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Social and technical chains of effects in business-to-business (B2B) service relationships

Purpose – This paper combines the social-technical systems and social exchange theories with the resource-based view of the firm, to introduce the idea of social and technical chains-of-effects to investigate how business-to-business (B2B) service firms need to synergize their social and technical resources to build successful customer relationships.

Design/methodology/approach – An online survey-based study with 321 managers working in Australian small and medium (SME) firms is used to test hypotheses about the sequential and substitutional impact of four social and technical resources (service quality, satisfaction, trust, and commitment) on customer loyalty, using both offline and online platforms.

Findings – The findings show that both social and technical chains-of-effects are viable channels for B2B service firms to build customer loyalty; however, mixing of both social and technical resources results in the weakening of both these chains.

Research limitations/implications – This research would help managers in B2B service firms understand the pitfalls of combining their social and technical resources because it may hamper their ability to build customer loyalty. Hence, they need to learn how to synergize their marketing resources across both offline and online platforms to achieve optimal results.

Originality/value – This research introduces a new idea (i.e., social and technical chains-of-effects) to examine the ability of B2B service firms to optimize their social and technical resources in a synergistic manner to build and nurture stronger customer relationships.

Keywords – B2B services, commitment and e-commitment, loyalty and e-loyalty, offline and online; satisfaction and e-satisfaction; service quality and e-service quality; Trust and e-trust,

Paper type – Research paper

Introduction

Self-service technologies (SSTs) have been previously recognized as a strategic imperative for service firms (e.g., Bitner *et al.*, 2002) - largely reflecting how the proliferation of online and mobile platforms has made service firms become increasingly reliant on SSTs to better serve customers (Lin and Hsieh, 2012; Singh and Crisafulli, 2016; Xiao *et al.*, 2019). However, the introduction of SSTs into the relational marketing equation when dealing with the customer also has broader implications for how business-to-business (B2B) service firms are able to build and maintain their social exchanged (SE) based customer relationships. This is because these technological platforms have reshaped the firm-customer interface (Lin and Hsieh, 2012) and through that the accompanying service separation (Green *et al.*, 2016; Keh and Pang, 2010) potentially reduces the service provider's opportunities to be able to fully leverage its socially based trust building capacity (i.e. Dwyer *et al.*, 1987). Given service interactions are largely social encounters (Malhotra *et al.*, 2005) this effectively means that when customers use SSTs these technologies also have the potential to dampen trust within the relationship. To date our understanding of the relational implications stemming from the need to integrate new technologies into the service offering at the same time maintain current and future SE based relationships is a relatively nascent field in B2B services. Due to the potential impact of service separation on SE relationships, this research examines the interplay between SSTs and the social exchange relational elements within a B2B service setting.

In B2B contexts, the interplay between SSTs and the firms' relationship marketing (RM) efforts is even more critical to understand given empirical studies continue to indicate the central importance of nurturing trust based commitment (e.g. Brown *et al.*, 2019; Kingshott and Pecotich, 2007; Morgan and Hunt, 1994). Due to the ongoing importance of SSTs in linking firms to the customer and the resultant service separation these platforms engender this means a better understanding of how the infusion of mobile, online and other forms of

SSTs into the B2B service value proposition complements the service firm's traditional RM efforts is needed. To date our understanding how SSTs and the service firm's RM efforts conjointly work together to help enhance B2B relationships is relatively limited. Although some scholars attempt to understand how the firms RM efforts are impacted by SSTs (e.g. Alhathal *et al.*, 2018; Kingshott *et al.*, 2018) there remains a distinct paucity of empirical studies showing how B2B service firms' online presence is integrated into their existing offline customer engagement platforms. Whilst the literature does attempt to discuss such integration under the guise of omni-channel retailing (e.g. Saghiri *et al.* 2019; Verhoef *et al.*, 2015) there is still a lack of understanding of the interplay between core relational and service constructs that underpin the service firms' technological and socially based marketing efforts within B2B service relationships.

From a theory standpoint, the integration of offline and online platforms to engage the customer can be explained by sociotechnical systems (STS) theory (Pasmore, 1988; Pasmore and Sherwood, 1978). Typically, this theoretical perspective advocates that when the firm's social and technical systems work together and these can be integrated into its operational environment this can help optimize firm outcomes. Thus we propose that by drawing upon STS theory in B2B service contexts, a closer examination of the interplay between well-established relational constructs (e.g. satisfaction, trust, commitment, etc.) and their technological equivalents (e.g. e-satisfaction, e-trust, e-commitment, etc.) will help to reveal whether the service firms' technological and social systems can work tandem in the process of yielding optimal B2B service provider outcomes. Since this has not been previously tested in the services marketing literature this contribution to current thinking enables a better understanding of the potential impact that online and offline platforms can have on the overall B2B service relationship.

Empirically, STS theory has been largely used to help explain a range of operational and manufacturing contexts (e.g. Chaudhuri and Jayaram, 2019; El Manzani *et al.*, 2019; Kleiner *et al.*, 2015) but by building on the emerging discussion in marketing and service settings (e.g. Kingshott *et al.*, 2018; Ramsaseshan *et al.*, 2015) we posit this conceptual grounding has merit in helping to examine the nexus between the service provider's traditional RM activities and its application of SSTs' in the value proposition. We make this ascertain on the basis that the aforementioned scholarly works in the services domain also suggest that when the B2B service firms' online marketing efforts (i.e., technical resources via SSTs) are able to work in tandem with their RM efforts (i.e., social resources via tacit trust and commitment) to build-customer relationships then this will also help the service provider optimize the value offered through their online presence. Given the important roles of SSTs and the firms RM efforts the association between online and offline channels of service delivery need to be empirically tested. Thus keeping in line with STS theory, the central proposition that we make is that when B2B service providers effectively deploy both offline and online platforms then their ability to optimize the core corresponding service outcomes of loyalty (e.g. Oliver, 1999) and e-loyalty (e.g. Anderson and Srinivasan, 2003) concurrently is largely a function of how well both modes of service delivery are integrated. We conceptualize integration simply as how effective these dual channels work in unison to nurture the customer relationship.

However, despite the potential for B2B service firms to embrace these dual platforms in an integrated manner, namely offering the customer a seamless, coordinated and integrated customer experience, the literature does tend to indicate that firms have found attaining this outcome extremely challenging (e.g. Lee *et al.*, 2019). Despite the advances in our understanding of omni-channels that advocate the need to interact with the customer in a coordinated and seamless manner it is still unclear how having dual online and offline channels in a B2B service setting can be integrated to attain optimal relational outcomes. This

is critical to know because if the RM and SST resources of the service firm act independently with little or no coordination, this would make them less effective at building sustainable customer relationships (Gallino *et al.*, 2014; Herhausen *et al.*, 2015; Ostrom *et al.*, 2015).

Thus the key issue facing service managers is not ‘whether’ to incorporate SSTs into their service operations but ‘how’ to assimilate such platforms into their overall SE based RM efforts. Given service interactions are social encounters that help contribute to successful service relationships (Malhotra *et al.*, 2005; Vargo and Lusch, 2008) this implies potential limitations (or boundaries) on the role that online platforms can play in building robust relationships. We therefore need to better understand the impact of social and technological resources on the service firms’ ability to build and manage successful customer relationship (Kingshott *et al.*, 2018), and herein referred to as the relational chain-of-effects.

Furthermore, we also distinguish between such effects in terms of each of the modes of interaction the service firm has with the customer. Specifically, in offline settings, due to the interactive SE based nature of service encounters we refer to this relational chain as the *social chain-of-effects*, whereas for online settings (due to technology assisted encounters) we term this the *technical chain-of-effects*. This distinction also helps to reflect the socio-technical system’s depiction of the social and technical resources held by the firm respectively. This distinction is critical as “any organization is composed of both social and technical systems that work in tandem to produce desirable outcomes” (Smith *et al.*, 2010, p.441), meaning that the inherent marketing resources in each of these chains need to work in an integrated manner to help build customer relationships.

Whilst Kingshott *et al.* (2018) attempt to address this important issue by exploring the impact of offline and online service quality on e-satisfaction and e-loyalty, and the mediating roles of overall trust and commitment in this process their study was limited. For example,

they ignore the effects of satisfaction with the offline service on trust and commitment in the online service so it is still not clear if these and other elements in the social and technical chains can work in unison to yield positive relational outcomes for a B2B service firm. This restricts our understanding of how the service firm's technological platforms and RM efforts can conjointly work together, so given the dual importance of building trust based relationships at the same time as using SSTs in the value proposition this is an area of research that requires further attention.

In order to address this research gap we combine social-technical systems (STS) theory (Pasmore, 1988; Pasmore and Sherwood, 1978) and social exchange (SE) theory (Thibaut and Kelley, 1959) with the resource-based view (RBV) of the firm (Wernerfelt, 1984) in this paper. Specifically, we explore the synergies among all the elements of these two relational chains-of-effects (i.e., social and technical resources) to help establish the influence of all these resources on the B2B service firm's ability to build customer loyalty, in two stages. First, we investigate if the *sequential* links among service quality, customer satisfaction, trust, commitment and loyalty (i.e., *the firms' relational chain-of-effects*) hold for both offline and online platforms. Next, we introduce elements from the social chain into the technical chain and vice-versa to see how this affects the formation of customer loyalty using both the chains. We contribute to the services and relationships marketing literatures in two ways. First, we extend the work of Chumpitaz-Caceres and Paparoidamis (2007) to show that the *relational chain-of-effects* is relevant to both the offline and online contexts. Second, we build on Kingshott *et al.* (2018) to provide a more complete picture of the effects of the service firm's social and technical marketing resources on the overall customer relationship.

We begin this paper with a review of the theoretical background of our research prior to developing our hypotheses. We then describe our empirical study and discuss its findings, their conceptual and managerial implications, limitations and directions for future research.

Theoretical background and hypotheses development

Social and technical chains-of-effects

Social-technical systems (STS) theory (Pasmore, 1988; Pasmore and Sherwood, 1978) suggests that firms comprise both social and technical systems that are synonymous with the service firm's social and technical resources respectively. Specifically, the potential range of social interactions that occur in service settings (e.g. Malhotra *et al.*, 2005; Vargo and Lusch, 2008) and the use of online and mobile platforms (e.g. Singh and Crisafulli, 2016; Xiao *et al.*, 2019) represent its social and technical systems respectively. Despite a plethora of studies examining the interplay between these two important organizational domains across a number of settings (e.g. Das and Jayaram, 2007; Chaudhuri and Jayaram, 2019; El Manzani *et al.*, 2019; Kleiner *et al.*, 2015; Manz and Stewart, 1997) it is only relatively recent that STS theory has emerged within marketing and service contexts to help explain firm-customer relationships. Unfortunately, these studies do not help to explain the effects of integrating its online and offline platforms (i.e. dual channels of engagement) to better serve the customer in the process of building long-terms relationships within B2B service settings. Despite the limitations of these studies, and those more recently in the service context (e.g., Kingshott *et al.*, 2018; Ramaseshan *et al.*, 2015; Smith *et al.*, 2010) they do indicate that both social (offline) and technical (online) resources need to effectively work together in tandem in services contexts for optimal firm outcomes.

This viewpoint also aligns with the RBV perspective that firms comprise a range of tangible and intangible assets (Wernerfelt, 1984, p.172) - which we argue herein enables us to directly observe how B2B service firms can optimize their use of dual channels (e.g., offline and online platforms) to build valuable customer relationships. In recognizing that service firms potentially have multiple channels to engage with customers we thus depict these

interactions to comprise online and face-to-face modes of interaction, and thus enables us to examine the effects of the firms tangible and intangible marketing resources (i.e. assets) associated with each of these two principal touchpoints on the overall customer relationship.

We conceptualize these resources to comprise elements within this *relational chain-of-effects* and distinguish social from technical resources as being a function of the offline or online experiences customers have in their ongoing relationship with their service provider. Accordingly, we portray these as two distinct relational chains (see figure 1), namely *social chain-of-effects* and *technical chain-of-effects*. Specifically, by drawing upon SE theory we conceptualize the *social chain-of-effects* (social resources) to be a function of the offline activities between parties and these manifest as the level of service quality [SQ], satisfaction [SAT], trust [TRU], commitment [COM], and degree of loyalty [LOY] that customers hold towards the service provider. Similarly, we conceptualize online interactions to constitute the *technical chain-of-effects* (technical resources) which in effect comprises their ‘e-equivalents’, namely e-service quality [ESQ], e-satisfaction (E-SAT), e-trust [E-TRU], e-commitment [E-COM], and e-loyalty [E-LOY]. These e-resources relate specifically to the service providers’ online platform used to engage the customer.

< Insert figure 1 about here >

Figure 1 depicts these two chains as independent of each other, which is how most B2B service firms view these; however, we argue that these should be considered as intertwined with each other, especially for those services that rely upon interacting with and serving customers across both offline and online platforms to attain optimal outcomes (Keeling *et al.*, 2019; Rousa and Voss, 2006). Whilst many firms have a multi-channeled approach to engaging with the customer, as indicated earlier we thus limit our study to dual channels that comprise online and face-to-face modes of customer engagement. Whilst we limit our

analysis to these two platforms our thinking is consistent with the stream of omni-channel literature (e.g. Saghiri *et al.* 2019; Verhoef *et al.*, 2015) advocating coordinating customer activities with the firm across channels. Specifically, we argue herein that in order to attain optimal outcomes with the use of offline and online platforms firms must ensure that they engage with the customer across platforms in a seamless and coordinated manner. In doing so the firm is able to optimize the benefits that SSTs provide at the same time take advantage of the social processes associated face-to-face interactions to help build trust based commitment. This supposition we make is consistent with STS theory, namely that service firms can operate in a truly integrated manner only if they integrate their social and technical resources to provide a seamless and coordinated service experience across both offline and online platforms, to ensure that each resources in the two chains contributes to the overall customer relationship. This research aims to test how these channels are intertwined by observing how the constituent constructs that underpin the two chains impact one another.

STS theory also suggests that firms “will function optimally only if the social and technical systems of the organization are designed to fit the demands of each other and the environment” (Pasmore, 1988, p. 1182), implying that each of the resources must be fit for purpose or inefficiencies will result. However, despite such importance attached to the overlapping nature of these two chains, others (e.g., Gallino *et al.*, 2014; Herhausen *et al.*, 2015; Ostrom *et al.*, 2015) discuss how the application of integrated approaches is often fraught with problems and not meeting customer expectations. Hence, if all the offline and online touchpoints do not effectively operate together then it will restrict the overall ability of the service firm to build sustainable relationships with their business customers.

According to resource-based view (RBV), firms have a range of tangible and intangible assets that can potentially be both a source of strength and weakness for the firm (Wernerfelt, 1984, p.172). The inference we draw from this is that the service firms’ social and technical

resources can potentially help as well as hinder the development of customer relationships, so the manner in which these two suites of marketing resources are aligned with one another provides the key to how service providers can enhance the customer experience and nurture the customer relationship at the same time. In order to ascertain this we first examine each of the relational chain-of-effects as independent touchpoints and then we determine the intrinsic social and technical resources in each of the chains impact the customer relationship when they are integrated. Simply put, we simulate and make comparisons between the independent and integrated modes of interaction in terms of their impact on the overall relationship. Next, we discuss the links among the elements of each of these chains in more detail.

Social chain-of-effects

STS theory (Pasmore 1988; Pasmore and Sherwood, 1978) posits that firms are comprised of both social and technical systems, therefore, we conceptualize these two systems as two highly interdependent chains (social and technical) that help optimize customer relationships. As both these chains pertain to two discrete touchpoints with the customer along its offline and online platforms, there is a need for these to be interdependent if the service firm wishes to exploit potential benefits of using an integrated approach (Rust and Huang, 2014). We also argue that each chain (represented by its own suite of resources) would still need to be efficient as a stand-alone channel because customers may simply opt for one or the other. Therefore, we posit that the social chain-of-effects comprises of a sequence of direct and indirect effects among those resources that stem from the offline interactions between customers and the service firm, including service quality, customer satisfaction, trust, commitment and customer loyalty (see figure 1a).

Service quality represents the customer's perception of what they consider the service should be and their perception about actual performance by the service provider (Brady and

Cronin, 2001; Parasuraman *et al.*, 1985). Past studies converge on the positive effects of service quality on customer satisfaction (e.g., Cronin and Taylor, 1992; Caruana, 2002). As service quality and customer satisfaction are shown to be central elements in the formation of SE based customer relationships within a B2B service context (Kingshott *et al.*, 2018) we also posit the construct to be inherent within our proposed social chain-of-effects.

Next, based on the role of customer loyalty as the one of the ultimate aims of marketing (Dick and Basu, 1994), we argue that the net effect of customer interactions that emanate from the social chain-of-effects can be best encapsulated in the form of customer loyalty to the service firm. Customer loyalty is defined as “*a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behaviour.*” (Oliver, 1999, p. 34). Given the significance of loyalty to the service firms past research explores many factors with direct and indirect effects on customer loyalty. For example, Chumpitaz-Caceres and Paparoidamis (2007) reveal that relationship satisfaction, trust and commitment have a positive and direct impact on loyalty and that the link between satisfaction and loyalty is partially mediated by trust and commitment. As satisfaction, trust and commitment are the cornerstones of a SE approach and their presence is a reflection of the relationship quality (e.g., Athanasopoulou, 2009; Hennig-Thurau, 2002), we posit these as the central elements in the social chain-of-effects, which leads to customer loyalty. Accordingly, we hypothesize:

H1. Customer loyalty is a relational outcome from the social chain-of-effects, which is sequence of relationships (SQ → SAT → TRU → COMM → LOY).

Technical chain-of-effects

For service firms using online platforms to engage with the customer, the literature shows this particular touchpoint also provides benefits to both the firm and customer (Keeling *et al.*, 2019). From a relational viewpoint, such expectations will need to culminate in the online context in the building of e-loyalty directed towards service providers' online platform if the firms marketing resources are deployed in an effective manner. E-loyalty has been defined as "*the customer's favourable attitude toward an electronic business resulting in repeat buying behavior*" (Anderson and Srinivasan, 2003, p.125) and thus represents the ultimate objective of a service firm and thus depicted as the final outcome of the technical chain-of-effects. This technical chain has a sequence of relationships among the service firms' technical resources, which include e-service quality, e-satisfaction, e-trust, e-commitment and e-loyalty (see figure 1b).

We use STS theory (Pasmore 1988; Pasmore and Sherwood, 1978) to represent the technical chain as a service firm's technical systems that may well operate as a 'standalone' channel in an efficient manner to yield e-loyalty. For example, Chou *et al.* (2015) find e-trust partially mediating the link between e-satisfaction and e-loyalty in online clothes shopping context. Chung and Shin (2009) find customer satisfaction with an online retailer drive their e-trust that in turn affects e-commitment. Within the B2B service context, Kingshott *et al.* (2018) find e-loyalty to be a function of e-satisfaction, whereas Jin *et al.* (2008) find loyalty to online shopping impacts both loyalty and satisfaction towards the online platform. In a similar context, Cristobal *et al.* (2007) show a positive link between website quality and satisfaction with the website for internet users, and furthermore that satisfaction towards the website yielded loyalty in that website. More generally, in a critical review of the e-loyalty literature, Valvi and Fragkos (2012) provide substantial evidence about the links among E-SQ, E-SAT, E-TRU, E-COM and E-LOY, suggesting that these constructs constitute core elements (technical resources) within the technical chain-of-effects. Thus, we hypothesize:

H2. E-loyalty is a transactional outcome from the technical chain-of-effects, which is a sequence of relationships (E-SQ → E-SAT → E-TRU → E-COM → E-LOY).

Integration between social and technical chains-of-effects

As indicated earlier, STS theory suggests that firms can achieve better outcomes if they can integrate their social and technical systems with each other and with their external environment, which in the context of our research is the customer. We depict the service firm's social system to encapsulate the range of potential face-to-face interactions in the service delivery process, whereas their technical system is akin to the customer using mobile and online platforms to engage with the firm. Thus as customers are able to choose which mode of delivery to use that may vary between interactions with the service firm. For example, in a banking context the bank's B2B customers would attend the branch in person to deposit funds (social interaction) but simultaneously use the bank's online platform to transfer funds (technical interaction) between accounts. According to STS theory these and the many other engagements that transcend platforms in this manner (i.e. interaction between social and technical systems) need to be seamless if the service firm desires elevated levels of customer experience in the process of attaining optimal outcomes. In simplistic terms, this means that customers should be able to switch between channels (i.e. online or offline) in an effortless manner without any disruptions to their service experience thus receiving the expected service to their desired level of satisfaction – irrespective of platforms. Since this makes synergies between platforms a necessary precondition for optimal firm outcomes our research is aimed at testing any synergy through examining how the well-established service constructs in the literature and their 'e' equivalents are linked.

This more holistic picture is important since the literature is abundant with examples of how an integrated approach across channel modes has not performed as expected but

interestingly only in relation to how selected aspects of how offline and online platforms are intertwined (e.g., Beck and Rygl, 2015; Ostrom *et al.*, 2015; Rosenmayer *et al.*, 2018; Xiao *et al.*, 2019). Typically, Xiao *et al.* (2019) note more consumers complain about online-to-offline activities (i.e., the use of online platforms to drive in-store sales) than any other area of e-business (p. 214), which is limited in scope but does indicate these two platforms are not fully synchronized in helping to deliver the overall customer experience.

Similarly, in the retailing context, Zhang *et al.* (2010, p. 176) note that a typical approach to a firms' multichannel strategy is to simply add new channels and this approach may produce conflict between platforms if it is not properly designed and positioned. To ascertain this eventuality we posit that such 'conflict' would be reflected in how the relational building aspects of the value chain (e.g. service quality, satisfaction, trust, commitment, and loyalty, as well as their online and mobile equivalents) work in unison across these two channel formats. By drawing on Chumpitaz-Caceres and Paparoidamis, (2007) we propose to extend their established model (depicted herein as the *social chain of effects*) to also comprise the e-equivalents (depicted herein as the *technical chain of effects*) to help understand how both channel formats are integrated. We therefore empirically examine the link between online and offline platforms in a more holistic way to offer a much clearer picture of the reality of how these dual channels perform when that are intertwined.

This approach is important because adding SSTs into the value proposition needs to be viewed as a strategic imperative (Bitner *et al.*, 2002) since the evidence (as we have alluded to) points towards service firms not fully integrating their offline and online channels. We posit that the converse also has the potential to result in relative poor outcome, namely 'pure play' service organizations adding a face-to-face element into their service delivery as such action may not optimize anticipated outcomes. Therefore by drawing upon STS theory and the RBV of the firm we are able to establish whether service firms are utilizing their social and technical

resources to build customer relationships to maximum effect. Accordingly, we propose any sub-optimal performance of the combined effects of both channels can be observed through analyzing how the two relational chains working in tandem. This supposition we make has some support in the literature. For example, Falk *et al.* (2007) examine ‘channel dis-synergies’ within a multichannel service environment and find that customer who are satisfied with the offline option have a diminished view of the self-service option. Similarly, in B2B contexts Kingshott *et al.* (2018) find that overall trust in a bank may not transfer to e-loyalty (loyalty towards its website) and further that commitment towards the bank actually has a negative impact on e-loyalty. At first glance these findings seem counter-intuitive but they also suggest that the service firm’s social and technical marketing resources associated with their offline and online platforms may not always be working in tandem or synergistically.

This can however be explained when viewed through the lens of STS theory. More specifically, STS theory proposes that social and technical systems can be integrated to optimize firm outcomes but to make this happen all the elements of the social and technical chains-of-effects need to work in tandem (Smith *et al.*, 2010). This assertion is also consistent with the RBV that is founded upon the notion that the firm resources can also be a source of weakness if they are not deployed properly and in sync with other resources (Wernerfelt, 1984). Indeed the decision of how to allocate the appropriate marketing resources across channels is a key challenge facing the service firm (Neslin *et al.*, 2006). In line with this and on the basis of prior empirical findings, we posit that the underlying relational based constructs, namely service quality, satisfaction and trust play different roles in each platform and this in turn will reflect on their contribution to the two relational chain-of-effects. For both touchpoints with the customer, the relational chain-of-effects signifies how well the service firm is able to draw upon its social and technical marketing resources to develop loyalty towards the service provider (social chain) and its online platform (technical chain) respectively.

Past research offers support for our ideas about the social and technical resources playing important roles within and across the two chains. For example, despite countless customer benefits of using these dual platforms to within the context of professional health services, Keeling *et al.* (2019) find patients are reluctant to transition into a digital health platform as they place higher trust in the medical profession than seeking alternatives. Moreover, in exploring the cognitive processes that determine channel evaluations, Falk *et al.* (2007, p. 156) find that customers considering the move from offline to online platforms into are plagued with the so-called ‘status quo bias’ (e.g. Hammond *et al.*, 2006) and consequently those customers that are satisfied with their current offering (i.e. offline platform) do not see any benefits of the new platform so as a consequence are reluctant to transition into online modes. These studies indicate that technical resources are not readily transferable into the social chain and we argue that similar results may be seen if social resources are embedded within the technical chain. In other words, both these chains are likely to become weaker as we introduce elements from one chain into the other. Therefore,

H3. The strength of relationships within the social chain-of-effects would become weaker as its elements (social resources) are supplemented by technical resources, such as e-service quality, e-satisfaction, e-trust and e-commitment.

H4. The strength of relationships within the technical chain-of-effects would become weaker as its elements are supplemented by social resources, such as service quality, satisfaction, trust and commitment.

Methodology

Sample and procedure

We use a sample of 321 respondents drawn from the nation-wide population of managers working in Australian SMEs to test all our hypotheses. Australian SMEs are known as

innovators and early adopters of mobile and online technologies (ACMA, 2011; Australia Post, 2018) and are an understudied segment in B2B services context (Kingshott *et al.*, 2018); hence, they provide a suitable research setting for this study on the deployment of both social and technical resources in B2B service relationships. All the participants were invited to complete an online survey with reference to their major bank with which they had both offline and online interactions during the last few years. The names of banks reported by respondents include, ANZ, Bendigo Bank, Citibank, Commonwealth Bank, National Australia Bank, ING, St George, Suncorp and Westpac, with almost all (99%) of them offering both offline and online services. Table I summarizes the sample profile.

< Insert table I about here >

As shown in table I, about three-fourth (74.8%) of the firms in our sample use only one bank for their regular banking needs, which include all the major banks operating in Australia (e.g., Commonwealth Bank, ANZ, NAB and Westpac). The relationship length between the firms and their major banks ranges from less than five years (19.6%) to more than twenty years (18.1%) with about two-thirds (62.3%) between five to twenty years. The firms in our sample represents a wide variety of businesses, ranging from retail, information technology and technical services to education, healthcare and consulting. About one-third of the firms have e-banking experience for less than five years (30.5%) or ten years and more (32.7%). Firm age ranges from less than five years (18.4%) to more than twenty years (30.8%) with about half the firms (51.8%) between five and twenty years. Most of the firms in our sample have thirty or less employees (78.2%) and a turnover of AUD 10 million or less (70.4%).

Measures

Data were collected using a self-administered online survey with the aid of an Australian online panel provider (GrowthHops) that specializes in access to a wide variety of target

populations. The questionnaire items consisted of scales adapted from extant literature. For example, service quality was measured with Chenet *et al.*'s (2010) 10-item scale and satisfaction (4 items), trust (5 items), commitment (5 items) and loyalty (5 items) with Ndubisi's (2014) scales. E-SQ was measured with Parasuraman *et al.*'s (2005) 12-item scale, E-SAT with Aldas-Manzano *et al.*'s (2011) 4-item scale, E-TRU with Johnson *et al.*'s (2008) 3-item scales, E-COM with Luarn and Lin's (2003) 4-item scale and E-loyalty with Srinivasan *et al.*'s (2002) 7-item scale. All scales use a seven-point Likert type response format, with "strongly disagree" (1) and "strongly agree" (7) as anchors.

Data analysis and results

We used the two-stage process recommended by Anderson and Gerbing (1988) to first test our measurement model with confirmatory factor analysis on all the scales using AMOS 6.0 to assess their psychometric properties (Byrne, 2004). The measurement model provided a good fit to the data ($\chi^2 = 2577.85$, $df = 1424$, $p < .001$, $\chi^2/df = 1.81$; GFI = .95, NFI = .96, CFI = .98, RMSEA = .039; SRMR = .045) with all the fit indices better than their cut-off values (e.g., RMSEA < .06, SRMR < .08, CFI > .95) recommended by Hu and Bentler (1999) and ($\chi^2/df < 3$) by Wheaton *et al.* (1977). Table II shows the psychometric properties of all the scale items, including standardized parameter estimates, mean and standard deviation.

< Insert table II about here >

All the parameter estimates (λ) are significantly higher than zero (.75 to .96) at $p < .05$ level, showing convergent validity. None of the confidence intervals of the correlation coefficients for each pair of scales (Φ estimates) includes 1.0, showing discriminant validity (Anderson and Gerbing, 1988). All the construct reliabilities (.85 to .96) and average variance extracted (AVE) for all the constructs (.69 to .88) are also very high, showing that all the constructs are reliable (Bagozzi and Yi, 1988). The AVE value for each construct is higher than the square

of its correlations with all the other constructs in the model, providing further evidence of discriminant validity (Fornell and Larcker, 1981). Table III shows the correlations, construct reliabilities, AVE values, scale means and standard deviations.

< Insert table III about here >

We tested all our hypotheses using Model 6 in Hayes' PROCESS Macro with SPSS as it allows mediation-based path analysis with multiple mediators between the independent and dependent variables using a series of ordinary least squares (OLS) regression models and provides test statistics that clearly show the presence or absence of each mediating effect (Hayes, 2013)¹. Table IV shows all the results. First, all the links in both, social [SQ ($\beta_1 = .88$) \rightarrow SAT ($\beta_2 = .46$) \rightarrow TRU ($\beta_3 = .50$) \rightarrow COM ($\beta_4 = .32$) \rightarrow LOY] and technical [E-SQ ($\beta_1 = .96$) \rightarrow E-SAT ($\beta_2 = .18$) \rightarrow E-TRU ($\beta_3 = .19$) \rightarrow E-COM ($\beta_4 = .34$) \rightarrow E-LOY] chains-of-effects are statistically significant and positive; hence, both H1 and H2 are supported.

< Insert table IV about here >

Next, we sequentially replaced each element in the social chain by its equivalent elements from the technical chain and found that the effects of all the social elements become weaker upon adding E-SQ as the first element in the social chain, such as SQ \rightarrow SAT ($\beta_1 = .88$ to $.34$), SAT \rightarrow TRU ($\beta_2 = .46$ to $.26$), TRU \rightarrow COM ($\beta_3 = .50$ to $.45$), except the final link COM \rightarrow LOY ($\beta_4 = .32$ to $.32$), which retains its strength. However, as we keep adding more technical resources to the social chain, the strengths of its links keep becoming weaker. In fact, the final model in which all the social resources are replaced with technical resources, has the coefficient for LOY also drops from $.32$ to $.24$ and the R-square value from $.83$ to $.76$

¹ As advised by the anonymous reviewers, we repeated our entire analysis using Structured Equation Modelling approach and did not find any significant differences from the results from Process Model 6. We also added an industry dummy in our data analyses and this did not have any significant effect on our results. Therefore, the sector in which the companies operate does not seem to have any significant effect on the hypothesised relationships in this paper.

(all the changes are significant at $p < .05$), which shows a clear deterioration in the firms' ability to maintain customer loyalty when they blend in technical resources into the social chain-of-effects. Thus, H3 is also supported.

We then replaced each element in the technical chain by its equivalent elements from the social chain in a sequential manner and found that the effects of all the technical elements also become weaker upon adding SQ as the first element in the technical chain, such as E-SQ \rightarrow E-SAT ($\beta_1 = .96$ to $.79$) but the other effects remain unchanged, E-SAT \rightarrow E-TRU ($\beta_2 = .18$ to $.17$), E-TRU \rightarrow E-COM ($\beta_3 = .19$ to $.18$) and E-COM \rightarrow E-LOY ($\beta_4 = .34$ to $.35$), with all the changes significant at $p < .05$. As we keep adding more social resources to the technical chain, the strengths of its links keep becoming stronger. However, the final model in which all the technical resources are replaced with social resources, the coefficient for LOY also drops from $.34$ to $.20$ and the R-square value from $.81$ to $.76$, which shows a decline in the firms' ability to maintain e-loyalty when they mix in social resources into the technical chain-of-effects, supporting H4.

Common Method Variance (CMV)

As we collected data for our independent and dependent variables from the same respondents in the same setting, we tried to minimize the impact of common method bias in our study, as advised by Podsakoff *et al.* (2003). Specifically, we first used many procedural remedies during data collection, such as assuring complete anonymity to the respondents, reducing any ambiguity in the items by using well-established existing scales, and ensuring that the scales for the independent and dependent variables were separated from one another in the research instrument. Next, we used the recommended Harman's one-factor diagnostic test to assess the potential impact of CMV by examining all scale items using a factor analysis to assess if the unrotated factor solution verifies that the majority of variance is not explained by a single

common factor. The results show ten distinct factors with eigenvalues greater than 1.0, which account for 70.9% of total variance and the single largest factor accounts for 22.1% variance, which is less than one-third of the total variance explained by all the ten factors. As no single factor account for a majority of the variance, CMV does not represent a significant concern in our data and is unlikely to bias our results (Podsakoff *et al.*, 2003).

Discussion and implications

The main aim of this research was to establish if the service firm's social and technical resources can be integrated with one another to jointly contribute to the building of customer relationships within B2B settings. Specifically, we examined the role that core service quality, satisfaction, trust, commitment and loyalty (and their e-equivalents) play by displaying how they interact with one another within the relationship chain-of-effects.

Accordingly, in our analysis we first make a distinction between the social and technical chains of effect by building upon pertinent literature to show how the two types of marketing resources (i.e., social and technical) help build loyal customers (H1 and H2) in each of these chains. Next, we test how robust each of these two chains are in developing loyalty and e-loyalty (H3 and H4) when technical and social resources were added to each of the chains (i.e. technical resources added into the social chain; and, social resources added into the technical chain). This approach helped us to simulate the likely consequences of when service firms (both 'pure play' and 'brick and mortar' firms) add another platform to their mode of interaction with the customer. Our findings reveal a number of scholarly and managerial implications, which we now discussed further.

Conceptual contribution

The proliferation of mobile and online technologies (e.g., Lin and Hsieh, 2012; Singh and Crisafulli, 2016; Xiao *et al.*, 2019) has resulted in much scholarly work being devoted to

helping explain how service firms use different channels to engage the customer (Lu *et al.*, 2018). Whilst literature indicates that an omni-channel approach to dealing with the customer should involve a coordinated and seamless approach to delivering value across each channel (Saghiri *et al.* 2019; Verhoef *et al.*, 2015) it also indicates that such an undertaking is very complex and extremely challenging (Lee *et al.*, 2019). Our study provides some additional scholarly insights into why such a challenge likely exists by examining the broader relational consequences of integrating dual channels. Specifically, our analysis shows the potential consequences of being reliant upon dual channels capacity to yield customer loyalty and e-loyalty. In order to do this we draw upon STS theory and apply this to B2B service relationships with the customer through building on existing literature (e.g. Chumpitaz-Caceres and Paparoidamis, 2007; Ramaseshan *et al.*, 2015) to further explore how ‘compatible’ technical and relational elements interact in the process of delivering value to the customer. Our study differs from past studies as it offers a more comprehensive picture of how B2B service firms engage with customers, namely examining the joint effects of the technical and social value chains (i.e. H3 & H4), rather than looking at them in isolation.

In that regard, our approach of examining the technical and social value chains, and then gradually intertwining these to directly observe the effects of each of the elements within each chain has not been previously undertaken in the extant literature. Through our study, the overarching judgement we make is that both the offline and online platforms, as reflected through their respective relational chain-of-effects (see figure 1), do work effectively as ‘independent chains’ in building customer loyalty and e-loyalty respectively. However, our findings also reveal that once we start to integrate ‘equivalent’ social and technical resources across chains (i.e., satisfaction vs. e-satisfaction, trust vs. e-trust, etc.) to help simulate the effects of an integrated dual channel service strategy, we begin to observe that the ‘blended chains’ are not as efficient in building loyalty. Furthermore, despite numerous studies that

draw upon SE theory to show trust plays a key role in the building of customer relationships in B2B settings (e.g., Kingshott, 2006; Kingshott and Pecotich, 2007; Morgan and Hunt, 1994) we find both trust and its e-trust equivalent to have different effects on the relationship within each of the respective relational chains.

Typically, when comparing the independent baseline chains in our study trust has a much stronger effect on commitment than e-trust on e-commitment (social chain: TRU \rightarrow COM ($\beta_3 = .50$, $p < .001$) vs. technical chain: E-TRU \rightarrow E-COM ($\beta_3 = .19$, $p < .01$). Interestingly, this strong effect of trust on commitment ($\beta_3 = .50$, $p < .001$) becomes even stronger ($\beta_3 = .60$, $p < .001$) when e-trust is added into the social chain, as shown in the middle part (shaded in grey) of the top half of table IV. In contrast, the weak effect of e-trust on e-commitment ($\beta_3 = .19$, $p < .01$) becomes non-significant ($\beta_3 = .08$, $p > .05$) when trust is added into the technical chain, as shown in the middle part (shaded in grey) of the bottom half of table 4. Whilst these findings further highlight the pivotal role of trust in the relational equation and show that B2B service firms need to build both, trust in the service firm (social) and trust in their online platform (technical) scholars need to factor this variation into future studies that examine various platforms used to engage the customer.

Managerial Implications

From a managerial perspective, our findings indicate that building trust should remain a central element in B2B service relationships irrespective of whether the firm deploys online or offline platforms. However, managers should be fully aware that trust is not necessarily a resource that is readily transferred from one platform of engagement to another (i.e., offline to online). This is echoed in the literature by Gundlach and Cannon (2010, p.402) who note that “the duality of trust as a lubricant, making relationships more efficient, also creates vulnerability and a potential road to opportunism and lower performance”. Since our findings

indicate that having trust directed towards the service firm does not necessarily translate into e-trust directed at their online platform managers need to be cautious not to assume trust can be transferred across platforms of engagement. This also means that B2B decision makers need to invest in building e-trust in their online platform, which our findings indicate can actually lead to greater overall trust, commitment and loyalty towards the firm as well as the online platform. Since trust is central to all relational activities, rather than relying upon being able to transfer trust (i.e. Doney and Cannon, 1997) the data we present suggest that service firms should take the time to independently invest in building online and offline forms of trust as the combined effects of each form of trust will result in a much stronger relationship.

Limitations and future research

This study has some limitations that future research may address. First, we study B2B service relationships between SME firms and their banks in Australia, where both online and mobile platforms are relatively well advanced and widely used (ACNA, 2011; Australia Post, 2018). Hence, future studies could study B2B customer relationships with other types of businesses and in other cultural and national settings that may reflect different patterns of offline and online usage. Second, most banks in our study have moved from a purely offline to a mixed (offline plus online) platform to build and manage their customer relationships, which is a typical pattern of ‘adding’ channels of delivery (Zhang *et al.*, 2010). Future research could replicate our study for service firms that commenced operations as a pure online player and are now trying to inculcate social resources into their largely technical operations. Third, we examine B2B services provided by banks that may limit the generalizability of our findings so future research could replicate our study in other B2B service contexts, such as auditors, travel service providers, maintenance and repair service providers etc. to test the generalizability of our findings. Finally, our study examines how the marketing assets of the service firm perform in two specific channels, through their offline and online interactions

with the customer. However, there are other modes of customer interaction categorized under the ‘Omni-channel’ banner, such as social media, catalogues, m-commerce platforms, among others (Rosenmayer *et. al.*, 2018) that we did not explore. Future research could explore the integrated impact of social and technical resources on the chains-of-effects for these other platforms to provide further insights.

References

- ACMA (2011): Australian Communications and Media Authority (2011), “The emerging mobile telecommunications service market in Australia”, *Communications Report 2010–11 Series: Report 3*, Australian Government, <https://www.acma.gov.au/-/media/Research-and-Analysis/Publication/Comms-Report-2010-11/PDF/Report-3-Emerging-mobile-telecommunications-service-market-in-Australia.PDF?la=en>
- Aldas-Manzano, J., Ruiz-Mafe, C., Sanz-Blas, S. and Lassala-Navarre, C. (2011), “Internet banking loyalty: Evaluating the role of trust, satisfaction, perceived risk and frequency of use”, *The Service Industries Journal*, Vol. 31 No. 7, pp. 1165-1190.
- Alhathal, F.T., Sharma, P. and Kingshott, R.P. (2019), “Moderating effects of service separation on customer relationships with service firms: A social-exchange perspective”, *Journal of Service Theory and Practice*, Vol. 29 No. 1, pp. 71-92.
- El Manzani, Y., Sidmou, M.L. and Cegarra, J.J. (2019), “Does ISO 9001 quality management system support product innovation? An analysis from the sociotechnical systems theory”, *International Journal of Quality & Reliability Management*, Vol. 36 No. 6, pp.951-982.
- Anderson, J.C. and Gerbing, D.W. (1988), “Structural equation modeling in practice: A review and recommended two-step approach”, *Psychological Bulletin*, Vol. 103 No. 3, pp. 411.

- Anderson, R.E. and Srinivasan, S.S. (2003), “E-satisfaction and e-loyalty: A contingency framework”, *Psychology & Marketing*, Vol. 20 No. 2, pp. 123-138.
- Athanasopoulou, P. (2009), “Relationship quality: A critical literature review and research agenda“, *European Journal of Marketing*, Vol. 43 Nos. 5/6, pp. 583-610.
- Australia Post (2018), “Inside Australian shopping online”, https://auspost.com.au/content/dam/auspost_corp/media/documents/2018-ecommerce-industry-paper-inside-australian-online-shopping.pdf
- Bagozzi, R.P. and Yi, Y. (1988), “On the evaluation of structural equation models”, *Journal of the Academy of Marketing Science*, Vol. 16 No. 1, pp. 74-94.
- Balaji, M.S. and Roy, S.K. (2017),”Value co-creation with internet of things technology in the retail industry”, *Journal of Marketing Management*, Vol. 33 Nos. 1/2, pp. 7-31.
- Bateson, J.E. (1985), "Self-service consumer: An exploratory study", *Journal of Retailing*, Vol. 61 No. 3, pp. 49-76.
- Beck, N. and Rygl, D. (2015), “Categorization of multiple channel retailing in multi-, cross-, and omni-channel retailing for retailers and retailing”, *Journal of Retailing and Consumer Services*, Vol. 27, pp. 170-178.
- Bitner, M.J., Ostrom, A.L. and Meuter, M.L. (2002), “Implementing successful self-service technologies”, *Academy of Management Executive*, Vol. 16 No. 4, pp. 96-108.
- Brady, M.K. and Cronin, J.J., Jr (2001), “Some new thoughts on conceptualizing perceived service quality: A hierarchical approach”, *Journal of Marketing*, Vol. 65 No. 3, pp. 34-49.

- Brown, J. R., Crosno, J.L. and Tong, P.Y. (2019), "Is the theory of trust and commitment in marketing relationships incomplete?" *Industrial Marketing Management*, Vol. 77, pp. 155-169.
- Byrne, B.M. (2004), "Testing for multigroup invariance using AMOS graphics: A road less travelled", *Structural Equation Modeling*, Vol. 11 No. 2, pp. 272-300.
- Caruana, A. (2002), "Service loyalty: The effects of service quality and the mediating role of customer satisfaction", *European Journal of Marketing*, Vol. 36 Nos. 7/8, pp. 811-828.
- Chaudhuri, A. and Jayaram, J. (2019), "A socio-technical view of performance impact of integrated quality and sustainability strategies", *International Journal of Production Research*, Vol. 57 No. 5, pp.1478-1496.
- Chenet, P., Dagger, T.S and O'Sullivan, D. (2010), "Service quality, trust, commitment and service differentiation in business relationships", *Journal of Services Marketing*, Vol. 24 No. 5, pp. 336-346.
- Chumpitaz-Caceres, R. and Paparoidamis, N.G. (2007), "Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty", *European Journal of Marketing*, Vol. 41 Nos. 7/8, pp. 836-867.
- Chung, K.H. and Shin, J.I. (2009), "The Relationship between site characteristics, relationship quality, and word of mouth", *International Journal of Business and Information*, Vol. 4 No. 2, pp. 137-160.
- Cristobal, E., Flavián, C. and Guinaliu, M. (2007), "Perceived e-service quality (PeSQ): Measurement validation and effects on consumer satisfaction and web site loyalty", *Managing Service Quality: An International Journal*, Vol. 17 No. 3, pp. 317-340.

- Cronin, J.J. and Taylor, S.A. (1992), "Measuring service quality: A re-examination and extension", *Journal of Marketing*, Vol. 56 No. 3, pp. 55-68
- Curran, J.M. and Meuter, M.L. (2005), "Self-service technology adoption: Comparing three technologies", *Journal of Services Marketing*, Vol. 19 No. 2, pp. 103-113.
- Das, A. and Jayaram, J. (2007), "Socio-technical perspective on manufacturing system synergies", *International Journal of Production Research*, Vol. 45 No. 1, pp. 169-205.
- Dick, A.S. and Basu, K. (1994), "Customer loyalty: Toward an integrated conceptual framework", *Journal of the Academy of Marketing Science*, Vol. 22 No. 2, pp. 99-113.
- Doney, P.M. and Cannon, J.P. (1997), "An examination of the nature of trust in buyer-seller relationships", *Journal of Marketing*, Vol. 61 No. 2, pp. 35-51.
- Dwyer, F. R., Schurr, P. H. and Oh, S. (1987), "Developing buyer-seller relationships", *Journal of Marketing*, Vol. 51 No. 2, pp. 11-27.
- Falk, T., Schepers, J., Hammerschmidt, M. and Bauer, H.H. (2007), "Identifying cross-channel dissynergies for multichannel service providers", *Journal of Service Research*, Vol. 10 No. 2, pp. 143-160.
- Gallino, S. and Moreno, A. (2014), "Integration of online and offline channels in retail: The impact of sharing reliable inventory availability information", *Management Science*, Vol. 60 No. 6, pp. 1434-1451.
- Green, T., Hartley, N. and Gillespie, N. (2016), "Service provider's experiences of service separation: The case of telehealth", *Journal of Service Research*, Vol. 19 No. 4, pp. 477-494.

- Gundlach, G.T. and Cannon, J.P. (2010). “Trust but verify”? The performance implications of verification strategies in trusting relationships” *Journal of the Academy of Marketing Science*, Vol. 38 No. 4, pp. 399-417.
- Harman, H. H. (1960). *Modern Factor Analysis*. Chicago, IL. University of Chicago Press
- Hartley, N. and Green, T. (2017), “Consumer construal of separation in virtual services”, *Journal of Service Theory and Practice*, Vol. 27 No. 2, pp. 358-383.
- Hammond, J.S., Keeney, R.L. and Raiffa, H. (2006), “The hidden traps in decision making,” *Harvard Business Review*, Vol. 84 No. 1, pp. 118-126.
- Hayes, A. F. (2013). *Mediation, moderation, and conditional process analysis: A regression-based approach*. New York: The Guildford Press.
- Hennig-Thurau, T., Gwinner, K.P. and Gremler, D.D. (2002), “Understanding relationship marketing outcomes: An integration of relational benefits and relationship quality”, *Journal of Service Research*, Vol. 4 No. 3, pp. 230-247.
- Herhausen, D., Binder, J., Schoegel, M. and Herrmann, A. (2015), “Integrating bricks with clicks: Retailer-level and channel-level outcomes of online–offline channel integration”, *Journal of Retailing*, Vol. 91 No. 2, pp. 309-325.
- Hu, L.T. and Bentler, P.M. (1999), “Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives”, *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1-55.
- Jin, B., Park, Y.J. and Kim, J. (2008), “Cross-cultural examination of the relationships among firm reputation, e-satisfaction, e-trust, and e-loyalty”, *International Marketing Review*, Vol. 25 No. 3, pp. 324-337.

- Johnson, D.S., Bardhi, F. and Dunn, D.T. (2008), "Understanding how technology paradoxes affect customer satisfaction with self-service technology: The role of performance ambiguity and trust in technology", *Psychology & Marketing*, Vol. 25 No. 5, pp. 416-443.
- Keeling, D.I., de Ruyter, K., Mousavi, S. and Laing, A. (2019), "Technology push without a patient pull: Examining digital un-engagement (DU) with online health services", *European Journal of Marketing*, (in press).
- Keh, H.T. and Pang, J. (2010), "Customer reactions to service separation", *Journal of Marketing*, Vol. 74 No. 2, pp.55-70.
- Kingshott, R.P. (2006), "The impact of psychological contracts on trust and commitment within supplier-buyer relationships: A social exchange view", *Industrial Marketing Management*, Vol. 35 No. 6, pp. 724-739.
- Kingshott, R.P. and Pecotich, A. (2007), "The impact of psychological contracts on trust and commitment in supplier-distributor relationships", *European Journal of Marketing*, Vol. 41 Nos. 9/10, pp. 1053-1072.
- Kingshott, R.P., Sharma, P. and Chung, H.F. (2018), "The impact of relational versus technological resources on e-loyalty: A comparative study between local, national and foreign branded banks", *Industrial Marketing Management*, Vol. 72, pp. 48-58.
- Kleiner, B.M., Hettinger, L.J., DeJoy, D.M., Huang, Y.H. and Love, P.E. (2015), "Sociotechnical attributes of safe and unsafe work systems", *Ergonomics*, Vol. 58 No. 4, pp.635-649.
- Lee, Z.W.Y., Chan, T.K.H., Chong, A.Y.L, and Thadani., D.R. (2019), "Customer engagement through omnichannel retailing: The effects of channel integration quality", *Industrial Marketing Management*, Vol. 77, pp. 90-101.

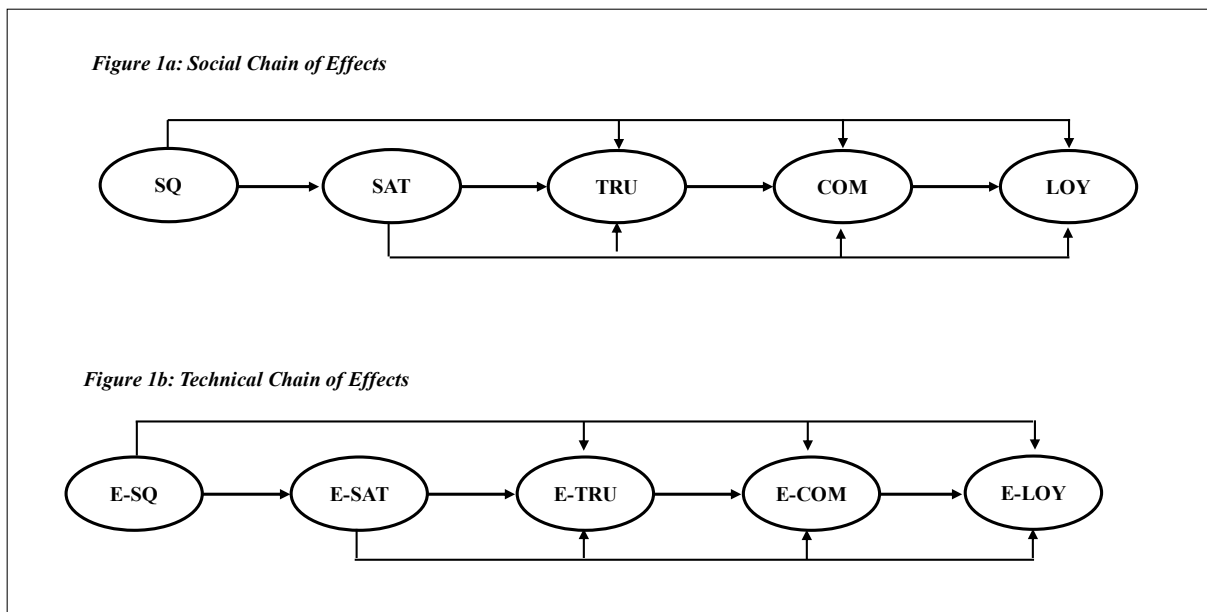
- Luarn, P. and Lin, H.H. (2003), "A customer loyalty model for e-service contexts", *Journal of Electronic Commerce Research*, Vol. 4 No. 4, pp. 156-167.
- Lin, J.S.C. and Hsieh, P.L. (2012), "Refinement of the technology readiness index scale: A replication and cross-validation in the self-service technology context", *Journal of Service Management*, Vol. 23 No. 1, pp. 34-53.
- Lu, Q.S., Pattnaik, C., Xiao, J. and Voola, R. (2018), "Cross-national variation in consumers' retail channel selection in a multichannel environment: Evidence from Asia-Pacific countries", *Journal of Business Research*, Vol. 86, pp. 321-332.
- Malhotra, N.K., Ulgado, F.M., Agarwal, J., Shainesh, G. and Wu, L. (2005), "Dimensions of service quality in developed and developing economies: Multi-country cross-cultural comparisons", *International Marketing Review*, Vol. 22 No. 3, pp. 256-278.
- Manz, C.C. and Stewart, G.L. (1997), "Attaining flexible stability by integrating total quality management and socio-technical systems theory", *Organizational Science*, Vol. 8 No. 1, pp. 59-70.
- Meuter, M.L., Ostrom, A.L., Roundtree, R.I. and Bitner, M.J. (2000), "Self-service technologies: Understanding customer satisfaction with technology-based service encounters", *Journal of Marketing*, Vol. 64 No. 3, pp. 50-64.
- Morgan, R. and Hunt, S. (1994), "The commitment-trust theory of relationship marketing", *Journal of Marketing*, Vol. 58 No. 3, pp. 20-38.
- Neslin, S.A., Grewal, D., Leghorn, R., Shankar, V., Teerling, M.L., Thomas, J.S. and Verhoef, P.C. (2006), "Challenges and opportunities in multichannel customer management", *Journal of Service Research*, Vol. 9 No. 2, pp. 95-112.

- Ndubisi, N.O. (2014), "Consumer mindfulness and marketing implications", *Psychology & Marketing*, Vol. 31 No. 4, pp. 237-250.
- Oliver, R.L. (1999), "Whence consumer loyalty?" *Journal of Marketing*, Vol. 63 No. 4, pp. 33-44.
- Ostrom, A.L., Parasuraman, A., Bowen, D.E., Patricio, L. and Voss, C.A. (2015), "Service research priorities in a rapidly changing context", *Journal of Service Research*, Vol. 18 No. 2, pp. 127-159.
- Paluch, S. and Blut, M. (2013), "Service separation and customer satisfaction assessing the service separation/customer integration paradox", *Journal of Service Research*, Vol. 16 No. 3, pp. 415-427.
- Parasuraman, A., Zeithaml, V.A. and Malhotra, A. (2005), "ES-QUAL: A multiple-item scale for assessing electronic service quality", *Journal of Service Research*, Vol. 7 No. 3, pp. 213-233.
- Pasmore, W.A. (1988). *Designing Effective Organizations: The Socio-Technical Systems Perspective*. New York, NY: John Wiley & Sons.
- Pasmore, W.A. and Sherwood, J.J. (1978). *Socio-Technical Systems: A Sourcebook*. LaJolla, CA: University Associates.
- Podsakoff, N.P. (2003), "Common method biases in behavioral research: A critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.
- Ramaseshan, B., Kingshott, R.P. and Stein, A. (2015), "Firm self-service technology readiness", *Journal of Service Management*, Vol 26 No. 5, pp. 751-776.

- Rosenmayer, A., McQuilken, L., Robertson, N. and Ogden, S. (2018), “Omni-channel service failures and recoveries: Refined typologies using Facebook complaints”, *Journal of Services Marketing*, Vol. 32 No. 3, pp. 269-285.
- Rust, R.T. and Huang, M-H. (2014), “The service revolution and the transformation of marketing science”, *Marketing Science*, Vol. 33 No. 2, pp. 206-221.
- Saghiri, S., Wilding, R., Mena, C., & Bourlakis, M. (2017), “Toward a three-dimensional framework for omni-channel”, *Journal of Business Research*, Vol. 77, pp. 53-67.
- Singh, J. and Crisafulli, B. (2016), “Managing online service recovery: Procedures, justice and customer satisfaction”, *Journal of Service Theory and Practice*, Vol. 26 No. 6, pp. 764-787.
- Smith, J.S., Fox, G.L. and Ramirez, E. (2010), “An integrated perspective of service recovery: Sociotechnical systems approach”, *Journal of Service Research*, Vol. 13 No. 4, pp. 439-452.
- Sousa, R. and Voss, C.A. (2006), “Service quality in multichannel services employing virtual channels”, *Journal of Service Research*, Vol. 8 No. 4, pp. 356-371.
- Srinivasan, S.S., Anderson, R. and Ponnavaolu, K. (2002), “Customer loyalty in e-commerce: An exploration of its antecedents and consequences”, *Journal of Retailing*, Vol. 78 No. 1, pp. 41-50.
- Thibaut, J.W. and Kelley, H.H. (1959). *The Social Psychology of Groups*. New York: John Wiley.
- Valvi, A.C. and Fragkos, K.C. (2012), “Critical review of the e-loyalty literature: A purchase-centred framework”, *Electronic Commerce Research*, Vol. 12 No. 3, pp. 331-378.

- Vargo, S.L. and Lusch, R.F. (2008), "Service-dominant logic: Continuing the evolution", *Journal of the Academy of Marketing Science*, Vol. 36 No. 1, pp. 1-10.
- Vargo, S.L. and Lusch, R.F. (2014), "Inversions of service-dominant logic", *Marketing Theory*, Vol. 14 No. 3, pp. 239-248.
- Verhoef, P. C., Kannan, P. K., and Inman, J. J. (2015) "From multi-channel retailing to omni-channel retailing: Introduction to the special issue on multi-channel retailing", *Journal of Retailing*, Vol. 91 No. 2, pp. 174-181.
- Wheaton, B., Muthen, B., Alwin, D.F. and Summers, G.F. (1977), "Assessing reliability and stability in panel models", *Sociological Methodology*, Vol. 8, pp. 84-136.
- Wernerfelt, B. (1984), "A resource-based view of the firm", *Strategic Management Journal*, Vol. 5 No. 2, pp. 171-180.
- Xiao, L., Zhang, Y. and Fu, B. (2019), "Exploring the moderators and causal process of trust transfer in online-to-offline commerce", *Journal of Business Research*, Vol. 98, pp. 214-226.
- Zhang, J., Farris, P.W., Irvin, J. W., Kushwaha, T., Steenburgh, T.J. and Weitz, B.A. (2010), "Crafting integrated multichannel retailing strategies", *Journal of Interactive Marketing*, Vol. 24 No. 2, pp. 168-180.

Figure 1: Relational Chain-of-effects



[SQ=Service Quality; SAT=Satisfaction; TRU=Trust; COM=Commitment; LOY=Loyalty]

[E-SQ=E-Service Quality; E-SAT=E-Satisfaction; E-TRU=E-Trust; E-COM=E-Commitment; E-LOY=E-Loyalty]

Table I. Sample composition (N=321)

Parameter		Parameter	
Number of banks used		e-Banking Experience	
One	81 (74.8%)	Less than 5 years	98 (30.5%)
More than one	40 (25.2%)	5 – 9 years	118 (36.8%)
Name of bank		10 years and more	105 (32.7%)
Commonwealth	90 (28.0%)	Firm Age	
ANZ	62 (19.3%)	Less than 5 years	59 (18.4%)
NAB	53 (16.5%)	5 – 9 years	69 (21.5%)
Westpac	52 (16.2%)	10 - 14 years	60 (18.7%)
Others	64 (19.9%)	15 - 19 years	34 (10.6%)
Relationship length		20 years and more	99 (30.8%)
Less than 5 years	63 (19.6%)	Number of Employees	
5 – 9 years	99 (30.8%)	Less than 5	115 (35.8%)
10 - 14 years	42 (13.1%)	5 – 10	29 (9.0%)
15 - 19 years	59 (18.4%)	11 – 20	65 (20.2%)
20 years and more	58 (18.1%)	21 – 30	42 (13.1%)
Business type		More than 30	70 (21.8%)
Retail	25 (7.8%)	Annual Turnover (AUD)	
Information technology	24 (7.5%)	Less than 500,000	123 (38.3%)
Technical	14 (4.3%)	500,000 - 1 million	30 (9.3%)
Education	13 (4.0%)	1 – 2 million	28 (8.7%)
Healthcare	13 (4.0%)	2 – 5 million	30 (9.3%)
Consulting	11 (3.4%)	5 - 10 million	15 (4.7%)
Others	221 (68.8%)	More than 10 million	95 (29.6%)

Table II-A. Scale items (Psychometric properties) – Social resources

Constructs and items	λ	M	SD
Service Quality [SQ] - Chenet et al. (2010)			
This bank's promises to our firm are mainly kept.	.83	3.56	1.20
This bank's responses on all our firms' queries is accurate.	.87	3.53	1.15
This bank's procedures are seamless and accurate.	.86	3.72	1.21
This bank's response on all our firms' queries is immediate.	.87	3.87	1.29
This bank's staff solve our firms' problems efficiently.	.84	3.70	1.19
This bank's staff deliver prompt services to our firm.	.86	3.71	1.21
This bank's staff care about us when our firm has a problem occurs.	.85	3.82	1.26
This bank's staff give our firm individualized attention.	.86	3.96	1.28
This bank's staff are consistently willing to help our firm.	.86	3.74	1.23
This bank's main focus is on its customers.			
Satisfaction [SAT] - Ndubisi's (2014)			
Our firm is completely happy with the services from this bank.	.91	3.67	1.28
We are pleased with what services this bank provides for our firm.	.96	3.60	1.22
Our experience with the services from this bank is good.	.95	3.56	1.26
Overall, we are satisfied with services from this bank.	.93	3.55	1.26
Trust [TRU] - Ndubisi's (2014)			
This bank usually keeps promises it makes to our firm.	.88	3.51	1.21
This bank can be relied upon on matters of importance to our firm.	.93	3.54	1.15
This bank maintains our firms' confidence under all circumstances.	.86	3.46	1.15
This bank cares for the wellbeing of our firm.	.85	3.84	1.28
This bank can be counted to do what is right for our firm.	.88	3.69	1.24
Commitment [COM] - Ndubisi's (2014)			
Our firm is committed to the relationship with this bank.	.88	3.63	1.23
Our firm intends to maintain the relationship with this bank indefinitely.	.91	3.57	1.25
Our firm puts maximum effort to maintain the relationship with this bank.	.89	3.69	1.21
Our firm is interested in a long-term relationship with this bank.	.93	3.59	1.28
Our firm is committed to maintain a good relationship with this bank.	.90	3.50	1.20
Loyalty [LOY] - Ndubisi's (2014)			
Our firm says positive things about this bank.	.85	3.64	1.22
We continuously do business with this bank.	.83	3.33	1.10
We encourage friends and relatives to do business with this bank.	.75	4.04	1.46
We really like doing business with this bank.	.89	3.73	1.25
Our firm uses this bank every time we need bank services.	.84	3.53	1.19

Note: λ = Standardized parameter estimates; α = Squared multiple correlations; M = Mean; SD = Standard Deviation; * Reverse-worded items

Table II-B. Scale items (Psychometric properties) – Technical resources

Constructs and items	λ	M	SD
Online Service Quality [E-SQ]			
This bank's website makes it easy for our firm to find what we need.	.89	3.57	1.27
It is easy to get anywhere on this bank's website.	.91	3.45	1.13
This bank's website enables our firm to complete transactions quickly.	.89	3.57	1.18
Information on this bank's website is well organized.	.89	3.50	1.10
This bank's website is simple for our firm to use.	.84	3.53	1.14
This bank's website enables our firm to get on to it quickly.	.92	3.64	1.15
This bank's website is always available for business.	.90	3.47	1.22
This bank's website quickly delivers what we are seeking from the bank.	.87	3.48	1.26
This bank's website has up to date information the about the bank offerings.	.89	3.45	1.26
Online Satisfaction [E-SAT]			
I think our firm has taken the right decision to use their website.	.93	3.44	1.22
I am satisfied with my firm's decision to use their website.	.96	3.41	1.21
I am generally satisfied with the way their website has managed transactions with our firm in the past.	.92	3.52	1.26
In general, I feel good with the service provided to our firm by their website.	.94	3.47	1.21
Online Trust [E-TRU]			
We can rely on the banks' technology to execute our firm's transactions reliably.	.88	3.34	1.09
Given the state of the banks' existing technology, I believe that the banks' technology-related errors are quite rare.	.95	3.53	1.25
In my opinion, the banks' technology is very reliable.	.94	3.45	1.23
Online Commitment [E-COM]			
Our firms' preference for this banks' e-service would not willingly change.	.87	3.74	1.25
It would be difficult to change my firm's beliefs about this banks' e-service.	.87	3.79	1.28
Even if close friends recommended another banking e-service, our firm would not change its preference for this banks' e-service.	.90	3.80	1.30
Changing our firms' preference from this banks' e-service would require major rethinking.	.85	3.71	1.27
Online Loyalty [E-LOY]			
Our firm seldom considers switching to another banks' website.	.78	3.68	1.37
As long as the present service continues, I doubt that we would switch bank websites.	.86	3.59	1.26
We try to use the banks' website whenever we need to make a transaction.	.84	3.46	1.23
When we need to make a transaction, this banks' website is our first choice.	.87	3.46	1.18
Our firm likes using this banks' website.	.89	3.58	1.27
To us this banks' website is the best website to do our banking with.	.90	3.73	1.28
We believe that this is our firms' preferred bank website.	.88	3.56	1.23

Note: λ = Standardized parameter estimates; α = Squared multiple correlations; M = Mean; SD = Standard Deviation; * Reverse-worded items

Table III. Correlations Matrix

	SQ	SAT	TRU	COM	LOY	E-SQ	E-SAT	E-TRU	E-COM	E-LOY
Service Quality (SQ)	.85									
Satisfaction (SAT)	.80**	.94								
Trust (TRU)	.82**	.86**	.88							
Commitment (COM)	.77**	.87**	.85**	.90						
Loyalty (LOY)	.77**	.88**	.84**	.87**	.83					
Online Service Quality (E-SQ)	.80**	.86**	.86**	.83**	.80**	.89				
Online Satisfaction (E-SAT)	.75**	.80**	.76**	.77**	.73**	.86**	.94			
Online Trust (E-TRU)	.72**	.83**	.79**	.78**	.78**	.84**	.81**	.92		
Online Commitment (E-COM)	.68**	.75**	.76**	.79**	.78**	.72**	.66**	.69**	.87	
Online Loyalty (E-LOY)	.72**	.83**	.80**	.84**	.82**	.85**	.79**	.80**	.80**	.86
Mean (M)	3.73	3.60	3.61	3.60	3.65	3.52	3.46	3.44	3.76	3.58
Standard Deviation (SD)	1.07	1.18	1.07	1.12	1.05	1.02	1.14	1.10	1.11	1.06
Construct Reliability (CR)	.86	.95	.90	.92	.85	.90	.96	.93	.89	.87
Average Variance Extracted (AVE)	.73	.88	.78	.81	.69	.79	.88	.85	.76	.74

*Note: Figures in the diagonal represent square roots of average variance extracted (AVE); * $p < .05$; ** $p < .01$; *** $p < .001$*

Table IV. Hayes' PROCESS Model 6 output (Social & technical chains-of-effects)

IV	M1	M2	M3	M4	DV
<u>Social chain of effect with offline resources</u>					
SQ →	SAT →	TRU →	COM →		LOY
.88***	.46***	.50***	.32**		
<u>Infusion of online resources into the social chain of effect</u>					
E-SQ →	SQ →	SAT →	TRU →	COM →	LOY
.84***	.34**	.26**	.45***	.32**	
E-SQ →	E-SAT →	SAT →	TRU →	COM →	LOY
.96***	.22**	.41***	.43***	.32**	
E-SQ →	E-SAT →	E-TRU →	TRU →	COM →	LOY
.96***	.17*	.14*	.60***	.45***	
E-SQ →	E-SAT →	E-TRU →	E-COM →	COM →	LOY
.96***	.17*	.19*	.37***	.47***	
E-SQ →	E-SAT →	E-TRU →	E-COM →	E-LOY →	LOY
.96***	.17*	.19*	.34**	.24**	
<u>Technical chain of effects with online resources</u>					
E-SQ →	E-SAT →	E-TRU →	E-COM →		E-LOY
.96***	.18*	.19*	.34**		
<u>Infusion of social resources into the technical chain of effect</u>					
SQ →	E-SQ →	E-SAT →	E-TRU →	E-COM →	E-LOY
.75***	.79***	.17*	.18*	.35**	
SQ →	SAT →	E-SAT →	E-TRU →	E-COM →	E-LOY
.88***	.52***	.37**	.13*	.34**	
SQ →	SAT →	TRU →	E-TRU →	E-COM →	E-LOY
.88***	.46***	.30**	.08 ^{ns}	.34**	
SQ →	SAT →	TRU →	COM →	E-COM →	E-LOY
.88***	.46***	.50***	.42***	.28**	
SQ →	SAT →	TRU →	COM →	LOY →	E-LOY
.88***	.46***	.50***	.32**	.20*	

Note: Figures under the arrows are the Standardized Beta Coefficients for the relationships between the variables on either side of the arrows. IV = Independent variable; M1-M4 = Mediating variables; DV = Dependent variable. * $p < .05$; ** $p < .01$; *** $p < .001$