

Association for Information Systems AIS Electronic Library (AISeL)

ICIS 2009 Proceedings

International Conference on Information Systems
(ICIS)

2009

Electronic Banking Channels and Task-Channel Fit

Harmut Hoehle

Victoria University of Wellington, harmut.hoehle@vuw.ac.nz

Sid Huff

Victoria University of Wellington, Sid.Huff@vuw.ac.nz

Follow this and additional works at: <http://aisel.aisnet.org/icis2009>

Recommended Citation

Hoehle, Harmut and Huff, Sid, "Electronic Banking Channels and Task-Channel Fit" (2009). *ICIS 2009 Proceedings*. 98.
<http://aisel.aisnet.org/icis2009/98>

This material is brought to you by the International Conference on Information Systems (ICIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICIS 2009 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

ELECTRONIC BANKING CHANNELS AND TASK-CHANNEL FIT

Research-in-Progress

Hartmut Hoehle

School of Information Management
Victoria University of Wellington
New Zealand
Hartmut.Hoehle@vuw.ac.nz

Sid Huff

School of Information Management
Victoria University of Wellington
New Zealand
Sid.Huff@vuw.ac.nz

Abstract

The increase in electronically mediated self-service technologies in the banking industry has impacted on the way banks service consumers. Despite a large body of research on electronic banking channels, no study has been undertaken to explore the fit between electronic banking channels and banking tasks. Nor has there been research into how the 'task-channel fit' and other factors impact on consumers' intention to use electronic banking channels. This paper proposes a theoretical model addressing these gaps. An exploratory study was first conducted, investigating industry experts' perceptions towards the concept of 'task-channel fit' and its relationship to other electronic banking channel variables. The findings demonstrated that the concept was perceived as being highly relevant by bank managers. A research model was then developed drawing on the existing literature. To evaluate the research model quantitatively, a survey will be developed and validated, administered to a sample of consumers, and the resulting data used to test both measurement and structural aspects of the research model.

Keywords: Electronic banking channel, task-channel fit, self-service technology

Introduction

Over the past three decades, the proliferation of new information and communication technologies within the financial industry has significantly influenced the way banks service consumers. In particular, self-service technologies have enabled banks to pursue an electronically mediated multi-channel strategy and nowadays ATMs, telephone banking, Internet banking, and mobile banking are efficient means for selling products and servicing customers.

The first self-service technologies emerged in the 1970s when banks installed the first automated teller machines (ATM), followed by telephone banking services in the 1980s. In the 1990s, banks extended their existing distribution channels further by offering consumers access to their accounts through Internet-based banking applications. Over the past decade, banks have begun to provide mobile banking applications, to enable consumers to bank using mobile technologies such as mobile phones, PDAs, and smart-phones.

For the consumer, these electronic banking channels eliminate the need to visit a branch, and offer convenient access to bank accounts. Banks also benefit from self-service technologies as they can cut costs incurred by the traditional branch network.

However, usage rates suggest that banks are missing out on the opportunity to move even more customers to electronic banking channels. For example, each month 73% of all European banking customers use ATM machines, although only 24% use Internet banking services (DB Research 2006). Similarly, although most North American and Australasian retail banks offer phone banking and mobile banking services, only 5-10% of all consumers have used them (Forrester Research 2007).

In addition, consumers' favor specific electronic banking channel for distinctive product categories. For instance, Internet banking applications are favored for acquiring complex products such as mortgages and loans (DB Research 2006), while mobile banking services are preferred for simple transactions (Forrester Research 2007).

These varying usage patterns indicate that each electronic banking channel has inherent capabilities that align with certain types of banking activities – and clash with others. For instance, complex financial transactions are seen to be difficult to perform on mobile phones due to their hardware limitations such as small screens and clumsy input mechanisms. On the other hand, consumers may use mobile devices for simple banking transactions in situations where they instantly need to access their account and other banking channels are not in reach (e.g. checking their account balance before purchasing goods at the point of sale).

This suggests the notion of a “fit” between a given electronic banking channel and specific banking tasks. Furthermore, it seems reasonable to assume that the better the “fit” between channel and task, the higher will be the adoption and utilization of the channel.

Despite a substantial body of knowledge on electronic banking services, to date there have been no rigorous studies investigating the fit between electronic banking channels and banking tasks. Nor has there been sufficient research into how the task-channel fit (TCF) (perhaps in combination with other factors) impacts a consumer's intention to use electronic banking channels. To address this gap, this research proposes a conceptual research model assessing the factors impacting on consumer intentions to use electronic banking channels.

The remainder of this paper is organized as follows: first we review extant literature on electronic banking services, including research studying the characteristics of electronic banking task, as well as the theoretical foundation of this research. Then we discuss the research model and state the research hypotheses. Next, we report the findings of a relevance check conducted with three German banks. This is followed by the proposed research design outlining the survey questionnaire development and the methods for quantitatively testing the research model.

Literature review

This section initially reviews extant literature on each electronic banking channel. Next, studies focusing on the characteristics of banking tasks are discussed before the theoretical base is outlined.

Electronic banking channels

ATMs are computerized telecommunication devices allowing customers of financial institutions to directly use a secure method to access cash as well as their bank accounts (Moutinho et al. 1989). Studies showed that that age affected consumers intentions to use ATMs and that elder consumers in particular hesitated to use ATMs (Antonides et al. 1999; Zeithaml et al. 1987). Other studies investigated consumer perceptions towards ATMs contrasting user and non-user attitudes. The user group believed that ATMs, would improve service quality (e.g. offering 24/7 access to bank accounts) and presented no inherent risks to them (Leblanc 1990). In contrast, non-users perceived ATMs as too complex, very risky and they were not satisfied with the data representation on ATMs (Leblanc 1990; Marshall et al. 1988). Surprisingly, few articles have developed theoretical frameworks or used existing theory to investigate the usage of ATMs. Among the few, Dabholkar and Bagozzi (2002) developed a theoretical model explaining consumer intention to use ATMs. Borrowing from the technology acceptance model (TAM) (Davis 1989), the findings confirmed that ease of use, performance expectations, and fun, positively affected consumers' attitude towards using ATMs. Similarly, consumer traits such as self-efficacy, novelty seeking, need for interaction and self-consciousness moderated the relationship between the aforementioned constructs and consumers' attitude towards using ATMs (Dabholkar et al. 2002).

Telephone banking is a service provided by banks allowing customers to perform transactions over the telephone (Van Birgelen et al. 2006). Most of these services make use of an automated phone answering system with phone keypad response or interactive voice response (IVR) systems (Ahmad et al. 2002). So far, only a few investigations have been published exploring the utilization of this banking channel. However, these studies consistently suggested that automated phone answering systems can be difficult to use and often trigger consumer irritation (Curran et al. 2005; Van Birgelen et al. 2006).

Internet-based banking allows customers to perform a wide range of banking transactions electronically using a bank's website (Tan et al. 2000). This form of banking is well researched. Many of those studies developed theoretical frameworks using or combining constructs from the diffusion of innovation theory (DOI) (Rogers 1995), theory of reasoned action (TRA) (Fishbein et al. 1975), TAM (Davis 1989), as well as the theory of planned behavior (TPB) (Ajzen 1991) to study consumer adoption and acceptance of Internet banking services. For example, Tan and Thompson (2000) developed a research model investigating the factors impacting on the adoption of Internet banking services in Singapore. Their findings confirmed that consumers' attitude and perceived behavioral control factors, rather than subjective norms, have a significant impact on consumers' intentions to use Internet banking services (Tan et al. 2000). Several other research studies investigated the acceptance of Internet banking services, by using modifications of the original TAM model (Cheng et al. 2006; Lai et al. 2005). Suh and Han (2002) for instance, added a trust construct to the original TAM model aiming to explain customer acceptance of Internet banking applications. The findings indicated that trust has a more direct effect on a customer's attitude than perceived ease of use in the Internet banking context (Suh et al. 2002).

Mobile banking services are a channel whereby the customer interacts with a financial institution using a mobile device, such as a mobile phone or personal digital assistant (PDA) (Barnes et al. 2003). Most mobile banking applications have interfaces enabling customers to access their bank accounts through voiceless applications such as text or mobile Internet based banking services. In the past ten years, a considerable body of research on mobile banking services has emerged. Several studies applied research frameworks traditionally used within the IS literature. For instance, many authors used the TAM model to research consumer acceptance of mobile banking applications (Kleijnen et al. 2004; Luarn et al. 2005). Adding perceived cost, system quality and social influence to the original TAM constructs, one study confirmed that these constructs were positively associated with consumer intentions to use mobile banking services (Kleijnen et al. 2004). Other studies repeatedly listed mobile device attributes like tiny displays, slow data connection, weak usability, and associated cost as inhibitors of mobile banking services (Laukkanen et al. 2005; Mallat et al. 2004).

Banking tasks

A number of studies have examined the distinctive characteristics of various banking tasks, and how those characteristics affect the suitability of the task for a particular electronic banking channel. For example, Sayar et al. (2007) defined domestic transfers, standing orders, and account inquiries as simple and standardized banking tasks. In contrast, credit products (e.g. mortgages, personal loans, and credit cards) as well as investment products (e.g. buying property, stock securities, and bonds) were rated as complex transactions (Sayar et al. 2007). Other authors

advanced this view confirming that complexity and perceived security of financial products influences consumers' propensity to purchase financial products online (Barczak et al. 1997; Black et al. 2002; Lee 2002; Morrison et al. 1998). Likewise, individuals' preferences and habits also affect consumers channel choice (Black et al. 2002; Choudhury et al. 2008; Lee 2002; Limayem et al. 2007; Morrison et al. 1998).

Theoretical base

The theoretical grounding for this proposed study comes from prior research on task-technology fit, or TTF (Goodhue et al. 1995). TTF argues that individuals using information systems with a high TTF will perform better than users carrying out similar tasks on technologies with a low TTF. Since its introduction, the TTF model has been applied in a diverse range of IS contexts (Dishaw et al. 1999; Goodhue 1998; Staples et al. 2004; Zigurs et al. 1998; Zigurs et al. 1999). However, most researchers have studied the TTF of specific technologies in mandatory and organizational use settings. The present study intends to adapt the TTF to examine not specific technologies, but rather delivery *channels*. The specific context is voluntary use of electronic banking channels at the individual level.

Integrating existing literature on electronic banking and the aforementioned theories, the following section introduces the conceptual research model and states the hypotheses of this research. The hypotheses are elaborated upon later in this paper.

Research model and hypotheses

The research model guiding this study is illustrated in Figure 1. The subsequent sections discuss the depicted constructs starting from the left to the right hand.

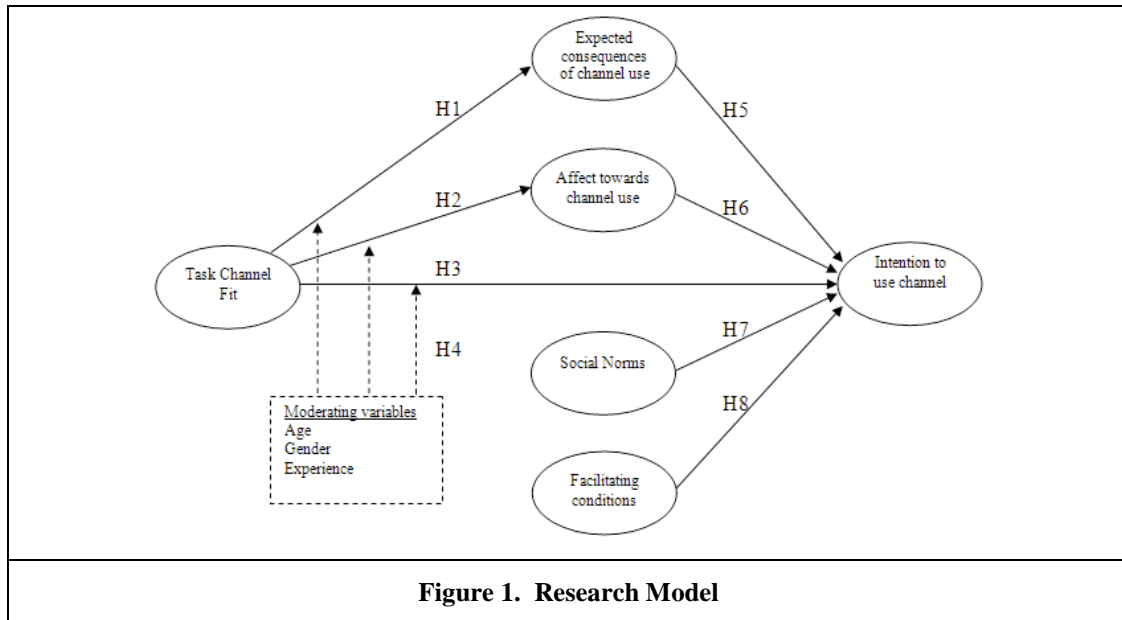


Figure 1. Research Model

Task-channel fit

Task-channel fit is defined as the correspondence between banking tasks and the functionality of electronic banking channels. Banking tasks include the various kinds of financial and non-financial transactions a consumer may wish to conduct with his or her bank. The existing literature suggests that these tasks differ significantly in their characteristics. Similarly, electronic banking channels vary in terms of their features and technical capabilities. The task-channel fit construct will be evaluated through several dimensions drawn from prior research, elaborated upon below. These dimensions will be re-assessed within focus group sessions (discussed within the research design section) in order to confirm or modify the initial conceptualization.

In this study, TCF will be modeled as a formative construct. All other constructs in the research model are reflective. The multidimensionality of the TCF construct will be handled by modeling the TCF as a second order factor with each dimension as a first-order factor (Diamantopoulos et al. 2008).

Dimension 1 – Task-complexity

Several studies using the TTF concept categorized tasks into simple versus complex tasks (Shirani et al. 1999; Zigurs et al. 1998). For example, Zigurs and Buckland (1998) emphasized the importance of task complexity when considering a task-technology fit for group support systems. As the literature has shown, banking tasks also vary in their complexity (e.g. account inquiries were considered as simple while mortgages were complex) (Sayar et al. 2007; Tan et al. 2000). Therefore, complexity is one dimension of the TCF construct.

Dimension 2 – Task-time criticality

The level of time criticality is an important aspect of financial transactions (Kleijnen et al. 2004; Liao et al. 2002; Tan et al. 2000). For instance, financial transactions such as foreign exchange trades or share brokerage are highly time sensitive due to market volatility, and often require immediate execution. On the other hand, transfers, loan applications or insurance acquisitions are less time critical. Thus, time criticality is one dimension of the TCF.

Dimension 3 – Channel-ease of Use

The degree to which an electronic banking channel is perceived as difficult to use influences consumers' intentions to utilize it (Dabholkar et al. 2002; Shih et al. 2004). Different electronic banking channels are likely to be seen to differ in terms of their ease of use as viewed by consumers. Hence, the level to which an electronic banking channel is perceived as being difficult to use comprises another dimension of TCF.

Dimension 4 – Channel-security

The dissemination of personal and sensitive data is a primary concern for consumers when managing their financial transactions through electronic banking channels. In this context, security can be understood financially, as well as in terms of privacy and the protection of data against unauthorized disclosure, modification, and destruction (Liao et al. 2008). Since consumers differ in their perceptions of the security level of alternative electronic banking channels, security is accepted as another dimension of TCF.

Dimension 5 – Channel-data representation

Cognitive fit theory demonstrates that data representation affects individuals' understanding of the system in use (Vessey 1991). Since data display capabilities and representation formats of electronic banking channels differ significantly (Liao et al. 2002), it seems that they may influence TCF as well. Therefore, data representation is considered as another dimension of TCF.

Moderating variables – age, gender and experience with electronic banking channels

The existing literature on electronic banking channels argues that individual characteristics such as age, gender, and experience with electronic banking channels influence a consumer's intention to use them (Dabholkar et al. 2002). Hence, these constructs are included in the conceptual research model as moderators affecting the relationship between TCF and expected consequences of use, and affect towards use, as well as consumer intention to use a channel (Staples et al. 2004).

Mediating variables – precursors of channel utilization

Expected consequences of channel use

'Expected consequences of channel use' is the extent to which consumers anticipate that using an electronic banking channel will enable them to perform their banking task effortlessly. This concept has been well documented in the literature suggesting that it is an important factor influencing consumers' intentions to use electronic banking channels (Dabholkar et al. 2002; Shih et al. 2004).

Affect towards channel use

‘Affect towards channel use’ can be understood as consumers feelings and beliefs about electronic banking channels. Based on the literature, this research assumes that consumers’ (positive or negative) feelings towards electronic banking channels influence their intention to use them (Dabholkar et al. 2002; Shih et al. 2004).

Social norms

According to Fishbein and Ajzen (1975), a person’s behavior may be influenced directly by other individuals (e.g., one individual telling another that he or she should use a particular banking channel), or indirectly (e.g., an individual inferring that others think he or she should use the channel). The literature suggests that social norms have an effect on consumers’ intention to use electronic banking channel (Shih et al. 2004; Tan et al. 2000).

Facilitating conditions

‘Facilitating conditions’ are “*objective factors, ‘out there’ in the environment, that several judges or observers can agree make an act easy to do*” (Thompson et al. 1991). Again drawing from previous literature, *inaccessibility of the channel* and *cost associated with channel use* are included as important facilitating conditions for using electronic banking channels (Kleijnen et al. 2004; Luarn et al. 2005; Mallat et al. 2004).

Dependent variable – intention to use channel

Behavioral intentions indicate how hard people are willing to try in order to perform a behavior (Sheppard et al. 1988). Many studies on electronic banking services have established that ‘intention to use’ constructs are reliable predictors for actual channel use (Dabholkar et al. 2002). Therefore, this research will measure “intention to use channel” as an indicator of actual channel use. The related research hypotheses are summarized in Table 1.

Table 1. Research Hypotheses	
Research Hypothesis 1 (H1):	<i>TCF will be positively associated with expected consequences of channel use.</i>
Research Hypothesis 2 (H2):	<i>TCF will be positively associated with affect towards channel use.</i>
Research Hypothesis 3 (H3):	<i>TCF will be positively associated with consumer intention to use channel.</i>
Research Hypothesis 4 (H4):	<i>Consumers characteristics age, gender, and experience with channel use will moderate the relationship between TCF and expected consequences of use, affect towards use as well as consumer intention to use channel.</i>
Research Hypothesis 5 (H5):	<i>Expected consequences of channel use will be positively associated with consumer intention to use channel.</i>
Research Hypothesis 6 (H6):	<i>Affect towards channel use will be positively associated with consumer intention to use channel.</i>
Research Hypothesis 7 (H7):	<i>Social norms will be positively associated with consumer intention to use channel.</i>
Research Hypothesis 8 (H8):	<i>Facilitating conditions will be negatively associated consumer intention to use channel.</i>

Each hypothesis is indicated in Figure 1 (H1-H8). Having introduced the conceptual research model and the hypotheses of this research, the following section discusses a relevance check of the TCF concept conducted with German banks.

Relevance check conducted with German banks

Between June and July 2008, an exploratory investigation was conducted investigating practitioners’ perceptions towards the proposed task-channel fit concept (Rosemann et al. 2008). Overall, nine high level managers from three German banks were interviewed with regard to the relevance of the task-channel fit concept for their bank operations and planning. The following Table 2 introduces the research participants.

Table 2. Research participants interviewed for the relevance check of the TCF concept		
Bank	Participant	Participants job description

A	1	Product manager developing and outsourcing electronic banking channels.
B	2	A member of the management board and acts as the CIO of Bank B.
	3	Managing director overseeing the IT infrastructure for private clients.
	4	Director of IT architecture for the private business division.
	5	Senior product manager in the e-services division for corporate clients.
C	6	Board member and CEO of Bank C.
	7	Board member of Bank C and responsible for customer services.
	8	Divisional head for customer service of Bank C.
	9	Product manager for Bank C focusing on mobile banking applications.

During the interviews, a simplified version of the task-channel fit research model was introduced and then discussed with each manager. The discussion was facilitated through semi-structured questions such as:

- “What banking products do you offer on each electronic banking channel (and why)?”
- “Which electronic banking channel supports which banking product category?”

Most discussions lasted between 50 and 60 minutes and were recorded and transcribed afterwards. To analyse the data, coding techniques commonly used for grounded theory studies were applied (Strauss et al. 1998). The codes were visualized in a data matrix to highlight similarities and differences between the various codes (Miles et al. 1994). Bank A and B are traditional Banks while Bank C solely focuses on “non-face-to-face” channels such as mail, facsimile, email as well as its telephone- Internet- and mobile banking applications.

Overall, the discussions indicated that the participants perceived the TCF idea as a valuable concept for banks. They agreed that banks would not have well established instruments to judge which banking tasks fit each banking channel best. For instance, participant six argued: “For us as a direct bank, a [measure of] TCF for electronic banking services would be very interesting. Currently we are re-considering the product-mix for our banking channels. Having a TCF tool would be very helpful here.”

The interviews also revealed that currently all three banks still “trial and error” their electronic banking applications. For example, one respondent stated: “Our team spent EUR 300.000 for designing a mobile banking application. Only 27 customers registered for this service, and five of those never used the service. In addition, out of the 22 users, 14 were banking staff. As a result, we terminated the service.” This participant added that a TCF instrument could potentially prevent such mis-investments.

In summary, all managers confirmed that a TCF instrument would be beneficial for banks. It was also interesting to note that all managers’ welcomed the inclusion of a relevance check in this study, and they indicated that they appreciated being involved in academic research. The following section outlines the research design proposed for this study.

Research design

In the first phase, a survey questionnaire will be developed and validated. In the second phase, data will be collected to quantitatively test the research model. Each phase is now described in detail.

First phase - survey instrument development

The primary goal of the first phase is to develop a survey questionnaire to measure the constructs depicted within the proposed research model (Figure 1). The initial step will be to assess the TCF dimensions identified within the literature (Goodhue et al. 1995; Staples et al. 2004). Using a convenience sampling strategy (Hufnagel et al. 2001), five focus groups will be organized consisting of consumers using electronic banking channels as well as industry experts (4-6 participants per panel). The focus group sessions will be recorded and then transcribed. Based on the outcome of these sessions, items will be developed to measure each TCF dimension. While these items will be newly created, existing scales will be adapted from the extant literature to measure the remaining constructs of the research model (‘expected consequences of channel use’, ‘affect towards channel use’, ‘social norms’, ‘facilitating conditions’ and ‘intentions to use electronic banking channels’).

A card sorting procedure will be used to assess the content validity of the newly developed items as well as to purify the wording of them (Moore et al. 1991). To this end, two card sorting rounds will be organized. The first round will involve approximately 5 senior IS researchers. These judges will be asked to sort the items into construct categories

without having the information about the underlying constructs. They will be asked to provide their own labels and definitions for the constructs. Afterwards, the construct definitions provided by the judges will be analyzed and consolidated in order to identify appropriate labels for each construct. The second card sorting round will consist of 10-15 participants including academics, postgraduate students, as well as administrative staff. During this phase it is planned to use Lawshe's (1975) content validity ratio, so as to gauge agreement among judges regarding how essential particular items are (Lawshe 1975).

Next, the questionnaire will be pretested through face-to-face interviews with consumers in New Zealand. Following the instrument pretest, the final version of the questionnaire will be administered to consumers during the second phase.

Second phase - testing the research model

The main intention of this second phase is to collect data from consumers to quantitatively test the research model. The final research questionnaire will be administered to consumers in Wellington using face-to-face interviews. Data will be collected from approximately 350 consumers who use electronic banking channels (75-100 respondents for each channel: ATM, telephone banking, Internet banking and mobile banking). Subsequently, the scales will be assessed for construct validity (including discriminant, convergent, nomological) and reliability, using commonly accepted techniques such as factor analysis and Cronbach's alpha. To test the construct validity of the formative TCF indicators, a t-test will be conducted to assess the relative contribution of each dimension to the TCF construct via the significance of weights. If necessary, the scales will be refined appropriately in light of the tests. Subsequently, partial least squares (PLS Graph 3.00) will be used to test the model fit and to assess the research hypotheses (PLS is an appropriate analytical method to use in this study as the research model includes both formative and reflective indicators). It is anticipated that the outcome of this study will lead to a better understanding of the factors impacting on consumer intentions to use electronic banking channels.

Conclusion

This research should interest both academics and practitioners as it investigates an important conceptual issue which also has significant practical value for banks and financial institutions.

An important theoretical contribution of this research will be to integrate task-technology fit theory (Goodhue and Thompson, 1995) with the existing literature on electronic banking channels. To date, no previous study has used TTF theory for this purpose. Therefore, this research will add theoretical value to the existing literature in the field of information systems by establishing a theory explaining the factors which affect consumers' intentions to use electronic banking channels.

A second contribution will be to research methodology. The original TTF theory was developed within an organizational context characterized by involuntary use. So far, very little is known how this concept can be applied to the individual level (Staples et al. 2004). This study will address this issue by developing and validating a survey questionnaire instrument intended to measure the TCF of electronic banking channels. Hence, this study will also add methodological value.

The third contribution will be to banks and financial institutions distributing their products and services through electronic banking channels. To assess the value of this research to practitioners, a relevance check was conducted with senior managers working for three German banks. Overall, the interviewees indicated that a task-channel fit construct would be valuable for practitioners as it would enable them to better judge which banking products to offer via each of the channels their bank supports.

This research focuses solely on electronic banking channels; neither traditional branch banking nor person-to-person telephone banking services are investigated. However, future studies, could extend the TCF instrument to these traditional banking channels. Likewise, this research exclusively focuses on consumer related electronic banking channels and does not consider bank-to-business electronic banking channels.

One avenue for future research is to apply the TCF theory to different industries deploying similar self-service technologies as banks (e.g. airline industry, supermarkets etc.). In addition longitudinal observations could be also used to assess how the task-channel fit of electronic banking channels changes over time, as self-service technologies and methods change.

References

- Ahmad, R., and Buttle, F. "Retaining telephone banking customers at Frontier Bank " *International Journal of Bank Marketing* (20:1) 2002, pp 5-16.
- Ajzen, I. "The Theory of Planned Behavior," *Organizational Behavior and Human Decision Processes* (50:2) 1991, pp 179-211.
- Antonides, G., Amesz, H.B., and Hulscher, I.C. "Adoption of payment systems in ten countries--a case study of diffusion of innovations," *European Journal of Marketing* (33:11/12) 1999, pp 1123-1135.
- Barczak, G., Scholder, P.E., and Pilling, B.K. "Developing typologies of consumer motives for use of technologically based banking services," *Journal of Business Research* (38:2) 1997, pp 131-139.
- Barnes, S.J., and Corbitt, B. "Mobile banking: concept and potential," *International Journal of Mobile Communications* (1:3) 2003, pp 273-288.
- Black, N.J., Lockett, A., Ennew, C., Winklhofer, H., and McKechnie, S. "Modelling consumer choice of distribution channels: an illustration from financial services," *International Journal of Bank Marketing* (20:4) 2002, pp 161-173.
- Cheng, T.C.E., Lam, D.Y.C., and Yeung, A.C.L. "Adoption of internet banking: An empirical study in Hong Kong," *Decision Support Systems* (42:3) 2006, pp 1558-1572.
- Choudhury, V., and Karahanna, E. "The relative advantage of electronic channels: a multidimensional view," *MIS Quarterly* (32:1) 2008, pp 179-200.
- Curran, J.M., and Meuter, M.L. "Self-service technology adoption: comparing three technologies," *The Journal of Services Marketing* (19:2) 2005, pp 103-113.
- Dabholkar, P.A., and Bagozzi, R.P. "An attitudinal model of technology-based self-service: Moderating effects of consumer traits and situational factors," *Academy of Marketing Science* (30:3), Summer 2002, p 184.
- Davis, F.D. "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *MIS Quarterly* (13:3) 1989, pp 319-339.
- DB Research "DB research: Banking online boosts and curbs customer loyalty," 2006.
- Diamantopoulos, A., Riefler, P., and Roth, K.P. "Advancing formative measurement models," *Journal of Business Research* (61) 2008, pp 1203-1218.
- Dishaw, M.T., and Strong, D.M. "Extending the technology acceptance model with task-technology fit constructs," *Information and Management* (36:1) 1999, pp 9-21.
- Fishbein, M., and Ajzen, I. *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research* Reading, MA, Addison-Wesley, 1975.
- Forrester Research "European Mobile Banking: An Inconvenient Truth," in: *Forrester Research*, 2007.
- Goodhue, D.L. "Development and measurement validity of a task-technology fit instrument for user evaluations of information systems," *Decision Sciences* (29:1) 1998, pp 105-138.
- Goodhue, D.L., and Thompson, R.L. "Task-technology fit and individual performance," *MIS Quarterly* (19:2) 1995, pp 213-236.
- Hufnagel, E.M., and Conca, C. "User response data: The potential for errors and biases," *Information Systems Research* (5:1) 2001.
- Kleijnen, M., Wetzels, M., and de Ruyter, K. "Consumer acceptance of wireless finance," *Journal of Financial Services Marketing* (8:3) 2004, pp 206-217.
- Lai, V.S., and Li, H. "Technology acceptance model for internet banking: an invariance analysis," *Information & Management* (42:2) 2005, pp 373-386.
- Laukkanen, T., and Lauronen, J. "Consumer value creation in mobile banking services," *International Journal of Mobile Communications* (3:4) 2005, pp 325 - 338.
- Lawshe, C.H. "A Quantitative Approach to Content Validity," *Personnel Psychology* (28) 1975, pp 563-575.
- Leblanc, G. "Customer Motivations: Use and Non-use of Automated Banking," *International Journal of Bank Marketing* (8:4) 1990, pp 36-40.
- Lee, J. "A Key to Marketing Financial Services: The Right Mix of Products, Services, Channels and Customers.," *Journal of Services Marketing* (16:3) 2002, pp 238-258.
- Liao, Z., and Cheung, M.T. "Internet-based e-banking and consumer attitudes: an empirical study," *Information & Management* (39:4) 2002, pp 283-295.
- Liao, Z., and Cheung, M.T. "Measuring consumer satisfaction in internet banking: a core framework," *Communications of the ACM* (51:4) 2008, pp 47-51.

- Limayem, M., Hirt, S.G., and Cheung, C.M.K. "How habit limits the predictive power of intention: the case of information systems continuance," *MIS Quarterly* (31:4) 2007, pp 705-737.
- Luarn, P., and Lin, H.H. "Toward an understanding of the behavioral intention to use mobile banking," *Computers in Human Behavior* (21) 2005, pp 873-891.
- Mallat, N., Rossi, M., and Tuunainen, V.K. "Mobile banking services," *Communications of the ACM* (47:5), May 2004 2004, pp 42-46.
- Marshall, J.J., and Heslop, L.A. "Technology Acceptance in Canadian Retail Banking: A Study of Consumer Motivations and Use of ATMs," *International Journal of Bank Marketing* (6:4) 1988, pp 31-41.
- Miles, M.B., and Huberman, A.M. *An Expanded Sourcebook-Qualitative Data Analysis* Sage Publications, Thousand Oaks, California, 1994.
- Moore, G.C., and Benbasat, I. "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," *Information Systems Research* (2:3) 1991, pp 192-222.
- Morrison, P.D., and Roberts, J.H. "Matching Electronic Distribution Channels to Product Characteristics: The Role of Congruence in Consideration Set Formation.," *Journal of Business Research* (41) 1998, pp 223-229.
- Moutinho, L.A., and Meidan, A. "Bank Customers' Perceptions, Innovations and New Technology," *International Journal of Bank Marketing* (7:2) 1989, pp 22-27.
- Rogers, E. *Diffusion of Innovations*, New York, 1995.
- Rosemann, M., and Vessey, I. "Toward improving the relevance of Information Systems Research to practice: the role of applicability checks," *MIS Quarterly* (32:1) 2008, pp 1-22.
- Sayar, C., and Wolfe, S. "Internet banking market performance: Turkey versus the UK," *The International Journal of Bank Marketing* (25:3) 2007, pp 122-141.
- Sheppard, B.H., Hartwick, J., and Warshaw, P.R. "The Theory of Reasoned Action: A Meta-Analysis of Past Research with Recommendations for Modifications and Future Research," *Journal of Consumer Research* (15:3) 1988, pp 325-343.
- Shih, Y.Y., and Fang, K. "The use of a decomposed theory of planned behavior to study Internet banking in Taiwan," *Internet Research* (14:3) 2004, pp 213-223.
- Shirani, A.I., Tafti, M.H.A., and Affisco, J.F. "Task and technology fit: a comparison of two technologies for synchronous and asynchronous group communication," *Information and Management* (36:3) 1999, pp 139-150.
- Staples, D.S., and Seddon, P. "Testing the Technology-to-Performance Chain Model," *Journal of Organizational and End User Computing* (16:4) 2004, pp 17-36.
- Strauss, A.L., and Corbin, J. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, (2nd ed.) Sage Publications, Thousand Oaks, 1998.
- Suh, B., and Han, I. "Effect of trust on customer acceptance of Internet banking," *Electronic Commerce Research and Applications* (1:3-4) 2002, pp 247-263.
- Tan, M., and Thompson, S.H. "Factors Influencing the Adoption of Internet Banking," *Journal of the Association of Information Systems* (1:5) 2000.
- Thompson, R.L., Higgins, C.A., and Howell, J.M. "Personal Computing: Towards a Conceptual Model of Utilization," *MIS Quarterly* (15:1) 1991, pp 124-143.
- Van Birgelen, M., Jong, A.D., and Ruyter, K.D. "Multi-channel service retailing: The effects of channel performance satisfaction on behavioral intentions " *Journal of Retailing* (82:4) 2006, pp 367-377.
- Vessey, I. "Cognitive Fit: A Theory-Based Analysis of the Graphs Versus Tables Literature," *Decision Sciences* (22:2) 1991, pp 219-241.
- Zeithaml, V.A., and Gilly, M.C. "Characteristics Affecting the Acceptance of Retailing Technologies: A Comparison of Elderly and Non-Elderly Consumer," *Journal of Retailing* (63:1) 1987, pp 49-68.
- Zigurs, I., and Buckland, B.K. "A theory of task/technology fit and group support systems effectiveness," *MIS Quarterly* (22:3) 1998, pp 313-334.
- Zigurs, I., Buckland, B.K., Connolly, J., and Wilson, E.V. "A test of task-technology fit theory for group support systems," *Data Base for Advances in Information Systems* (30:3/4) 1999, pp 34-50.