

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

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## 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



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 Karjaluo, 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; Jaspersen *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.

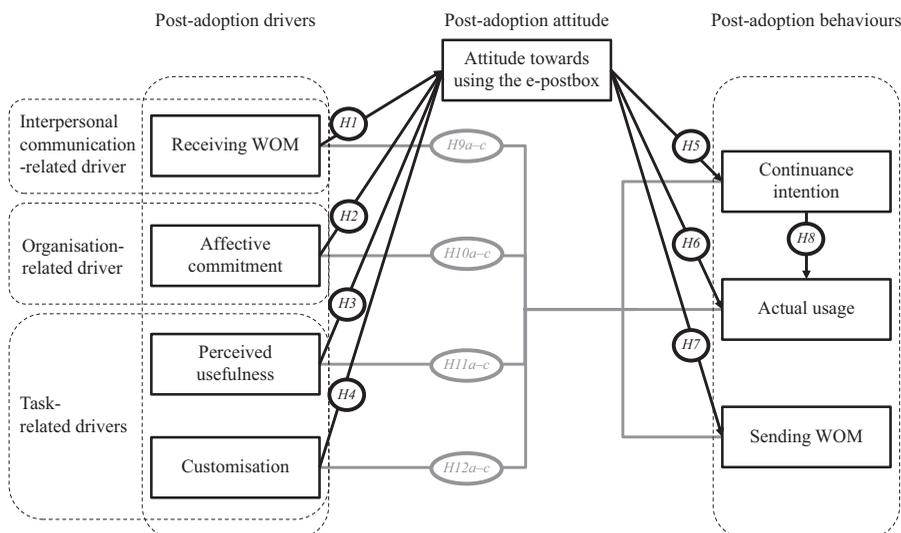


Figure 1. Conceptual model

## 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 Bhattacharjee, 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 (Bhattacharjee, 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

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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 (Bhattacharjee, 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 (Pikkariainen *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-ended 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 <i>et al.</i> (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	Bhattacharjee (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  $\chi^2$  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,  $\chi^2/df = 2.69$ , 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  $\alpha$  and composite reliability was conducted. The internal consistency reliability estimates ( $\alpha$  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	$\alpha$	CR	AVE
Receiving WOM (4.02; 1.18)		0.97	0.98	0.89
This person provided little new information <sup>a</sup>	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 <sup>a</sup>	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 <sup>b</sup>	–			
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 <sup>b</sup>	–			
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 <sup>a</sup>	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 <sup>b</sup>	–			
I am proud to tell others that I use this bank	0.85			

**Notes:** FL, factor loading;  $\alpha$ , Cronbach's  $\alpha$ ; CR, composite reliability; AVE, average variance extracted.  
<sup>a</sup>Reverse coded; <sup>b</sup>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	<i>0.94</i>							
(2) Affective commitment	0.22	<i>0.86</i>						
(3) Perceived usefulness	0.31	0.28	<i>0.92</i>					
(4) Customisation	0.22	0.42	0.53	<i>0.90</i>				
(5) Attitude towards using the e-postbox	0.35	0.28	0.72	0.40	<i>0.96</i>			
(6) Continuance intention	0.37	0.25	0.73	0.34	0.83	<i>0.86</i>		
(7) Actual usage	0.38	0.15	0.53	0.24	0.56	0.66	<i>0.92</i>	
(8) Sending WOM	0.23	0.64	0.27	0.35	0.18	0.19	0.18	<i>0.88</i>

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

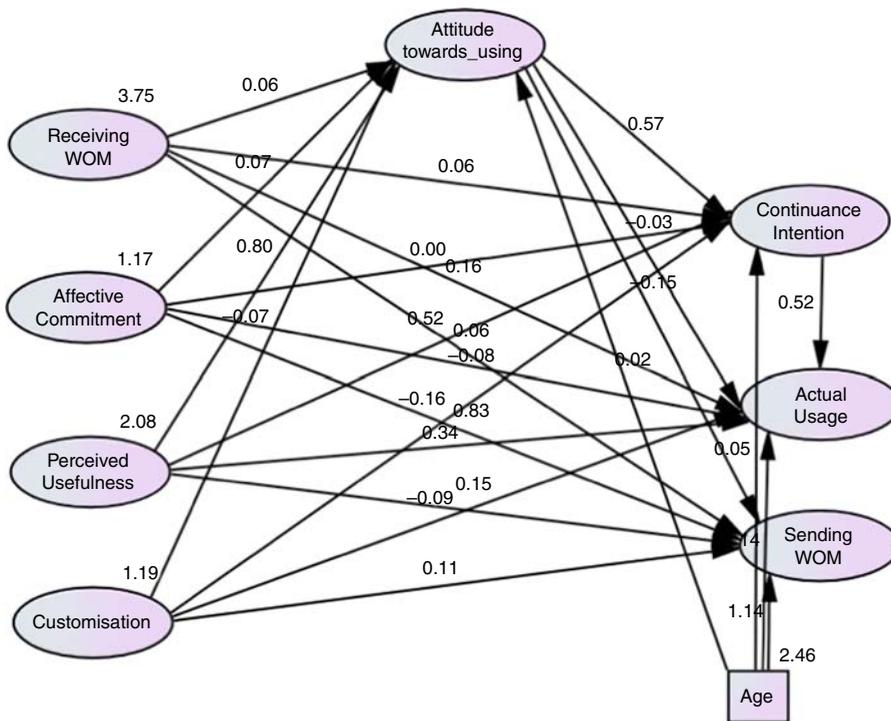
the model, indicating discriminant validity (Fornell and Larcker, 1981). Third, given that some of the intercorrelations of the latent variables are fairly high, the authors conducted a confirmatory factor analysis (CFA) and assessed whether pairs of constructs in the model were correlated less than 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).  $\chi^2$  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

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

**Table V.**  
Structural model

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

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	<i>0.08**</i>	<i>0.09</i>	0.03	<i>0.14**</i>	-0.03	0.06**
Customisation → continuance intention	-0.07	-0.08	<i>-0.24*</i>	-0.03	<i>-0.22**</i>	-0.16***
Perceived usefulness → continuance intention	0.40***	0.35**	<i>0.61***</i>	<i>0.65***</i>	<i>0.64***</i>	0.52***
Attitude towards using the e-postbox → continuance intention	<i>0.66***</i>	<i>0.71***</i>	<i>0.53***</i>	<i>0.43**</i>	<i>0.48***</i>	<i>0.57***</i>
Continuance intention → actual usage	0.39**	<i>0.57**</i>	<i>0.67***</i>	<i>0.37**</i>	<i>0.90**</i>	0.52***
Receiving WOM → actual usage	<i>0.23***</i>	<i>0.25**</i>	-0.06	-0.01	<i>0.21**</i>	0.16***
Perceived usefulness → actual usage	<i>0.51***</i>	<i>0.37*</i>	0.27	<i>0.56**</i>	-0.10	0.34***
Receiving WOM → sending WOM	<i>0.07*</i>	<i>0.15*</i>	<i>0.08</i>	<i>0.09</i>	-0.01	0.06**
Affective commitment → sending WOM	<i>0.84***</i>	<i>0.89***</i>	<i>0.73***</i>	<i>0.84***</i>	<i>0.73***</i>	<i>0.84***</i>
Perceived usefulness → sending WOM	<i>0.35***</i>	<i>0.17</i>	0.11	-0.11	0.10	0.15**
Customisation → sending WOM	<i>0.14</i>	<i>0.12</i>	0.11	0.09	0.03	0.11**
Attitude towards using the e-postbox → sending WOM	<i>-0.31***</i>	<i>-0.26*</i>	-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	$(18)/(24) \times 100 = 75.00\%$	$(12)/(16) \times 100 = 75.00\%$
(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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