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Achieving continued usage in online banking: a post-adoption study

Anna-Sophie Oertzen
Department of Marketing and Supply Chain Management, School of Business and Economics, Maastricht University, Maastricht, The Netherlands and Köln International School of Design, Technical University of Applied Sciences Cologne, Cologne, Germany, and
Gaby Odekerken-Schröder
Department of Marketing and Supply Chain Management, School of Business and Economics, Maastricht University, Maastricht, The Netherlands

Abstract

Purpose – Despite ample research on the adoption of online banking, the post-adoption phase remains largely neglected. The purpose of this paper is to develop a new conceptual model to investigate drivers, attitudes and behaviours in the post-adoption phase of the e-postbox, a co-creative online banking feature.

Design/methodology/approach – Research from bank marketing, services marketing, information systems and relationship management informs the proposed post-adoption model. Empirical tests rely on structural equation modelling and a sample of 750 current customers of the e-postbox of a large German bank.

Findings – The proposed model provides a multifaceted view of the post-adoption phase, including task-related, organisation-related and interpersonal communication-related drivers. This study reveals the importance of integrating dual interpersonal communication as a post-adoption driver and a post-adoption behaviour. It also extends the technology acceptance model by applying it to the post-adoption phase. Significant effects of age further suggest that younger customers express the most favourable attitudes towards and highest intentions to continue using the e-postbox; interestingly, older customers use it more and share more word-of-mouth.

Research limitations/implications – This paper develops a post-adoption model that highlights the importance of continued usage for successful co-creation between the bank and its customers.

Practical implications – Managers can encourage continued usage during the post-adoption phase of a co-creative, digitalised service, which determines the retention of current customers and opportunities to attain new customers.

Originality/value – This study defines and establishes constructs for the post-adoption phase and categorises them according to post-adoption drivers, attitudes and behaviours.

Keywords Online banking, TAM, Co-creation, SEM, Post-adoption, Continuance intention, Continued usage

Paper type Research paper

1. Introduction

Digitalisation of financial systems pressures banks to undergo the largest transformation in their history (Laukkanen, 2017), moving from physical brick-and-mortar stores to virtual environments (Martovoy and Santos, 2012). As one of the main drivers of digitalisation, online banking has become commonly accepted (Patel and Patel, 2018) and is integral to

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customers' lives, largely because it offers round-the-clock availability, easy transactions and avoidance of queues (Al-Somali *et al.*, 2009). Online banking refers to a secure website offered by the bank to conduct financial transactions and leverage other financial services; it can be accessed via internet banking over a laptop or desktop PC or via m-banking over mobile devices (Lee, 2009; Martins *et al.*, 2014; Shaikh and Karjaluoto, 2015). Compared with online purchases, online banking adoption is more complex, because it usually implies a long term, relational exchange between the customer and the bank (Lee, 2009). The adoption decision of online banking and the factors influencing it thus have received substantial attention from financial services scholars, whereas the post-adoption phase – or the period after the initial adoption decision – largely has been ignored (Al-Somali *et al.*, 2009; Jasperson *et al.*, 2005; Lee, 2009; Martins *et al.*, 2014; Tam and Oliveira, 2017a). Yet customers may start using more functional digital features only in the post-adoption phase, after they have gained some experience with online banking (Hsieh *et al.*, 2011; Tam and Oliveira, 2017b). Continued usage throughout the post-adoption phase ultimately determines the success of online banking (Patel and Patel, 2018).

Therefore, this study seeks to investigate post-adoption phases in general, including their drivers, attitudes and behaviours, and specifically examines the post-adoption phase for the electronic postbox (e-postbox), which is a functional feature of the online banking services offered by most sizable banks. An e-postbox represents an incremental innovation that typically offers online bank statements, security papers, a personal messenger, customised offerings and a notification service. Customers may use each of these modules individually. Although the institutionalisation of virtual environments has prompted many customers to adopt online banking already, relatively fewer customers engage with functional online banking features beyond online transactions. Nonetheless, encouraging continued usage of these additional modules is important to banks, as this intensifies co-creation of services. Especially operative co-creation of services, denoting the collaborative activities in the customer–bank interface associated with later stages in the service process (Oertzen *et al.*, 2018), is fostered by stimulating the involved customers to participate and engage in the service process to meet their own needs (Mainardes *et al.*, 2017). Due to the continual, relational and interactive properties of services (Matthing *et al.*, 2004), co-creation offers a highly effective way to retain customers (Mainardes *et al.*, 2017), embodying both innovation and improved banking services (Martovoy and Santos, 2012).

In a context of increased competition and intensifying, volatile customer demands (Devlin, 2001), ensuring customers' continued usage in the post-adoption phase of financial services, such that they engage in successful, prolonged co-creation with the bank, is indispensable. In response to calls for more research on the post-adoption phase of online banking and co-creation in the banking sector (Mainardes *et al.*, 2017; Tam and Oliveira, 2017a), the current research aims to develop and test a comprehensive model of the post-adoption phase of a specific co-creative feature of online banking. In turn, this paper provides four main contributions: first, the newly developed model offers a way to examine drivers, attitudes and behaviours in the post-adoption phase of online banking services, thereby proposing which elements can foster continued usage by current customers and attract new customers. The resulting multifaceted model suggests the importance of three types of post-adoption drivers: task-related, organisation-related and interpersonal communication-related. To holistically explain the rational and emotional decision-making processes in the post-adoption phase, task-related drivers (e.g. perceived usefulness) are important, but so are organisation-related drivers (e.g. affective commitment) and interpersonal communication-related drivers (e.g. receiving WOM). Second, the authors argue for a dual perspective on interpersonal communication in post-adoption models that includes both receiving WOM as well as sending WOM. This dual perspective can increase understanding of current customers' attitudes, intentions and behaviours towards online

banking services. Third, this study extends the technology acceptance model (TAM; Davis, 1993) to the post-adoption stage in the context of online banking services and shows both mediated and direct effects on current customers' post-adoption behaviours. Finally, age emerges as a significant determinant of post-adoption behaviour, suggesting salient differences between younger and older customers.

This paper begins with a literature review that spans information systems, bank marketing, services marketing and relationship management and leads to the proposed post-adoption model, as well as complementary hypotheses. The methodology section then details the data collection process, the sample and the checks for bias. Next, the analysis and results section evaluates the measurement and structural model, including a comparison with a rival model. Finally, this paper concludes with a discussion of the findings and implications for theory and practice.

2. Literature review and hypotheses development

Ample literature has focused on the adoption of technological, information-rich services and the factors leading up to the adoption decision (Patel and Patel, 2018). In the domain of information systems research, technology adoption has been one of the most widely and comprehensively studied topics with extant literature exploring it on the individual, group, and organisational levels (Venkatesh, 2006). Especially research on the individual-level technology adoption is one of the most thoroughly researched streams in terms of the drivers of adoption and adoption decisions (Venkatesh, 2006). Originating from social psychology (Venkatesh *et al.*, 2007), some of the most prominent theories and models to explore information technology adoption have been the theory of reasoned action (TRA; Fishbein and Ajzen, 1975), the TAM (Davis *et al.*, 1989; Davis, 1993), the theory of planned behaviour (TPB; Ajzen, 1991), the decomposed TPB (Taylor and Todd, 1995), the extended TAM (TAM2; Venkatesh and Davis, 2000), the unified theory of acceptance and use of technology (UTAUT; Venkatesh *et al.*, 2003), the TAM3 (Venkatesh and Bala, 2008) and the extended unified theory of acceptance and use of technology (UTAUT2; Venkatesh *et al.*, 2012). Among these extensively studied theories and models, the TAM has been the dominant model to understand technology adoption and the factors leading up to the adoption decision (Tam and Oliveira, 2017a; Venkatesh *et al.*, 2007; Venkatesh and Bala, 2008). Based on the TRA of Fishbein and Ajzen (1975), the TAM predicts that external variables influence cognitive responses (perceived usefulness; perceived ease of use), which triggers an affective response (attitude towards using), which in turn forms intentions (behavioural intentions to use), and ultimately determines behaviour (actual system use) (Davis *et al.*, 1989; Davis, 1993).

Also for information-intensive technologies in bank marketing, the TAM has been widely used to investigate the adoption decision and its antecedents, for instance of automated teller machines (ATMs), internet banking, mobile banking and telephone banking (Çelik, 2008; Cheng *et al.*, 2006; Patel and Patel, 2018; Reid and Levy, 2008; Wasswa Katono, 2011). Tam and Oliveira (2017a) demonstrate in their review that the TAM has been the most widely applied model to assess the adoption decision of mobile banking and the determinants that lead to the adoption decision. However, their review also points towards the negligence of the post-adoption phase of online banking and necessitates more research on the drivers of the post-adoption phase to retain current customers and attract potential new customers (Tam and Oliveira, 2017a).

Drawing on bank marketing, services marketing, information systems and relationship management literature, the authors of the present research develop a model for the post-adoption phase of online banking, specifically for the e-postbox, a recently introduced co-creative feature of online banking. To investigate the relatively unexplored post-adoption phase and to develop a post-adoption model for the e-postbox, the current research

leverages the traditional TAM as it is the most common model to study online banking (e.g. Tam and Oliveira, 2017a), it has been comprehensively validated and verified (e.g. Venkatesh *et al.*, 2007; Venkatesh and Bala, 2008), and it is more parsimonious than other models or theories, such as the UTAUT, allowing this research to add further post-adoption drivers (e.g. Van Raaij and Schepers, 2008). Specifically, this paper includes the TAM's cognitive (perceived usefulness), affective (attitude towards using the e-postbox), intentional (continuance intention) and behavioural (actual usage) properties. Recognising the value of the consistently proven subjective norm construct reflecting social influence processes that is absent in the traditional TAM, but an integral part of the TRA, TPB and TAM2 (Venkatesh and Davis, 2000), this research further includes the variable receiving WOM to resemble customers' perceptions of what other people think. Figure 1 depicts the relationships among the key constructs, as elaborated on subsequently.

2.1 The post-adoption attitude

Attitudes are considered a relatively stable construct over time and have been an integral part in many technology acceptance models and theories for decades due to their strong effect on intentions and behaviours (Ajzen, 1991; Davis, 1993; Fishbein and Ajzen, 1975). The attitude towards using refers to "the degree of evaluative affect that an individual associates with using the target system" (Davis, 1993, p. 476). Hence, the attitude towards using reflects customers' positive or negative feelings (evaluative affect) about performing a specific behaviour (Fishbein and Ajzen, 1975). As such, attitude towards using a particular product or service represents an affective response that is influenced by cognitive stimuli and that determines intentions and behavioural responses. In bank settings, the TAM predicts that the attitude towards using is a function of the perceived usefulness of a digitalised financial service, and in turn determines whether a customer actually uses this financial service (Çelik, 2008). Attitude towards using the e-postbox might evoke beneficial or detrimental behaviours; a favourable attitude should allow customers to use the e-postbox and communicate positively about it, but an unfavourable attitude could cause them to discontinue using the e-postbox and communicate negatively about it.

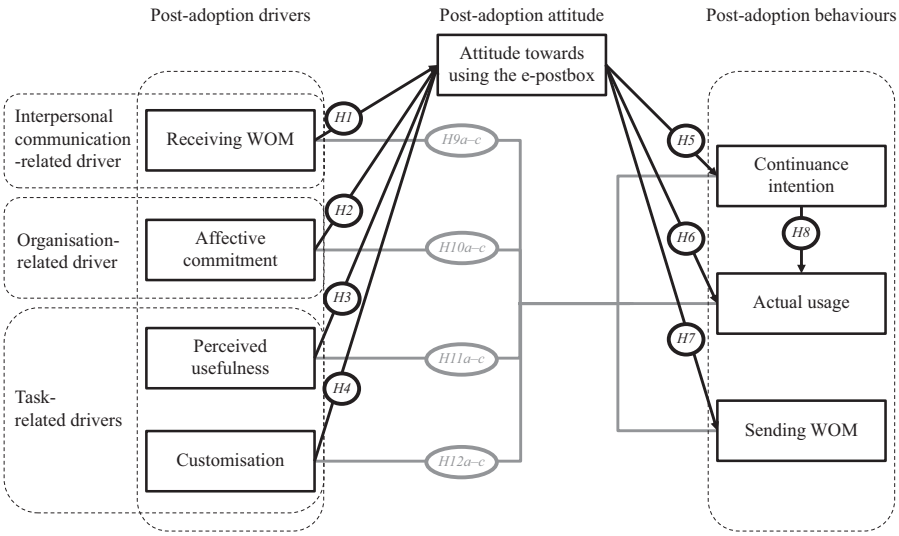

Figure 1.
Conceptual model

2.2 The effect of post-adoption drivers on post-adoption attitude

Following the call for more research on the drivers of the post-adoption phase (Tam and Oliveira, 2017a), this research considers three categories of drivers that likely influence the post-adoption attitude: first, task-related drivers pertaining to the e-postbox itself (e.g. perceived usefulness, customisation; Coelho and Henseler, 2012; Davis, 1993), second, organisation-related drivers associated with the bank (e.g. affective commitment; Meyer *et al.*, 2002) and third, interpersonal communication-related drivers (e.g. receiving WOM; Sweeney *et al.*, 2012). Including different post-adoption drivers is important to provide a holistic view of post-adoption behaviour variance (Çelik, 2008). Extending the general TAM to the post-adoption phase of digital service systems would have limited use for explaining customers' attitudes and behavioural intentions beyond task-related drivers for example, as the TAM only indirectly includes other external variables through their effects on perceived usefulness and ease of use (Mohammadi, 2015; Venkatesh and Davis, 2000). Therefore, this research integrates affective commitment as an organisation-related driver, which acknowledges that customers do not only adopt a digitalised financial service based on rational decision-making pertaining to the features of the service, but also through affective decision-making steered by their emotions towards the bank (Malhotra and Galletta, 2005). Besides, in an innovation context such as the newly introduced e-postbox, interpersonal communication is essential, as personal sources are often deemed more trustworthy than external marketing efforts of the bank due to the newness and unfamiliarity of the service (Godes and Mayzlin, 2004). Receiving WOM from others likely drives customers' post-adoption attitudes and behaviours and thus constitutes the third type of post-adoption driver – the interpersonal communication-related driver.

2.2.1 Receiving WOM. Active, interpersonal communication involves two perspectives: receiving WOM from others and sending WOM to others (De Matos and Rossi, 2008; Gilly *et al.*, 1998). The present study defines receiving WOM, or receiving influence, as being given comments about the e-postbox (Sweeney *et al.*, 2012). Customers' perceptions of what other people think is a widely used concept in technology acceptance used by prominent theories and models, such as the TRA, TPB and TAM2 (Ajzen, 1991; Fishbein and Ajzen, 1975; Venkatesh and Davis, 2000). Receiving WOM plays an important role in the adoption of technological services as it shapes customers' attitudes (Brown and Reingen, 1987; Meuter *et al.*, 2013). Some scholars even argue that rational agents may favour interpersonal information over their own private information (Godes and Mayzlin, 2004), because those sources appear more trustworthy; they often have greater impacts on customers' attitudes than banks' marketing efforts. This influence is especially important for digitalised services, which increase customers' need for personal sources to overcome the intangible nature of virtual environments (Murray, 1991). Given that receiving WOM is widely considered an important determinant of technology adoption (Venkatesh and Davis, 2000) and respective customers' attitudes (Brown and Reingen, 1987; Herr *et al.*, 1991; Meuter *et al.*, 2013), it is reasonable to assume that it is also critical when making choices in the post-adoption phase of online banking. For instance, Karjaluoto *et al.* (2002) demonstrate that the attitude towards using online banking is influenced by interpersonal communication with reference groups, such as families and friends. Hence, this paper considers receiving WOM as an interpersonal communication-related driver of post-adoption and posits:

H1. Receiving WOM has a positive effect on the attitude towards using the e-postbox.

2.2.2 Affective commitment. There are two different types of commitment driving technology adoption: affective commitment – "an emotional attachment to, identification with, and involvement in the organization" (Meyer *et al.*, 2002, p. 21) – and continuance commitment – "the perceived costs associated with leaving the organization" (Meyer *et al.*, 2002, p. 21).

With regard to the voluntary use of information-intensive service technologies, affective commitment is considered a positive driver of usage behaviour, whereas continuance commitment has a negative effect (Malhotra and Galletta, 2005). These two commitment constructs differ in that affective commitment occurs when customers like and identify with an organisation, and hence develop attitudes towards that organisation, which are steered through the salience of the relationship, irrespective of the actual service (Cater and Zabkar, 2009; Malhotra and Galletta, 2005). On the contrary, the cognitive construct continuance commitment is based on the costs that customers associate with not using a particular service, such as investments or lack of alternatives, and does not further tell about customers' attitudes towards the respective service or the organisation (Meyer and Allen, 1984). Since this research aims to investigate customers' affective responses to the e-postbox, specifically their attitudes towards using the e-postbox, this study focuses solely on customers' affective commitment to the bank, because only this type of commitment is theorised to significantly impact customers' attitudes through internalisation and identification with the financial institution (Malhotra and Galletta, 2005). Thus, the model considers customers' affective commitment an organisation-related driver of post-adoption, which positively influences customers' attitudes towards using the e-postbox:

H2. Affective commitment to the bank has a positive effect on the attitude towards using the e-postbox.

2.2.3 Perceived usefulness. As a task-related driver of online banking, perceived usefulness is the degree to which customers believe that using the e-postbox will enhance their task performance (Davis, 1989), perhaps through benefits such as increased efficiency or reduced effort (Patel and Patel, 2018), which improves their subsequent attitudes towards using online banking (Çelik, 2008). Thus, a service with high perceived usefulness steers customers' beliefs in a positive use–performance relationship (Davis, 1989). The TAM predicts that perceived usefulness mediates the effect of external variables, such as system characteristics or training, on attitudes and usage intentions (Davis *et al.*, 1989; Venkatesh and Davis, 2000). As Davis (1993) describes this line of thinking, system design is an external stimulus that suggests that an action will result in usefulness and ease of use. This cognitive response then triggers an affective response, namely, attitude towards using it. However, the current study only includes the cognitive perceived usefulness construct as a predictor of attitude towards using the e-postbox; perceived ease of use is not directly included in this research, because it is nearly fully mediated by the perceived usefulness of a digital banking system. Studies of internet banking also indicate its mixed effects (cf. Cheng *et al.*, 2006; Makanyeza, 2017; Mohammadi, 2015):

H3. Perceived usefulness of the e-postbox has a positive effect on the attitude towards using it.

2.2.4 Customisation. Drawing from services marketing, customisation in an online banking context refers to the degree to which the e-postbox is tailor-made or personalised to fulfil heterogeneous customer demands (Anderson *et al.*, 1997). Considerable variation occurs in the customisation of online banking services across financial institutions, due to the differing capabilities of the banks and varying expectations of their customers (Wang *et al.*, 2017). Generally, customisation forms customers' attitudes according to the experience they have when reviewing information from the service provider (Ho and Bodoff, 2014). It also shapes the attitude towards using, because customers tend to be more satisfied with a customised service in the long term (Arora *et al.*, 2008; Coelho and Henseler, 2012). Formally, customisation provides a task-related driver of the post-adoption phase:

H4. Customisation of the e-postbox has a positive effect on the attitude towards using it.

2.3 The effect of post-adoption attitude on post-adoption behaviours

Several post-adoption behaviours are likely influenced by customers' existing attitudes towards using the e-postbox.

2.3.1 Continuance intention. An important post-adoption behaviour related to digital services is continued adoption vs discontinuance (Parthasarathy and Bhattacherjee, 1998). This research uses customers' intentions to continue using the e-postbox as a proxy of the potential for customers' discontinuance. As Libai *et al.* (2009) note, customers may discontinue their relationship with the service organisation or stop using the service altogether. Although customers' continuance intentions are fundamental to the post-adoption phase, services marketing literature notes that they have been largely overlooked, and current models do not account for customers leaving the service (Libai *et al.*, 2009; Shi *et al.*, 2014). For the current conceptualisation, continuance intention emerges in the decision-making stage, such that customers consider continuing their use of the e-postbox. This intention cannot guarantee that customers actually continue using the e-postbox, but this approach supports a cross-sectional analysis and has been validated by previous research (Bhattacherjee, 2001; Hellier *et al.*, 2003; Mittal and Lassar, 1998). Generally, the more favourable customers' attitudes towards a given behaviour, the stronger will be their intentions to engage in the behaviour (Ajzen, 1991). Customers' favourable attitudes towards using the e-postbox thus should positively affect their intentions to use and continue using the e-postbox (Lee, 2009). By examining customers' continuance intentions and revealing their decision-making processes after adopting the e-postbox, banks can better leverage strategies that encourage continued usage:

H5. The attitude towards using the e-postbox has a positive effect on the intention to continue using it.

2.3.2 Actual usage. For online banking, the TAM behavioural response of actual usage refers to customers' self-reported use of the e-postbox (Davis, 1993). According to Fishbein and Ajzen (1975), individual beliefs about the consequences of performing a specific behaviour directly influence attitudes towards that behaviour, which affect behavioural responses, such as the practical use of the e-postbox. Robey (1979) affirms the strong relation between attitude and actual usage, such that usage depends on intuitions, beliefs and attitudes; it is a behavioural response following an affective stimulus. Customers' attitudes influence their intentions to use a digitalised service, as well as their behavioural use (Davis *et al.*, 1989; Sreejesh *et al.*, 2016; Teo, 2011; Venkatesh and Davis, 2000). In particular, customers' favourable attitudes towards using online banking positively influence their actual usage (Ayo *et al.*, 2016; Karjaluoto *et al.*, 2002). Therefore:

H6. The attitude towards using the e-postbox has a positive effect on actual usage.

2.3.3 Sending WOM. Complementing the receipt of WOM from others, a second interpersonal communication construct in this post-adoption model is sending WOM. Using Harrison-Walker's (2001) definition, sending WOM refers to interpersonal, informal communication from a non-commercial communicator to others and in this study denotes customers' giving comments about the financial institution to others. Although WOM activities have been widely investigated, most research takes the receiver's perspective (De Matos and Rossi, 2008; Harrison-Walker, 2001), yet by definition, any social exchange of information involves at least two parties (Gilly *et al.*, 1998). Research that considers WOM as a behavioural outcome demonstrates that it increases with customer loyalty and that the most satisfied or dissatisfied customers are most likely to engage in it (Anderson, 1998; Bowman and Narayandas, 2001). In an early study on post-purchase behaviour, Westbrook (1987) already evidenced that positive affect leads to more WOM activity. Thus, a positive

affective response, such as a positive attitude towards using the e-postbox, likely has a positive influence on the behavioural response of sending favourable WOM:

H7. The attitude towards using the e-postbox has a positive effect on sending WOM.

2.4 The effect of continuance intention on actual usage

Fishbein and Ajzen (1975) suggest as part of their established TRA that an intention towards a certain behaviour is a major and immediate determinant of that behaviour. Extensive literature in information systems has validated the effect of intentions on behaviours (Ajzen, 1991; Taylor and Todd, 1995; Venkatesh and Bala, 2008); specifically, the strong causal relationship between intentions to use a technology and actual usage of that technology (Sheppard *et al.*, 1988; Venkatesh and Morris, 2000). Behavioural intentions often act as a mediator between attitudinal variables and the resulting behaviours. Therefore, behavioural intentions predict future behaviours relatively accurately (Fishbein and Ajzen, 1975; Ajzen, 1991; Taylor and Todd, 1995). Also in online banking, usage intentions are considered a direct determinant to usage behaviour (Arenas-Gaitán *et al.*, 2015; Farah *et al.*, 2018):

H8. The intention to continue using the e-postbox has a positive effect on actual usage.

2.5 The direct effects of post-adoption drivers on post-adoption behaviours

2.5.1 The effect of receiving WOM on the post-adoption behaviours. Receiving comments from others on the e-postbox will also have direct effects on the subsequent post-adoption behaviours. Meuter *et al.* (2013) suggest a strong, positive effect between receiving WOM and behavioural intentions. Brown and Reingen (1987) propose that WOM communications significantly affect customers' behaviours. In a review on WOM, Nyilasy (2006) supports both arguments by reporting on the power of WOM to influence awareness, attitude change, behavioural intentions and behaviours. Given these effects on customers' intentions and behaviours, this research theorizes a positive relationship between receiving WOM and the post-adoption behaviours:

H9. Receiving WOM has positive effects on (a) intention to continue using the e-postbox, (b) actual usage of the e-postbox and (c) sending WOM.

2.5.2 The effect of affective commitment on the post-adoption behaviours. In their review on WOM communications, De Matos and Rossi (2008) evidence that customers' commitment to the service provider is the strongest predictor of sending WOM. The authors propose that committed customers are likely to be more satisfied, which leads to positive WOM. In the case of a low satisfaction condition, customers' commitment to the provider also leads to positive WOM to reduce their own cognitive dissonance. In addition, the current research argues that affective commitment also influences the actual use of services. This is in line with Malhotra and Galletta (2005), who propose that the emotional attachment, involvement and identification with a provider have a sustained positive effect on usage behaviour. Also in the banking sector, the emotional bond that customers form to the bank based on their affective commitment is suggested to steer subsequent intentions and behaviours, such as sending WOM (Bloemer and Odekerken-Schröder, 2003; Sumaedi *et al.*, 2015). Thus:

H10. Affective commitment to the bank has positive effects on (a) intention to continue using the e-postbox, (b) actual usage of the e-postbox and (c) sending WOM.

2.5.3 The effect of perceived usefulness on the post-adoption behaviours. Previous research suggests that cognitions have direct effects on behavioural intentions and actual behaviours

(Sabherwal *et al.*, 2006; Venkatesh and Davis, 2000; Venkatesh and Bala, 2008). First, in existing literature a positive link between the perceived usefulness of online banking and usage and continuance intention is established, which provides evidence of an effect of cognition on intention (Bhattacherjee, 2001; Çelik, 2008; Patel and Patel, 2018). Second, the positive influence of perceived usefulness on actual usage of online banking is demonstrated, which implies an influence of cognition on behaviour (Pikkarainen *et al.*, 2004). And finally, Moldovan *et al.* (2011) investigated the impact of usefulness on the valence of sending WOM, which exemplifies the effects of cognition on sending WOM. Hence, this research posits:

H11. Perceived usefulness of the e-postbox has positive effects on (a) intention to continue using the e-postbox, (b) actual usage of the e-postbox and (c) sending WOM.

2.5.4 The effect of customisation on the post-adoption behaviours. Literature on the outcomes of service customisation is generally scarce (Coelho and Henseler, 2012) and few studies have investigated how customisation affects customers' decision processes in a technological context (Tam and Ho, 2005). The exceptional studies that did assess the effect of service customisation have suggested that it influences usage intentions through more satisfied customers (Li and Yeh, 2009), as well as subsequent behaviours due to better-matched preferences (Tam and Ho, 2005). Given the significant positive effect of customisation on customers' satisfaction (Coelho and Henseler, 2012) and the significant positive effect of customers' satisfaction on WOM communications (De Matos and Rossi, 2008), this research postulates that the customisation of the e-postbox also has an influence on sending WOM. Hence, the degree to which the e-postbox is tailor-made is expected to steer all three post-adoption behaviours:

H12. Customisation of the e-postbox has positive effects on (a) intention to continue using the e-postbox, (b) actual usage of the e-postbox and (c) sending WOM.

3. Methodology

To develop and test the proposed model of drivers, attitudes and behaviours in the post-adoption phase of a co-creative feature of online banking, the data collection was quantitative and cross-sectional.

3.1 Data collection procedure and measurement scales

The data collection relied on an online survey. The introduction outlined the purpose of the study, followed by questions about how often respondents used their e-postbox. The second part focused on participants' interpersonal communications and its impacts on their decision-making. Next, the survey asked respondents to indicate their feelings towards the e-postbox and the financial institution at large. Finally, the survey gathered demographic information.

The data collection took place within a single bank in Germany, which corresponds to extant approaches (Karahanna *et al.*, 1999; Wang *et al.*, 2017), in that investigating a single institution controls for organisational differences, such as the features or layout of the online banking site. The questionnaire was developed in English and then translated to German, after which it was cross-validated by the authors. An expert panel of representatives from the investigated bank evaluated each question for its applicability and face and content validity. Their feedback led to the exclusion of two items and some alterations to the wording. The revised version was pretested with a sample of 20 respondents, spread evenly across gender and age groups, who completed the questionnaire via e-mail, phone or in

face-to-face interviews. These respondents indicated the level of understanding of the intention of the questions, cited any problems with the wording or content, and provided their overall impression of the survey in terms of its sequence, format, layout and instructions. As a result of their feedback, the questionnaire was slightly adjusted.

The questionnaire items used existing scales, adapted to the online banking context. Table I lists the measurement constructs and their sources. For actual usage, the original scale by Davis (1993) was rephrased to correspond to an interval scale, rather than open-worded items. For receiving WOM, the authors used the scale of Gilly *et al.* (1998) on episodic influence that provides a rich understanding of the effect of social influence processes beyond the mere receipt of comments from others. All scales were adapted to fit seven-point Likert scales, and most response options ranged from 1 ("strongly disagree") to 7 ("strongly agree"). Finally, the control variables age, gender and years with the bank were surveyed, using one item per construct.

3.2 Sample

The focal e-postbox is part of the online banking system of a large German bank and was introduced six months before the data collection. It offers several free-of-charge digital modules, such as bank statements, security papers, a personal messenger, customised offerings and a notification service. The bank introduced this innovation to save time, be sustainable, be secure and build closer relationships with customers. The e-postbox represents continued service co-creation in the consumption stage; customers can co-create with the bank's employees during tailored consultations and discussions to produce a customised economic plan for the customer, which strengthens a long-term customer–bank relationship.

Among nearly 200,000 private customers, around 40,000 customers use the bank's online banking. After excluding customers who denied receiving any messages from the bank, a sample of approximately 13,000 customers remained; they received the questionnaire via an embedded link in a personalised e-mail. The first week produced 430 responses; a reminder e-mail then increased the total to 750 responses. Overall, the 5.80 per cent response rate is higher than is conventional for similar surveys by banks in Germany, according to the participating bank. As Table II shows, the sample features variance in gender, age and years as a customer; many customers are younger but have been customers for at least ten years.

3.3 Non-response bias and common-method bias

To assess the potential for non-response bias, early respondents (first 20 per cent) were compared with late respondents (last 20 per cent) (Armstrong and Overton, 1977). The lack of significant differences in the means for the constructs across the two groups suggests that non-response bias is not a concern in this study. The check for common method bias relied on Harman's single-factor test, followed by a common latent factor (CLF) test

Constructs	Sources	Number of items
Receiving WOM	Gilly *et al.* (1998)	6
Affective commitment	Harrison-Walker (2001)	10
Perceived usefulness	Davis (1989)	6
Customisation	Coelho and Henseler (2012)	3
Attitude towards using the e-postbox	Davis (1993)	5
Continuance intention	Bhattacherjee (2001)	3
Actual usage	Davis (1993)	2
Sending WOM	Harrison-Walker (2001)	6

Table I. Validated scales

Table II. Demographics of respondents

Item		Number of respondents	Percentage
Gender	Male	425	56.7
	Female	325	43.3
Age	< 30	299	39.9
	30–40	96	12.8
	41–50	104	13.9
	51–60	109	14.5
	61+	142	18.9
Years with bank	0–1 year	37	4.9
	2–5 years	87	11.6
	6–10 years	123	16.4
	More than 10 years	503	67.1

Note: $n = 750$

(Podsakoff *et al.*, 2003). The CLF was added to the conceptual model and linked to all the construct indicators. The paths from the CLF initially were left equivalent and unrestrained, then constrained to 0.00. The χ^2 difference test of the unconstrained and constrained models yields a non-significant result at the 1.00 per cent level, indicating that common method variance is not significant. The results of both tests suggest common method bias is not a concern.

4. Analysis and results

The test of the conceptual model relied on structural equation modelling (SEM) in AMOS Version 25. For this research, the parameter estimation of SEM entails applying a maximum likelihood estimation to the covariance matrix.

4.1 Measurement model evaluation

To purify the measurement model and establish unidimensionality, an exploratory factor analysis was conducted that excluded items that loaded less than 0.70 on the main factor or cross-loaded more than 0.30 on other factors (Hulland, 1999; Kleijnen *et al.*, 2007). This step led to the exclusion of three items, namely, the eighth item of affective commitment, the first item of customisation and the fifth item of sending WOM. Table III displays the final items of the latent variables used in this model. After this step, the model exhibited a satisfactory overall fit ($\chi^2 = 1{,}679.88$, degrees of freedom $= 624$, $\chi^2/\text{df} = 2.69$, goodness-of-fit index $= 0.90$, adjusted goodness-of-fit index $= 0.88$, confirmatory fit index (CFI) $= 0.97$, Tucker–Lewis index $= 0.96$, root mean square error of approximation $= 0.05$).

To ensure construct reliability, an analysis using Cronbach's α and composite reliability was conducted. The internal consistency reliability estimates (α values) vary between 0.80 and 0.98, surpassing the suggested threshold for acceptable reliability of 0.70 (Nunnally, 1978). The composite reliability values range between 0.90 and 0.98, exceeding the cut-off value of 0.60, as proposed by Bagozzi and Yi (1988). Convergent validity was evaluated by considering the item loadings on the respective factors. All items have standardized loadings of 0.70 or more (Hulland, 1999), and the average variance extracted (AVE) of each construct is higher than the proposed value of 0.50 (Bagozzi and Yi, 1988; Fornell and Larcker, 1981), supporting convergent validity. Discriminant validity was evidenced through four approaches. First, the cross-factor loadings were not substantial (Hulland, 1999). Second, the square root of the AVE for each construct was used to examine whether a latent variable captures more variance from its indicators relative to the amount due to other constructs representing different indicators (Chin, 1998). As Table IV reveals, the square root of the AVE exceeds the correlations of the respective construct with other constructs in

Construct items (mean; standard deviation)	FL	α	CR	AVE
Receiving WOM (4.02; 1.18)		0.97	0.98	0.89
This person provided little new information[a]	0.95			
The opinion of this person influenced my choice about continuing/using the electronic postbox	0.96			
This person mentioned some things I had not considered	0.97			
This person provided some different ideas than other sources	0.93			
This person really did not change my mind about continuing/using the electronic postbox[a]	0.91			
This person helped me make a decision about continuing/using the electronic postbox	0.94			
Affective commitment (5.06; 1.08)		0.96	0.96	0.75
For me, this is one of the best banks of its kind	0.85			
I am proud that I use the services of this bank	0.72			
I usually agree with the bank's policies and procedures on important matters	0.82			
This is a good bank to use	0.92			
I like the way the bank operates	0.91			
The bank understands my needs	0.86			
I like the bank	0.90			
I have a special relationship with the bank[b]	–			
Doing business with the bank is enjoyable	0.89			
I do business with the bank because I like it	0.89			
Perceived usefulness (3.87; 1.46)		0.96	0.97	0.84
Using the electronic postbox enables me to accomplish tasks more quickly	0.92			
Using the electronic postbox improves my performance	0.93			
Using the electronic postbox increases my productivity	0.97			
Using the electronic postbox enhances my effectiveness	0.96			
Using the electronic postbox makes it easier to do my tasks	0.94			
I find the electronic postbox useful	0.78			
Customisation (3.58; 1.19)		0.80	0.90	0.81
The electronic postbox of the bank satisfies my specific needs[b]	–			
I could not find the electronic postbox at another bank	0.93			
If I changed between banks, I would not obtain a service as customised as I have now	0.87			
Attitude towards using the e-postbox (4.69; 1.47)		0.98	0.98	0.92
All things considered, my use of the electronic postbox is				
Good	0.95			
Wise	0.96			
Favourable	0.96			
Beneficial	0.96			
Positive	0.96			
Continuance intention (4.48; 1.49)		0.85	0.90	0.75
I want to continue using the electronic postbox rather than discontinue its use	0.82			
My intentions are to continue using the electronic postbox rather than any alternative means	0.84			
If I could, I would like to discontinue use of the electronic postbox[a]	0.93			
Actual usage (2.66; 1.61)		0.81	0.92	0.84
I use my electronic postbox frequently	0.83			
I spend a considerable amount of time using the electronic postbox each week	1.00			
Sending WOM (3.48; 1.45)		0.92	0.94	0.77
I mention the bank to others quite frequently	0.90			
I have told more people about the bank than I have told about most other banks	0.86			
I seldom miss an opportunity to tell others about the bank	0.91			
When I tell others about the bank, I tend to talk about the bank in great detail	0.86			
I have only good things to say about the bank[b]	–			
I am proud to tell others that I use this bank	0.85			

Notes: FL, factor loading; α, Cronbach's α; CR, composite reliability; AVE, average variance extracted. [a]Reverse coded; [b]Item omitted from analysis

Table III. Measurement model

Table IV. Intercorrelations of the latent variables

Construct	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Receiving WOM	*0.94*							
(2) Affective commitment	0.22	*0.86*						
(3) Perceived usefulness	0.31	0.28	*0.92*					
(4) Customisation	0.22	0.42	0.53	*0.90*				
(5) Attitude towards using the e-postbox	0.35	0.28	0.72	0.40	*0.96*			
(6) Continuance intention	0.37	0.25	0.73	0.34	0.83	*0.86*		
(7) Actual usage	0.38	0.15	0.53	0.24	0.56	0.66	*0.92*	
(8) Sending WOM	0.23	0.64	0.27	0.35	0.18	0.19	0.18	*0.88*

Note: Square root of the AVE in italics on the diagonal

the model, indicating discriminant validity (Fornell and Larcker, 1981). Third, given that some of the intercorrelations of the latent variables are fairly high, the authors conducted a confirmatory factor analysis (CFA) and assessed whether pairs of constructs in the model were correlated less than unity (De Ruyter *et al.*, 2001). For that, the estimated correlation parameter between two constructs was constrained to 1.00 for one pair at a time (Anderson and Gerbing, 1988). χ^2 difference tests ($\Delta\chi^2$) with one degree of freedom that analysed the difference between the unrestrained and restrained models were all statistically significant ($p < 0.001$). Thus, even though some latent variables demonstrate fairly high correlations, they must be considered distinct, which substantiates discriminant validity (Bagozzi and Phillips, 1982). Finally, confidence intervals for the estimates of the intercorrelations among the constructs were constructed from the robust standard errors yielded by the CFA (Schepers *et al.*, 2008). In support of discriminant validity, the value 1.00 is not included in the confidence intervals of the correlations for any of the construct pairs (Anderson and Gerbing, 1988). Based on these four approaches, the authors conclude that all constructs display satisfactory discriminant validity.

4.2 Structural model evaluation

After testing the measurement model, the next step is to estimate the structural model. The control variables function as exogenous variables in the model (Lin and Hsieh, 2011), supporting the predictions about the other latent constructs. Figure 2 and Table V display the results.

The model offers good explanatory power; the variance explained (squared multiple correlations) is greater than 45 per cent for each construct. As hypothesised, receiving WOM, affective commitment to the bank and perceived usefulness of the e-postbox significantly increase the attitude towards using the e-postbox, in support of *H1–H3*. Customisation of the e-postbox does not have a significant effect on this attitude though, so *H4* is not supported. While the data further substantiate the predicted positive relationship of the attitude towards using the e-postbox with continuance intention in support of *H5*, there is no statistical relationship between the attitude towards using the e-postbox and actual usage, indicating that *H6* is not supported. The predicted positive link between the attitude towards using the e-postbox and sending WOM does not receive support in the theorised direction; the attitude towards using the e-postbox has a negative effect on sending WOM. Thus, *H7* cannot be supported.

There is a strong positive relationship between continuance intention and actual usage of the e-postbox, which supports *H8*. Additionally, several post-adoption drivers exert direct effects on post-adoption behaviours. Receiving WOM and perceived usefulness of the e-postbox have significant positive effects on all three post-adoption behaviours, in support of *H9a–c* and *H11a–c*. Affective commitment to the bank only positively influences sending

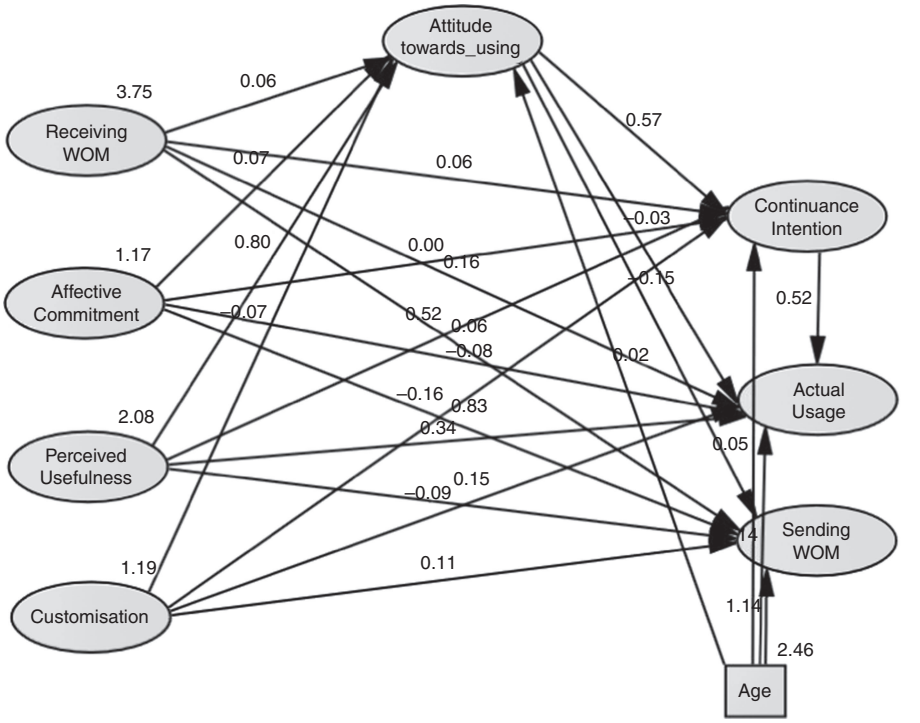

Figure 2. Validated model, including unstandardised estimates

WOM, so though *H10c* receives support, *H10a* and *H10b* do not. Customisation of the e-postbox similarly has a positive impact on sending WOM (*H12c* supported), but it has a negative effect on continuance intention and no effect on actual usage (*H12a* significant in an opposite direction to predictions; *H12b* not supported). Customisation also is the only post-adoption driver that is not partially mediated by the attitude towards using the e-postbox.

Finally, this analysis suggests that the control variables gender and years with the bank have no considerable influence on the model, but age positively influences the relationships with all post-adoption behaviours. To explore this impact, the data set was split into five age groups, and the analysis was re-run with all significant links to continuance intention, actual usage and sending WOM. The results of the multi-group analysis in Table VI reveal that only four relationships are significant across all groups. Generally, younger age groups indicate a higher percentage of significant relationships than older ones; for example, only customers aged younger than 30 years report a significant, positive effect of perceived usefulness on sending WOM. A one-way, between-group analysis of variance, to determine whether the five age groups differ significantly across constructs, reveals significant differences for six of the eight constructs. On average, younger customers (< 30 years) are most likely to perceive the e-postbox as useful, consider it customised, have a favourable attitude towards using it and intend to continue using it; customers older than 60 years of age use the e-postbox the most and send more WOM than customers of any other age group.

4.3 Comparison with a rival model

To increase the meaningfulness and robustness of the results, this study also considers rival models (De Wulf *et al.*, 2001). The significant, direct effects between several post-adoption drivers and post-adoption behaviours suggest the need to assess an alternative model

Hypothesis	*Path*	*Estimate (SE)*	*p-value*
H1	Receiving WOM → attitude towards using the e-postbox	0.06 (0.02)	0.001**
H2	Affective commitment → attitude towards using the e-postbox	0.07 (0.04)	0.059*
H3	Perceived usefulness → attitude towards using the e-postbox	0.80 (0.04)	***
H4	Customisation → attitude towards using the e-postbox	–0.07 (0.05)	ns
H5	Attitude towards using the e-postbox → continuance intention	0.57 (0.04)	***
H6	Attitude towards using the e-postbox → actual usage	–0.03 (0.08)	ns
H7	Attitude towards using the e-postbox → sending WOM	–0.15 (0.05)	0.002**
H8	Continuance intention → actual usage	0.52 (0.08)	***
H9a	Receiving WOM → continuance intention	0.06 (0.02)	0.001**
H9b	Receiving WOM → actual usage	0.16 (0.03)	***
H9c	Receiving WOM → sending WOM	0.06 (0.02)	0.008**
H10a	Affective commitment → continuance intention	0.00 (0.04)	ns
H10b	Affective commitment → actual usage	–0.08 (0.06)	ns
H10c	Affective commitment → sending WOM	0.84 (0.05)	***
H11a	Perceived usefulness → continuance intention	0.52 (0.05)	***
H11b	Perceived usefulness → actual usage	0.34 (0.09)	***
H11c	Perceived usefulness → sending WOM	0.15 (0.06)	0.009**
H12a	Customisation → continuance intention	–0.16 (0.05)	***
H12b	Customisation → actual usage	–0.09 (0.08)	ns
H12c	Customisation → sending WOM	0.11 (0.06)	0.047**
Control variables			
	Age → attitude towards using	0.02 (0.02)	ns
	Age → continuance intention	0.05 (0.02)	0.035**
	Age → actual usage	0.14 (0.04)	***
	Age → sending WOM	0.14 (0.03)	***
	Gender	ns	
	Years with the bank	ns	

Squared multiple correlations for structural equations	Estimate
Attitude toward using the e-postbox	0.64
Continuance intention	0.76
Actual usage	0.47
Sending WOM	0.50

Notes: SE, standard error; ns, not significant. *,**,***Significant at the 10, 5 and 1 per cent levels, respectively

Table V. Structural model

without mediation by the attitude towards using the e-postbox. As suggested by Morgan and Hunt (1994), the structural models are compared using four criteria: overall fit measured by the CFI, which compares the sampled covariance matrix with the implied covariance matrix; the percentage of statistically significant parameters hypothesised in the model; parsimony, as measured by the parsimonious normed fit index (PNFI); and R^2 values for the endogenous constructs.

Table VII indicates that the initially theorised model is more parsimonious than the rival model, even though both models exhibit the same percentage of statistically significant parameters and similar CFI statistics. The hypothesised model also explains more of the variance in two out of three endogenous constructs, with the third construct being fairly similar across models. It is justifiable to retain attitude towards using the e-postbox as a mediator in the model, not only because of its empirical meaningfulness and robustness in contrast to the rival model, but also because of its theoretical merits as the mediating effect of attitude has a long withstanding history in technology acceptance research (Davis, 1993; Fishbein and Ajzen, 1975).

5. Discussion and implications

The main objective of this study was to develop and test a model of drivers, attitudes and behaviours in the post-adoption phase of a co-creative feature of online banking. To achieve

Path	< 30 Est.	30–40 Est.	41–50 Est.	51–60 Est.	61+ Est.	Model Est.
Receiving WOM → continuance intention	*0.08***	*0.09*	0.03	*0.14***	−0.03	0.06**
Customisation → continuance intention	−0.07	−0.08	*−0.24**	−0.03	*−0.22***	−0.16***
Perceived usefulness → continuance intention	0.40***	0.35**	*0.61****	*0.65****	*0.64****	0.52***
Attitude towards using the e-postbox → continuance intention	*0.66****	*0.71****	0.53***	0.43**	0.48***	0.57***
Continuance intention → actual usage	0.39**	*0.57***	*0.67****	0.37**	*0.90***	0.52***
Receiving WOM → actual usage	*0.23****	*0.25***	−0.06	−0.01	*0.21***	0.16***
Perceived usefulness → actual usage	*0.51****	*0.37**	0.27	*0.56***	−0.10	0.34***
Receiving WOM → sending WOM	*0.07**	*0.15**	*0.08*	*0.09*	−0.01	0.06**
Affective commitment → sending WOM	0.84***	*0.89****	0.73***	0.84***	0.73***	0.84***
Perceived usefulness → sending WOM	*0.35****	*0.17*	0.11	−0.11	0.10	0.15**
Customisation → sending WOM	*0.14*	*0.12*	0.11	0.09	0.03	0.11**
Attitude towards using the e-postbox → sending WOM	*−0.31****	*−0.26**	−0.08	0.14	−0.13	−0.15**

Notes: Est., estimate. Italic font denotes estimates that are higher than the overall model estimates. *,**,***Significant at the 10, 5 and 1 per cent levels, respectively

Table VI. Age-based multi-group analysis

Criterion	Measure	Proposed model	Rival model
(1) Model fit (CFI)	CFI	0.964	0.963
(2) Significant parameters	Percentage of model	(18)/(24) × 100 = 75.00%	(12)/(16) × 100 = 75.00%
(3) Parsimony (PNFI)	PNFI	0.837	0.826
(4) Explained variance	Squared multiple correlations		
	Continuance intention	0.763	0.668
	Actual usage	0.470	0.471
	Sending WOM	0.496	0.487

Table VII. Analysis of competing structural models

this objective, the authors developed a new model for the post-adoption phase of the e-postbox, which includes post-adoption drivers, post-adoption attitudes and post-adoption behaviours, and then empirically validated this model. The collected data ($n = 750$) of current customers of the e-postbox of a large German bank indicate that post-adoption drivers (receiving WOM, affective commitment, perceived usefulness and customisation) and post-adoption attitudes (attitude towards using the e-postbox) influence post-adoption behaviours (continuance intention, actual usage and sending WOM).

As Brown and Reingen (1987) predict, receiving WOM positively affects customers' attitudes towards using the e-postbox, which underscores the significance of including interpersonal communication as a post-adoption driver. Surprisingly though, this attitude has a negative effect on the post-adoption behaviour of sending WOM. The age-based multi-group analysis shows that younger customers with favourable attitudes towards using the e-postbox are less likely than older customers with favourable attitudes to send WOM. A potential explanation comes from extant literature (cf. Anderson, 1998; Bowman and Narayandas, 2001; Chen *et al.*, 2011), which argues that dissatisfied customers are more

active in spreading WOM online or offline than moderately satisfied customers due to negatively experienced emotions, such as anger and frustration (Bonifield and Cole, 2007; Sweeney *et al.*, 2005). The contrasting finding of a positive impact of receiving WOM on the attitude towards using the e-postbox and a negative influence of this attitude on sending WOM, suggests that these two interpersonal communication constructs do not necessarily move into the same direction. While customers may receive favourable WOM from others, they in turn may not spread favourable WOM, even though they have a favourable attitude towards using the online banking. The opposing directions of effect highlight the need to investigate interpersonal communication from two perspectives in post-adoption models of banking services: receiving WOM as a post-adoption driver and sending WOM as a post-adoption behaviour.

With regard to the organisation-related driver of the post-adoption phase, the data reveal a positive relationship between affective commitment to the bank and the attitude towards using the e-postbox. Apparently, customers' emotional attachment and identification with their bank nurtures their favourable attitudes towards using the bank's services. Furthermore, affective commitment positively influences sending WOM, in a link that is significant for all ages; emotional attachment to the bank has a strong and robust positive effect on sending WOM. This finding contrasts the previously discussed negative association reported between attitude towards using the e-postbox and sending WOM. As suggested by Harrison-Walker (2001), despite customers' attitudes towards a specific service, affective commitment to the overall organisation enhances their WOM. De Matos and Rossi (2008) propose that even if customers experience lower levels of satisfaction with a service, they still may send favourable WOM if they are committed to the organisation, in an effort to reinforce their initial decision to enter the relationship, maintain cognitive consistency and justify their organisational identification (Brown *et al.*, 2005). This emotional aspect of decision-making in the post-adoption phase thus underscores the necessity to include organisation-related drivers in post-adoption models that go beyond a focus on the functional elements of a financial service.

The significant effects of the TAM variables support the integration of cognitive, affective and behavioural constructs into post-adoption models of digitalised financial services (Davis, 1993). The task-related driver perceived usefulness indirectly affects post-adoption behaviours through the attitude towards using the e-postbox, but it also has strong, direct effects on all three post-adoption behaviours. Further studies of digitalised financial services thus should go beyond analysing the mediated effects of the TAM and integrate the direct impacts as well. The empirical examination of the newly developed post-adoption model also reveals strong support for the link between continuance intention and actual usage of the e-postbox, which is in line with prominent technology adoption research suggesting that intentions affect behaviours (Ajzen, 1991; Davis *et al.*, 1989; Fishbein and Ajzen, 1975). In the online banking context, customers' intention to continue using the e-postbox is a direct predictor of customers' actual usage behaviour. Adding the link from continuance intention to actual usage to the model renders the link between attitude towards using the e-postbox and actual usage insignificant; continuance intention fully mediates the effect of attitude on usage behaviour. Thus, banks' marketing efforts are encouraged to specifically target the continuance intentions of their customers in order to foster actual usage behaviour of the e-postbox.

In contrast to *H12a*, greater customisation of the e-postbox decreases customers' intentions to continue using the e-postbox. Wang *et al.* (2017) predict a positive relationship between customisation and intention to continue using online banking, but they also suggest that this effect is mediated by customers' decreased effort expectancy and increased performance expectancy. A potential explanation for the negative link that emerges in the current study is that customers actually must exert increased effort to use the e-postbox,

due to its relative newness and unfamiliar service attributes. Cheung *et al.* (2000) suggest that greater complexity leads to less usage; digitalised services that are still relatively new might be perceived as more complex and thus customers may decide to discontinue their use. Yet even though customisation negatively influences continuance intention, it has a positive effect on sending WOM, which demonstrates that post-adoption drivers may affect post-adoption behaviours in opposing directions.

Finally, intention to continue using the e-postbox increases with customers' attitude towards using it, receiving WOM from others and how useful customers perceive the e-postbox to be. These findings reaffirm extant calls to account better for customers who discontinue their relationships with service organisations (Libai *et al.*, 2009; Shi *et al.*, 2014). The intensifying competition among banks and volatile customer demands (Mainardes *et al.*, 2017) mandate a better understanding of how to achieve continued usage and retain customers, such as by improving the perceived usefulness of a service. Integrating continuance intention in post-adoption models also is fundamental in light of the importance of co-creation; it empowers a customer-centred premise of an inherently relational exchange between the bank and customers through continued usage. If customers intend to discontinue using the provided services, long-term relationships are unlikely to result, such that these customers likely engage in exchanges with transaction-like features or churn to competing financial institutions.

5.1 Implications for theory

This study provides several implications for theory. It offers a novel exploration of the post-adoption phase of a co-creative feature of online banking and thus informs both service and banking literature in four main ways. First, it responds to calls for more research on the post-adoption phase and co-creation in financial services (Mainardes *et al.*, 2017; Tam and Oliveira, 2017a) and develops a testable model of this post-adoption phase for a co-creative feature of online banking, in order to foster customers' continued usage and attract new customers. Responding to the need for more research on the drivers of the post-adoption phase (Tam and Oliveira, 2017a), the proposed model suggests a multifaceted picture of post-adoption that includes two task-related drivers (customisation and perceived usefulness), an organisation-related driver (affective commitment) and an interpersonal communication-related driver (receiving WOM). These different types of drivers are essential to holistically predict post-adoption behaviour, because they consider rational decision-making based on functional features of the e-postbox, but also emotional decision-making directed by affect.

Second, the empirical tests of the model confirm the importance of a dual perspective on interpersonal communication (Gilly *et al.*, 1998; Harrison-Walker, 2001) and also respond to calls for more research by integrating the perspectives of both the WOM recipient and the WOM sender (De Matos and Rossi, 2008). To assess continued usage of a digitalised financial service, it is essential to account for the interpersonal communication-related driver of customers receiving WOM from others and how that affects their attitudes, intentions and behaviours. Complementarily, sending WOM by current customers is a critical post-adoption behaviour that increases the potential to acquire new customers.

Third, this research extends the general applicability of the TAM (Patel and Patel, 2018; Tam and Oliveira, 2017a) to the post-adoption phase of an innovative, co-creative feature of online banking. The underlying model is supported in this novel context. In addition, this study shows that researchers risk ignoring important findings if they fail to analyse direct effects together with mediated effects (e.g. perceived usefulness directly influences all three post-adoption behaviours). Diligent scrutiny of the post-adoption phase also requires the consideration of organisation-related and interpersonal communication-related drivers, in addition to the task-related drivers of the TAM; for example, besides perceived usefulness,

receiving WOM and affective commitment have strong, significant influences on the TAM variable attitude towards using.

Fourth, this study contradicts findings that suggest that the TAM constructs are generally invariant across age (Cheng *et al.*, 2006; Lai and Li, 2005); it instead supports and extends studies that propose that customers' age significantly affects online banking constructs and relationships (Chau and Ngai, 2010; Mohammadi, 2015). Six of the eight constructs in the proposed model reveal significant differences across age groups; all TAM constructs are influenced by age. Customers younger than 30 years score highest on perceived usefulness, customisation, attitude towards using and continuance intention; customers older than 60 years exhibit higher actual usage and send the most WOM.

5.2 Implications for practice

The findings also are interesting for bank managers and marketers who aim to encourage continued usage of their co-creative, digitalised services. Financial institutions must realise that the stage after customers' adoption decision is critical for the success of their digital services, in that it determines the potential for long term, mutually beneficial relationships. Essentially, post-adoption behaviours determine the worth of current customers, in terms of their actual usage and continuance intentions, as well as the opportunity to attract new customers through WOM. Therefore, bank managers must consider not only how potential customers receive WOM but also what kind of WOM their current customers are sending. Banks should develop specific incentives to encourage customers to send favourable WOM, especially for customers in their 30s and 40s, because these age groups are least likely to send WOM.

As part of a strategic goal to minimise customer churn, banks are also encouraged to identify and recover dissatisfied customers by determining which factors influence their intentions to discontinue using the service, before customers actually leave. Perceived usefulness, receiving WOM and the attitude towards using the e-postbox have positive effects on continuance intention, so these concepts should be the primary targets of banks' marketing efforts.

Finally, this research demonstrates that in some cases, the customisation of a digitalised financial service can diminish intentions to continue using it. This negative effect potentially relates to the relative newness of the service feature, which increases customers' perceptions of complexity and unfamiliarity. Therefore, banks have to take care to explain and support customers' usage of newly introduced service features, to mitigate their negative perceptions of complexity and increased effort expectancy.

5.3 Limitations and recommendations for further research

This research has some limitations that suggest avenues for further research. The proposed post-adoption model offers a practical application to foster continued usage of a co-creative, digitalised service by current customers and improves on existing models by including representative task-, organisation-, and interpersonal communication-related drivers. Yet it also might benefit from further extensions, such as the addition of other organisation-related drivers (e.g. customers' loyalty, trust in the bank) or task-related drivers (e.g. perceived security, enjoyment). Customer-related drivers, such as attitude towards using technology or need for interaction with a bank employee, also may shed light on the post-adoption phase of online banking by addressing customers' already established attitudes and dispositions. The relative importance of the post-adoption drivers also may fluctuate over time. The post-adoption phase can continue infinitely, but the perceived novelty of the digitalised financial service decreases with relationship duration. Additional studies might explore whether customisation of the digitalised financial service continues to exert a negative effect on continuance intention later, once the customer has moved from novice to

experienced user (Venkatesh and Morris, 2000). Perhaps customisation initially exerts a negative influence on continuance intention, which gradually becomes positive – a potential trend that requires further research consideration.

6. Conclusion

The adoption of online banking and the factors leading to it have received ample research attention, to the neglect of the post-adoption phase that follows after the initial adoption decision. However, the post-adoption phase is critical for banks that face volatile customer demands and increasing competition, because continued usage of online banking increases the potential to develop long term, mutually beneficial customer–bank relationships, which ultimately determine a bank's success. To help banks foster customers' continued usage of their online banking services and attract new customers, this study has developed and tested a model of drivers, attitudes and behaviours in the post-adoption phase of a co-creative feature of online banking, namely, the e-postbox. The empirical analysis identifies three types of post-adoption drivers that influence post-adoption attitudes and behaviours: task-related drivers, such as perceived usefulness and customisation of the e-postbox; organisation-related drivers, such as customers' affective commitment to the bank; and interpersonal communication-related drivers, such as receiving WOM. This research evidences effects of the post-adoption drivers on the post-adoption attitude towards using the e-postbox and further on three post-adoption behaviours (intention to continue using the e-postbox, actual usage of the e-postbox and sending WOM). Finally, this study shows that age has a significant effect on several constructs and relationships.

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About the authors

Anna-Sophie Oertzen is an Early Stage Researcher at the Service Design for Innovation Network (SDIN) funded by the European Union's Horizon 2020 Research and Innovation Programme. As a PhD candidate, she is currently employed by KISD, the Köln International School of Design, and enrolled at the Department of Marketing and Supply Chain Management of the School of Business and Economics at Maastricht University. Her main research interests evolve around service marketing, service design and service innovation. Anna-Sophie Oertzen is the corresponding author and can be contacted at: a.oertzen@maastrichtuniversity.nl

Gaby Odekerken-Schröder is Professor in Customer-Centric Service Science at Maastricht University. She is the Head of the Department of Marketing and Supply Chain Management at Maastricht University. Her main research fields are services and relationship marketing. Her research has been published in *Journal of Marketing*, *Journal of Retailing*, *Journal of Service Research*, *Journal of Business Research*, *International Marketing Review*, *European Journal of Marketing*, *Journal of Retailing and Consumer Services*, *Journal of Consumer Marketing* and many other international journals. Her teaching time is dedicated to developing high quality courses for Bachelor, Master, PhD and executive students.

Financial planning for retirement: the role of income

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Milagros Vivel-Búa
Faculty of Economics,
Universidade de Santiago de Compostela, Santiago de Compostela, Spain
Lucía Rey-Ares
Universidade de A Coruña, Ferrol, Spain
Rubén Lado-Sestayo
Universidade de A Coruña, A Coruña, Spain, and
Sara Fernández-López
Universidade de Santiago de Compostela, Santiago de Compostela, Spain

Abstract

Purpose – The purpose of this paper is to study the driving forces of both the decision to participate in individual pension plans and the amount of money allocated to such plans. Moreover, this paper evaluates the potential role that income plays, which has not previously been considered in depth in the financial literature.
Design/methodology/approach – Based on a sample of the Spanish population over the period 2008–2015, this paper estimates probit and tobit models, using 165,791 observations. The driving forces of private retirement savings comprise demographic, financial and socio-economic characteristics.
Findings – This paper confirms the impact of socio-demographic and economic variables on participation and monetary contributions to pension plans. It also confirms that income plays a non-negligible role. Moreover, empirical evidence reveals that the effect of gender is related to the income stratum to which the individual belongs.
Originality/value – Retirement planning plays a key role in retirees' future income and several countries have emphasised the importance of private individual savings to supplement the minimum provided by public pension schemes. The previous literature has concluded that those who plan their retirement end their working lives with three times the wealth of non-planners. Consequently, analysis of whether people are saving enough for their retirement can contribute to avoiding future wealth inequalities among retirees. Spain is one of the countries with the greatest inequality in income distribution, so this issue is of even greater interest.

Keywords Income, Saving, Driving forces, Retirement, Individual pension plans
Paper type Research paper

1. Introduction

A primary concern of western societies is the challenge of population ageing. According to the European Commission (EC, 2015), the number of elderly people in Europe is expected to increase annually by no less than 1 per cent to the year 2060. At the same time, the European Union (EU) working age population is expected to decrease by an average of 0.3 per cent every year. As a result, in its baseline scenario, Eurostat projects that strictly age-related expenditure (pensions, long-term care and education) will increase by around 2 percentage points of gross domestic product by the year 2060. These bleak projections will shape the political agenda of Europe. To mitigate, at least in part, this increase in public budgets, in several countries the emphasis of government has been put on private individual savings to supplement the minimum income provided by public pension schemes (EC, 2015).

Spain is not immune from these trends. Indeed, there is an ongoing debate concerning the need to implement more reforms aimed at fostering the private pillar of the pension system. As a result, individual pension plans have become the most popular way of capturing

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individuals' saving efforts. However, the incentives for the Spanish population to complement public pensions through savings in private pension plans are relatively low, as public pension replacement rates reach, on average, 72.3 per cent, compared to the 52.9 per cent average for Organisation for Economic Co-operation and Development (OECD) countries (OECD, 2017). To counteract this, the Spanish Government has designed tax incentives aimed at fostering private retirement savings, but these fiscal advantages only benefit high-income households, which constitutes a problem, as Spain is considered one of the countries in Europe with the greatest social inequality. The disposable income of Spanish households fell by 20 per cent over 2007–2014, mainly due to the drop in labour income and as a consequence of the high unemployment rate and the increase in part-time and temporary employment contracts (Goerlich, 2016). Spain, together with Poland, leads the contractual temporality rate in the EU[1]. Even though public pensions contributed to a reduction in income inequality of 17.9 per cent during the crisis, this was not the case for middle-income households, i.e., there is a certain polarisation in income levels (Goerlich, 2016). The decrease in income experienced was greater among households with low- and medium-income levels, surpassing 30 per cent in the most disadvantaged households according to the INE (Spanish National Statistical Institute) data.

Consequently, considering this social and economic environment, it is necessary to study the driving forces of personal savings to favour a societal change in attitude able to generate a sufficient financial coverage for retirement in all economic strata, thus improving the standard of living of all retirees. Thus, the main objective of this paper is to analyse the driving forces of private retirement savings through individual pension plans in Spain, evaluating if there are significant differences by household income level over the period 2008–2015. Answering this question will determine whether individuals might indeed be well prepared to complement their retirement provision, as recent reforms of public pension systems have placed on them an increasing share of the responsibility for retirement planning.

Previous studies have mainly considered the driving forces of the decision to save for retirement which may not reflect the quantity of money tied up in individual pension plans (Fernández *et al.*, 2015; Fornero and Monticone, 2011; Foster and Smetherham, 2013). This previous financial literature has mostly defined the dependent variable considering whether the individual has or does not have a private pension plan, ignoring the fact that he/she might have one, but may not make any contribution to it over a concrete period. Within our approach, the emphasis is put on both the decision to have an individual pension plan, estimating a probit model, as well as on the individuals' annual contribution to it, using a tobit model. This differentiation is important as in Spain there is a remarkable contrast between owning a pension plan and making contributions to it. As the Spanish pensions' association, namely, the *Asociación de Instituciones de Inversión Colectiva y Fondos de Pensiones* (INVERCO, 2017) points out that 65 per cent of those in Spain with an individual pension plan did not made any contributions in 2016 and 10 per cent contributed less than €300.

Regarding the role of income, most previous financial studies have considered the effect of income on private retirement savings as a continuous or categorical independent variable. This consideration will only reveal whether the probability of contribution to a pension plan or the amount of money devoted to it would be greater or lower depending on income. However, it does not capture the potential differences in the driving forces of private retirement savings depending on the income level, which might influence the effectiveness of the stimulus measures aimed at fostering private retirement savings. Namely, in Spain, according to the Living Conditions Survey (LCS) reported by the INE (2016), the percentage of people contributing to individual retirement accounts decreased 6.8 percentage points over the period 2008–2015, mainly as a result of the fact that those in

low- and medium-income groups reduced their contributions or even stopped contributing to retirement accounts. However, annual net contributions experienced an average annual increase of 2.68 per cent, especially for high-income households.

The rest of the paper is organised as follows. Section 2 briefly describes the Spanish pension system and reviews the literature on the issue, providing a conceptual framework. Section 3 presents the data as well as the methodology and empirical analysis. Finally, Section 4 concludes the paper.

2. Literature overview

Household finances have been traditionally set aside in favour of corporate finances. But in recent years, household finances have been attracting more interest due to their growing importance in the financial industry as well as the need to complement savings for retirement. Most developed countries are facing an increasing population ageing that together with the recent socio-economic and institutional trends, are questioning the sustainability of the "pay-as-you-go" (PAYG) pension systems and putting a greater emphasis on the individual as the manager of their financial planning for retirement. These trends in Spain are even more pronounced, as predictions indicate that in 2050 Spain will be the country with the greatest percentage of aged people in the EU, with more than one-third of its population over 65 years old.

In this context, the formalization of supplementary saving instruments for retirement is more and more necessary, being individual pension plans one of the alternatives that have received more government support. This paper is aimed at identifying and analysing the potential individual factors that determine the participation and the volume of contributions in private pension plans by Spanish population. It is relevant because previous financial literature has fundamentally focussed on studying the decision of having a pension plan, but fewer references analysed the decision concerning the individuals' annual contribution. However, people can have a pension plan but not making any contribution or making a small contribution, as it happens in the Spanish market. Additionally, the determinants of both decisions may be different, influencing the effectiveness of the incentives aimed at fostering private saving for retirement.

Next, the Spanish pension system is characterised, highlighting its recent reforms. Also, the main driving forces of saving for retirement identified in the previous literature are explained, being then the focus in the subsequent empirical analysis.

2.1 The Spanish pension system

The Spanish pension system has its origins at the beginning of the twentieth century with the development of pension funds associated with some occupations, although it was not until the second half of the century that a unitary model of social protection in old age was established. Today, the Spanish pension system is based on a three-pillar pension system, in which public pensions still play the dominant role. The first tier of the system is a traditional PAYG system, also known as the Social Security System, which consists of a general earnings-related scheme financed through contributions, resulting in a defined-benefit pension. The second and third tiers consist of supplementary pension schemes, respectively occupational and personal pension schemes, which have been relegated to the background in the pension system. According to OECD (2017) statistics, in 2016, 18.6 per cent of the Spanish working age population (15–64 years) was covered by voluntary pension plans – either occupational or personal.

Spain, as is the case for other developed European economies, has not remained oblivious to the recent demographic trends (especially the sustained increase in life expectancy) that constitute a major challenge to the financial sustainability of its pension system. As a response, it has undergone different reforms in the last decade. The most recent, as

indicated in Hernández de Cos *et al.* (2017), have been implemented through Law 27/2011 (effective from 2013), which introduced significant changes in the conditions of access to retirement provision. Namely, this reform implied: a gradual increase in retirement age from 65 to 67 years; a progressive increase in the period considered for computing the "regulatory base" (i.e. the wage base used to calculate contributions) of the retirement pension, from 15 to 25 years; the requirement to prove at least 37 years of contributions to access 100 per cent of the pension provision. Two years later, Law 23/2013 established a new mechanism for calculating the annual revaluation of pensions (effective from 2014), which took into account the income and expenses of the system and introduced a sustainability factor for retirement pensions (not effective until 2019). In sum, most of the reforms of the Spanish pension system have been parametric, mainly focussed on trying to limit the future increase in retirement expenses and foster the development of the third tier of the pension system through tax relief, among other measures.

2.2 Determinants of saving for retirement

The Spanish public retirement pension is fundamentally determined by individual labour income; thus, the earnings path has a significant impact on pension entitlements. Therefore, the literature review starts by considering the potential role of income when referring to the decision to save privately for retirement. Later, this review considers whether the participation in supplementary pension schemes can also be influenced by other socio-economic variables, such as age, education and employment. Finally, the review identifies variables of a personal or individual nature that might be considered as driving forces for retirement savings.

Income. This research considers especially the role of income as a determinant of saving for retirement because Spain is one of the countries in Europe with the greatest social inequality. In fact, the percentage of Spanish people saving privately for retirement decreased in recent years, mainly in low- and medium-income households; and some of these households even stopped contributing to pension plans.

Income has long been pointed to as a key determinant of consumption decisions and analogously of saving decisions. Keynes (1936), in his manuscript par excellence, "General theory of employment, interest and money", argued that consumption increases with income, although in a less than proportional way. Also, Duesenberry (1949) in his "relative income hypothesis" and Modigliani and Brumberg (1954) in their "life-cycle hypothesis" considered that income has a non-negligible role in the determination of savings. By extension, it seems reasonable to consider that the role of income is crucial when analysing the decision to save privately for retirement, as previous empirical research has demonstrated (Medeiros and Correia, 2017; Rey-Ares *et al.*, 2018). Indeed, Cappelletti *et al.* (2013), using Italian data, found that income was the strongest predictor of participation in supplementary pension schemes, as individuals who earn more money would also have more resources available to subscribe to private pension schemes. Similarly, Foster and Smetherham (2013) highlight that as income increases, individuals have more disposable income, as well as more opportunity to save money through private retirement accounts. Recently, Moreno-Herrero *et al.* (2017) found that the expectations of lower future income influence the likelihood of having a private pension plan and thus, not only available income seem to influence subscription to an individual pension plan, but also expected income.

Another argument that supports the positive impact of income on participation in supplementary pension schemes has to do with the potential fiscal benefits – such as tax incentives or tax-exempt contributions – implemented by governments to foster individual participation (Lum and Lightfoot, 2003). However, such fiscal benefits primarily favour the wealthy, since private pension schemes are positively related to income level in most

countries (Goudswaard and Caminada, 2010). Moreover, as Huberman *et al.* (2007) argue, low-income individuals are less inclined to save for retirement as they consider that public pension schemes will offset the potential wage gap from their working lives during their retirement period.

Socio-economic determinants. According to the life-cycle theory of savings, it would be expected that savings for retirement increase over the working life, as individuals become more established in their careers. However, as Foster and Smetherham (2013) consider, it is not common for people to actively plan contributions to private pension schemes until their late 30s or 40s, or even later.

Educational attainment is another important factor. Previous empirical studies have demonstrated that participation in supplementary pension schemes tends to increase as the educational attainment of the individual improves. There are three potential ways through which education might positively affect the decision to participate, as well as the amount of contributions: the greater earning potential of individuals with higher educational levels; their better abilities to engage in financial planning (van Groezen *et al.*, 2009); and their lower costs of entry – information, search, etc. – to the financial market.

Employed individuals have greater probabilities of saving for retirement, as indicated by Fernández *et al.* (2015), due to two main reasons: being employed leads to greater income levels and being employed might also familiarise individuals with financial planning for retirement as some jobs offer the individual the possibility to participate in occupational pension plans. Unemployed people, apart from having less disposable income, tend to rely more on public support and therefore show a stronger preference for public pensions (van Groezen *et al.*, 2009). Self-employed people, who usually have lower replacement rates (Torricelli *et al.*, 2016) and assume greater individual responsibilities than the employed (van Groezen *et al.*, 2009), might be more likely to participate in supplementary pension schemes.

The term of the job (contract) might constitute another driving force for participation in supplementary pension plans. The review of the literature leads to the consideration that those who have permanent employment contracts will be more likely to contribute to private pension schemes as enjoying job stability allows the individual to plan financial decisions over the long term. In this regard, previous studies show that long-term planning horizons might be beneficial when taking decisions concerning saving and retirement (Alessie *et al.*, 2011).

Torricelli *et al.* (2016) demonstrated that the number of years of contribution to Social Security Systems, which can be considered a proxy for pension wealth, is positively and significantly related to participation in voluntary pension plans. In principle, it might be expected that workers with more years of contributions would have lower incentives to participate in these financial assets. However, these workers might be more aware of the need for and importance of supplementary pensions and thus will save more in these assets.

Determinants of personal or individual nature. Concerning variables of a personal or individual nature, marital status might be considered a driving force for retirement savings. People with a formal commitment (married or common-law/partners) generally display greater probabilities of saving (Fontes, 2011) due to the fact that they are usually more concerned about the financial stability of the family, together with the potential economies of scale that emerge from the sharing of resources in the couple. Empirical evidence confirms that gender can influence the contribution to private pension schemes. Even though the sign of its effect remains unclear, the majority of previous studies indicate that women display lower probabilities of saving for retirement, which could partially be explained by their lower levels of financial literacy (Kumar *et al.*, 2019), their lower income levels or their worse labour conditions. Although women's employment rates have increased over time, they still continue to occupy part-time and temporary positions to a greater extent than men.

In terms of family composition variables, empirical evidence confirms that those who have dependent children in the household display lower probabilities of saving (Lusardi, 2001), which might be due to the fact that the substantial costs of child rearing leave less money available to spend on private pension provisions (van Groezen *et al.*, 2009). However, once the children cease to be economically dependent on their parents, they can save more for retirement, especially with the purpose of trying to garner as many economic resources as possible for their descendants to inherit.

In Spain, the acquisition of housing is considered a strategy for retirement saving. The effect of homeownership on individual participation in private pension schemes has long been questioned due to a possible trade-off between housing and pension plan participation, as pointed out by Kemeny (1981). Housing could be seen as an alternative to private pensions, as Torricelli *et al.* (2016) highlight, thus reducing the contribution to these financial assets. Regarding the purchase of housing, Torricelli *et al.* (2016) also found that having a mortgage is positively and significantly related to participation in supplementary pension plans in Italy. In addition, Torricelli *et al.* (2016) argue that "households with mortgages are sound both from an economic and from a financial viewpoint […] and by the greater familiarity mortgage holders have with financial products" (p. 15). Therefore, it would be expected that those homeowners with a mortgage display greater probability of saving through individual pension schemes, as well as making higher contributions.

Finally, there may be temporary effects that must be controlled. The recent economic downturn has dealt a major blow to the financial soundness of social security and pension funds, which might make individuals more conscious of the need to plan financially for their retirement provision. However, in the aftermath of the crisis, the situation in the Spanish labour market and economy was critical, probably discouraging individuals from saving privately for retirement.

3. Empirical analysis

3.1 Sample, variables and methodology

This investigation draws on the LCS, an annual survey aimed at households and focussed on providing comparable and harmonised information on different aspects of social cohesion and the living conditions of the Spanish population (INE, 2005). Its target population consists of people aged 16 or over who are members of private households living in main family dwellings, as well as said households. Specifically, this research employs data from wave 2008 to wave 2015, thus covering a period of eight years. Thus, this paper contributes to the financial literature by enhancing the knowledge of individuals' saving behaviour over a recent time horizon, characterised by a new economic and social context that emerged from the financial crisis and has pointed to Spain as a country with quite social inequality in Europe. The sample was restricted to those aged 65 or less, resulting in a final estimation sample of 165,791 observations.

The driving forces of private retirement savings, i.e. the independent variables, comprise demographic, financial and socio-economic characteristics. Some of these are dichotomous variables recoded from the original questionnaire, while others are categorical and continuous variables. Table I lists the variables included in the analysis, along with their description and the expected sign of influence over the decision and contribution to private retirement savings, according to the literature review contained in Section 2.

The empirical analysis is mainly organised in two parts. The first is aimed at analysing the determinants of the decision to save money for retirement through the estimation of a probit model for the whole sample (global probit model), while the second section is aimed at analysing the volume of savings using a tobit model, also for the whole sample (tobit global model). According to this methodology, there are two dependent variables. For the probit

Variable	Definition	Expected sign
Age	Age of the individual in years	+
Age^2	Age squared of the individual	−
Educational attainment	Discrete variable referring to the highest level of education an individual has achieved and equal to: 1. If the individual has primary education (baseline) 2. If the individual has lower secondary education 3. If the individual has upper secondary education 4. If the individual has higher vocational education 5. If the individual has higher education	+
Employment status	Discrete variable equal to:	
	1. If the individual is an employee (baseline)	+
	2. If the individual is self-employed	+
	3. If the individual is unemployed	−
	4. If the individual is out of the workforce	−
Term of job	Binary variable equal to 1 if the employment contract of the individual is permanent; 0 otherwise	+
Years of contribution	Number of years that the individual has contributed to the public pension system	+
Marital status	Binary variable equal to 1 if the individual is married or in a common-law relationship; 0 otherwise	+
Gender	Binary variable equal to 1 if the individual is female; 0 if male	−
Income	Net annual income received by the household in the year before the interview (in thousands of euros)	+
Homeowner	Binary variable equal to 1 if the individual lives in a household in his/her own property; 0 otherwise	+
Mortgage	Binary variable equal to 1 if the individual is a homeowner with a mortgage [only the main residence is considered here]; 0 otherwise	+
Household size	Number of household members. Household size includes all members living in the same household (the respondent, his/her partner, children, parents, siblings, or other household members)	−
Children	Number of children in the household	+
Dependent children	Binary variable equal to 1 if the household has any children who need to be financially supported; 0 otherwise. Children considered financially dependent are those under the age of 18, or those under 25 if they are part of the non-working population	−

Table I. Description of independent variables

model, the dependent variable is a dummy variable equal to 1 if the individual has contributed any money to a retirement plan in the year prior to the interview, 0 otherwise. For the tobit model, the dependent variable is a continuous censored variable measuring the contribution (in euros) to individual pension plans in the year prior to the interview. Thus, this paper evaluates the decision to have an individual pension plan as well as the decision concerning the individuals' annual contribution, filling the gap identified in the previous literature, which was mainly focussed on just the first aforementioned decision.

Income has been long pointed to as one of the strongest driving forces for participation in private pension schemes. Previous studies have analysed its impact on the decision to contribute to these financial products or the quantity of money invested in them, incorporating the income variable as a continuous or categorical independent variable. However, it is important to point out that the driving forces of private retirement savings might differ depending on the income level. Therefore, not considering these potential differences would result in biases in the results obtained and thus the estimates would be inconsistent. Namely, estimating a global model without considering these potential differences could result in non-significant values in those variables that might vary their

sign depending on the income level, or result in reduced mean values when differences between income levels are of great magnitude. As an example, the positive effect that having dependent children might exert on the contributions to individual pension plans in the case of high-income households could have a lower or even a negative impact for households with the lowest income as they need to allocate a high percentage of their income to child rearing. If this differentiation were not taken into account, the estimate would indicate a lower average figure than actually represents the case for high earners and a higher figure for middle earners. Consequently, this would limit the usefulness of the results from global models in the design of incentive measures for saving in both groups. To study these differences according to income level in a greater depth, this research compares the results of global models with those obtained by analysing a set of sub-samples constructed according to household income levels. The objective is twofold: first, to validate the results of global models and second, to analyse whether the potential differences according to income level are statistically significant. Thus, this paper contributes to evaluating the need to design specific incentives for each income stratum, with a view, ultimately, aimed at improving its financial situation in the retirement period.

The distribution of the sample according to income level was proposed as follows. In a first step, we calculated the minimum number of observations to represent an unknown population considering a 99% confidence level, a maximum error of 1 per cent and the worst possible scenario regarding expected prevalence ($p = 0.5$). This value was for 16,641 observations. In a second step, the total sample size (165,791 observations) was divided by the value previously mentioned, obtaining 10 as the nearest integer. Hence, the creation of ten income groups was considered for the evaluation of the potential differences in the driving forces of saving for retirement depending on income levels. Table II summarises the income deciles distribution. This method guaranteed that every income group had a sufficient and representative sample size, allowing thus the analysis of its driving forces and its comparison among the different deciles and with the global model.

Once the global sample was split according to income level, different probit and tobit models were estimated for each of the ten sub-samples identified. The coefficients obtained for each were compared with the outcomes of the global models (probit and tobit). In what follows, these data will be plotted. If there are no differences in a determinant depending on the level of household income, both coefficients (from the global sample and from the sub-sample) will coincide within the same confidence interval. Conversely, if there are statistically significant differences in any determinant, the confidence intervals will not match. This would highlight the need for and importance of carrying out a study of the driving forces of pension savings by income level because otherwise the results might display important biases.

Table II. Income distribution by decile

Decile	Income values
1	< €12,498.97
2	€12,498.97–17,812.79
3	€17,812.79–22,179.41
4	€22,179.41–26,458.20
5	€26,458.20–30,846.65
6	€30,846.65–35,559.70
7	€35,559.70–41,579.40
8	€41,579.40–49,537.97
9	€49,537.97–62,399.26
10	> €62,399.26

Source: Authors' analysis based on LCS data

3.2 Descriptive analysis

The main descriptive statistics of the sample are shown in Table III. The summary statistics displayed here are those covering the period 2008–2015 for both the global sample and the sub-samples of contributors and non-contributors to individual pension plans. Overall, the sample consisted of 165,791 people, mostly women (50.8 per cent), with an average age of 42.32 years. With regard to marital status, the majority (57.1 per cent) had a formal commitment – marriage or common-law partnership. Household size comprised more than three people, while the number of children approached the unit and 46.5 per cent of households had children needing financial support.

The average annual level of household income was €34,855.1 and 82.3 per cent of respondents lived in their own dwelling, 33.5 per cent of which were mortgaged. With regard to economic activity, 57.3 per cent of the respondents were working, either as an employee (47.2 per cent) or self-employed (10.1 per cent), while 16.4 per cent were unemployed and the remaining 26.3 per cent were out of the workforce. Of those who were employed, 36.2 per cent had a permanent employment contract. The average number of years of contributing to the public pension system was close to 17 years. Educational attainment presented a non-uniform distribution among the categories: 17.2 per cent of respondents had completed primary education; 28.7 per cent lower secondary education; 24.3 per cent upper secondary education; 0.5 per cent higher vocational education; and 29.3 per cent tertiary education.

Finally, with regard to the dependent variables, over the period 2008–2015, on average, 12.07 per cent of survey participants reported having participated in supplementary pension schemes. The annual net contribution was €1,286.6, only considering those who do contribute to these financial assets.

	Total sample		Contributors		Non-contributors		t-test; χ^2 test	
	Mean	SD	Mean	SD	Mean	SD	t; χ^2	p
Participation	0.1207	–	–		–	–		
Net contribution	155.31	789.53	1,286.6	1,925.8	–	–		
Age	42.32	13.17	49.1	9.15	41.4	13.36	−105.6	< 0.001
Educational attainment 1	0.172	–	0.131	–	0.178	–	2,033.9	< 0.001
Educational attainment 2	0.287	–	0.219	–	0.296	–		
Educational attainment 3	0.243	–	0.220	–	0.246	–		
Educational attainment 4	0.005	–	0.003	–	0.005	–		
Educational attainment 5	0.293	–	0.427	–	0.275	–		
Employee	0.472	–	0.631	–	0.450	–	6,039.1	< 0.001
Self-employed	0.101	–	0.185	–	0.089	–		
Unemployed	0.164	–	0.061	–	0.178	–		
Out of workforce	0.263	–	0.122	–	0.284	–		
Term of job	0.362	0.48	0.575	0.49	0.333	0.47	4,468.6	< 0.001
Years of contribution	16.69	13.36	24.4	11.70	15.6	13.22	−98.3	< 0.001
Marital status	0.571	0.50	0.761	0.43	0.545	0.50	3,364.3	< 0.001
Gender: female	0.508	0.50	0.466	0.50	0.514	0.5	163.6	< 0.001
Income	34,855.1	23,967.1	45,512.1	29,676.4	33,392	22,685.9	−55.6	< 0.001
Homeowner	0.823	0.38	0.906	0.292	0.812	0.39	1,058.5	< 0.001
Mortgage	0.335	0.47	0.37	0.48	0.33	0.47	121.3	< 0.001
Household size	3.36	1.29	3.2	1.17	3.4	1.31	25.4	< 0.001
Children	0.85	0.99	1.1	0.97	0.82	0.99	−37.8	< 0.001
Dependent children	0.465	0.50	0.471	0.50	0.464	0.50	3.4	0.064
Observations	165,791		20,013		145,778			

Notes: Income variable is expressed in euros. t-tests of differences in means are used for continuous variables; χ^2 tests of differences in proportions are used for discrete variables
Source: Authors' analysis based on LCS data

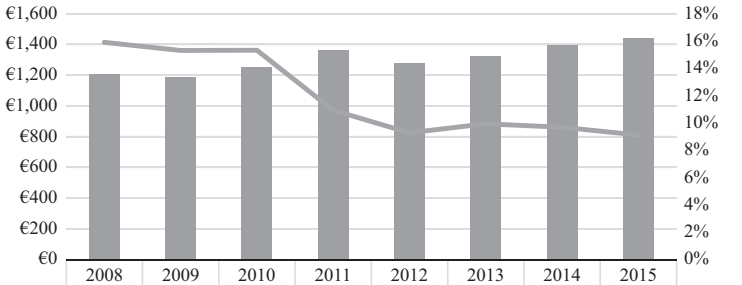
Table III. Descriptive statistics for the global sample (2008–2015)

The potential existence of significant differences in the independent variables between participants and non-participants in private pension plans was analysed through *t*-tests of differences in means (continuous variables) and χ^2 tests of differences in proportions (discrete variables), as displayed in the last two columns of Table III. The most relevant feature to be highlighted is the existence of statistically significant differences in observable characteristics between participating and non-participating individuals at a 1 per cent level of significance. Only the variable measuring the presence of children in the household fails to be significant. Overall, the differences in sample characteristics demonstrate that those who do participate in supplementary pension plans, compared to non-participating individuals: are older and have higher educational attainment; present a greater percentage of employed persons and those with permanent employment contracts, or who are self-employed: have contributed more to the public pension system; display higher levels of income and homeownership; represent a greater percentage of person married or in a committed partnership. With regard to household composition, i.e. household size and presence of dependent children in the household, the figures for both participants and non-participants display similar values.

Figure 1 provides a greater detail concerning the dependent variables, displaying the mean rates of participation, as well as the net contribution. The data reveal that the participation rate decreased over the period analysed, from the maximum participation rate of 15.91 per cent in 2008 to the minimum of 9.11 per cent seven years later. Conversely, the annual net contribution increased slightly over this period. The annual net contribution of participants was €1,207.60 in 2008 and continued to increase steadily until reaching a maximum of €1,442.60 in 2015. Figure 2 shows the evolution of rates of participation in supplementary pension schemes based on the contributors' income level and demonstrates that this evolution, besides that of average contributions, has been conditioned by the non-negligible decrease in the number of contributors in the lowest income deciles.

3.3 Retirement saving: contributing or not to a pension plan and how much to contribute?

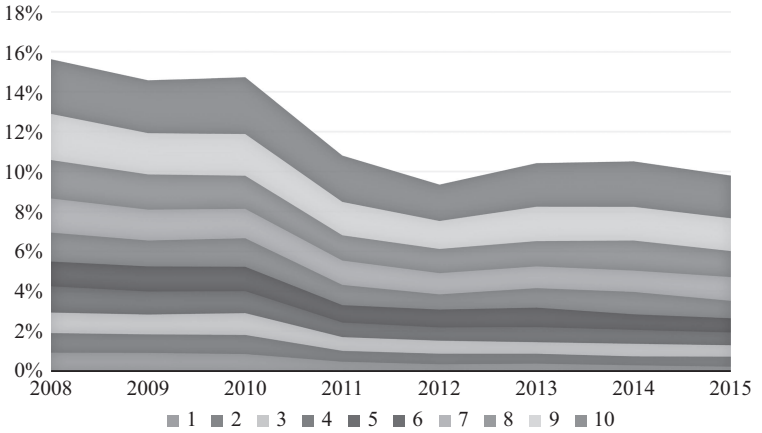
Table IV displays the results of the econometric analysis. Namely, the first and second columns summarise the coefficients and the average marginal effects of the probit model, respectively, analysing the decision to invest money in private and personal pension plans. The third column condenses the coefficients of the tobit model estimating the driving forces of the amount of money tied up in these financial assets. A first look at the data reveals that the driving forces of both decisions do not differ; only the gender variable seems to play a role in differentiation.



	2008	2009	2010	2011	2012	2013	2014	2015
Net contribution €	1,207.6	1,190.2	1,250.8	1,363.2	1,278.2	1,321.9	1,398.7	1,442.6
Participation %	15.91%	15.31%	15.33%	10.93%	9.28%	9.94%	9.69%	9.11%

Source: Authors' analysis based on LCS data

Figure 1.
Mean values of participation (%) and net contribution (€)



Source: Authors' analysis based on LCS data

Figure 2. Rates of participation in supplementary pension schemes based on the contributors' income level (%)

Empirical evidence reveals that the probability of investing in these financial assets and the quantity of money invested increase as people age (Fernández *et al.*, 2015; Lum and Lightfoot, 2003; Torricelli *et al.*, 2016), but only up to a point as the sign of the variable age squared is negative (Fernández-López *et al.*, 2012; Huberman *et al.*, 2007). Educational attainment also exerts a positive and significant effect. Thus, focussing on the probit results, compared to people who have completed primary education, those with lower secondary have on average 2.4 percentage points higher probability of taking out a supplementary pension plan and investing €408.10 more each year in these assets, *ceteris paribus*; those with upper secondary education have a higher probability of 3.8 percentage points and invest €606.70; those with higher education have a higher probability of 5.6 percentage points and invest €1,002.50 more. These results are consistent with Lum and Lightfoot (2003) for the USA and Torricelli *et al.* (2016) for Italy. Higher vocational education does not seem to play a role either in the decision to save money in private pension plans or the quantity of money invested.

Regarding employment status, the empirical evidence reveals that people who are self-employed have a greater probability of around 8.9 percentage points of saving for retirement and invest €1,228.50 more than those who are employed. Self-employers usually have lower replacement rates and lack of access to public early-retirement schemes (Radl, 2012) and, therefore, might be more likely to invest in supplementary pension schemes (Torricelli *et al.*, 2016). Fernández *et al.* (2015) reached similar results for self-employed people in different OECD countries, arguing than this positive effect might suggest that compulsory pension systems are mainly designed for employed people and thus they do not properly cover the self-employed, who sometimes might need to look for other alternatives to complement their retirement provision. Conversely, the results also show that those who are unemployed or out of the workforce – students, homemakers – both have a lower probability of around 2.6 percentage points of saving and invest on average €407.90 and €422.20 less, respectively, than employees. Van Groezen *et al.* (2009) indicated that unemployed people tend to rely more on public support and, therefore, they might have a stronger preference for public pensions rather than private ones; similarly, Torricelli *et al.* (2016) for Italy found that people who are not working have a lower probability of saving through private schemes.

The term of the job (contract) also affects the decision to allocate money and the amount saved in private pension plans. Those people with permanent employment contracts have a

	Probit model Dependent variable: 1 = individual has contributed to a private and personal pension plan; 0 = otherwise		Tobit model Dependent variable: contribution (in euros) to a private and personal pension plan
	Coef.	ME	Coef.
Age	0.122*** (0.004)	0.020*** (0.000)	282.979*** (11.943)
Age^2	−0.001*** (0.000)	−0.000*** (0.000)	−2.411*** (0.128)
Educational attainment 2	0.137*** (0.015)	0.024*** (0.002)	408.093*** (39.677)
Educational attainment 3	0.213*** (0.016)	0.038*** (0.002)	606.695*** (42.691)
Educational attainment 4	0.058 (0.073)	0.010 (0.010)	283.238 (212.083)
Educational attainment 5	0.313*** (0.015)	0.056*** (0.002)	1,002.534*** (47.334)
Self-employed	0.453*** (0.020)	0.089*** (0.004)	1,228.500*** (56.589)
Unemployed	−0.163*** (0.022)	−0.026*** (0.002)	−407.917*** (58.202)
Out of workforce	−0.163*** (0.021)	−0.026*** (0.002)	−422.210*** (57.340)
Term of job	0.294*** (0.017)	0.050*** (0.003)	681.152*** (46.805)
Years of contribution	0.006*** (0.001)	0.001*** (0.000)	14.627*** (1.515)
Marital status	0.108*** (0.012)	0.018*** (0.002)	260.773*** (32.464)
Gender: female	0.003 (0.010)	0.001 (0.001)	−62.897** (25.530)
Income	0.008*** (0.000)	0.001*** (0.000)	26.272*** (0.739)
Homeowner	0.223*** (0.015)	0.035*** (0.002)	592.337*** (39.456)
Mortgage	−0.040*** (0.010)	−0.007*** (0.001)	−225.988*** (27.142)
Household size	−0.180*** (0.007)	−0.030*** (0.001)	−551.318*** (22.011)
Children	0.090*** (0.009)	0.015*** (0.001)	277.175*** (24.928)
Dependent children	−0.087*** (0.013)	−0.015*** (0.002)	−235.713*** (34.962)
Year 2009	−0.051*** (0.016)	−0.008** (0.002)	−149.933*** (41.330)
Year 2010	−0.063*** (0.016)	−0.010*** (0.002)	−164.128*** (41.307)
Year 2011	−0.306*** (0.017)	−0.046*** (0.002)	−728.788*** (46.441)
Year 2012	−0.410*** (0.018)	−0.059*** (0.001)	−1,013.746*** (49.652)
Year 2013	−0.366*** (0.018)	−0.054*** (0.002)	−887.424*** (48.961)
Year 2014	−0.379*** (0.018)	−0.055*** (0.002)	−896.461*** (49.400)
Year 2015	−0.450*** (0.018)	−0.064*** (0.001)	−1,076.743*** (50.521)
Constant	−4.527*** (0.102)		−11,517.756*** (324.230)
Sigma			2,732.909*** (49.081)
Observations	165,791		165,791
R^2	0.171		0.0492
χ^2	13,260		
Log-likelihood	−50,607		−215,862
F-test			122.8
AIC	0.611		431,779.2
BIC	−1.891E+06		432,059.7
AUC	0.7948		

Notes: Robust standard errors are shown in parentheses. R^2 is a measure of the goodness of fit of the model. χ^2 is the Wald χ^2 test that contrasts the goodness of fit under the null hypothesis of no joint significance of the independent variables' coefficients. Log-likelihood is the value of the maximum likelihood function. The F-test is a measure of goodness of fit. Akaike information criterion (AIC) and Bayesian information criterion (BIC) evaluate the explanatory power of the models, allowing comparison of models, those with smaller values having greater explanatory power. The AUC (area under the curve) denotes a measure of accuracy. **,***Statistically significant at 5 and 1 per cent levels, respectively
Source: Authors' analysis based on LCS data

Table IV. Determinants of the decision to participate in private pension schemes (probit) and the volume of savings (tobit)

greater probability of around 5 percentage points of contributing to these financial products, which may be due to the economic stability that these contracts ensure. Moreover, they invest €681.20 more in retirement accounts than people with short-term or fixed-term contracts. As Torricelli *et al.* (2016) have demonstrated, the number of years of contribution to public pension schemes exerts a positive effect on the probability of contributing to

retirement accounts. The estimations reveal that a one-year increase in the time of contribution to public schemes is associated with a €14.60 annual increase in the predicted value of contribution.

Gender, which does not seem to constitute a driving force regarding the decision to allocate money to private retirement accounts, does affect the contributions people make to these financial assets. Spanish women invest €62.90 less than men in private pension schemes. This result contradicts those of Chatterjee (2010), Fernández *et al.* (2015) and Lum and Lightfoot (2003), who found that men made fewer voluntary contributions than women. However, our result might be explained by the explicit links to earnings as despite the increases in women's employment, many opportunities are still in part-time and poorly paid employment (Foster and Smetherham, 2013).

Marital status has a non-negligible impact on the decision to allocate money to private pension plans and the amount of money saved, as found by DeVaney and Chiremba (2005), Fontes (2011), Fornero and Monticone (2011) and Torricelli *et al.* (2016). Empirical evidence shows that people in a marriage or common-law partnership have a greater probability of 1.8 percentage points of having a private pension plan on average than those who do not have a formal commitment, ceteris paribus. Furthermore, those who have a formal commitment invest €260.80 more than people in other marital status.

Household size reduces the probability of investment, as well as the amount of money people tie up in supplementary pension schemes. Specifically, each additional person in the household reduces the annual amount contributed by €551.30. When focussing only on the number of children in the household, the econometric analysis reveals that this independent variable exerts a positive influence, namely, each additional child increases the annual contribution to private plans by €277.20. Having offspring might foster retirement savings, as parents usually try to leave an inheritance to their children. Empirical evidence also confirms that having any children in the household needing financial support from their parents exerts a negative effect. Indeed, those respondents with dependent children have a lower probability of 1.5 percentage points of saving on average and this also reduces the amount of money that they invest in individual pension plans by €235.70. The economic needs of children might discourage parents from investing money in private pension schemes, thus constituting an opportunity cost. This result differs from the non-significant effect found by Fernández *et al.* (2015) for the Spanish case, as well as Foster and Smetherham (2013) for a sample of British men. Nevertheless, these latter authors found that the presence of dependent children in the household seems to discourage women from participating in voluntary retirement schemes, which is consistent with the empirical evidence of this research.

Regarding economic variables, both income and housing tenure have a significant effect on the decision to participate in private pension schemes and on the amount saved. In particular, an increase of €1,000 in the income level of a household would be associated with an annual increase in retirement contributions of €26.30. Homeowners have a greater probability of 3.5 percentage points saving for retirement on average and they invest €592.30 more than people with a different housing tenure. This finding is consistent with the empirical evidence found by DeVaney and Chiremba (2005) and Fontes (2011) for the case of the USA, but it differs from the negative effect found by Torricelli *et al.* (2016) for the Italian case. Fernández *et al.* (2015) found a positive effect of income and homeownership on contributions to private pension schemes, while Chatterjee (2010) only found a significant effect of family income.

A negative association is found in this research between participation in private retirement schemes and the holding of a mortgage on the primary residence, i.e. homeowners who do not have a mortgage on their properties display greater probabilities of contributing to a voluntary pension plan. Moreover, among homeowners, those who have a mortgage on their

property would invest annually €225.99 less annually in private pension plans. Mortgage payments familiarise individuals with financial instruments, but they also seem to constitute a barrier that discourages individuals from investing in private pension plans.

Finally, the dummies capturing time aggregate effects reveal that compared to 2008, the following years lead to a lower probability of private saving for retirement and a reduction in the annual amount of money allocated. This effect might be related to the economic and financial crisis initiated in Spain in 2008 during the world financial downturn of 2007–2008. Specifically, the probability of participation shrank from 0.8 percentage points in the 2009 survey, to a lower probability of 6.4 percentage points of individuals saving in the 2015 survey. Compared to participants in the 2008 survey, the 2009 survey participants reduced their contributions to pension plans by €149.90, while the 2011 and 2015 survey participants reduced their contributions by €728.80 and €1,076.70, respectively.

3.4 The role of income in the determinants of saving for retirement

As previously mentioned, the empirical evidence confirms that income constitutes one of the driving forces for private retirement savings. As was also found by Huberman *et al.* (2007), Lum and Lightfoot (2003) and Torricelli *et al.* (2016), the probability of saving for retirement increases as the household income level rises, i.e. as individuals earn more, they have more resources available to subscribe to voluntary pension schemes. In this regard, an analysis of the effect of the independent variables on the decision to participate in individual pension plans for the different income groups was considered (data are available upon request). The aim of this analysis is to examine whether the effect of the independent variables on pension plan participation might differ depending on the income level based on a confidence interval of 95%.

In terms of the effect of age, the empirical evidence reveals that there is an inverted U-shaped relationship between age and the probability of participation in individual pension plans. The maximum probability of participation is reached at an older (younger) age for those in the highest (lowest) deciles of income distribution.

Concerning educational attainment, it seems that the effect of having completed lower (Educational attainment 2) and upper (Educational attainment 3) secondary education is lower than that estimated by the global probit model for those in the lowest deciles of income distribution, but the differences are small. The same is true for the effect of having completed tertiary education (Educational attainment 5), even though the effect is greater in the case of people in the highest deciles of income distribution. For people with this level of educational attainment, the difference between the groups is close to 8 percentage points (i.e. higher education increases the probability of participation in a private pension plan by 10 percentage points in the case of people in the highest deciles, while this probability increases by around 2 percentage points in the case of people in the lowest income levels).

Being self-employed has a lower impact than that predicted by the global model in the case of people with a lower income, while being out of the workforce has a lower impact than predicted in the case of people in the highest decile of the distribution and a lower impact than predicted in the global model for people in the lowest deciles.

Being married or in a common-law partnership seems to exert a greater impact than expected in the case of people in the highest decile of income distribution. Being female seems to exert different impacts. Women display a greater probability of participation than men when both belong to the lowest income level, whereas women display a lower probability of participation than men when both belong to the highest income level. It should be noted that this variable was not significant in the global model – the one not considering the existence of different income groups – and, therefore, this result could explain the different impact of this variable found in previous studies, being one of the main contributions of this paper.

Overall, the effect of having an own property does not vary by income level. However, the effect of having a mortgage seems to be overestimated in the case of the highest income level, i.e. the wealthiest people with mortgages seem to save less than expected by the global model. This can be explained by the fact that the purchase of housing is frequently considered an investment for retirement at the highest income level and thus there may be a potential trade-off between private pension plans and homeownership (Torricelli *et al.*, 2016).

Also notable are the differences by income level found for the years 2012 and 2015. In both cases, the impact of time on the probability of saving through pension plans seems to be underestimated in the case of people in the lowest income levels and overestimated in the case of people in the highest income deciles. That is, 2012 and 2015 both had greater negative impacts on the highest income level (compared to 2009). Thus, there are unobservable characteristics that reduce the probability of participating in the highest income deciles, for example, the reduction in tax incentives to contribute to pension plans.

Table V shows a synthesis of the results obtained from the global sample and from the sub-samples by income decile regarding the analysis of the driving forces for the decision to participate in supplementary pension plans.

Income not only influences the decision to participate in private pension plans, but also the amount of money that people tie up in these financial products. Overall, the graphs on the effects by income deciles of each of the independent variables (data are available upon request) for the impact of age on contributions to supplementary pension plans by income group reveal significant differences. As predicted by the tobit global model, the impact of age on pension plan contributions will have an inverted U shape, i.e. contributions will increase as people age, reaching a maximum, then from that age onwards the increase will take place at a decreasing rate. This maximum will be reached at a younger age in the case of people in the lowest income deciles and at older age in the case of people who enjoy higher income levels.

Concerning educational attainment, it seems that its positive effect might be greater in the case of people in the highest decile of the income distribution, especially for upper secondary and tertiary education. In the latter case, apart from the existence of significant differences among income levels, the empirical evidence reveals that the tobit global estimate might be overestimated considering the estimates from the second to the eighth income deciles.

In relation to employment status, it seems that the effect of being self-employed, unemployed or out of the workforce does not significantly vary by income level, despite the fact that some minor differences are found. Neither the effect of term of job (contract) nor the years of contribution to the public pension system significantly differ by income level.

Marital status seems to exert a significant influence on private contributions to pension plans only for those people in the lowest and highest deciles of the income distribution, who would contribute more than predicted by the initial global tobit estimate (€260.80). Analogously, the effect of gender would also significantly differ for the aforementioned income deciles. In particular, gender presents a downward trend as household income increases. Thus, women in the first decile of the income distribution would contribute significantly more than men at the same income level to private pension schemes, while women in the 10th decile would invest less money than men in these financial assets.

Overall, the effect of homeownership does not seem to differ significantly by income decile at a 95% confidence interval. In the case of mortgages, the empirical evidence reveals that for those people in the highest decile of income distribution, the impact of having a mortgage on the main residence seems to be even more negative than expected, compared to people within the same income decile who do not have a mortgage. Concerning the impact of household composition variables – namely, household size, number of children and dependents – they seem to not diverge by income level.

Table V. Synthesis of results by income decile – retirement saving decision (probit)

Variables	Global probit	Income deciles 1	2	3	4	5	6	7	8	9	10
Age	+	+ (<)	+ (<)	+ (<)	+ (<)	+ (<)	+ (=)	+ (>)	+ (>)	+ (>)	+ (>)
Age^2	–	– (<)	– (<)	– (<)	– (<)	– (=)	– (=)	– (>)	– (>)	– (>)	– (>)
Educational attainment 2	+	No	+ (=)	+ (=)	No	No	+ (=)	+ (=)	No	+ (=)	+ (=)
Educational attainment 3	+	+ (<)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	No	+ (=)	+ (=)
Educational attainment 4	No	No	No	No	No	No	No	No	No	No	No
Educational attainment 5	+	+ (<)	+ (=)	+ (=)	+ (<)	+ (<)	+ (<)	+ (=)	+ (=)	+ (=)	+ (>)
Self-employed	+	+ (<)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)
Unemployed	–	– (=)	– (=)	No	No	No	No	– (=)	– (=)	– (=)	No
Out of workforce	–	– (=)	No	No	No	– (=)	No	– (=)	– (<)	– (<)	– (=)
Term of job	+	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (>)
Years of contribution	+	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	No	+ (=)
Marital status	+	+ (=)	+ (=)	+ (=)	No	+ (=)	No	No	No	No	+ (>)
Gender: female	No	+	No	No	No	No	No	No	No	No	–
Homeowner	+	+ (=)	+ (<)	+ (=)	+ (=)	+ (=)	No	+ (=)	+ (=)	No	No
Mortgage	–	No	No	No	– (=)	– (=)	No	No	No	No	– (>)
Household size	–	– (>)	– (=)	– (=)	– (=)	– (<)	– (<)	– (<)	– (=)	– (=)	– (=)
Children	+	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	No	+ (=)	+ (=)
Dependent children	–	No	No	– (=)	– (=)	No	– (=)	– (=)	– (>)	– (=)	– (=)
Year 2009	–	No	No	No	– (=)	No	No	– (=)	No	– (=)	No
Year 2010	–	No	No	No	– (=)	No	No	– (=)	– (=)	– (=)	No
Year 2011	–	– (<)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)
Year 2012	–	– (>)	– (>)	– (>)	– (=)	– (>)	– (=)	– (=)	– (=)	– (<)	– (<)
Year 2013	–	– (>)	– (>)	– (=)	– (=)	– (<)	– (=)	– (=)	– (=)	– (<)	– (=)
Year 2014	–	– (>)	– (>)	– (>)	– (=)	– (=)	– (=)	– (=)	– (=)	– (<)	– (=)
Year 2015	–	– (>)	– (>)	– (>)	– (=)	– (=)	– (=)	– (=)	– (=)	– (<)	– (<)

Notes: +/– denotes a statistically significant positive/negative effect of the variable on the probit estimate; "no" denotes that the variable was not statistically significant in the probit estimation; = denotes that the variable does not present statistically significant differences in the model by income decile with respect to the global model; > / < denotes that the variable obtained a statistically higher/lower value in the model by income decile with respect to the global model

Source: Authors' analysis based on LCS data

Finally, with regard to the time variables, the empirical evidence shows that the effects of time dummies do not significantly vary by income level. The only notable finding is the effect of some of these variables for the people in the lowest decile of income distribution. Compared to the reference year 2008, the impact of years 2011, 2013, 2014 and 2015 on private pension contributions might be underestimated by the global tobit regression model in the case of people whose income level is in the first decile of the distribution.

Table VI shows a synthesis of the results regarding the determinants of the quantity of money saved in individual pension plans obtained from the global sample and the sub-samples by income decile.

4. Conclusions

In the coming years, western societies are set to experience a noteworthy ageing of their populations. In Spain, this important societal challenge has called into question, especially in the context of the financial crisis, the sustainability of its pension system, traditionally dominated by a robust public pension pillar. As a response, the Spanish Government is trying to alleviate it by fostering the development of private pensions as a complement for public income. Therefore, analysis of the driving forces of the participation and contribution to supplementary pension schemes is necessary to identify, albeit tentatively, the motivation of people to invest in these financial assets. Moreover, as Lusardi and Mitchell (2011) highlight, planning for retirement pays off, as those who plan their retirement end their working life with three times the amount of wealth of non-planners.

Overall, this paper confirms and reinforces previous results concerning the impact of socio-demographic and economic variables on participation and monetary contribution to individual pension plans over the period 2008–2015 in Spain. The empirical evidence reveals that the driving forces of the decision to save for retirement through individual pension plans and the amount of money allocated to these financial assets are very similar. Moreover, the empirical evidence confirms that income distribution plays an outstanding role when analysing these issues. Focussing on gender, this variable does not constitute a significant determinant of the decision to save money for retirement in a private retirement plan, but it negatively and significantly affects the quantity of money saved. Spanish women invest less than men in private pension schemes, which could be explained by their lower earnings. In fact, previous literature found that the probability of women concerning voluntary savings for retirement is lower than that of men, as corroborated by Fontes (2011) and Lum and Lightfoot (2003) in USA; Fornero and Monticone (2011), Ricci and Caretelli (2017) and Torricelli *et al.* (2016) in Italy; Banks and Oldfield (2007) and Changwony *et al.* (2015) in the UK, and Fernández-López *et al.* (2012) in Europe. As Foster and Smetherham (2013) point out, most women have part-time jobs and their wages are still low compared to men, which could at least partly explain this negative relationship. However, our result contradicts the evidence obtained by Chatterjee (2010), Fernández *et al.* (2015) and Lum and Lightfoot (2003), who found that men made lower voluntary contributions than women. According to these authors, the greater risk aversion of women, compared to men, generates that their probability of saving for retirement is higher. This can be enhanced by two reasons: the longer life expectancy of women and, consequently, the longer retirement period that they must finance by generating more resources during their working life; and the fact that women know that public pension systems rely to a large extent on the income obtained during their working life – of smaller amount for them compared to men, as previously indicated – and consequent need to compensate these future inequalities with a greater volume of private savings before retirement. In our opinion, these contradictory results found by the previous financial literature regarding gender could be explained considering that the gender effect might depend on the income level, i.e. the effect of gender is related to the

Table VI. Synthesis of results by income decile – retirement saving amount (tobit)

Variables	Global tobit	Income deciles 1	2	3	4	5	6	7	8	9	10
Age	+	+ (=)	+ (<)	+ (<)	+ (<)	+ (<)	+ (<)	+ (=)	+ (=)	+ (>)	+ (>)
Age^2	–	– (=)	– (>)	– (>)	– (>)	– (>)	– (>)	– (=)	– (=)	– (<)	– (=)
Educational attainment 2	+	No	+ (=)	+ (=)	No	No	+ (=)	+ (=)	No	+ (=)	+ (=)
Educational attainment 3	+	+ (=)	+ (=)	+ (=)	+ (<)	+ (=)	+ (=)	+ (<)	No	+ (=)	+ (>)
Educational attainment 4	No	No	No	No	No	No	No	No	No	No	No
Educational attainment 5	+	+ (=)	+ (=)	+ (<)	+ (<)	+ (<)	+ (<)	+ (<)	+ (<)	+ (=)	+ (>)
Self-employed	+	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (<)	+ (<)	+ (<)	+ (=)
Unemployed	–	– (=)	– (=)	No	No	No	No	– (=)	No	– (=)	No
Out of workforce	–	– (=)	No	No	No	– (=)	No	– (=)	– (=)	– (=)	– (=)
Term of job	+	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (<)	+ (<)	No	+ (=)
Years of contribution	+	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	No	+ (=)	+ (=)	No	+ (=)
Marital status	+	+ (>)	+ (=)	+ (=)	No	No	No	No	No	No	+ (>)
Gender: female	–	No	No	No	No	No	No	No	No	– (<)	– (<)
Homeowner	+	+ (=)	+ (=)	+ (<)	+ (=)	+ (=)	No	+ (<)	+ (=)	No	+ (=)
Mortgage	–	No	No	– (=)	– (=)	– (=)	No	– (=)	– (=)	– (=)	– (<)
Household size	–	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)	– (<)
Children	+	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	+ (=)	No	+ (=)	+ (=)
Dependent children	–	No	– (=)	– (=)	– (=)	No	– (=)	– (=)	– (<)	– (=)	– (=)
Year 2009	–	No	No	No	No	No	No	– (=)	No	– (=)	No
Year 2010	–	No	No	No	– (=)	No	No	– (=)	– (=)	– (=)	No
Year 2011	–	– (<)	– (=)	– (>)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)	– (=)
Year 2012	–	– (=)	– (>)	– (>)	– (=)	– (>)	– (=)	– (=)	– (=)	– (=)	– (<)
Year 2013	–	– (<)	– (=)	– (=)	– (=)	– (>)	– (=)	– (=)	– (=)	– (=)	– (=)
Year 2014	–	– (<)	– (=)	– (>)	– (=)	– (=)	– (>)	– (=)	– (>)	– (=)	– (=)
Year 2015	–	– (<)	– (=)	– (>)	– (=)	– (=)	– (=)	– (>)	– (=)	– (=)	– (=)

Notes: +/– denotes a statistically significant positive/negative effect of the variable on the probit estimate; "no" denotes that the variable was not statistically significant in the probit estimation; = denotes that the variable does not present statistically significant differences in the model by income decile with respect to the global model; > / < denotes that the variable obtained a statistically higher/lower value in the model by income decile with respect to the global model

Source: Authors' analysis based on LCS data

income stratum to which the individual belongs. Namely, the empirical data in this paper confirm that women in the lowest deciles of income distribution are more likely than men to participate in private pension plans and contribute more money, whereas women in the highest income decile display a lower probability of participation than men in the same income stratum and contribute significantly less.

This paper presents theoretical and managerial implications. The design of effective policy interventions aimed at fostering financial savings for retirement, makes it necessary to comprehend the underlying driving forces of this decision. This paper contributes to the discussion of the driving forces of this financial decision focussed on Spain that, compared to other European countries, is characterised by a supplementary pension system that is still underdeveloped and a greater reliance on public pension schemes. Hence, the results might be extrapolated to other similar countries in Southern Europe, namely, Italy (Torricelli *et al.*, 2016), Greece and Portugal. Once the driving forces of this decision is known, the following step will be the proposal of recommendations aimed at improving the financial planning of Spanish households, by fostering the participation in voluntary pension schemes.

The empirical evidence reveals that the driving forces that influence both the decision to save for retirement through individual pension plans and the amount of money allocated to these financial assets are very similar. Among these driving forces, our empirical evidence confirms that income distribution plays an outstanding role. Thus, some differences arise when analysing the effect of the driving forces of private and personal saving for retirement depending on different income levels. Future research should consider it and not only study if the probability of contribution to a pension plan or the amount of money devoted to it would be greater or lower depending on income, as previous literature traditionally did. The consideration of different income stratums is important because it might influence the effectiveness of the stimulus measures aimed at fostering private retirement savings.

This research has analysed a recent time horizon (2008–2015), which is characterised by a new economic and social context, so it contributes to the literature on the topic by enhancing knowledge of individuals' saving behaviour in this new context. In fact, Spain is, according to Eurostat statistics, one of the EU countries with the greatest inequality in the income distribution. Particularly, in 2015 the income quintile share ratio in Spain was almost 7, only being surpassed by Lithuania. In Spain, there exist a great proportion of workers with low or very low income, which limits their contributions to the Social Security System, and therefore, their future pension benefits. If the privatisation of pensions systems goes further, income inequalities at the time of retirement will increase. Therefore, any policy geared towards improving the participation in private pension should take into account the difficulties of participation of low-income households that are those people who would need it the most.

To sum up, this paper has implications for individuals, policy makers and the banking and insurance industry. As Romero *et al.* (2014) also pointed out, the responsibility for getting an attractive environment for household saving and investment is a responsibility shared by the three economic agents previously mentioned. The design of measures to foster household financial activity should bear in mind the need of considering the different characteristics of people, and sometimes, the need of targeting. Thus, these agents should adjust the policy and marketing strategy on supplementary savings for retirement and should not apply "one-size-fits-all" policies, considering the heterogeneous nature of individuals, as well as the different impact of policies and measures depending on income level. The design of tax incentives becomes critical, and to some extent, it should be differentiated by income levels, in order to effectively foster voluntary pension plans taking into account, among other facts, that the effect of gender varies by income level as reveals the empirical data of our paper. Moreover, as this empirical research confirms, having a

mortgage negatively affects savings in individual pension plans, especially in those households with higher incomes. Thus, tax deductions related to the amortisation of the mortgage might result in a trade-off between housing and supplementary pension plans, favouring the purchase of housing with mortgage loans as a tool to finance retirement. Similarly, our findings should enable decision makers to develop more accurate policies by considering age, educational level and the environment (time effect), which also showed a significantly different impact depending on the income level.

This paper has some potential limitations that require further research. Although we made an effort to obtain a large and representative sample (165,791 observations), it only relates to the Spanish case. While the study of the Spanish case is in itself remarkable, as ageing statistics point out that Spain will be one of the countries with the oldest populations in Europe, it would be interesting to extend the study to other countries as a line of further research. This extension would allow analysis of the potential effect of the social model considering the particularities of other countries. Similarly, it would be advisable to include a proxy variable for financial literacy among the driving forces, as prior financial literature highlights its importance (Bucher-Koenen and Lusardi, 2011; Lusardi and Mitchell, 2014). However, the use of secondary data limited its inclusion.

Note

1. According to the Employment Service of the Spanish Government, only 6 per cent of new employment contracts were indefinite and on a full-time basis in 2016, whereas this figure was 11.96 per cent in 2007.

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Corresponding author
Milagros Vivel-Búa can be contacted at: mila.vivel@usc.es

Reasons to switch: empowered vs less powerful bank customers

Jeanette Carlsson Hauff
Department of Marketing,
Gothenburg School of Business, Economics and Law, Gothenburg, Sweden

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Abstract

Purpose – The purpose of this paper is to contribute to the existing literature of driving and impeding switching factors by operationalizing the catalyst factor of perceived power among customers. Acknowledging the importance of trust in a financial context, a trust-based framework for the analysis is used. The study explicitly analyzes factors of importance for subsequent switching of banks for empowered customers (i.e. savers) and low-on-power customers (i.e. borrowers).

Design/methodology/approach – The study measures factors driving or impeding switch of service provider, together with measures of trust and power using online survey methods. The sample is intended to focus on savers and borrowers, defined quantitatively as well as perception wise. Through a multi-group SEM analysis, differences between the samples of savers and borrowers are analyzed. The dependent variable was in both cases inclination to switch.

Findings – The paper manages to define differences between empowered and less empowered customers, such as borrowers and savers. The mediating effect of trust prevails only for borrowers: here, the only effect on switching behavior stems from a full mediation of stability through trust. For savers, direct influences of both service failure and lack of involvement on trust are of major importance. The importance of trust, however, is lacking; for the sample of savers, the link between trust and switching behavior is insignificant.

Practical implications – The results may be used as a tool box in order to address consumer switching behavior and mobility in the financial services market. The biggest obstacle for switching banks among savers is the low level of involvement. This has clear implications regarding how to increase switching, e.g., by raising interest. Focusing instead on borrowers, stability of the chosen financial institution turned out to be the most important factor.

Originality/value – This paper introduces a view on consumer switching behavior, taking into account differences regarding service provider relations (empowered savers vs less empowered borrowers) and the importance of trust in these two settings. The paper introduces trust as a mediator between switching behavior and four determinants: stability, personal relations, service failure and internet-related issues, and involvement.

Keywords Consumer behaviour, Trust, Financial services, Switching behaviour

Paper type Research paper

Introduction

Consumer loyalty and switching behavior are topics that have received ample academic attention during the last two decades (e.g. Jiang *et al.*, 2014). The picture of a loyal customer remaining in an existing relation is valid for a number of industries, such as the financial services industry. A number of surveys from a variety countries assess that the majority of bank customers are reluctant to switch: 73 percent of bank customers are loyal in a Dutch survey (ACM, 2014), 71 percent in a study from Canada (EY, 2013), whereas a slightly lower percentage (60 percent) of loyal customers was obtained in a British study (CMA, 2015). This latter survey might be indicative of the direction that switching behavior is going: switching rates have lately increased on average by 15 percent – and in some geographical markets significantly more (Barroso and Picón, 2012). In a pre-study focused on the Swedish bank market (explained further in the text), we obtain higher loyalty levels (around 80 percent), but are able to verify the trend of increased switching when comparing the recent pre-study to similar studies in 2001 and 2009. This implies that the need to understand consumer switching behavior now is more prevalent than ever before; retaining loyal customers and avoiding the damaging switching behavior of the

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customer base has always been of paramount importance in order to maintain profitability, and recent development has made switching behavior even more critical (Manrai and Manrai, 2007). Switching from one service provider to another will, however, not only impact the company in question. The observed immobility and reluctance to switch service provider among customers is something that has also received attention from both legislators and authorities; simply because the observed behavior may translate into negative monetary effects for the individual consumer (Van der Cruijsen and Diepstraten, 2017).

Switching behavior has frequently been studied also from a theoretical point of departure. Much elaboration has been directed toward the industry level, focusing on market efficiency and the importance of disloyal consumers in ensuring sound competition (see World Bank, 2012 for an overview). Further studies have focused on the importance of loyal consumers for the profitability of the individual service provider (Gronroos, 1989; Helgesen, 2006). The relative importance of economies of scale in service industries is further noted, making switching behavior even more relevant to understand in a service context (Keaveney and Parthasarathy, 2001). Finally, on the individual consumer level, a magnitude of consumer behavior-focused research has highlighted aspects of switching service provider (e.g. Liang *et al.*, 2013). In their meta-article of switching behavior literature, Chuang and Tai (2016) hence conclude that the literature on customer switching behavior is well developed (p. 934).

Inherent in all studies of customer switching behavior lies an implicit assumption regarding the underlying provider–customer relation. Deciding to switch service provider inevitably implies terminating an existing relation, with all the pros and cons for the customer that this entails. This paper argues that understanding switching behavior necessarily implies understanding the nature of the essential service relation. The combination of underlying drivers ultimately ending up in a decision to switch service provider is, it is argued, firmly associated with the very relation between the provider and the customer: the balance-of-powers between the two and subsequently the perceived trust on behalf of the customer.

One specific example of a provider–customer relationship is the connection between a bank and its customers. This relationship is not a uniform, straightforward connection. Rather, it could be assumed that this relation be distinctly different depending on whether the bank customer views himself as a saver or as a borrower. The savings relation may be seen as a relation where the customer is empowered, in charge and practically assesses the creditworthiness of the financial counterparty in question and decides where to save for retirement, or where to hold a transaction account. This differs substantially from the relation between the relatively less powerful borrower and his or her bank, where the decision to apply for a mortgage loan implies a questioning of the applicant from the banks' point of view and hence uncertainty by the customer. In this sense, financial services make up almost a natural experiment when addressing the impact of the provider–customer relation on switching behavior: the relation with an empowered customer vs relatively powerless customers may potentially benefit from the analysis of savers and borrowers performed in this study.

Power has in previous studies been established as a psychological catalyst of consumer switching behavior (Jiang *et al.*, 2014). Furthermore, the literature regarding driving and impeding factors having a decisive impact on switching behavior is abundant (e.g. Chuang and Tai, 2016). The purpose of the present study is to contribute to the existing literature of driving and impeding switching factors by explicitly operationalizing the catalyst factor of perceived power among customers. Acknowledging the general importance of trust when analyzing consumer behavior in a financial context (Moin *et al.*, 2015), as well as the fact that a focus on power and empowerment borders the concept of trust (Jiang *et al.*, 2014),

a trust-based framework for the analysis is used. Hence, the study explicitly analyzes factors of importance for subsequent switching of banks for empowered customers (i.e. savers) and low-on-power customers (i.e. borrowers), respectively, taking into account the impact of perceived trust. The design of the analysis furthermore facilitates practical recommendations of substantial importance, explicitly addressing which levers to pull in order to promote switching behavior (from a legislators' point of view) or retain customers (from the banks' point of view) for the assumedly differing subgroups of borrowers and savers.

Theoretical framework

Switching behavior from a theoretical viewpoint

Consumer switching behavior, defined as replacing the current service provider with another provider (Bansal and Taylor, 2002), has been the focus of theoretical studies since the mid-1990s. During the initial exploratory phase with contributions from, among others, Keaveney (1995), the observed phenomenon of switching service provider was connected to underlying factors such as inconvenience, price, core service failure and competition. In this pursuit "pushing" factors, making an actual switch more likely, as well as "pulling" factors, encouraging customers to retain their current relationship were examined (Roos, 1999). A later meta-study addressed the relative importance of these predictor variables, and found that satisfaction (also commonly used as a mediating variable), switching costs and alternative attractiveness are the factors most commonly used in switching behavior studies (Chuang and Tai, 2016).

Subsequent research has further refined the models of switching determinants, performing correlational studies and adding social and psychological variables to construct an integrated model (e.g. Bansal and Taylor, 2002). Especially the psychological strand of research has proven to be of great importance when attempting to understand the switching behavior of the consumer (Jiang *et al.*, 2014). For example, the psychological trait of need of stimulation has been used as determinant of subsequent switching behavior, establishing that individuals in need of variety in choices will be more likely to switch (Kahn, 1995). The mediating effects of, e.g., commitment (Bansal *et al.*, 2004) and satisfaction (Antón *et al.*, 2007; Han *et al.*, 2013) have also been added, and over time a more comprehensive picture of the switching behavior of consumers has been obtained. This picture has gradually become even more fine-tuned, including factors such as the importance of descriptive norms (Zhang *et al.*, 2018), and perceptions of the service provider as innovative (Malhotra and Malhotra, 2013) on observed switching behavior. Given the development of many services being offered in a multi-channel framework, the specific focus on online vs offline switching behavior is obvious. The attitude to and adoption of these new channels has been investigated (Florenthal and Shoham, 2010) as well as the difference in customer loyalty in an online setting vs an offline setting (Fernándes-Sabiote and Román, 2012). Results indicate that there is a correspondence between online and offline loyalty and that offline loyalty seems to have a stronger effect on overall loyalty (Fernándes-Sabiote and Román, 2012).

The effects of empowered customers

Among the various psychological variables influencing switching behavior, as described above, it is conceivable that the construct of power or empowerment on behalf of the customer may be included. Power, here, defined as "asymmetric control over valued resources in social relations" (Magee and Galinsky, 2008, p. 361) has been proven to distinctly influence individual behavior (e.g. Jiang *et al.*, 2014) and more importantly to induce action orientation among individuals (Galinsky *et al.*, 2003). This influence points at power being a relevant factor in explaining switching behavior, a connection that is verified in an experimental

setting (Jiang *et al.*, 2014). High levels of induced power encourage individuals to switch, even when the current brand is perceived equal to the new one – simply due to the action involved (Jiang *et al.*, 2014). In this paper, it is argued that savers and borrowers represent two types of bank customers, with distinctively different characteristics regarding, e.g., the level of empowerment and subsequently different switching patterns. This theoretical underpinning of the use of power as a means to explain consumer switching behavior is strengthened with anecdotal evidence of Swedish bank customers, with experiences fresh from the Swedish financial crisis of the 1990s (where banks sometimes forced immediate repayment of loans given) being cautious regarding their relation with the bank they have borrowed money from, but are more willing to shop around with their retirement savings funds. These theoretical and empirical arguments as to why it is productive to analyze switching behavior will be matched with a methodological experimental design, aiming at obtaining two clear-cut samples of savers and borrowers, respectively.

Having established that power could have a decisive impact on observable consumer switching behavior, i.e., powerful customers do switch more than less powerful (Jiang *et al.*, 2014), the underlying relation between customer and service provider becomes central. This relation may be beneficial for the customer in several ways: private information gained by the bank during the relationship may be translated into offerings with better terms (Boot and Thakor, 1994). However, the more pronounced relational strength as well as the information acquired may also serve as an efficient lock in, preventing the customer from switching to another provider (Rajan, 1992). A switch of banks with this relational focus hence includes crucial aspects of the ongoing relation that may or may not act as "relational glue." It is this aspect, or pattern of driving and impeding forces behind a switch of bank provider that will be the focus of the present study going forward.

Furthermore, the products offered by a service provider are often far from a homogenous cluster. Previous studies have found that certain products within an offered range are perceived differently as regards potential gains and ease of switch (Van der Cruijsen and Diepstraten, 2017). The present study argues that the observations that consumers behave differently depending on type of product reflect something more innate than merely a difference in ease-of-use or cost arguments. With regards to the provider, customer relation literature provides ample references to the commitment established between the two parties, and how a relation and subsequent switching behavior may be understood in terms of level of trust held in the service provider (e.g. Jiang *et al.*, 2014). The present study argues that the customers' relation to the provider, and hence the importance of trust, will vary substantially between products and that it is productive to view these differences in terms of differences in balance-of-powers. Put simply, in a financial context, savings products reveal a certain relation between the bank and the customer, not because they are savings products *per se*, but because they imply a certain balance-of-powers between the provider and the customer.

Having introduced a trust-based view of the provider–customer relationship, and hence on subsequent switching behavior, the area of financial services presents unique possibilities to explicitly test this proposition. Inherent in the financial consumer–bank relation lies two very different relations: the saving relation where the customer has more of an unquestioned power to go elsewhere with the money saved, and the debt side relation, where the customer in capacity of borrower is dependent on the new bank approving a loan when attempting to switch. The difference in balance-of-powers, assumed to influence the relation between provider and customer, is hence naturally operationalized within the saving and borrowing relation, respectively.

This trust-based view regarding financial services also corresponds to a reasoning common within economics, where an informational asymmetry between borrower and lender exist (Stiglitz and Weiss, 1981). Again, the balance-of-powers or informational asymmetry between the parties involved will shape their relation in a pronounced way.

The importance of trust

The concept of trust may be defined as a deliberate decision from a person to rely, or "trust," another party to act on his or her behalf (Möllering, 2006). Involved are hence the two parties, the belief that the action performed by one party will be in the interest of the other party, and importantly also the existence of a possibility of the trusted party to defect, or to act maliciously. This latter prerequisite is hence a necessary part of the trust-building process, and for the purpose of the present study also a connection to the two defined customer–bank relations; the more static savings relation and the more vulnerable borrowing relation, where the bank assumedly has a possibility to – due to various reasons, both internal and external – engage in a behavior that could be negative for the customer.

Trust may hence in many situations be viewed as a tool used by the individual in order to reduce risk; in purchase situations, the lack of accurate information has been found to be compensated for by the use of trust (Sztompka, 2003). Trust has, in a broader context as well as in the more narrowly defined purchase-oriented framework, been found to have a number of positive consequences. A high level of trust has been found to positively impact both purchase intentions (Hong and Cho, 2011) and loyalty (Shainesh, 2012). Reciprocally, the organization in question may undertake certain actions in order to signal trustworthiness to its customers (Hardin, 2002). This study will use a few of these actions and connect them specifically to the service provider and consumers' switching behavior.

Driving or impeding factors regarding bank switching behavior

As has been described, the switching behavior literature contains several general models of factors inducing or deterring switching behavior. The ambition of the present study is not to present a complete model valid for all customers, but to introduce a framework including a limited number of underlying factors applicable for a study of empowered vs powerful bank customers in a trust-based framework.

The switching literature presents ample evidence of actual service failures, or an inability to fix what the customer perceives as a problem (in both an analog and digital setting), having a critical impact on consumer switching behavior (Colgate and Hedge, 2001). This central factor also comprises what Keaveney (1995) calls "service recovery failure," i.e. it is not only the mistake in itself that is critical, but also subsequent actions taken (or not taken) by the service provider in order to take care of the issue.

Traditionally, service failures incorporating personal relations with employees have been found to be a potential driver of switching behavior. This finding emanates from a stream of studies focusing on the importance of strong channel relationships for building trust, satisfaction and subsequently for repurchase intent (e.g. Morgan and Hunt, 1994). Especially in sectors with a large degree of standardization and commoditization, the relationship between the customer and the provider revolves around the sole ingredient than cannot be standardized, i.e. the personal relation between customer and employee (Chakravarty *et al.*, 2004).

In our study, both service failures and personal relations represent factors inducing a switch of banks. Against these two drivers stand factors that instead have an impeding effect on the consumer, hindering factors making a switch of bank less likely. One such hindering factor is the level of perceived financial stability of the service provider, or rather the combination of difficulties to judge *a priori* if a provider is financially solvent or not, together with the importance of financial stability as such (Brunetti *et al.*, 2016). This impediment contains a long-term perspective, and focuses on the predictability of the service provider (van Esterik-Plasmeijer and van Raaij, 2017). Given the difficulties for the customer to evaluate the provider, the risk of switching to another service provider, not knowing the financial situation of this new alternative, is simply in many cases viewed as implicating too high a risk level.

Last, the tendency to engage in habitual buying behavior, in the present study referred to as lack of involvement, also constitutes a hindering factor. As discussed in Wieringa and Verhoef (2007), this factor diverges from the rational decision-making narrative underlying, e.g. reactions to an unfair price. Such divergences are, however, not uncommon; the body of behavioral finance literature presents ample evidence of financial customers acting in a way that is at odds with the rational, economic man paradigm (e.g. Thaler, 2017). Several studies also explicitly provide evidence of this inertia exercising substantial powers over individuals' frequency of switching banks (Rust *et al.*, 2004). The present study distinguishes between emotional involvement and rational involvement. Emotional involvement would be connected to interest and value-oriented importance of an action such as a switch of provider, whereas rational or cognitive involvement would imply that the individual believes that the switch would make a difference. The view that "all service providers are alike" and that the monetary benefit of a switch would be limited could be an important hindering factor (Van der Cruijsen and Diepstraten, 2017).

Having theoretically outlined a framework of potential drivers and hindering factors as regards service provider switching behavior, the study now aims to test which of these factors that have a substantial impact on the actual switching action taken by empowered and less powerful bank customers, respectively, taking into account also the mediating effect of level of trust.

Hypotheses

The acknowledgment of the importance of trust in a financial setting enables us to formulate hypotheses regarding the relative importance of various drivers and hindering factors on the switching behavior of savers and borrowers, respectively.

The construct of trust has been deemed to be of especially high importance for banks and other financial service providers due to the specific characteristics of the financial service itself; intangibility, heterogeneity and credence attributes make it difficult to evaluate the service prior to or even after consumption (Ennew *et al.*, 2011). The high level of perceived risk connected to financial service further exacerbates the use of trust (Branca, 2008).

Given this observed importance of trust in a financial setting, a significant mediation of trust is expected for all customers. However, a relatively stronger effect is assumed regarding the customer that is more dependent on the bank, perceives the relation as riskier and has more to gain from maintaining the relationship, i.e. the customer characterizing himself as a borrower:

H1a. Trust will significantly mediate the impact of other drivers and impediments for all customers as regards switching of banks.

H1b. Trust will have a significantly larger mediating impact on borrowers than on savers as regards switching of banks.

In the literature a number of antecedents to trust are presented, some of which are more calculable in nature (i.e. built on cognitive assessments), whereas others are more affective, relying more on the benevolence of the counterparty to act in the individuals' best interest (Williamson, 1993). Ennew, Sekhon and Kharouf more specifically introduce a typology of various antecedents: integrity and consistency, competence and expertise, concern and benevolence, communications and shared values (Ennew *et al.*, 2011). This framework forms the platform for an assessment of the connection between the drivers of switching behavior and the trust construct; the stability variable may be viewed as a function of the possibility of a financially sound organization to act consistently and predictably toward the customer. Building on this reasoning, it is postulated that a preference for stability, or an unwillingness to risk switching and ending up with a less

solvent bank, will have a marked impact on level of trust (Ennew *et al.*, 2011), and through this mediating variable also on inclination to switch banks. Again, this impact is expected to be more marked for the less empowered borrowers, i.e. the bank customers for whom the relation is relatively more valuable:

H2a. Trust will have a mediating effect on the impact of stability on subsequent switching of banks.

H2b. The perceived level of stability of the bank will have a significantly larger positive impact on borrowers' inclination to switch than on savers'.

The literature further contains several studies pointing at the importance of personal relations: in a service context generally, and regarding the credence type of services represented by financial institutions specifically (Yim *et al.*, 2012). The importance of face-to-face interactions when building trust in a financial context has further been assessed (Howcroft *et al.*, 2003). Evidence even suggests that interpersonal relations are markedly more important in a borrower – lender context (Boot, 2000). This again serves as a foundation for the hypothesis that the personal relation, through trust, will be an efficient driver especially in a relation between a borrowing customer and a lending bank:

H3a. Trust will have a mediating effect on the impact of importance of personal relations with bank personnel on subsequent switching of banks.

H3b. The personal relations with bank personnel will have a significantly larger positive impact on borrowers' inclination to switch than on savers'.

Leaving the impact of trust, it is further postulated that the analysis will reveal some factors that have a direct effect on inclination to switch banks. Service failure and internet-related issues, such as a markedly negative service experience, have frequently been brought forward as important in explaining bank switching behavior (Colgate and Hedge, 2001) and it is hence hypothesized that the same pattern will appear in the present study. This is to say that, lacking the impact of trust, the foundation for a switching of banks will be a direct consequence of a failure to complete a transaction, a negative impression of the banks' home page or a failed meeting with bank personnel. Given the large hypothesized importance of trust in a borrowing relation, it is hypothesized that these direct effects instead will have a relatively larger impact on savers:

H4a. Trust will have a mediating effect on the impact of service failure and internet-related issues on subsequent switching of banks.

H4b. Service failure and internet-related issues will have a significantly larger positive impact on savers' inclination to switch than on borrowers'.

Finally, consumer behavior in a financial setting is often categorized by a markedly low level of involvement (Aldlaigan and Buttle, 2001). Acknowledging that substantial impediments to switching behavior emanate from the bank customer himself, the last hypothesis is that a similar pattern will prevail in the present study. Building on the documented prevalence of procrastination among financial customers (e.g. Zanjani *et al.*, 2016), and the fact that borrowers receive a monthly "reminder" of their choice and the subsequent monetary effects thereof, involvement is hypothesized to be a more important impeding factor for savers:

H5a. Trust will have a mediating effect on the impact of lack of involvement on subsequent switching of banks.

H5b. Lack of involvement will be a significantly larger hindering factor for savers' inclination to switch than for borrowers'.

Results

Pre-study

As stated, the ambition of this study is not to give a comprehensive picture of switching behavior of bank customers; rather few factors are selected on the premise that they may be of importance in the trust framework used. However, as an attempt to substantiate the relative importance of the four factors chosen, an exploratory pre-study was launched to a representative sample of 617 Swedish bank customers obtained from a panel database. From a literature review a large number of factors were identified, spanning from administrative hindering factors making a switch less likely, to service failures and personal factors (such as relocation or marriage) instead inducing a switch. All in all, 21 factors were identified, and each factor was represented by three items. These factors were later reduced to 10, using a confirmatory factor analysis. The respondents were further asked about whether they had switched banks, and were also asked to rate how important the various factors were to them when contemplating a switch. The results were rather surprising; when combined in one single regression model, the only factor that stuck out as significant (when controlling for age, gender, income and education but also for levels of objective and subjective financial knowledge) was lack of involvement. In other words, all the other factors failed to have an impact on actual switch of banks. Instead, one hindering factor – lack of involvement – proved to have a significant negative impact on respondents' inclination to switch. The results of the regression can be found in Table AI.

The saver–borrower study

To address the differences between the borrower and the saver, and to explicitly address the question of power, a second survey using a subset of the drivers and hindering factors used in the pre-study was administered to a sample of non-bank employed Swedish citizens from a Swedish panel database (sample characteristics in Table I). The respondents were asked an initial question pertaining to whether they had savings above SEK 500,000 or if they had borrowings over SEK 1,000,000. Selecting only those respondents with positive answers, the two groups formed were subsequently asked whether they perceived themselves primarily as savers/borrowers in their relation to their bank. Given a positive answer also on this question (i.e. an answer that corresponded to an amount saved or borrowed over the threshold), two independent samples of 206 savers and 201 borrowers were obtained, constituting the fundaments for subsequent analysis. These two groups are far from a representative sample. Rather, they are extreme groups, defined by the categorization of the respondent himself (into either saver or borrower), and a volume characteristic ensuring that the bank relation is of sufficient importance for the respondent. The methodology behind creating these two groups of respondents rests on the foundation that the perception held by the respondent (i.e. the answer to whether he or she primarily sees him- or herself as a borrower or a saver) is what guides behavior. It is highly likely that one individual may be both a saver and a borrower (most people have both a retirement savings account and a mortgage loan), but the important thing is how the individual identifies him- or herself, and hence what is perceived as most important.

The study is performed in Sweden, a country with a relatively high indebtedness: total outstanding debt amounts to BnSEK 3.5 (Swedish Bankers Association, 2017) and the average Swedish citizen has approximately MSEK 2.1 in loans (Finansinspektionen, 2017).

Table I. Descriptives of sample

Women (%)	47
Age, average (SD)	44.7 (13.5), min: 18, max 75
Education	5% no high school degree, 38% high school degree, 60% university/college degree
Monthly income, mean	4.1 (where 4: SEK 26.000–35.000 and 5: SEK 36.000–45.000)

Note: $n = 407$

The borrowing relation is characterized by mortgage loans (over 80 percent of outstanding debt to households is comprised by mortgages, Swedish Bankers Association, 2017), primarily with short maturity (implying that the loans are renewed every third month and the customer fully stands the risk of interest-rate hikes). The accumulated savings for Swedish households amounts to BnSEK 4.6, with about 35 percent stemming from bank deposits and 25 percent from life insurance and insurance-linked savings (Swedish Bankers Association, 2017).

Measurements

The variable of interest for the analysis is ultimately the inclination to switch from one bank to another, and hence this is the dependent variable of the model to be tested. Given our assumption that balance-of-power plays an important role, the factor trust and trustworthiness is also included in the model. Further, a number of explanatory variables are hypothesized to have an effect on switching behavior; either directly or through the mediating variable of trust. These explanatory variables would ideally include both trust-related variables, and also factors assumed to have a direct strong impact on inclination to switch bank. Trust-related variables in the study were exemplified by the variables personal relations and stability, and these were hence included in the model as explanatory variables. As for the factors with a general importance, the pre-study hinted at the lack of involvement being crucial in understanding bank consumers' behavior, and evidence from literature also indicates that a failed encounter with the bank may be a switching driver. These two variables were hence also added as explanatory variables in the model to be tested (Figure 1).

The measurement items of the four explanatory variables, as well as the mediating variable of trust and the segmenting variable of power, are shown in the following.

Stability is measured by three items, as adapted from van Esterik-Plaasmeijer and van Raaij (2017): "I have a sense that my bank is financially stable"; "I think my bank will be there in ten years' time"; and "I think that there is a small probability of financial surprises stemming from my bank," all anchored by "not at all important factor" and "very important factor."

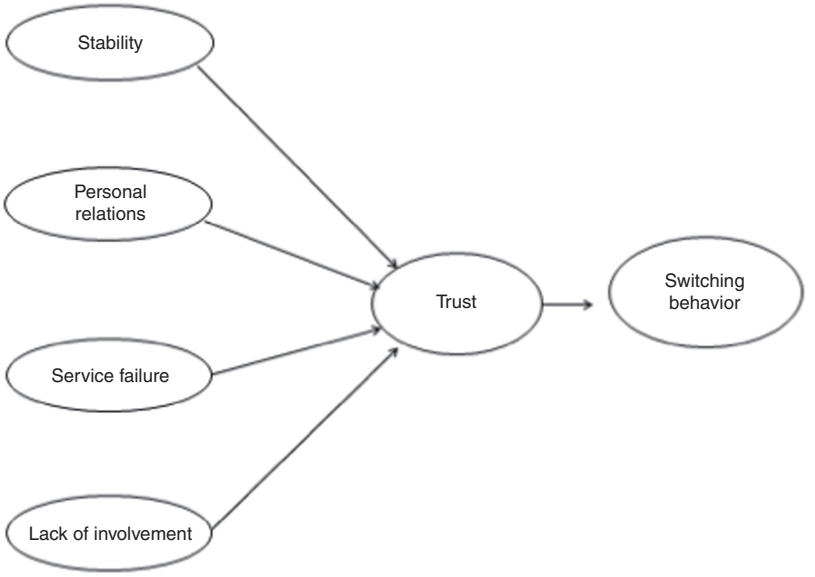


Figure 1.
Theoretical model

Construct reliability for the stability items (as for all the other measurement variables) is presented in Table V.

Personal relations are measured by four items, three of which stemming from relational obstacles to switch and one from relational drivers: "I have a personal contact at my bank and it would feel a bit like betraying him/her if switching"; "I think it would take some effort to find new bank contacts"; "I have faith in the personnel at my bank"; and "A switch would be likely if my personal contact at the bank had quitted," all anchored by "not at all important factor" and "very important factor." The items are inspired by Atorough and Salem (2016) but adapted to a potential switching context.

Service failure and internet-related issues are measured by four items; three of them specially focusing on internet failures and one on regular service failures: "I have a hard time logging into the internet bank"; "I perceive the structure of the internet bank as hard to understand and unclear"; "I have tried to perform a transaction at the internet bank but failed"; and "The bank failed to perform a transaction as promised," all anchored by "not at all important factor" and "very important factor." The items were adapted from Patterson *et al.* (2006) – mainly the distributive items – but were adjusted to reflect a context where internet-related failures play a greater role.

Lack of involvement pertains to both emotional and rational involvement, and builds on involvement being a goal-directed arousal capacity governed by two sets of motives (Park and Mittal, 1985). The four items used build on Carlsson Hauff (2014): three focus specifically on rational involvement and one on emotional. These items are: "The gain of switching banks would be too small in relation to the effort needed"; "I cannot manage to find the involvement needed to switch banks"; "It is comfortable to keep the old bank, even if it would be somewhat more costly"; and "I'm not interested in banks and bank-related matters," all anchored by "do not agree at all" and "fully agree."

The mediating variable trust is also depicted using items previously employed in earlier studies. It is measured by three items focusing on narrow-based trust, not trust in the financial system/sector as a whole but rather the respondents' trust in his or her own bank. The items are all adapted from Hansen (2012): "I trust my bank"; "I have a high level of faith in my bank"; and "I rely heavily on my bank," all anchored by "do not agree at all" and "fully agree."

Finally, the segmenting variable of balance-of-powers is used in order to connect the sample of borrowers and savers, respectively, to a perceived relation toward the bank. The items used are inspired by Zhang *et al.* (2018), but modified in order to better comply with a financial setting. The items are: "My bank is able to act in a way that may considerably affect me"; "I'm depending on the bank – to a much greater extent than the bank is dependent on me"; and "I'd say that the relation between me and my bank is not a relation between equals – I often feel inferior to the bank." The items that measured balance-of-powers were all anchored by "do not agree at all" and "fully agree."

Table II shows the mean and standard deviation for all measured variables.

Table II. Descriptive statistics of all measured variables

Variable	Mean (SD)
Stability[a]	4.34 (0.81)
Personal relation[a]	3.16 (0.93)
Service failure and internet-related issues[a]	3.94 (0.91)
Lack of involvement[b]	3.10 (0.99)
Trust[b]	3.85 (1.04)
Balance-of-powers[b]	3.25 (1.01)

Notes: [a]Measured on a five-point scale anchored by (not at all important factor, very important factor); [b]Measured on a five-point scale anchored by (do not agree at all – fully agree)

The dependent variable switching behavior is measured by a scale building on actual switching action taken place during the past three years. The steps in the scale are defined as: has neither switched, contemplated nor tried to switch; has contemplated switching; has tried to switch; and has switched. The steps from "has neither switched, contemplated nor tried to switch" to "has switched" are in the further computations treated as a Likert-type scale and hence treated as a continuous scale.

Our hypotheses all concern the underlying factors behind the decision to switch banks, and not the inclination to switch as such. As an illustration, however, a description of the actual switching behavior of savers and borrowers, respectively, is presented in Table III. The average of 2.77 for savers and 2.82 for borrowers corresponds to around 29 percent of the respondents having switched (29.9 percent for savers and 27.2 percent for borrowers). As can be seen in Table III, there is no significant difference as regards the inclination to switch for savers and borrowers, respectively.

Analysis of difference regarding balance-of-powers between saver and borrower sample

In order to be able to discuss the subsamples of savers and borrowers in terms of difference in balance-of-powers or empowerment, an analysis of the difference in the actual measured variable power between these two subgroups has to be performed. As stated above, balance-of-powers is measured with three items (reliability sufficient with a Cronbach's α of 0.667). A test of difference between the means of the two groups was performed and as can be seen in Table IV, the difference was statistically significant hence enabling us to refer to borrowers as less powerful and savers as more empowered.

Analysis of difference in driving and impeding factors between saver and borrower sample

All in all, the set of variables used in the analysis of underlying factors (drivers or impediments) contained only a few missing values (corresponding to well below 5 percent of total number of values) that were replaced by the median for the variable in question. The data set was also checked as regards skewness and kurtosis. A confirmatory factor analysis was performed and the variables included checked for validity and reliability. The composite reliability was found to be larger than 0.7 hence indicating reliability (see leftmost column in Table V). Furthermore, the average variance extracted (AVE, see Table V) was above 0.5, indicating convergent validity since variance shared with indicator items is then larger than with error variance (Hair *et al.*, 2010). Additionally, the square root of AVE (diagonal, in italics in Table V) was compared to correlation between factors (off-diagonal). For all variables, the square root of AVE was larger than the corresponding inter-construct

Sub-group	Mean (SD)	*t*-value	Significance
Borrowers	2.24 (1.22)	0.470	0.639
Savers	2.30 (1.26)		

Note: Switching is measured on a scale comprised by the steps (has neither switched, contemplated nor tried to switch; has contemplated switching; has tried to switch; has switched)

Table III. Difference in actual switching of banks between savers and borrowers

Sub-group	Mean (SD)	*t*-value	Significance
Borrowers	3.47 (0.99)	−4.455	0.000
Savers	3.03 (0.98)		

Note: Balance-of-powers is measured on a five-point scale anchored by (do not agree, fully agree)

Table IV. Difference in measured balance-of-powers between savers and borrowers

correlations, hence indicating discriminant validity (Hair *et al.*, 2010). This was confirmed by comparing the maximum shared variance (MSV) with the AVE; for every variable AVE was larger than MSV.

Multi-group analysis in Amos Graphics was employed in order to analyze the difference between savers and borrowers. First, invariance tests were employed across the two groups of savers and borrowers (Bentler, 1990). Table VI shows the different types of invariance tested for, with the χ^2-test for all imposed restrictions rejecting the hypothesis of difference between the groups.

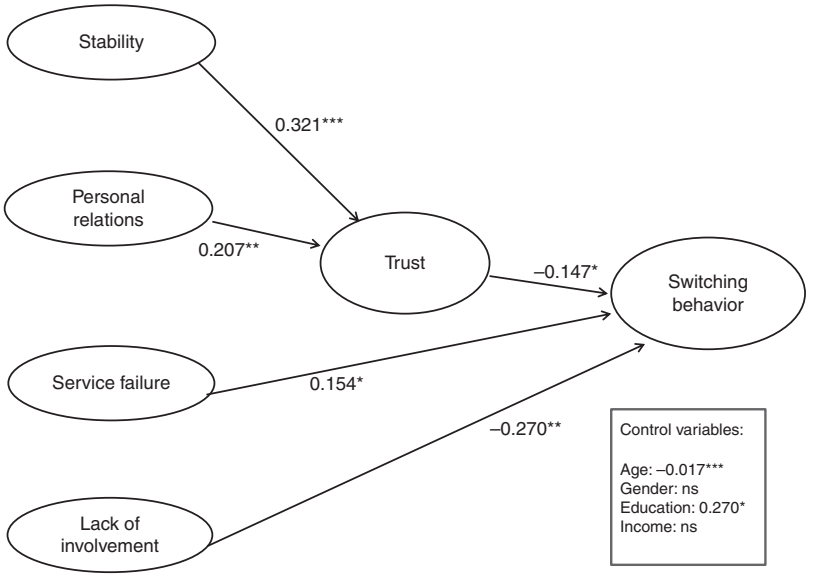
The results of the SEM-analysis revealed that several paths had a significant impact on switching behavior. Figure 2 shows the significant relations for switching behavior: full

Table V. Composite reliabilities, average variance extracted, maximum shared variance, square root of AVE (italic in diagonal) and inter-construct correlations

Factor	CR	AVE	MSV	Involvement	Failure	Relations	Stability	Trust
Lack of involvement	0.810	0.520	0.184	*0.721*				
Service failure	0.835	0.566	0.231	0.125	*0.752*			
Personal relations	0.796	0.501	0.366	0.344	0.123	*0.708*		
Stability	0.845	0.645	0.231	0.120	0.481	0.164	*0.803*	
Trust	0.946	0.854	0.048	0.140	0.024	0.219	0.203	*0.924*

Table VI. Test for configural, metric and scalar invariance

Switch	χ^2/df	*p*-value	TLI	PCFI	CFI	RMSEA
Configural model	1.719	0.000	0.927	0.798	0.938	0.042
Metric model	1.679	0.000	0.931	0.827	0.939	0.041
Scalar model	1.671	0.000	0.932	0.861	0.937	0.041



Notes: $*p<0.05$; $**p<0.01$; $***p<0.001$

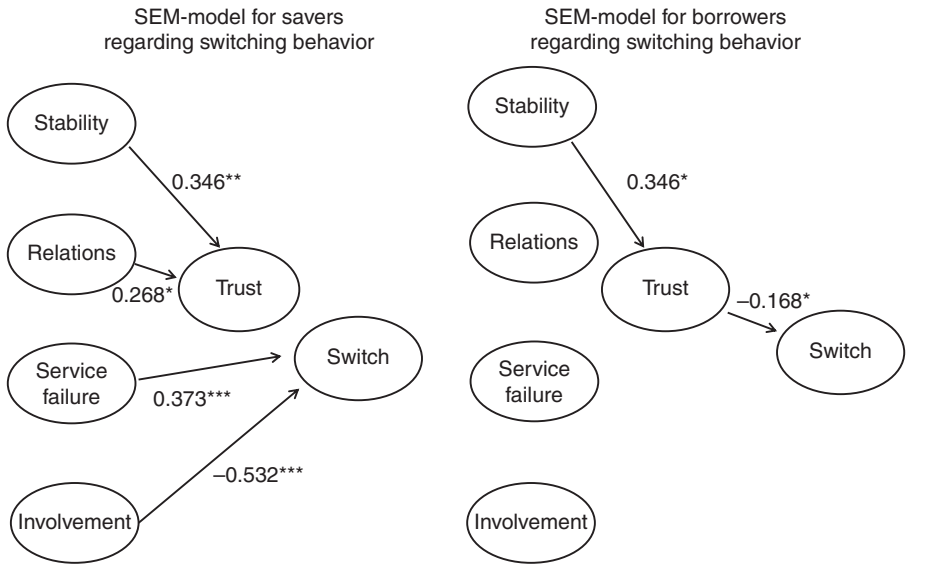
Figure 2. Significant paths as regards bank switching behavior

mediation of trust as regards stability and personal relations on switching behavior and a direct impact of lack of involvement and service failure.

The model fit is good to acceptable with χ^2/df = 1.745, CFI = 0.960, TLI = 0.950, PCFI = 0.777 and RMSEA = 0.043. Proceeding with hypotheses tests, conclusion that *H1a* is supported is drawn: there is a significant negative effect of trust on switching behavior in that the more the individual trust the less inclined he or she is to switch banks. In line with expectations underlying *H2a* it is also found that stability has a significant positive impact on trust. There is further a full mediation, as the indirect effect of stability through trust is the only significant relation between stability and switching behavior. The same goes for *H3a*: there is a significant positive impact of personal relations on trust and subsequently on switching behavior, and no direct significant impact of personal relations on inclination to switch. Furthermore, support both for *H4a* and *H5a* is found: there is a significant direct impact of both involvement and service failure (along with internet-related issues) on switching behavior. As expected, no direct connection to trust stemming from these two variables can be established.

Moving to the analysis of the two groups, savers and borrowers, the resulting paths and comparative analyses are found in Figure 3 and Table V. As can be seen from Figure 3, the patterns of the two groups are different in several aspects. The mediating effect of trust found in the entire sample above prevails only for borrowers: here, the only significant effect on switching behavior stems from a full mediation of stability through trust. The pattern as regards savers instead reveals direct influences of both service failure and lack of involvement on trust – similar to but even stronger than the direct effects of these variables noted for the entire sample in Figure 2. The importance of trust, however, is lacking: for the sample of savers, the link between trust and switching behavior is insignificant.

A test of model fit is performed for each sub-group separately, i.e. for savers first and subsequently for borrowers. A good to acceptable fit is observed also for the subsamples; for savers: χ^2/df: 1.631, CFI = 0.926, TLI = 0.910, PCFI = 0.768, RMSEA = 0.056 and for borrowers: χ^2/df = 1.704, CFI = 0.929, TLI = 0.915, PCFI = 0.772, RMSEA = 0.059.



Notes: *$p<0.05$; **$p<0.01$; ***$p<0.001$

Figure 3. Significant paths as regards switching banks, using subsamples of savers and borrowers

Using multi-group analysis, the differences between savers and borrowers as regards the above path patterns were analyzed (see Table VII). The path pattern is significantly different in several ways between the two groups. The model for savers is dominated by the strong direct influence of involvement and service failure; relations that do not prevail for borrowers and hence constitute a significant difference between the samples. The pattern for borrowers is instead dominated by one single mediating effect: the effect of stability through trust on switching behavior. Significant in the separate domains (i.e. savers and borrowers, respectively), the differences are, however, too small to be significant when comparing the domains.

Turning to the between-group hypotheses, *H1b* stipulated that trust would have a larger impact on switching behavior for borrowers. A significant effect of trust on switching behavior in the sample of borrowers is confirmed, and no such effect is evident in the savers' sample, but the difference is too small to be statistically different and hence *H1b* is rejected. The same goes for the effect of personal relations and stability on trust, and hence also *H2b* and *H3b* are rejected. In *H4b*, involvement was forecasted to have a significantly stronger direct effect on switching behavior for savers – which is also confirmed by the analysis. *H4b* is hence accepted. This pattern is also visible with regards to the direct effect of service failure and internet-related issues: a strong direct effect on switching behavior in the savers' sample, no significant effect in the borrowers' sample and hence a significant difference. This leads to an acceptance of *H5b*.

Discussion

This paper introduces a new way of viewing consumer switching behavior, taking into account both the difference regarding type of service provider relation (i.e. with respect to a relation where the customer is in charge as to one where he or she enjoys less power) and the implied importance of trust in these two settings. The contrasting service provider relations are operationalized by two very different financial customer–bank relations: the relation where the customer primarily is a saver, symbolizing the relation including an empowered customer, and the relation where the customer is a borrower and hence less in charge. This categorization rests on the perception of the individual himself: does he perceive himself primarily as a borrower or a saver? The proposed model further introduces trust as a mediating variable between the outcome, i.e. switching of banks, and four determining factors chosen on theoretical ground: stability, personal relations, service failure and internet-related issues, and involvement. Given the increased vulnerability of the borrower

Table VII. Results of the tests of difference between savers and borrowers, switching behavior

	Savers	Borrowers	Difference (*z*-score)
Trust – personal relations	0.268***	0.219*	0.333
Trust – stability	0.346***	0.346**	−0.002
Trust – lack of involvement	−0.093	0.190	−1.855
Trust – service failure	−0.042	−0.156	0.886
Switch – trust	−0.149	−0.168*	−0.143
Switch – personal relations	−0.035	−0.086	−0.734
Switch – stability	−0.031	−0.246	1.219
Switch – lack of involvement	−0.532***	−0.104	2.297*
Switch – service failure	0.373***	−0.018	−2.547*
Switch – gender	0.175	0.362**	−0.776
Switch – age	−0.013**	−0.028***	−1.678
Switch – income	−0.009	0.083	0.979
Switch – education	0.305**	0.222	−0.388

Notes: $*p < 0.05$; $**p < 0.01$; $***p < 0.001$

in his or her relation to the bank, an increased importance of trust is expected in the borrowing relation; something that the multi-group SEM analysis is able to verify.

The theoretical contribution of the current study is that the nature of the customer relation and the different implicit connections to trust are explicitly used in order to explain switching behavior. Given the very definition of value creation in a service context, i.e. that the service is offered by the producer and that value subsequently stems from co-creation involving the customer, the actual relation between the two parties has to be examined in order to at all understand the crucial concept of value creation. The relation between a service provider and its customers is in a sense a bundle of different relations, each one with its own characteristics and risks. This is sometimes made explicit by the consumers' choice of several providers; each one specialized in a subset of the customers' total needs – represented by, e.g., the choice of several niche banks to accompany the more traditional house bank. The present study argues that the powerful and the less powerful relation between a provider and a customer (in the present studies represented by the savings and borrowing relation to the bank) are different enough to warrant a unique path to customer (dis)satisfaction and subsequent switching behavior.

This assumption is supported by the results from the multi-group analysis: the less powerful (borrower–bank) relation appears to be more centered around the concept of trust, whereas the empowered (saver) customers' inclination to switch is dependent partly on negative experiences (such as a feeling of the internet platform as less user friendly) and partly on a subsequent overcoming of the barriers caused by indifference or lack of interest in the matter. Starting with the powerless customers' focus on trust, this makes sense given the view of Hardin (2002), that trust is used in order to reduce risk: the powerless borrower generally experiences a relation toward the service provider where he or she is more at risk. The service providers' actions (such as in the case of a bank, increasing interest rates, asking for additional collateral or even accepting/rejecting a loan application) will have considerable effects on the well-being of individuals. This is further exacerbated by the intendedly highly leveraged respondents in the borrowing sub-sample: the relatively large amounts of loans taken by these individuals indicate that the risk associated with these loans is substantial. A reduction of this high perceived risk level, through the use of trust, is accordingly what would be expected. What the present study has shown is that this risk-trust connection prevails also for factors determining switching behavior: the only path leading to switching behavior that is significant for the relatively powerless sub-sample of borrowers is the full mediation of stability (i.e. the importance of a financially sound counterparty most likely being around for the foreseeable future) through trust.

The empowered customer (in the present study operationalized by the savers) is defined by a lack of use of trust. This emanates from the very nature of the service in question, and the way customers co-create, interact and hence create value, by being more in charge and hence feeling less vulnerable. Even if a more marked "shopping-around" behavior among these empowered customers cannot be observed (i.e. the difference as regards the inclination to switch between the saver and borrower sample was insignificant), they are nevertheless free to switch service provider knowing that there exist no potential obstacles to being accepted by a new provider. It then becomes logical that the strongest influencer in the model of empowered customers' switching behavior stems from the psychological impediments of lack of involvement and a "could not careless" stance. Speculating in the origin of this low involvement, the theories of procrastination (e.g. Zanjani *et al.*, 2016) are useful: the importance of choosing a good provider (with low costs, or as in the case of the present study high savings rates) for example your pension savings portfolio is of course of paramount importance for well-being after retirement, but it is not noticeable right now and has no marked influence on cash flow (as a reciprocal increase in interest rate paid on loans would have). This example is again transferrable to areas outside of the financial arena;

many credence services such as legal services or health care services are characterized by a delayed quality assessment.

We manage to find some differences between the empowered group and the group less in charge, i.e. between savers and borrowers that are statistically significant. Again it is the two direct effects influencing the empowered group that stands out: the importance of an experience of service failure and the subsequent approach toward this negative experience to let it go or to take action and do something about it. These two direct effects are statistically different from what is observed in the powerless sample. The comparative analysis does not support a different impact of trust; it is noticed that the path between trust and switching behavior is more marked in the powerless sub-sample, but not enough to be statistically significant.

Practical implications

The importance of understanding consumer switching behavior is of paramount importance both for authorities aiming to ensure both sufficient consumer protection and sound competition within the financial industry, as well as for banks and financial agents aiming to retain their customers. The results from the present study may be used as a practical tool box in order to address the issue of consumer switching behavior and mobility on the market for financial services.

What we see is that the biggest obstacle for switching banks among the sub-sample of savers lies within their heads; it is the impeding factor of low involvement that has the biggest (negative) effect on switching behavior. This has clear implications regarding how to increase switching: raising interest and proving that it at all makes a difference, i.e. alluring to the low levels of both emotional and rational involvement. This could practically be done in several ways. One way to induce a higher level of emotional involvement could be to build on more affective-laden ways of communication. As stated by Weber (2004), feelings could serve as a precursor of action. Studies have also proven that an affective way of communication, i.e. building on narrative processing of information has proven to heighten the level of involvement (Carlsson Hauff *et al.*, 2014), albeit mainly in the message and not in the underlying issue (Carlsson Hauff *et al.*, 2016). Attempting instead to raise the level of rational involvement among savers could imply, e.g., clearly illustrating the difference between savings rates or fund fees and explicitly indicating the effect this would have on future consumption.

Focusing instead on the sub-group of borrowers, the picture is rather different. Here, stability of the chosen financial institution turned out to be the most important factor, facing authorities and banks with a completely different task. How is stability ensured, and is such an insurance at all possible? Could the savings guarantees, at hand in several countries, be an appropriate path to take or does the scrutinizing (and judgment of level of stability) of financial counterparts made by individuals play a critical role? From authorities point of view it could possibly be argued that the picture revealed in the present study as regards the borrowers constitutes a minor problem; it is less at odds with the view of the financial consumer as an (at least boundedly) rational decision maker. Focusing on stability, it could be argued, makes sense in a risk-minimizing perspective and would hence be acceptable from a legislative point of view – given that the level of competition in the bank sector is not too hampered by this.

Limitations and future research

Literature on service provider switching behavior covers both analyses of static factors, such as the present study and dynamic processual approaches (e.g. Roos, 1999; Roos *et al.*, 2006). The perceptions of the customer are, the processual studies argue, changing over time, hence forming a dynamic switching path instead of a number of important factors at

one point in time. The relational perspective, with focus on evolving relationships instead of transactions also sees the customer–provider relation in a longtime perspective, similar to this dynamic switching approach. This is an obvious limitation of the present study – the process-related view of the dynamic analysis is indeed compelling but for exploratory purposes a static perspective has been chosen. As stated in the Roos *et al.*'s (2006) study, the analysis of static factors could be seen as a starting point for future studies of the dynamic process for empowered customer and relatively less powerful customers, respectively. Given the results in this study, with markedly different paths leading to a switch of service provider, this would be a potentially fruitful way to proceed.

Also, the methodology used in the present study has its limitations. As discussed, the use of self-categorization in the sampling phase rests on the individuals' ability to correctly classify himself into either a borrower or a saver, and also on the assumption that these self-categorizations are what will guide behavior. Should this not be the case, this might alter the results of the study and hence constitute a theoretical limitation.

A limitation of the financial focus of the study is that the idiosyncratic characteristics of the financial industry and the relation between the financial provider and its customers are so unique that no analogies to other industries may be made. To be remembered here is that the heterogeneity among financial products constitutes the foundation for the study made – in this sense the bank functions almost as a natural experiment. The outcome may hence not be transferrable to companies with a homogenous range of products, such as an energy provider, but well to perhaps a telecom operator with a varying bundle of offerings.

Another way to refine the analysis of the present study would be to add knowledge as an influential factor. Given the vast literature on financial literacy (Lusardi *et al.*, 2017), the assumption is that the paths identified in the present study would be different among highly knowledgeable savers and borrowers and their less knowledgeable counterparties.

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Further reading

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Appendix

Variables	Model I B	Model I SE (B)	Model I β	Model II B	Model II SE (B)	Model II β	Model III B	Model III SE (B)	Model III β
Administrative hindering factors	0.063	0.054	0.063	0.071	0.058	0.070	0.081	0.058	0.080
Service failure	0.009	0.074	0.007	0.068	0.080	0.049	0.020	0.079	0.015
Economic hindering factors	0.102	0.073	0.075	0.055	0.077	0.040	0.020	0.079	0.015
Lack of involvement	−0.402	0.056	−0.340***	−0.390	0.060	−0.327***	−0.350	0.063	−0.293***
Reputation/scandals	−0.015	0.075	−0.011	0.022	0.078	0.016	0.053	0.079	0.039
Relations	−0.086	0.061	−0.075	−0.104	0.066	−0.089	−0.098	0.066	−0.084
Actual offering	0.108	0.079	0.074	0.130	0.084	0.088	0.104	0.084	0.070
Stability	0.065	0.067	−0.048	−0.050	0.072	−0.036	−0.078	0.073	−0.056
Personal factors	0.071	0.051	0.066	0.063	0.055	0.058	0.054	0.055	0.050
Price	0.035	0.064	0.025	−0.004	0.069	−0.003	−0.023	0.069	−0.017
Gender				−0.032	0.107	−0.014	−0.066	0.112	−0.028
Age				−0.008	0.004	−0.087	−0.010	0.004	−0.110*
Education				0.104	0.093	0.052	0.100	0.094	0.050
Income				0.063	0.038	0.085	0.050	0.038	0.067
Objective financial literacy							−0.048	0.058	−0.043
Subjective financial literacy							−0.005	0.066	−0.004
Interest in economic matters							0.155	0.067	0.128*
Adjusted R^2	0.100			0.105			0.119		
Change in R^2				0.005			0.014		

Notes: *,***Significant below 0.05 and 0.001 levels, respectively

Table AI. Model I: 10 explanatory variables, Model II: controlling for sociodemographic factors and Model III: controlling for sociodemographic factors and knowledge/interest factors

Corresponding author
Jeanette Carlsson Hauff can be contacted at: jeanette.hauff@handels.gu.se

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The antecedents and consequences of financial literacy: a meta-analysis

Fernando De Oliveira Santini and Wagner Junior Ladeira
Universidade do Vale do Rio dos Sinos, São Leopoldo, Brazil
Frederike Monika Budiner Mette
Escola Superior de Propaganda e Marketing – Campus ESPM Sul, Porto Alegre, Brazil, and
Mateus Canniatti Ponchio
Department of Marketing, Escola Superior de Propaganda e Marketing, São Paulo, Brazil

Abstract

Purpose – The purpose of this paper is to determine the antecedents and consequences of financial literacy by using meta-analytic techniques.

Design/methodology/approach – The authors conducted a meta-analysis of 44 valid studies, which generated a total of 690 observations (effect sizes).

Findings – The findings showed that the factors influencing financial literacy were as follows: educational level, financial attitude, financial knowledge, financial behaviour, gender, household income and investments. The consequences of financial literacy were the behaviour of incurring avoidable credit and checking fees, credit score, and the willingness to take investment risks. The authors also find some methodological, cultural, economic and theoretical moderations effects between financial literacy and antecedent/consequent constructs.

Research limitations/implications – This meta-analysis reviewed the relationships found worldwide in the literature on financial literacy. The authors also identified new avenues for future research. Some specific limitations, such as the non-use of qualitative studies, are registered.

Originality/value – This research tested the impact of the antecedents, consequences and moderators of financial literacy via a meta-analytical review. This meta-analysis contributes to the marketing and financial literature by offering a set of empirical generalisations about the direct and moderation effects investigated.

Keywords Antecedents, Meta-analysis, Financial literacy, Consequents and moderators

Paper type Research paper

Introduction

Financial literacy is understood as "the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being" (Hung *et al.*, 2009, p. 4). On the other hand, financial well-being is understood as "a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow them to enjoy life" (Consumer Financial Protection Bureau, 2017, p. 6). It is expected that as consumers increase their financial literacy, they become more sensitive to saving and investment decisions (Lusardi and Mitchell, 2007) and probably more skilful to make daily financial choices (Lusardi and Tufano, 2008). Given the importance of this issue in people's lives, the conceptualization and measurement of the term "financial literacy" is one of the major concerns on the agenda of researchers in the financial and marketing context (Huston, 2010; Lusardi and Mitchell, 2014).

Over the last few decades, financial literacy has been interpreted and measured by researchers from different fields of knowledge (Braunstein and Welch, 2002; Gathergood, 2012; Fernandes *et al.*, 2014; Sivaramakrishnan *et al.*, 2017). These studies have analysed the term "financial literacy" according to different lines of thought: the effect of parents on the financial socialisation of their children (Van Campenhout, 2015), financial literacy on the

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stock market (Sivaramakrishnan *et al.*, 2017), the effect of financial literacy on individuals' willingness to take investment risks (Krische, 2014), its impact on financial well-being (Brüggen *et al.*, 2017) and its impact on attitudes towards personal saving (Dholakia *et al.*, 2016), among others.

This diverse range of studies has demonstrated the need to employ clearer and more consistent criteria in the definition and measurement of financial literacy (Remund, 2010). The correct definition and measurement of financial literacy is fundamental when analysing its relationships with other constructs (Huston, 2010). Many studies have shown divergent results regarding the relationships generated by financial literacy. One example of this can be found in the relationship between financial literacy and occupation. It is possible to identify positive relationships (Silgoner *et al.*, 2015) and neutral relationships (Montagnoli *et al.*, 2017).

These incongruencies between studies can be assigned to different methodological approaches (Hedges and Olkin, 1985), cultural differences (Minkov, 2011) or economic influences (Zarantonello *et al.*, 2013) about the country in which the study samples were drawn. Such incongruences constitute barriers that avoid the possibility of reaching a more definitive conclusion about the financial literacy construct. Meta-analytic techniques are suitable for surpassing these barriers because of their ability to provide generalisable results (Fern and Monroe, 1996). Indeed, this methodological approach is recommended to overcome possible biases associated with previous research limitations (e.g. type of sample, methodological robustness) and allows for the estimation of accurate effect sizes for each analysed relationship (Lipsey and Wilson, 2001).

Examples applied in financial contexts illustrate the assurance of the meta-analytic approach (e.g. Nienaber *et al.*, 2014; Ladeira *et al.*, 2016). In these cases, the meta-analytic studies are used to produce a generalisable understanding of the phenomenon (Lipsey and Wilson, 2001) by the identification of the antecedents, consequences and moderators of the construct that are investigated and the integration of findings derived from these relationships (Lipsey and Wilson, 2001). In essence, the meta-analytic approach is important because it allows researchers to consolidate their understanding of a phenomenon (Green, 2005).

In this way, this paper proposes the accomplishment of a meta-analytic study with the objective of analysing the main relationships associated with the construct of financial literacy. The systematic review made to promote this meta-analysis identified the main antecedents and consequences of financial literacy. After this identification, we analysed the effect sizes of each direct relationship. In addition, a hierarchical linear meta-analysis (HiLMA) was performed on the relationship between educational and financial literacy, with the intention of reducing the heterogeneity of previous findings. For the moderating variables of the HiLMA, the study used: power distance, uncertainty avoidance, long-term perspective, indulgence, the human development index, consumer price inflation (annual %), recent crises and other categories measuring financial literacy.

At the end of this study, we intend to provide answers to three main questions:

(1) What are the antecedent and consequent effects of the financial literacy construct?

(2) What is the strength of the antecedent and consequence relationships in the financial literacy construct?

(3) What are the moderators affecting the relationship between education level and financial literacy?

We also hope that this meta-analysis will contribute to studies on financial literacy, since it provides a synthesis and generalisation of the findings from the primary articles (Fern and Monroe, 1996). In addition, we identified possible moderating variables based on an analysis

of the heterogeneity of the relationships and detected areas requiring further investigation (Hedges and Olkin, 1985). Thus, given the generalisable and more consistent nature of the meta-analysis, this study intends to help managers to implement more assertive actions (Hunter and Schmidt, 2004).

Conceptual framework

Financial literacy is an essential component in the achievement of economic well-being (Braunstein and Welch, 2002). Theoretically, much has been said about this construct. In practice, however, financial literacy has been difficult to conceptualise, measure and evaluate (Lusardi and Mitchell, 2011; Atkinson and Messy, 2012).

Financial literacy can be conceptualised as a measure in which the individual has an understanding of major financial concepts and applies them in the management of their personal finances (Huston, 2010; Remund, 2010). According to this definition, it is understood that financial literacy is financial understanding that supports short-term decision-making and sound, long-term financial planning, while enabling the individual to be mindful of life events and changing economic conditions (Remund, 2010; Lusardi and Mitchell, 2011).

Despite the importance of financial literacy, many countries have had difficulties in dealing with this issue (Lusardi and Mitchell, 2011). These difficulties concern the selection of priority focus areas in order to increase individuals' financial literacy (Atkinson and Messy, 2012).

This difficulty arises from the complexity of assessing how people are financially literate and the specific factors driving this literacy (Fernandes *et al.*, 2014). This is due to the fact that financial literacy encompasses a number of concepts and a set of antecedents, consequents and moderators.

After conducting a systematic literature review, we identified similar constructs with different names. In this case, we performed a content analysis to group similar definitions used as antecedents or consequents of financial literacy. We incorporated the constructs into our theoretical model if at least three relationships with financial literacy were found among the studies investigated (Hunter and Schmidt, 2004). Then, we assigned groups of constructs to similar dimensions. This procedure has typically been used in other meta-analyses (e.g. Palmatier *et al.*, 2006; Santini *et al.*, 2018). Figure 1 presents the conceptual framework.

In this framework, literacy reflects the ability to perform a range of tasks related to money, including saving and spending (Huston, 2010; Remund, 2010). Operationally, several instruments are available in the literature for the measurement of financial literacy (Huston, 2010; Remund, 2010; Knoll and Houts, 2012). These instruments have been used on a large scale and measure financial categories such as interest, inflation, the time value of money, investment, risk diversification, debt management and retirement savings.

These instruments assess financial literacy as a skill or behaviour enabling individuals to use financial knowledge and attitudes to manage their financial operations (Hung *et al.*, 2009; Fernandes *et al.*, 2014).

Antecedents of financial literacy

Financial literacy in this context is formed by a set of interrelated constructs associated with socio-economic characteristics and financial behaviours and attitudes (Hung *et al.*, 2009; Lusardi and Mitchell, 2011). In our framework, based on a systematic literature review, we defined seven antecedent constructs of financial literacy: educational level, financial attitude, financial knowledge, financial behaviour, gender, household income and investments. Table I presents the conceptual definition, expected relationships and operationalization of each of the antecedents of this framework.

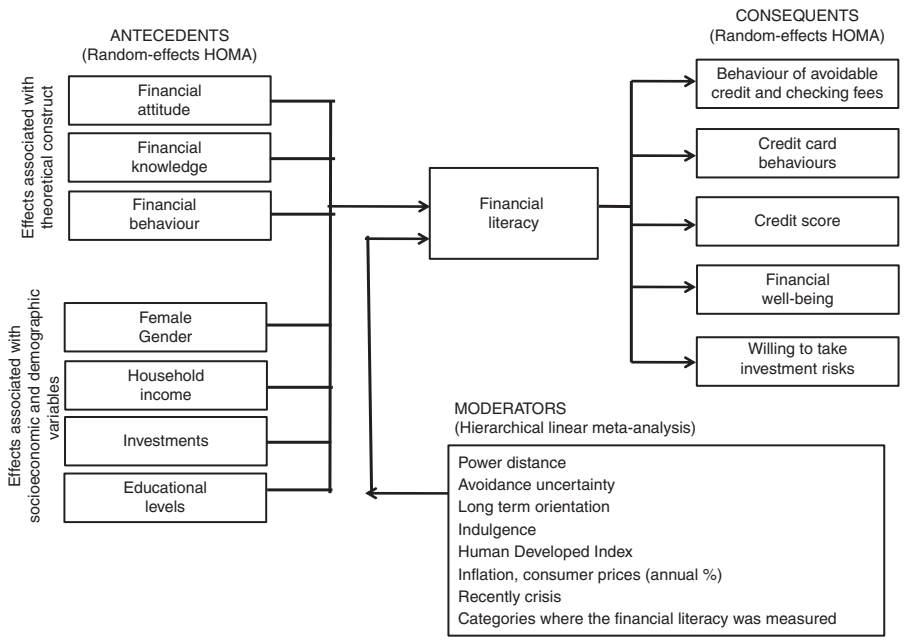

Figure 1. Conceptual framework for the meta-analysis

Consequents of financial literacy

Financial literacy results in behaviours that are capable of changing an individual's ability and confidence to apply this knowledge in financial decision making (Huston, 2010). This framework directly evaluated five possible consequences of financial literacy: the behaviour of incurring avoidable credit and checking fees, credit card behaviours, credit score, financial well-being and the willingness to take investment risks. Table II presents the operationalization of each consequent construct and the expected relationship with financial literacy.

Moderators of financial literacy

Financial literacy studies have demonstrated that financial competence is an essential element in more conscious and planned consumer decision making (Lusardi and Mitchell, 2011; Knoll and Houts, 2012). On the other hand, other studies have demonstrated that local characteristics, such as cultural and economic contexts, seem to coordinate their attitudes and consumption behaviours (Huston, 2010; Silgoner *et al.*, 2015).

Based on this statement, we analysed the moderators associated with the local characteristics in the relationships in the conceptual framework that presented the highest number of observations (educational level). It is important to analyse these groups, since cultural and economic elements are considered to be key factors in the understanding and distortions of behaviours found in the literature on financial literacy (Luttmer and Singhal, 2011). Similarly, cultural factors are responsible for enhancing or mitigating the effects of the two relationships (Fern and Monroe, 1996).

In addition, these moderators assist in our understanding of the relationship between educational level and financial literacy, as they offer explanations for the identified heterogeneity in this relationship. This is because the financial literacy studies consulted in this review analyse and incorporate studies with different sample sizes, collection techniques and application sites.

Conceptual definition	Expected relationship based on a bibliographic review	Common aliases	Relationship signal expectation
Antecedents of financial literacy			
Educational level refers to formal education, which can be understood as education obtained through schools regularly established in accordance with educational requirements (Silgoner *et al.*, 2015)	Research indicates that higher levels of schooling lead to higher levels of financial literacy (Chen and Volpe, 1998; Lusardi and Mitchell, 2011). This implies that those with less education are less likely to answer questions correctly and more likely to say that they do not know the answer (Chen and Volpe, 1998)	Years of education; college graduate	Positive
Financial attitude consists of a combination of concepts, information and emotions which are linked to the predisposition to act favourably in financial matters (Hogarth and Hilgert, 2002)	Attitude is understood as a psychological tendency which is expressed by evaluating a particular entity with some degree of favour or disfavour (Eagly and Chaiken, 1993). In the financial sphere, attitudes are established through the economic and non-economic beliefs possessed by a decision-maker (Ajzen, 1991). These financial attitudes tend to increase financial literacy (OECD, 2013)	Attitude; attitude to banking products; financial attitude	Positive
Financial knowledge is a type of human capital which is acquired through learning and affects individuals' ability to manage their income, expenses and savings effectively (Delavande *et al.*, 2008)	Financial literacy involves the ability to understand financial information and make effective decisions through financial education. This can occur through remembering a set of facts, i.e., financial knowledge (Robb *et al.*, 2012). Thus, knowledge about financial information tends to increase financial literacy (Lusardi and Mitchell, 2011)	Bank account knowledge; financial capability index; financial knowledge	Positive
Financial behaviour is manifested when people have a goal, purpose or motivation for saving (Henager and Mauldin, 2015)	The positive results of being financially literate are due to behaviour such as expenditure planning and the construction of financial security (Atkinson and Messy, 2012). Thus, financial literacy depends directly on good or bad financial behaviour (Marcolin and Abraham, 2006)	Desirable behaviour; financial behaviour	Positive
Household income refers to the respondents' family income level (Silgoner *et al.*, 2015)	People on lower incomes are more likely to have low levels of financial literacy (Hastings and Mitchell, 2011). Thus, the higher the income level, the greater the probability that the individual is part of a group with a higher level of financial literacy (Atkinson and Messy, 2012)	Income; household income; parental income	Positive

Table I.
Antecedents of financial literacy

(*continued*)

Conceptual definition	Expected relationship based on a bibliographic review	Common aliases	Relationship signal expectation
Female gender	Men's financial literacy is increasing faster than women's (Agarwal *et al.*, 2009). In addition, women generally have lower rates of financial literacy than men (Lusardi and Mitchell, 2011). Women find it more difficult to perform financial calculations and have a lower level of financial knowledge, which makes financial literacy difficult (Lusardi and Mitchell, 2011)	–	Negative
Investment variety refers to a mix of investments made by the respondents (securities, savings, stocks and mutual funds, among others) (Fernandes *et al.*, 2014; Chu *et al.*, 2017)	Financial literacy may be associated with the ability of consumers to be better shoppers. This provides them with more opportunities to consume, save or invest. Thus, making investments is associated with the specific aspects of personal finance which lead individuals to acquire more financial literacy (Remund, 2010). The greater the range of investments made, the greater the respondents' financial literacy	Participation; balance of financial assets; investment in bonds; stocks	Positive

Table I.

This meta-analysis then evaluated eight moderating variables, distributed into two main dimensions: cultural and economic. The cultural aspects comprise Hofstede (2011) dimensions: power distance, uncertainty avoidance, long-term perspective and indulgence level. In the economic dimensions, we analysed the human development index, inflation, consumer price inflation (annual %), recent crises and other categories measuring financial literacy. Table III describes the concept attributed to each of these moderators and the way they were coded.

Methodological design

As we mentioned earlier, we applied the meta-analytic approach to address some incongruencies in investigating financial literacy. In this way, we followed the steps indicated by Cooper *et al.* (2010), which have been reapplied in other meta-analytic studies (Ali *et al.*, 2015; Babić Rosário *et al.*, 2016). The Cooper (2010) approach comprises three steps: data search, data collection process, and data coding and analysis. It also contemplates the PRISMA protocol, which is recommended for systematic reviews (Moher *et al.*, 2009).

In the first step, a data search was performed. In this case, data were collected from seven databases: EBSCO, Elsevier Science Direct, Emerald, JSTOR, SciELO, Scopus and Taylor and Francis. In the second stage, namely, the data collection process, we used the search criterion of "financial literacy" in the title and summary areas of the database. In addition, we included any papers which cited the studies "Defining and measuring financial literacy" by Hung *et al.* (2009) and "Measuring financial literacy" by Huston (2010). Searching for these articles was important, since these studies generate scales to quantitatively measure the construct of financial literacy.

Conceptual definition	Expected relationship based on a bibliographic review	Common aliases	Relationship signal expectation
Consequents of financial literacy			
Behaviour of incurring avoidable credit and checking fees is understood as the frequency of fees paid by the consumer to the bank to use its financial services (Fornero and Monticone, 2011)	The effect of financial literacy reduces the behaviour of incurring avoidable credit and checking fees (Fernandes *et al.*, 2014). Thus, financial literacy tends to reduce the frequency with which the consumer pays fees to the bank	Bank interaction frequency	Negative
Credit card behaviours comprise five activities associated with consumer credit card use: (1) always paying a credit card balance in full; (2) carrying over a credit card balance and being charged interest; (3) making only a minimum payment on a credit card balance; (4) being charged a fee for late payment; and (5) being charged a fee for exceeding a credit limit (Allgood and Walstad, 2013)	Financial literacy is a financial behaviour which helps the consumer to avoid credit card purchases (Fernandes *et al.*, 2014). Thus, financial literacy tends to reduce the amount paid by the consumer on their credit card (Fornero and Monticone, 2011)	Credit card payment; credit card behaviour	Negative
Credit score refers to a numerical value derived from analysing a person's credit files (Mende and van Doorn, 2015)	Credit scores are crucial determinants of whether or not consumers should be given access to a variety of fundamental services, including mortgages, credit cards, car loans and/or insurance and utility services (Barakova *et al.*, 2003; Fellowes, 2006). This is because financial literacy has an influence on credit scores because it leads to higher scores, which in turn enables consumers to access better loans and jobs and to pay lower insurance premiums (Mende and Van Doorn, 2015)	Banks and credit card firms rate credit scores	Positive
Financial well-being is satisfaction with various aspects of a person's life associated with their financial situation (Prawitz *et al.*, 2006; Mende and van Doorn, 2015)	Financial literacy is known as a person's use of their knowledge and skills to generate financial well-being (Remund, 2010). This implies that having more knowledge about money can generate financial well-being (Braunstein and Welch, 2002)	Financial satisfaction	Positive
Willingness to take investment risks refers to the individual's willingness to take risks in general (Dohmen *et al.*, 2011; Almenberg and Dreber, 2015)	Financial literacy increases financial knowledge, thus leading to risk diversification (Krische, 2014). In addition, financial literacy tends to give the consumer a long-term perspective which has an impact on risk preferences (Lusardi and Mitchell, 2008)	Contributors to return loss; risk preference; risk investment; willing to take risk	Positive

Table II.
Consequents of financial literacy

Variable/description	Codification
Cultural dimensions	
Power distance represents the degree of inequality between individuals in a society. It is a way of measuring the extent to which less powerful members in a society accept and expect the existence of this uneven distribution (Hofstede, 2011). In this case, we identified the index obtained in each country from which data were collected and separated them into two groups based on the median	0 = low power distance 1 = high power distance
Uncertainty avoidance represents a country's level of tolerance of uncertainties and ambiguities (De Mooij and Hofstede, 2011). This moderator reflects the level of discomfort which people feel regarding risks, chaos and unknown (Hofstede, 2011). In this case, we identified the indices obtained in each country from which data were collected and separated them into two groups based on the median	0 = low uncertainty avoidance 1 = high uncertainty avoidance
Long-term perspective is a measure which analyses whether a society maintains or adapts its traditions. This moderator is associated with the characteristic of resistance (or lack of resistance) to change. In the financial domain, this measure refers to the way in which savings and money are encouraged (Hofstede, 2011). For this, we identified the indices obtained in each country from which data were collected and separated them into two groups based on the median	0 = low long-term perspective 1 = high long-term perspective
Indulgence represents the extent to which individuals are able to control their desires and impulses. For this dimension, more indulgent cultures place higher value on freedom of expression and personal control (Hofstede, 2011). For this measure, we identified the indices obtained in each country from which data were collected and separated them into two groups based on the median	0 = low indulgence 1 = high indulgence
Economic dimensions	
The human development index was developed by the United Nations Development Programme and compares wealth, literacy, life expectancy and birth rate for each country. For this measure, we identified the indices obtained in each country from which data were collected and separated them into two groups based on the median	0 = low human development index 1 = high human development index
Consumer price inflation (annual %) is measured by the consumer price index and reflects the annual percentage change in the cost of acquiring goods and services for the average consumer, which may be fixed or changed at specified intervals (The World Bank, 2018). For this measure, we identified the indices obtained in each country from which data were collected and separated them into two groups based on the median	0 = low inflation 1 = high inflation
The recent crisis measure indicates whether the country under analysis in the article has experienced any kind of crisis during the data collection period	0 = no 1 = yes
Other categories related to financial literacy indicate possible objects of study in which financial literacy could be applied (Huston, 2010; Remund, 2010; Knoll and Houts, 2012)	0 = interest of inflation 1 = time value of money 2 = investment 3 = risk diversification 4 = debt management 5 = retirement savings

Table III. Moderators associated with the local characteristics and personal values of the individual

Initially, 397 studies were identified. Soon after, we removed 141 studies, because they were characterised as qualitative studies. Another 41 studies were not investigated because the statistics they contained were insufficient to convert the effects into correlations. Another 171 studies were not analysed because they failed to include relationships of interest to this research. On the application of the above-mentioned criteria, we identified 44 valid studies, which generated a total of 690 observations (effect sizes).

In the last step, data coding and analysis, the coding process was carried out on a spreadsheet, which contained information such as: article identifier (number), work source

(paper, thesis), author(s), country of data collection, sample size, type of sample, type of collection, application context, study environment, consumption context, scale used, number of scale items, scale alpha index, index of extracted variance from the scale, related constructs (antecedent or consequent) between the relationships, and the conversion index of the correlation between the investigated behaviours.

The analysis procedures used Pearson's correlation coefficient (r). This coefficient infers the size of the effect found between financial literacy and a construct, antecedent or consequent. In studies in which a correlation index was not reported, we performed the conversion according to the procedures described by Hedges and Olkin (1985). The correlation value was calculated from the random effect, as suggested by Schmidt and Hunter (2014). In addition, the fail-safe number index was calculated in order to estimate the number of non-significant or unpublished studies that would be necessary to refute the findings of this study (Rosenthal, 1979). For this calculation, we used the formulae suggested by Rosenthal (1979) and Orwin (1983).

The direct effects analysed were elaborated through a random effects Hedges and Olkin meta-analysis to match the study estimates (Carney *et al.*, 2011). We used HiLMA to analyse the moderators in a multivariate regression-based format (Carney *et al.*, 2011). The HiLMA filters the effects of important moderators that may or may not be part of the primary studies. In our analysis, we only included variables employed in at least three regression models.

Analysis of the antecedents of financial literacy

Table IV presents the results of the antecedent constructs of financial literacy. The table shows: the number of studies which have investigated these relationships (k); the number of effects generated for the relationships between the constructs (0); the cumulative sample number of the studies tested (N); the force of the generated effect (r); the lower-limit confidence interval (LLCI); the upper-limit confidence interval (ULCI); the value of Fisher's Z transformation; the level of significance of the relationship (p-value); the level of relationship heterogeneity according to the Cochran Q index and the I^2 statistic; and the fail-safe number (FSN).

The results were significant and relevant across all types of antecedents, as demonstrated by the effect sizes of the variables in Table IV.

The expected relationship between educational level and financial literacy was confirmed ($r = 0.105$; $p < 0.05$). The values were consistent ($FSN_{Rosenthal} =$ 9,910; $FSN_{Orwin} = 64$), indicating that individuals with higher levels of schooling tend to have higher levels of financial literacy. This is an acceptable result, because the higher the general education level of the individual, the greater the chance that they will adequately be able to answer financial questions (Chen and Volpe, 1998; Lusardi and Mitchell, 2007).

Financial attitudes were proven to have a great influence on financial literacy ($r = 0.13$; $p < 0.001$). It should be noted that financial literacy must be distinguished from financial attitudes (Edwards *et al.*, 2007). However, these concepts have been shown to be directly correlated. Financial attitudes are constructed through economic and non-economic beliefs, along with the ability to directly influence personal decision making and, consequently, increase financial literacy (OECD, 2013).

The expected relationship between financial knowledge and financial literacy was confirmed ($r = 0.31$; $p < 0.001$). This relationship proved to be consistent ($FSN_{Rosenthal} = 1{,}996$; $FSN_{Orwin} = 86$), which was confirmed by primary studies indicating that financial knowledge tends to increase self-confidence in financial decision making (Huston, 2010), thus leading to greater financial literacy (Lusardi and Mitchell, 2011).

Financial behaviour was shown to have a positive and significant relationship with financial literacy ($r = 0.333$; $p < 0.001$). These results were consistent

Table IV. Antecedents and consequents of financial literacy

Variable	k	O	N	r	LLCI 95%	ULCI 95%	Z	p-value	Q	I^2	FSN*	FSN**
Antecedents												
1. Educational level	15	96	14,155	0.105	0.020	0.188	2.42	*	18,273.3	99.49	9,910	64
2. Financial attitude	10	20	25,800	0.130	0.019	0.237	2.31	**	365.55	95.89	597	33
3. Financial knowledge	8	15	3,522	0.310	0.103	0.490	2.89	**	839.95	98.33	1,996	86
4. Financial behaviour	11	45	8,148	0.333	0.241	0.419	6.75	**	3,305.7	98.66	23,061	241
5. Female gender	8	11	3,564	−0.280	−0.373	−0.183	−5.46	**	74.92	78,0	625	26
6. Household income	12	51	10,757	0.059	0.009	0.109	2.31	*	1,629.7	96.91	1,650	36
7. Investments variety	7	23	9,815	0.145	0.056	0.232	3.17	**	1,269.34	98.34	2,074	33
Consequents												
1. Behaviour of incurring avoidable credit and checking fees	5	38	28,646	−0.053	−0.066	−0.041	−8.19	**	1,147.7	96.77	20,147	49
2. Credit card behaviours	5	84	28,803	−0.004	−0.034	0.027	−0.235	ns	49,919.43	99.82	NC	NC
3. Credit score	4	9	1,565	0.311	0.214	0.402	6.05	**	72.19	88.91	666	42
4. Financial well-being	4	10	3,204	0.021	−0.033	0.074	0.758	ns	39.99	77.49	NC	NC
5. Willingness to take investment risks	3	13	880	0.569	0.428	0.682	6.71	**	8.06	87.59	8	5

Notes: FSN* shows Rosenthal's (1979) parameter; FSN** shows Orwin's (1983) parameter and NC shows not calculated. *$p < 0.05$; **$p < 0.001$

($FSN_{Rosenthal} = 23{,}061$; $FSN_{Orwin} = 241$). Previous studies have also confirmed this relationship, because they indicate that financial behaviour is capable of increasing financial well-being, which, in turn, increases an individual's understanding of personal finance. Thus, this financial behaviour tends to increase financial literacy (Atkinson and Messy, 2012).

The gender and financial literacy relationship was negative and significant ($r = 0.280$; $p < 0.001$), indicating that women consumers are less financially literate and aware. This result was expected in light of the literature review, since male individuals are more likely to be included in groups with higher levels of financial literacy (Agarwal *et al.*, 2009; Lusardi and Mitchell, 2011).

The empirical evidence of this meta-analysis suggests that household income has a positive and significant relationship with financial literacy ($r = 0.059$; $p < 0.05$). These results demonstrate that low levels of income are associated with low levels of financial literacy (Hastings and Mitchell, 2011; Atkinson and Messy, 2012).

It is interesting to note that a willingness to make investments has a positive effect on financial literacy ($r = 0.145$; $p < 0.001$). This relationship is justified, since investments should be used as an operational variable. This variable goes beyond the capacity of financial awareness, as it evaluates a person's aptitude to manage specific aspects of their personal finances (Remund, 2010).

Analysis of the consequents of financial literacy

Table V presents the results of the consequents of financial literacy. Based on the results, we noted that the relationship between financial literacy and the behaviour of incurring avoidable credit and checking fees is negative ($r = -0.053$; $p < 0.001$). This result indicates that being more financially literate reduces the payment of avoidable credit and checking of fees (Fornero and Monticone, 2011). On the other hand, the relationship between financial literacy and credit card behaviours was not significant ($r = -0.034$; $p =$ ns), despite the fact that consumers make frequent or regular purchases of goods and services with their credit card, which is representative of financial behaviour. This relationship was not found to have any significant interaction in this meta-analysis.

The effect of financial literacy on credit scores was shown to be positive and significant ($r = 0.311$; $p < 0.001$). Although credit scores received little attention in the primary studies, this result proves that credit scores can be considered as one of the main indicators of consumers' objective financial well-being, which is generated through financial literacy.

In the primary studies, financial literacy was expected to promote increased financial well-being (Braunstein and Welch, 2002; Remund, 2010). This relationship was not confirmed by the calculations performed in this meta-analysis ($r = 0.021$; $p =$ ns). Finally, the relationship between financial literacy and the willingness to take investment risks was positive and significant ($r = 0.569$; $p < 0.001$). This finding indicates that financial literacy has an influence on a person's propensity to plan, as well as on their risk preferences (Fernandes *et al.*, 2014; Krische, 2014).

Moderators analysis

Analyses of possible moderators were carried out for the variables of educational level. The analysis took place under these conditions, since these relationships were significant, presented a significant number of observations ($k = 96$ and 84) and were highly heterogeneous ($Q = 18{,}273.3$ and 1,141.70).

To test the moderation analysis, we used the HiLMA method, which comprises a multivariate format based on regressions to interpret moderating effects (Geyskens *et al.*, 2009). This procedure follows the recommendations of Lipsey and Wilson (2001). Table V

Moderators	Levels	Educational level β^a	r^a	p-value
Power distance	Intercept	0.200		0.001
	Low	1	0.191	
	High	−0.106	0.087	0.05
Uncertainty avoidance	Intercept	0.200		0.001
	Low	1	0.191	
	High	−0.106	0.087	0.05
Long-term perspective	Intercept	0.113		ns
	Low	1	0.108	
	High	0.018	0.143	ns
Indulgence	Intercept	−0.123		0.05
	Low	1	−0.064	
	High	0.262	0.133	0.05
Human Development Index	Intercept	0.070		ns
	High	1	0.093	
	Low	−0.027	0.043	ns
Consumer price inflation (annual %)	Intercept	−0.022		ns
	Low	1	0.09	
	High	0.108	0.184	ns
Recent crises	Intercept	0.355		ns
	No	1	0.187	
	Yes	−0.176	0.048	ns
Other categories measuring financial	Intercept	0.047		ns
	Interest inflation	1	0.007	ns
	Time value of money	0.143	0.184	
	Investment	0.085	0.132	ns
	Risk diversification	0.093	0.136	ns
literacy	Debt management	–	–	–
	Retirement savings	−0.057	0.117	ns

Notes: β^a shows standardized coefficient; n shows accumulated sample size; r^a shows correlation coefficient; p-value shows the level of significance

Table V. Hierarchical linear meta-analysis

presents the obtained results, divided into cultural and economic dimensions. We identified seven countries in which the relationship between education level and financial literacy was tested: Austria, Brazil, Germany, Japan, New Zealand, Scotland and the USA.

Cultural moderation effects

We tested four possible variables that could moderate the effect size of educational level and financial literacy: power distance, uncertainty avoidance, long-term perspective and indulgence.

The moderation test revealed three significant moderators: power distance, uncertainty avoidance and indulgence. The relationship between educational level and financial literacy was stronger in cultures with high power distance ($r_{\text{high}} = 0.191$; $r_{\text{low}} = 0.087$), cultures with low uncertainty avoidance ($r_{\text{high}} = 0.191$; $r_{\text{low}} = 0.087$) and cultures with high indulgence levels ($r_{\text{high}} = 0.133$; $r_{\text{low}} = -0.064$).

These results suggest that in societies characterised by higher power distance, low uncertainty avoidance and high indulgence levels, the gains in financial literacy derived from increases in educational levels are more pronounced, that is, the strength of the relationship between both constructs differs. Even though the Hofstede (2011) dimensions are country-level descriptors, whereas the relationship between formal education and financial literacy is measured at the individual level, further investigation into the mechanisms which help explain such results should be fostered.

Economic moderation effects

We analysed another four economic variables that could moderate the relationship between education level and financial literacy: human development index, consumer price inflation, recent crises and other categories measuring financial literacy. In this case, the analysis did not present significant results.

Conclusions

Programmes promoting financial literacy have been proposed to address the problem of over-indebtedness and to promote well-being. If, on the one hand, financial competence and socio-economic characteristics are essential elements of more conscious and planned consumer decision making, then on the other hand, individuals' cultural characteristics and personal values (power distance, uncertainty avoidance and indulgence), which are moderators in relationships pertaining to financial literacy, seem to coordinate their attitudes and consumption behaviours.

The availability of a large number of empirical studies on financial literacy has allowed us to more robustly establish the relationship between this construct and its antecedents and consequences. The identification of processes and mechanisms, which explain individual differences in relation to these constructs, would be a means by which to advance our understanding of the relationship between financial literacy and financial well-being. In this sense, the antecedents and consequences of financial literacy identified here could be incorporated into future studies in more detail. The antecedent constructs identified in this research refer to the socio-demographic characteristics (educational level, gender, household income and investments) and theoretical trainers of the financial literacy construct (financial attitude, financial knowledge and financial behaviour).

The financial literacy leads to certain financial behaviours (e.g. incurrence of avoidable credit and checking fees, credit card behaviours) and to an increased propensity for risk-taking to the detriment of other constructs (e.g. credit card repayment and engagement). So, these results reinforce of thinking the importance about the ways in which financial education programmes are offered.

This research has sought to arrive at a more consistent understanding of financial literacy and been conducted with the intention of integrating the findings of financial literacy research. For example, Fernandes *et al.* (2014) conducted a meta-analytic study to specifically look at the relationship between financial literacy, financial behaviour and financial education. Recently, Peeters *et al.* (2018) developed a systematic review to identify successful elements in financial literacy and the role of group counselling. Although the contribution of these works is widely acknowledged, further clarification is still needed in these fields since the work of Fernandes *et al.* (2014) did not include antecedent and consequent elements which differed from those for financial behaviour, while the study of Peeters *et al.* (2018) did not advance the generalised understanding of the phenomenon.

Managerial implications

From a managerial perspective, this study also offers contributions to practitioners and institutions interested in promoting financial well-being by means of financial education programmes. Financial literacy is commonly expected to promote increased financial well-being (Braunstein and Welch, 2002; Remund, 2010), but this relationship was not confirmed by the calculations performed in the current meta-analysis. The weak role of financial literacy in predicting financial well-being has important implications for financial education efforts. In accordance with Dholakia *et al.* (2016, p. 152), "simply teaching factual knowledge about how personal finance works as is done in conventional financial literacy programs may not be enough; it may be necessary to teach people habits that encourage consistent saving and ways to generate and maintain a saving-oriented lifestyle".

According to Fernandes *et al.* (2014), financial education initiatives focused on developing interpersonal skills may be more effective than those focused on content knowledge about interest rates and inflation. Personal characteristics such as gender, education, income and prior experience with varying investments should be considered in order to better delineate such intervention programmes.

Limitations and future research

Finally, the work does have some limitations, such as the non-use of qualitative studies and the adverse cut-off that exists in the secondary data. These limitations can be reduced with the application of research methodologies other than meta-analysis. We also considered papers measuring financial literacy in an objective way. Thus, in this case, we did not analyse studies measuring the financial literacy construct by means of subjective elements (e.g. confidence). Another important limitation refers to the fact that one of the problems with meta-analysis is the reduction in adverse concepts that exist in the used secondary data. Therefore, it should be pointed out that since these data are empirical and derived from different authors, there may be opposing conclusions. Therefore, some constructs (e.g. financial knowledge) could be measured in both objective and subjective ways. In this case, we cannot test using a separate format, because there are only a few studies available about this relationship. As such, other studies, with a higher number of relationships, could test a possible difference between these dimensions (objective and subjective).

Despite these limitations, we would like to highlight the contribution of this study to the field of financial literacy, in order to provide more assertive conclusions on the subject. This systematic review has enabled us to identify possible areas in need of further investigation, such as credit card behaviours and financial well-being. This paper can help managers to implement assertive public policies, since the results found here are conclusive based on the meta-analytic approach (Lipsey and Wilson, 2001; Green, 2005). In this sense, it is possible to imagine that actions carried out from the very beginning of children's educational trajectories, particularly directed at women from all income bands, will lead to more consistent results.

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Corresponding author
Fernando De Oliveira Santini can be contacted at: santiniconsultores@terra.com.br

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The effects of social media brand personality on brand loyalty in the Latvian banking industry

The mediating role of brand equity

Zanete Garanti
Department of Business Administration, Cyprus International University, Lefkoşa, Turkey, and
Philip Siaw Kissi
Management Information Systems, Cyprus International University, Lefkoşa, Turkey

Abstract

Purpose – The purpose of this paper is to draw upon social information processing theory and its purpose is twofold. First, it aims to examine the relationship among five brand personality traits (responsibility, activity, simplicity, emotionality and aggressiveness) as to brand equity created on social media in the banking industry of Latvia. Second, it aims to unveil the indirect effects of brand personality on brand loyalty, treating brand equity as a mediating variable.

Design/methodology/approach – A questionnaire was designed and a survey method was employed in line with the above-mentioned purposes. Data were collected from 404 customers who followed retail banks on social media. A series of hypotheses were developed and tested using structural equation modeling.

Findings – The results show that aggressiveness, followed by responsibility and activeness, form positive brand equity on social media. In contrast, emotionality and simplicity do not contribute to the brand equity of banks on social media. The results also reveal that brand equity positively impacts brand loyalty and partially mediates brand personality and brand loyalty relationship. The theoretical model is thus validated and can be used in future research.

Research limitations/implications – The current study is cross-sectional and has a limited sample size and representativeness. Nevertheless, the results of the present study bring valuable implications for marketing managers who value the role of social media in creating long-term company–customer relationships.

Originality/value – Over the past 20 years, the literature has been dominated by studies that mainly focus on the definition of brand personality and its traits. Unlike the aforementioned efforts, the current study brings new insight into the subject by focusing on brand personality created on social media and linking it to the actual consumer outcomes and exploring the mediating role of brand equity in the banking industry of Latvia.

Keywords Latvia, Banking industry, Social media, Brand personality, Brand loyalty

Paper type Research paper

Introduction

The emergence of companies using social media has changed the way people buy and sell goods, search for product and service information and interact with companies and other customers (Garcia-Morales *et al.*, 2018; Correa *et al.*, 2010). In an attempt to manage their customer relationships, companies make use of a wide set of social media platforms such as blogs, websites, forums and social networking websites. Utilizing social media does not only offer some unique opportunities to interact (Kaplan and Haenlein, 2010; Hanna *et al.*, 2011), but also provides an opportunity to achieve marketing goals with a reduced cost (Felix *et al.*, 2017). Although social media is most actively used and dominated by the hospitality, pharmaceutics and manufacturing industries (Adweek, 2018), it must be taken into consideration that the finance sector is also rapidly growing. A recent study by the American Bankers Association (2017) reveals that 74 percent of banks value themselves as being active on social media, while 76 percent agree that utilizing social media is essential

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for a bank. The aforementioned study also reveals that banks use social media mainly for communication, advertising, risk management and customer service purposes.

It is an undeniable fact that the importance of social media in the overall marketing strategy of a company has increased (Macarthy, 2018) and a growing number of companies are now reaching out to consumers through social media (Okazaki and Taylor, 2013). While this is the case, some companies are more successful than others in their ability to communicate with consumers on social media (Hanna *et al.*, 2011). A successful social media communication strategy requires mindful adaption, community building and absorptive capacity (Culnan *et al.*, 2010), showcasing the distinctive characteristics of the organizations on social media (Leonardi and Vaast, 2017) and effectively adopting the personification approach (Men and Tsai, 2015). Therefore, "the set of human characteristics associated with the brand" (Aaker, 1997) – or simply "brand personality" – has an undeniable role in creating successful communication on social media (Hu *et al.*, 2018) and it helps organizations manage brand perceptions (Xu *et al.*, 2016). Moreover, according to the study of Walsh *et al.* (2013), users of social media develop much higher perceptions of brands' personality and image than non-users.

Corporate brand personality "should reflect the corporate values held by the organization" (Keller and Richey, 2006), and should also become a reflection of internally espoused values. An effectively managed brand personality (Lee and Kang, 2013) can increase the stakeholders' engagement and involvement (Cho and Auger, 2017). Customers develop an identity with the brand (Hu *et al.*, 2018) as well as an attachment toward the brand (Swaminathan *et al.*, 2008) with matching personality. The personal meaning that is developed (Aaker and Fournier, 1995) systematically influences brand outcomes such as brand associations (Freling and Forbes, 2005), brand attachment (Malär *et al.*, 2011), brand trust (Chi *et al.*, 2018) and brand loyalty (Molinillo *et al.*, 2017). This, in return, determines consumer behavior and purchase intentions (Islam *et al.*, 2017). One of the most recent studies on virtual bank personality in the banking industry (Ong *et al.*, 2017) reveals that "a clear and consistent virtual brand personality leads to customer satisfaction and ultimately, increased brand loyalty."

All the intangible brand assets like image, associations, awareness and perceived quality (Aaker, 2009) develop brand equity (Keller, 1993) – one of the most important antecedents of customer loyalty (Taylor *et al.*, 2004). Brand equity is the driver of future cash flows (Ambler *et al.*, 2002) as it creates loyal customers paying premium prices for a product or service (Davcik *et al.*, 2015). Loyalty both as an attitude and behavior do contribute to financial performance (Smith and Wright, 2004) and a firm's profitability (Hallowell, 1996) while also benefiting non-financial outcomes such as positive word of mouth (Watson *et al.*, 2015).

Several research gaps are addressed in the current article. First, both academics and practitioners have devoted significant attention to brand personality since the original work of Aaker (1997), with banks' personality research not being an exception (Kaynak, 1986; Gibbons, 2008). For example, Wentzel (2009) attempted to measure how perceptions of bank personality changes once the customer meets with the employees of a bank. In spite of the rapidly growing use of social media networks to interact with customers, limited empirical evidence is available regarding the brand personality that banks create on social media. For example, Ong *et al.* (2017) introduced the term consumer-based virtual brand personality (CBVBP) and attempted to gather empirical evidence from the Malaysian banking industry. Although social media is the most frequently used source of information amongst high propensity visitors (Dilenschneider, 2016) – overreaching websites by 15 percent and mobile web by 10 percent – Ong *et al.* (2017) focused on the brand personality of online banking on the banks' website instead. In addition to this, some researchers used social information processing (SIP) theory (Walther, 1992, 1996, 2007) in an attempt to identify the brand personality traits that allow the banks to develop hyperpersonal relationships with their customers on social media and the ones that promote customers who patronize the bank due

to its communication. Moreover, the majority of empirical studies to date have focus on either developing or modifying brand personality scales (e.g. Azoulay and Kapferer, 2003), presenting limited empirical evidence that would link brand personality with the actual brand outcomes (Kim *et al.*, 2001; Ong *et al.*, 2017). This calls for more research (Valette-Florence *et al.*, 2011) and empirical evidence on how specific brand personality traits affect consumer responses (Badgaiyan *et al.*, 2017). With regard to the outcomes, Geuens *et al.* (2009) suggested testing proposed brand personality traits and scale and its impact on consumer loyalty. On the other hand, Kamboj *et al.* conducted a study on consumer–brand relationships on social media and suggested future studies to include brand equity as an essential consumer outcome. Although considerable research has been devoted to brand personality in various industries such as tourism (e.g. Chi *et al.*, 2018), sports (e.g. Blank *et al.*, 2018) and fashion (Kim, Kim and Holland, 2018; Kim, Vaidyanathan, Chang and Stoel, 2018; Tong *et al.*, 2018), less attention has been paid to brand personality in the banking industry. Therefore, among others, Kamboj *et al.* have recently highlighted the need for consumer–brand relationships on social media to be explored in depth in the banking industry. Lastly, a considerable number of the empirical studies in the literature have dealt with brand personality in developed economies (Kuenzel and Halliday, 2010; Okazaki, 2006) or emerging economies (Rojas-Mendez *et al.*, 2004). Latvia as a developing economy is mostly ignored in academic research, although the importance of online solutions in the banking industry in Latvia has previously been identified (Brige, 2006). In an attempt to address the above-listed research gaps, the current study investigates the mediating role of brand equity in the relationship between brand personality dimensions (responsibility, activity, aggressiveness, simplicity and emotionality) and brand loyalty. More specifically, our study examines:

(1) the impact of brand personality dimensions (responsibility, activity, aggressiveness, simplicity and emotionality) on brand equity;

(2) the effect of brand personality dimensions and brand equity on brand loyalty; and

(3) brand equity as a mediator between brand personality dimensions and brand loyalty.

Theoretical foundations and hypothesis

Social information processing theory

To understand how brand personality is perceived on social media and how it may spiral into brand equity and loyalty, various complex factors that underlie online company–customer communication must be examined. In an attempt to explain the aforementioned phenomena, the current study uses SIP theory, originally developed by Joseph Walther (1992), based on the belief that computer-mediated communication users can develop as strong relationships as the ones developed face-to-face. Said theory "focuses on how communicators adapt to the absence of nonverbal cues when using a medium that is generally restricted to textual symbols" (Walther *et al.*, 2015). Although relationships may develop rather slowly in the computer-mediated environment, users tend to find ways to disclose personal information (Bryant *et al.*, 2011). It is even believed that disclosure of self and personal information is more frequent in computer-mediated communication (Nguyen *et al.*, 2012) compared to face-to-face communication.

In his theory, Walther (1992, 1996) describes three phases of SIP, which are, namely, impersonal, interpersonal and hyperpersonal. Relationships in online communities are built in the forms of "like," "share," "follow," and "comment." SIP theorists argue (Walther, 2007) that first, within a short period, low or even high number of causal messages are exchanged, and members develop a loose/impersonal relationship. In the early days, computer-mediated communication was strictly used for business purposes. Therefore, all computer-mediated communication was considered to be solely impersonal

(Parks and Floyd, 1996). Nowadays, it is believed that when more frequent messages are exchanged, the "socially oriented exchanges between users" (Robinson and Turner, 2003) arise, forming interpersonal relationships. Hyperpersonal relationships occur when many messages are exchanged over a long period of time (Abedin and Chew, 2016), and deep relationships are formed. Although insufficient nonverbal clues are considered to be one of the disadvantages of computer-mediated communication, they in fact help form positive impressions. These clues even allow receivers to "construct idealized images of their partners and relationships" (Lamerichs, 2003).

Several studies acknowledge SIP theory and its importance in marketing. For instance, Tybout *et al.* (1981) have recognized the value of SIP theory in "guiding managerial practice" when developing marketing strategies, while Davis and Agrawal (2018) test the role of interpersonal identification in evaluating online reviews of products and services.

SIP theory provides guidance about the direct relationship of brand personality and its dimensions on brand equity and brand loyalty. When company–customer communication takes place in a computer-mediated environment, customers select information that appeals to them, forming an image and attitude toward the company (Goldman, 2001). Brand personality, as an integral part of the brand image (Malik and Naeem, 2013), plays a key role for communication in progressing from non-intimate to intimate (Lew *et al.*, 2018). Such communication allows trust to be developed (Nurul *et al.*, 2017), and trust leads to a successful and satisfying long-term relationship (Edwards *et al.*, 2019). At the hyperpersonal relationship stage (Abedin and Chew, 2016), customers are expected to have a positive overall image and loyalty toward the company (Forman and Whitworth, 2005). In addition to the above, SIP theory also guides the emergence of brand equity as a mediator in brand personality–brand loyalty relationship. A loyal company–customer relationship evolves over time (Cropanzano and Mitchell, 2005). First, customers interpret information that is available to them in the social context (Demerouti *et al.*, 2018), and in line with their interpretation, they form either a negative or a positive overall image. Customers patronize the company only when the image formed is a positive one.

The role of brand personality in maximizing brand equity

"The set of human characteristics associated with the brand" (Aaker, 1997), or simply the brand personality, has achieved a great deal of attention in marketing literature since the original work of Aaker (1997). While there is a census on brand personality concept and its importance in marketing (Choi *et al.*, 2017), the discussion with regard to brand personality scales is still ongoing.

Originally, Aaker (1997) proposed five brand personality dimensions which are, namely, sincerity, excitement, competence, sophistication and ruggedness. Critics (e.g. Azoulay and Kapferer, 2003) argue that proposed brand personality scales are measures of brand identity. Meanwhile, Aaker approached the brand personality in cross-cultural settings (Aaker, 2000) and suggested that in the case of Japan, ruggedness is replaced with peacefulness. On the other hand, a study conducted in Germany (Bosnjak *et al.*, 2007) revealed four brand personality dimensions: drive, conscientiousness, emotion and superficiality, while Grohmann (2009) suggested two gender personality scales – masculinity and femininity. Recognizing that brand personality is highly impacted by culture, Geuens *et al.* (2009) attempted to develop brand personality scale, reliable "between-brand between-category comparisons, for between-brand within-category comparisons, and for between-respondent comparisons." The suggested scale, which is also used in the current study, consists of five brand personality dimensions. These are, namely, responsibility, activity, aggressiveness, simplicity and emotionality, which are validated in cross-country and cross-culture settings.

Responsibility stands for an "obligation to be held accountable for one's actions and their consequences" (Madrigal and Boush, 2008), where customers expect the bank to act in down

to earth, stable and responsible manner (Japutra and Molinillo, 2017). Customers who perceive their bank as responsible, are expected to develop a positive attitude toward the bank and its services (Poolthong and Mandhachitara, 2009). An activity represents the active, innovative and dynamic personality of the bank (Geuens *et al.*, 2009), which is an essential aspect involved in the process of building customer-brand relationships and predicting customer behavior (Japutra and Molinillo, 2017). Aggressiveness reflects the aggressive and bold personality traits (Möller and Herm, 2013), which can be seen as a negative trait in the conservative sector of banking (Gordon *et al.*, 2016). Although this is the case, authors argue that aggressiveness can also be a reflection of power, success and achievement (Badgaiyan *et al.*, 2017), positively perceived by the customers of banks. Simplicity reflects the ordinary and simple nature of a brand (Matzler *et al.*, 2016), expressing customers' need for down-to-earth products and services (Arora and Stoner, 2009), which is especially important in online environments (Park *et al.*, 2005). Finally, emotionality stands for romantic and sentimental traits (Geuens *et al.*, 2009). When a brand becomes emotional (Toldos-Romero and Orozco-Gómez, 2015), and trigger customers' emotional interest (Guido *et al.*, 2010), it is reflected in positive customer behavior.

Empirical evidence suggests that brand personality traits are of unique importance and have the potential to create a differentiating impact on customer and firm-level outcomes. According to Molinillo *et al.*, responsibility can positively impact results, while activity has a negative effect. When gathering evidence from the higher education sector, Rutter *et al.* concluded that excitement and competence are the leading personality traits that ensure positive outcomes. Similarly, a cross-cultural wine industry study reveals excitement as the most effective brand personality trait (Treen *et al.*, 2017), that leads to positive outcomes.

Customers that can identify themselves with the brand personality seen on social media are expected to develop positive feelings toward the company and the brand. Consumer perceptions of brand personality reflect the added value of the brand (Valette-Florence *et al.*, 2011). The added value that brand personality creates is conceptualized as customer-based brand equity, which in other words is the "differential effect of brand knowledge on consumer response to the marketing of the brand" (Keller, 1993). Lassar *et al.* (1995) suggested five dimensions: performance, value, social image, trustworthiness and commitment, while Aaker (1996) proposed four dimensions of brand equity that are used more frequently in the marketing literature. The dimensions proposed by the latter are loyalty, perceived quality, associations, and awareness. Interestingly, loyalty can be treated in two ways, either as part of equity or as an outcome of brand equity (Aaker, 2009).

Marquardt *et al.* (2017) defined brand personality framework as an effective tool to assess overall brand equity. Another study which explored the link between the design of logos, brand personality and brand equity (Luffarelli *et al.*, 2018) put forward that interesting personality associated with brand logos promotes brand equity. Several other studies conducted in various industries have concluded that brand personality positively affecting brand equity (e.g. Giroux *et al.*, 2017; Liao *et al.*, 2017). Although this is the case, only a limited number of studies link brand personality with brand equity in the banking sector. In the context of Islamic bank in Bangladesh, authors (Fatema *et al.*, 2015) found that brand image and loyalty are the main contributors of brand equity. The findings of another study conducted among 50–69-year-old women in Australia suggested that responsibility and activity traits of banking services tend to be essential catalysts of behavioral intentions and attitudes (Gordon *et al.*, 2016). In light of the above-mentioned studies, a positive link between brand personality traits and brand equity is expected in the current study:

H1. Brand personality traits (a) responsibility, (b) activity, (c) simplicity, (d) emotionality and (e) aggressiveness have a positive influence on brand equity.

The impact of brand equity on brand loyalty

When a particular brand has created value for its consumers, the consumers are then expected to positively respond to the marketing activities of the brand (Keller and Lehmann, 2006). Loyalty, which is defined as "the strength of the relationship between an individual's relative attitude and repeat patronage" (Dick and Basu, 1994), is the most desirable outcome for a company. Hence, the majority of marketing efforts are concentrated on sustaining and increasing loyalty. Both conceptual and empirical research have failed to reach a consensus with regard to brand equity and brand loyalty relationship. Some authors (e.g. Aaker, 1996) consider brand loyalty as the dimension of brand equity, while others (e.g. Taylor *et al.*, 2004) treat brand equity as an outcome of brand loyalty. In this paper, authors argue that brand equity occurs when "customer is familiar with the brand and holds some favorable, strong, and unique brand associations in memory" (Keller, 1993). The authors of the current study see this as a precondition in building strong, loyal customer relationships. In addition, empirical evidence suggests that the higher the brand equity, the higher the loyalty (e.g. Netemeyer *et al.*, 2004; Taylor *et al.*, 2004; Juga *et al.*, 2018; Khadim *et al.*, 2018; Foroudi *et al.*, 2018). With particular interest in social media marketing of luxury fashion brands, Kim and Ko (2012) discovered that brand equity created on social media influences customer behavior in a powerful way. Moreover, a similar study (Godey *et al.*, 2016) on luxury brand consumers suggests that brand awareness in particular and brand image dimensions of brand equity created on social media are significant predictors of loyalty. Therefore, the authors conclude that brand equity is expected to influence brand loyalty positively. That is:

H2. There is positive relation between brand equity and brand loyalty.

The impact of brand personality on brand loyalty

Companies try to build unique brands with outstanding personalities (Chung and Park, 2017) that differ from competitors (O'Cass and Lim, 2002) in order to create a competitive advantage over the others (Chung and Park, 2017). When a company successfully positions itself in the consumers' mind, customers are expected to develop commitment toward the company with distinctive features (Chi and Qu, 2008), leading to an increased number of more loyal consumers (Kim, Kim and Holland, 2018; Kim, Vaidyanathan, Chang and Stoel, 2018).

When researching toys and video game market, Lin (2010) found out that various brand personality traits have a positive effect on both affective and action loyalty. Kim *et al.* (2001) argue that the higher the attractiveness and customer identification with brand personality is, the higher will be the loyalty. Wahyuni and Fitriani (2017) conducted a study on Islamic bank consumers and concluded that brand personality positively affects brand loyalty. Therefore, the authors suggest that:

H3. Brand personality traits (a) responsibility, (b) activity, (c) simplicity, (d) emotionality and (e) aggressiveness have positive influence on brand loyalty

Mediating role of brand equity

Guided by the SIP theory, the present study suggests that the relationship between brand personality traits and brand loyalty is mediated by the level of brand equity developed on social media networks. Conceptually, the current hypothesis is built on the premise that hyperpersonal level of relationships – where customers build loyal relationships with the company – can be built with the presence of interpersonal relationships, e.g., knowledge of the brand, awareness, perceptions and brand image (Walther, 2007). Therefore, we suggest that:

H4. Brand equity mediates the relationship between brand personality and brand loyalty.

Research methodology

Respondents and procedure

Following the deep regression and financial crisis in Latvia in 2008, 2016 saw the country become one of the fastest growing economies in the EU (OECD Latvia, 2016). The Latvia Financial and Capital Market Commission (2018) lists 15 commercial banks that operate in Latvia. The domestic-centered bank segment in Latvia is dominated by Scandinavian banks and their branches (OECD Latvia, 2016). The banks with the highest assets in 2017 are Swedbank, Luminor Bank and SEB Bank. All banks operating in Latvia use social networks, mainly Facebook. Swedbank Latvia Facebook page is followed by more than 51 thousand people, while 12 thousand people follow SEB Bank account.

Data collection took place in April 2018, during which the activity of the banks' social network sites was investigated. Within two months (February and March), the banks shared 157 posts, tweets and Instagram posts. A total of 2019 users were identified as active followers of the banks' social media accounts (they either liked, shared, tweeted or commented on the content on social media sites). The customers of banks were contacted via a private message on social media and a link to the questionnaire developed by Google Forms was shared with the participants. Several measures were taken to ensure participation and to eliminate the likelihood of common method bias. Researcher ensured that there was no right or wrong answers to the questions, no financial information was asked and responses remained anonymous. A private message was sent to 1,873 participants that were enabled to receive messages from a user not in their network. Out of the 1873 messages sent, 420 were returned to the authors. Hence, the response rate is 22 percent – a rate that is well consistent with previous web-based study response rates (e.g. Correa *et al.*, 2010). A total number of 404 (96 percent) questionnaires were fully answered and therefore included in the current study. The demographics of the respondents are represented in Table I below.

According to the data presented in Table I, a total of 404 responses were gathered. In total, 80.9 percent of the respondents were female and 19. 1 percent were male. According to the authors' observations during the data collection stage, females were four times more active in liking and commenting on social media posts, which is also represented in our sample. Majority of the respondents were 26–35 years old (44.3 percent), while 31.7 percent of the respondents were 18–25 years old, 14.1 percent were 36–45 old and 9.9 percent of the respondents were over 46 years of age. The results of the survey found that 64.4 percent of the respondents reported that they follow Swedbank, 12.9 percent followed SEB bank, 4.0 percent followed Bank Citadele, 3.2 percent followed Rietumu bank and the remaining 15.5 percent reported that they followed other banks on social media. Regarding the number of years the respondents have been clients of their banks, 34.9 percent reported being customers for 4–6 years, 34.4 percent were customers for 10 years and more, while 24 percent were clients for less than three years and 6.7 percent were clients for 7–10 years. A majority of the respondents follow their current banks' social networks for less than one year (35.1 percent), 1–3 years (46.3 percent); fewer respondents report following the bank for 4–6 years (13.6 percent) and 7–10 years (5 percent). While a majority of the respondents indicated that they follow their banks on social networks because they are clients of the bank (65.6 percent), others stated that they followed their banks to show others that they support this bank (4.7 percent), or to receive the latest information (21.5 percent) and to access special offers (8.2 percent).

Measurement scales

The questionnaire was developed in English and then translated into Latvian using the back-translation method in line with the suggestion of Brislin (1970). The questionnaire was edited by academics who work in the field of marketing. Said editors are native Latvians and

Demographic category	Frequency	Percentage
Gender		
Male	77	19.1
Female	327	80.9
Age		
18–25	128	31.7
26–35	179	44.3
36–45	57	14.1
Above 46	40	9.9
Bank followed on social media		
Swedbank	260	64.4
SEB bank	52	12.9
Bank Citadele	16	4.0
Rietumu banka	13	3.2
Others	63	15.5
Years of being customer		
Less than three years	97	24
4–6	141	34.9
7–10	27	6.7
10 years and more	139	34.4
Years of follow this bank on social media		
Less than one year	142	35.1
1–3	187	46.3
4–6	55	13.6
7–10 years	20	5
Reasons to follow this bank on social media		
Because I am client of this bank	265	65.6
To show my support to the bank	19	4.7
To receive the latest information	87	21.5
To access special offers	33	8.2

Note: $n = 404$

Table I. Demographic distribution

constitute the pilot sample of five bank customers. The aim of creating a pilot sample was to ensure the understandability of questionnaire items. The final questionnaire consisted of four parts: demographics, statements regarding brand personality, brand equity and brand loyalty.

For brand personality, the Geuens *et al.* (2009) brand personality scale is used. This scale consists of five brand personality dimensions which are, namely, responsibility, activity, aggressiveness, simplicity and emotionality. While responsibility includes traits like down to earth, stable and responsible, activity consists of active, dynamic and innovative traits. On the other hand, aggressiveness is explained using aggressive and bold traits. Simplicity is measured with ordinary and simple traits and finally, emotionality is assigned the romantic and sentimental traits. All traits have been measured in Likert scale, ranging from 1 (not characteristic for the brand at all) to 7 (very characteristic for the brand). Overall brand equity was measured using four items suggested by Yoo *et al.* (2000), while brand loyalty was measured using three items from Yoo *et al.* (2000) study. The overall brand equity and loyalty were both measured using five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Data analysis strategy

The data of the employees in the banking industries were analyzed using SPSS version 24.0 and LISREL 9.30 version for the structural equation modeling. The aim of the analysis was

to examine the suitability of the research models and to predict factors influence of each research hypotheses. Aptness of the model constructs with its items was tested by investigating the internal consistency, content, convergent and discriminant validity (Anderson and Gerbing, 1988). Exploration factor analysis, structural model, Confirmatory factor analysis and hypotheses were also tested.

Results

Content validity

The content of the survey instruments used in the study was examined in two ways: items of the constructs were adopted from previous studies that have been validated and the survey instrument was reviewed by some professionals in the field under investigation to confirm content validity.

Internal consistency

The internal consistency of the survey items was assessed using Cronbach's α. It is recommended that the internal consistency or reliability of each construct exceeds or equals to 0.70 (Hair *et al.*, 2010). As indicated in Table I, Cronbach's α values range from 0.791 to 0.888. In addition, the sampling adequacy was measured using Kaiser–Meyer–Olkin (KMO) and Bartlett's test of sphericity. The results showed significant statistics of χ^2 (171) = 3,972.521 ($p = 0.000 < 0.05$) and the KMO measure = 0.778 > 0.500. Therefore, the data in this study is regarded as appropriate for the factor analysis to proceed.

Convergent validity

The convergent validity was measured by testing factor loadings (λ), average variance extracted (AVE), and composite reliability (CR). The accepted values of AVE for each construct should be more than 0.50 while the CR values should exceed 0.70 for recommended convergent validity (Hair *et al.*, 2010). Furthermore, the factor loading (λ) for all the items were above 0.60, which indicates a significant level of acceptance (Chen and Phou, 2013). As reported in Table II, the constructs values of AVE, CR and factor loading (λ) of the items fall within the acceptance range.

Discriminant validity

The validity of the discriminant is achieved if the square root of the AVE for each construct are higher than the inter-construct correlation of the research model (Chin, 1998; Hair *et al.*, 2010). As displayed in Table III, the square root of AVE (in bold) is higher than the correlation values of the constructs. Therefore, the general results satisfy discriminant validity acceptance of the model construct.

The structural model results

Table IV presents the general results of the fitness of the research model. The χ^2/df, p-value, GFI, AGFI, NFI, RMSEA, CFI and SRMR are consistent with previous studies (Kissi *et al.*, 2018; Wu and Chen, 2017; Chin, 1998). Therefore, the values of the fit index of this study are within the acceptance range, suggesting that the research model has an acceptable good fit.

Hypotheses tests

Figure 2 shows the results of the hypothesis testing. From the findings, *H1c* and *H1d* were not supported. That is, no statistically significant influence was identified between brand personality traits of (c) simplicity and brand equity ($\beta = 0.004$, $p = 0.927$), and (d) emotionality and brand equity created on social media in the banking industry in Latvia ($\beta = 0.052$, $p = 0.315$). However, *H1a*, *H1b* and *H1e* were supported. Thus, brand

Construct	Measurement	Factor loading (λ)
	AVE = 0.702, CR = 0.876 and $\alpha = 0.847$	
PR1	Down to earth	0.836
PR2	Responsible	0.852
PR3	Stable	0.825
Personality activity	AVE = 0.743, CR = 0.896 and $\alpha = 0.888$	
PA1	Active	0.852
PA2	Dynamic	0.872
PA3	Innovative	0.861
Brand equity	AVE = 0.781, CR = 0.877 and $\alpha = 0.800$	
BE1	It makes sense to use this bank instead of any other bank, even if they are the same	0.900
BE2	Even if another bank has same features as this bank, I would prefer to use this bank	0.867
Personality simplicity	AVE = 0.817, CR = 0.899 and $\alpha = 0.829$	
PS1	Ordinary	0.919
PS2	Simple	0.889
Personality emotionality	AVE = 0.795, CR = 0.886 and $\alpha = 0.791$	
PEM1	Romantic	0.879
PEM2	Sentimental	0.904
Personality aggressiveness	AVE = 0.743, CR = 0.897 and $\alpha = 0.870$	
PAG1	Aggressiveness	0.872
PAG2	Bold	0.849
PAG3	Pretentious	0.865
Brand loyalty	AVE = 0.710, CR = 0.907 and $\alpha = 0.864$	
BL1	Consider myself to be loyal to this bank	0.839
BL2	This bank would be my first choice	0.912
BL3	I will not use other bank if this bank is available	0.878
BL4	Recommend this bank to a friend	0.731

Notes: AVE $\equiv (\sum \lambda^2)/n$, CR $\equiv (\sum \lambda)^2/((\sum \lambda)^2 + \sum a)$, where $a \equiv 1-\lambda^2$, factor loadings (λ) < 0.600 were omitted, varimax with Kaiser normalization

Table II. Results of exploration factor analysis

Construct	PR	PA	BE	PS	PEM	PAG	BE
PR	*0.838*						
PA	0.463	*0.862*					
BE	0.271	0.259	*0.884*				
PS	0.131	0.190	0.093	*0.904*			
PEM	0.129	0.193	0.115	0.279	*0.896*		
PAG	0.290	0.270	0.296	0.152	0.102	*0.862*	
BE	0.181	0.127	0.155	−0.044	−0.020	0.253	*0.843*

Note: Diagonal elements are square roots of AVE

Table III. Correlation matrix of the constructs

Fit index	Accepted value	Research model
χ^2/degree of freedom (χ^2/df)	$\leqslant 3.00$	2.429
p-value	< 0.05	0.033
Goodness of fit index (GFI)	$\geqslant 0.80$	0.992
Adjusted goodness of fit index (AGFI)	$\geqslant 0.80$	0.953
Normed fit index (NFI)	$\geqslant 0.90$	0.960
Root mean square error of approximation (RMSEA)	$\leqslant 0.08$	0.059
Comparative fit index (CFI)	$\geqslant 0.90$	0.975
Standardized root mean square residual (SRMR)	$\leqslant 0.05$	0.032

Table IV. Confirmatory factor analysis

personality traits of responsibly ($\beta = 0.216$, $p = 0.007$), activeness ($\beta = 0.150$, $p = 0.021$) and aggressiveness ($\beta = 0.289$, $p = 0.000$) of the research model were important factors in predicting brand equity. Among the aforementioned predicting factors, aggressiveness has the strongest influence of $\beta = 0.289$ on brand equity. This suggests that on social media accounts of the banks, customers perceive aggressiveness as the leading brand personality trait that influences brand equity. Results are summarized in Figure 1 and Table V, respectively.

Furthermore, *H2* was statistically significant, revealing that brand equity has positive influence ($\beta = 0.180$, $p = 0.000$) on brand loyalty. Table IV presents a tabular summary of the results of the hypothesis tests.

In relation to *H4*, multiple linear regression was employed as displayed in Table VII. Two of the five individual dimensions of brand personality traits were supported. That is, personality trait responsibility ($\beta = 0.139$, $p = 0.014$) and personality trait aggressiveness ($\beta = 0.114$, $p = 0.0.27$) have positive influence on brand loyalty. Furthermore, the combined dimension of the individual personality traits has a positive influence on brand loyalty. This means *H3* is supported, suggesting that personality traits ($\beta = 0.205$, $p = 0.000$) have a direct and positive influence on brand loyalty.

Analysis of mediation

Partial or complementary mediated approach employed by previous studies (i.e. Baron and Kenny, 1986; Ong, Nguyen, and Syed Alwi, 2017) to test *H4*.

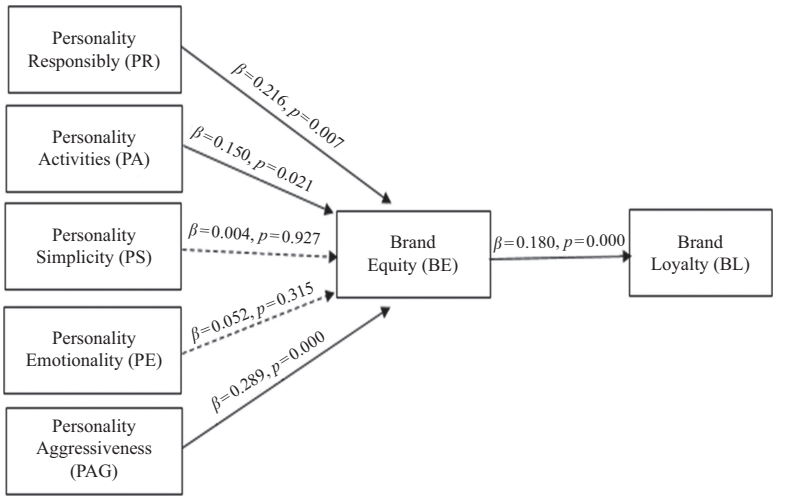

Figure 1.
Path analysis

Hypothesis	Path coefficient	*p*-value	Decision
H1a: PR → BE	0.216	0.007**	Supported
H1b: PA → BE	0.150	0.021**	Supported
H1c: PS → BE	0.004	0.927	Not supported
H1d: PE → BE	0.052	0.315	Not supported
H1e: PAG → BE	0.289	0.000**	Supported
H2: BE → BL	0.180	0.000**	Supported

Note: Supported at $^{**}p < 0.05$

Table V.
Model path analysis

The relationship and calculation of the formula and corresponding results are presented in Tables V–VII and Figure 2. The results suggested partial mediation with both directions having a positive direct significant influence on brand loyalty (sum combined brand personality → brand equity → brand loyalty). In particular ($\beta = 0.385$; $p = 0.000$) and ($\beta = 0.0.180$, $p = 0.000$). Full mediation occurs when the β coefficient is approaching zero or

Model	Standardized coefficients β	t	Sig	Multiple regression model summary
Individual dimension of brand personality (BP) relation with brand equity (BE)				$R = 0.396$ $F = 14.784$ $p = 0.000$
Personality responsibility (PR)	0.165	3.128	0.002	
Personality activity (PA)	0.121	2.258	0.024	
Personality aggressiveness (PAG)	0.210	4.336	0.000	
Personality simplicity (PS)	0.085	1.759	0.079	
Personality emotionality (PE)	0.009	0.195	0.845	
Combined demission of BP (PR, PA and PAG)	0.385	8.354	0.000	$R = 0.396$ $F = 69.784$ $p = 0.000$

Table VI. Relationship between brand personality and brand equity

Model	Standardized coefficients β	t	Sig	Multiple regression model summary
Individual dimension of brand personality (BP) relation with brand loyalty (BL)				$R = 0.396$ $F = 14.784$ $p = 0.000$
Personality responsibility (PR)	0.139	2.481	0.014	
Personality activity (PA)	0.055	0.974	0.331	
Personality aggressiveness (PAG)	0.114	2.222	0.027	
Personality simplicity (PS)	−0.071	−1.389	0.165	
Personality emotionality (PE)	−0.041	−0.805	0.421	
Combined demission of BP (PR and PAG)	0.205	4.194	0.000	$R = 0.205$ $F = 17.591$ $p = 0.000$

Table VII. Relationship between brand personality and brand loyalty

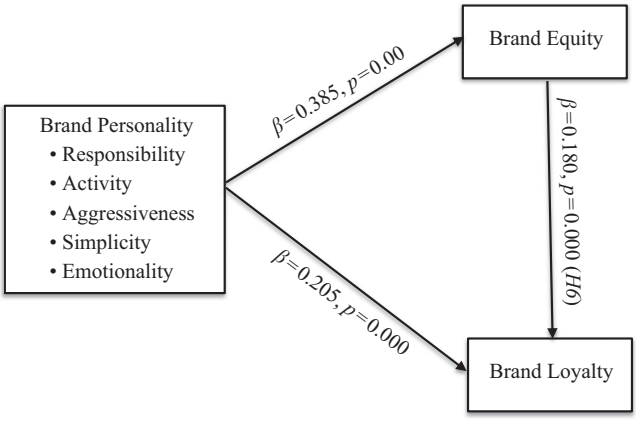

Figure 2. Coefficients of mediation effect

is insignificant regarding the direct effect between "a" and "b" when "m" (mediation) is presented (Baron and Kenny, 1986). Partial mediation takes place when both paths are significant (Ong *et al.*, 2017; Baron and Kenny, 1986), as shown (combined brand personality → brand equity, combined brand personality → brand loyalty and brand equity and brand loyalty). Therefore, *H4* is supported. That is, brand equity mediates the relationship between brand personality and brand loyalty.

Figure 2 displays the relationship and the calculation of the formula and corresponding results of the brand equity mediating brand personality and brand loyalty.

Conclusions and discussion

Loyal consumers are the biggest asset of any company, and managers are forced to find new ways to ensure customers are patronizing the company (Gremler and Brown, 1996). In the era of social media dominated communications (Enli and Simonsen, 2018), where traditional marketing practices are no longer effective (VanMeter *et al.*, 2018), academics and practitioners are constantly in search of innovative marketing approaches. Responding to the recent call of the Badgaiyan *et al.* (2017), Kamboj *et al.* and Geuens *et al.* (2009) investigated brand personality traits that build consumer–brand relationships on social media in the banking industry. The current study was designed to examine brand personality traits created on social media and its impact on brand equity, as well as the mediating role of brand equity in brand personality and brand loyalty relationship.

The study is grounded by SIP theory (Walther, 1992), explaining how relationships are formed in a computer-mediated environment lacking personal, face-to-face contact. The results are based on a survey amongst 404 customers of commercial banks in Latvia that follow banks' social media accounts and indicate the vital role of brand personality traits in developing brand equity and loyalty. A majority of SIP research (Olaniran *et al.*, 2012; Farrer and Gavin, 2009 amongst others) focuses on the impressions and attitudes individuals form in computer-mediated environment toward other individuals in various settings (e.g. online chat rooms, dating sites, etc.). While this is the case, limited efforts have been made to apply SIP theory in company–customer settings (Forman and Whitworth, 2005; Tremblay *et al.*, 2018). The findings of this paper contribute toward a deeper understanding of underlying mechanisms of applying SIP theory in company–customer computer-mediated environment. The findings of the current study suggest that company–customer relationships are formed based on the same SIP principles as individual relationships. The results also shed light on the importance of building positive overall image and matching personality, which allows developing deeper and long-lasting interconnection in form of brand equity and loyalty over time.

Findings of the study suggest that the main personality trait that works as a catalyst for brand equity on social media is aggressiveness ($\beta = 0.289$, $p = 0.000$), which directly contributes to brand loyalty ($\beta = 0.114$, $p = 0.0.27$). Therefore, the findings of the study highlight that customers create positive brand associations and overall equity if the banks' personality created on social media accounts is perceived as forceful and persistent. This finding is consistent with SIP theory and is supported by a study of Badgaiyan *et al.* (2017), which suggests that aggressiveness is a determinant of consumer behavior in all four product categories that were studied. Ha and Janda (2014) confirmed that aggressiveness is indeed essential, but not the leading personality trait for consumers in the Chinese automobile industry. In contrast, when brand personality study was conducted on tourism destinations, aggressiveness was found to have a negative impact on visit intentions (Matzler *et al.*, 2016). The diversity of the results might be mainly due to the effects of culture and the industries studied (Unurlu and Uca, 2017). Moreover, results suggest that aggressiveness as a personality trait might not be as important when there is personal contact involved (e.g. visit a destination, purchasing a car). However, on social media, aggressiveness is a trait that allows the company to stand out and develop closer customer–company relationships, resulting in higher brand equity and loyalty.

In addition to the aforementioned, the results of the current study also indicate that responsibility ($\beta = 0.216$, $p = 0.007$) and activeness ($\beta = 0.150$, $p = 0.021$) do have a role in the creation of brand equity, supporting the outcomes of previous studies (Madrigal and Boush, 2008; Goldsmith and Goldsmith, 2012; Aaker *et al.*, 2001). Under these circumstances, consumers on social networks expect banks' communication to be stable, down to earth and responsible, as well as active, dynamic and innovative. In contrast, the findings of the current study indicate that simplicity ($\beta = 0.004$, $p = 0.927$) and emotionality ($\beta = 0.052$, $p = 0.315$) do not have a statistically significant impact on brand equity. Therefore, it can be concluded that on social media, emotional and simple communication do not attract the attention of consumers, and they are not effective tools in creating brand equity. The current study also confirmed that brand equity is a significant predictor of brand loyalty ($\beta = 0.180$, $p = 0.000$), and brand equity plays a partial mediating role in predicting brand loyalty. SIP theory proposes that interpersonal, warm relationships are essential preconditions to building strong, hyperpersonal relationships that form over time and exchange of messages (Walthers, 1992), which is supported by the findings of this study. These findings are supported by the previous study of Nikhashemi and Valaei (2018), and allow us to conclude that consumers that perceive banks' personality on social media as aggressive, active and responsible develop positive perceptions of the brand, and therefore are more loyal consumers, engaging in repeat purchases and spreading positive word of mouth.

Theoretical contributions

Three main theoretical implications arise from the current study. First, the present study investigated the consequences of brand personality traits created on banks' social media accounts. This is an important contribution, as majority of the previous brand personality studies were conducted on actual product or service that is more tangible (e.g. Lee and Kim, 2018; Kotsi and Slak Valek, 2018), with some recent study focusing on banks' online services on the website (Ong *et al.*, 2017). However, to our best knowledge, brand personality traits have not previously been investigated based on brand personality perceived on social media.

Second, the current study investigates specific brand personality traits and their impact on brand equity and brand loyalty. As suggested by Valette-Florence *et al.* (2011), Badgaiyan *et al.* (2017) and Geuens *et al.* (2009), current literature lacks evidence on how perceived brand personality traits on social media could affect consumer–brand outcomes. Consumers who perceive a brand on social media as aggressive, active and responsible tend to elevate the higher level of brand equity, which, in turn, leads to higher loyalty. In contrast, consumer perception of the brand being a sentimental and emotional personality on social media, do not contribute to the brand equity and loyalty.

Finally, given that brand personality literature mostly presents empirical evidence from various industries like tourism, sports and fashion, the current study is conducted in banking industry following the suggestion by Kamboj *et al.* Banking industry representatives have indeed admitted the importance of social media in building company–consumer relationships (American Bankers Association, 2017). However, limited empirical evidence is available. Moreover, the current study uses data obtained from customers from Latvia that follow banks on social networks, since Latvia and surrounding developing countries are largely ignored in academic literature.

Managerial implications

Social media is a challenging environment for a business and the discussions regarding its effectiveness to meet organizational goals and improve business performance are ongoing (Wang and Kim, 2017). Presence on social media does not necessarily bring success; it is the company's ability to "strategically adopt Web 2.0 technologies into their organization structure" (Haro-de-Rosario *et al.*, 2018) that ensure strong company–customer relationships on

social media. Following the recent banking crisis in 2008 – which had an enormous effect on the economy in Latvia (Romanova, 2012) – banks are operating in highly demanding conditions. The banks not only need to attract new customers, but they also have to restore the trust of the existing ones (Haro-de-Rosario *et al.*, 2018). In relation to this, the findings of the current paper suggest that the starting point for a strong and loyal company–customer relationship could be brand personality. In other words, customers who perceive banks' personality favorably on social media, are more likely to develop stronger brand equity and loyalty.

Brand personality concept brings a promise that brands, like humans, have some specific characteristics (Aaker, 1997), and are alive and "experienceable" (Zook and Salmon, 2017). Findings of the current study suggest that consumers on social media positively perceive banks' brand personality that is aggressive, active and responsible. Therefore, it is recommended that marketing managers apply aggressive, innovative, responsible (not overpromising) marketing communication to build brand equity. It was believed that aggressiveness has a negative, rather than a positive, impact on consumer outcomes (Ha and Janda, 2014; Matzler *et al.*, 2016). Although this is the case, we argue that in a dynamic social media environment, marketing communications that are not aggressive are simply missed out. More specifically, to enchase aggressiveness, the banks need to develop social media communication strategies that emphasize active participation and engagement (Chu, 2011) in forms of likes, shares, comments and discussions. Banks should approach their social media followers with special, time-limited offers and content that requests continuous customer engagement. Creating a scheduled content sharing can help banks to keep track of their activity level. Moreover, banks should balance the promotional and non-promotional content that is regularly shared (Thackeray *et al.*, 2008). Banks should also allow and promote users to create their own content, keeping in mind that consumers expect the banks to take responsibility for the content that is created.

Additionally, the current study suggests that emotionality and simplicity do not enhance customers experience with the bank on social media. Emotionality is seen as an awkward trait for a bank (Mogaji, 2018), while simplicity is not seen as characteristics that would fit in the lifestyle of the people using social media (Ong *et al.*, 2017). Banks should consider their communication on social media and be less emotional and more elaborate, allowing customers to identify banks' social media personality with their lifestyles. Therefore, banks should share the latest and the trendiest content (Ferchaud *et al.*, 2018), organize and engage in activities that are perceived fashionable and represent the popular, modern, successful personality of the social media users.

Finally, to achieve the goals of successful social media marketing strategy, the management should make sure that all employees – in particular, the ones that engage in marketing activities of banks – are trained on the differences between face-to-face and social media marketing. This would help marketing and sales people represent more aggressive and active personality of banks (Luttrell, 2018) when engaging with customers on social media.

Limitations and suggestions for future research

The present study has several limitations that could be addressed in future studies. First, the present study is cross-sectional, and although the present study offers significant contributions to extend the database for generalization purposes, longitudinal and cross-national approach could be adapted. Moreover, the sample size and representativeness are other major concerns of the current study. Future studies could expand the present study by applying it in different geographical locations, industries and samples, as well as various, emerging social networks (e.g. Snapchat). The present study used a quantitative approach, but qualitative or mixed method approach would be appreciated. Finally, only active users and followers of banks' social networks were invited to take part in this study.

To avoid further non-response and selection bias, future studies could also include in their research the followers who do not actively post, comment, and share and like the content.

As the results of the current study reveal some contrasting results with previous studies, hypothesis could be extended to unveil the mediating and moderating roles of gender, culture (Wang *et al.*, 2018) and other demographics (e.g. social networks used, time spent online, age). This would indeed provide a relatively more in-depth evidence on the formation of brand personality on social media. The hypothesis could also be extended to test, apart from equity and loyalty, the brand personality impact on various consumer outcomes which is important in the online environment (Fazal-e-Hasan *et al.*, 2018), e.g., brand value, trust, satisfaction and commitment.

Finally, the present study used Geuens *et al.* (2009) brand personality scales, which is validated to be used in cross-cultural settings. Future studies could evaluate or even compare various brand personality traits and scales to clarify which set of traits and scales are the most efficient when used in social media marketing.

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Corresponding author
Zanete Garanti can be contacted at: zgaranti@ciu.edu.tr

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