**Abstract**

The new type of service provided by the banks with the help of the internet technology is called “Internet Banking” (IB). Internet Banking can be characterized as a financial transaction over the Internet through a bank’s website. Financial institutions have to deal with the adoption of a new technology and the issue of trust. This article reviews the IB literature through the lenses of four models. The diffusion of innovation, technology acceptance model, the factor of trust have been identified as being reviewed and undertaken in the majority of articles in the field of Internet Banking. The factor of segmentation to improve and to accelerate the adoption process, was also examined, but there is still limited research dealing with this matter. The topic is classified into Schumpeters’ theory as Internet Banking deals mainly with innovation and the adaption of these innovations. Schumpeters’ school was given a new focus in the 1990es which can be seen by the numbers of citations in this time.

**Keywords:** Internet Banking, TAM, Internet Banking adoption, innovation diffusion, trust

**Introduction**

The advent of internet technology has revolutionised the way business and services are provided by companies and businesses all over the world. It provided innumerable service innovations for the consumer (Sabi, 2014). They started using the internet technology to deliver banking and financial services. The technological change has brought the rapid transmission of information, the easy way for marketing banking products and enhanced the customer's access and awareness (George & Gireeshkumar, 2012). Banks can use the opportunities offered by the internet as strategic tools and revolutionised the way they operate. There is a quote from the Financial Times from the year 1996 where they said: “Banking is essential to a modern economy, banks are not” (Tan & Teo, 2000).

The new type of service provided by the banks with the help of the internet technology is called “Internet Banking”. Internet Banking (IB) can be characterized as a financial transaction over the Internet through a bank’s website. It enables
financial institution customers, individuals or business, to access accounts, transact money or gather information on financial products, at anytime and anywhere as long internet connectivity is available (Shao, 2007; Prakash & Malik, 2008). With Internet Banking, customers can conduct their banking activities quickly and efficient without leaving their homes or offices. Internet Banking decreases the transaction costs for the customer (Dong, 2008).

The usage of Internet Banking has advantages for both parties. It has become one of the premier channels for institutions in the financial industry to conduct business. The speed of conduction personal and commercial activities with their customer increased. The financial institutions can replicate the traditional activities, which take place in a bank, over the internet. This shift to online transactions lowers the operational and overhead costs for the financial institutions. The reason for these cost savings is the automation of processing customer transactions (Dong, 2008).

For customers and financial institutions, to take advantage of this innovation, it is central to analyse the main reasons of why people adapting to Internet Banking. In comparison to other online purchases, the adoption of Internet Banking is typically more complex. It initiates a long-term relationship between both parties. This process is important for customers, because they start to get into a business relationship with an Internet Banking services, without having a personal connection to it (Lee, 2009; Liao, 1999).

During the research about Internet Banking, the authors realized that most of the scientific articles in the field of Internet Banking are about the adoption of Internet Banking. In a broader view, the articles are about factors influencing the adoption of an innovation. The most research about the different factors was done about the innovation diffusion model from Rogers, the technology acceptance model and the factor trust. The purpose of this literature review was to collected the factors influencing the adoption of Internet Banking and connect this broader problem to a economic school of thoughts.

**Method**

For the research, the authors started by studying a suggested article that is related to the topic, to get an overview of the field of Internet Banking (IB). A list of the most relevant keywords was constructed. The following keywords were used to find a first amount of related articles: Internet Banking, TAM, Internet Banking adoption, innovation diffusion and trust.

This preparatory work enabled the authors to find specific and relevant references. Accordingly, this study reviewed the literature on Internet Banking in databases, including: ScienceDirect, Emerald Fulltext, Springer, and JSTOR. The search engines Google Scholar and Scopus were also used as well as the search engine of Halmstad University to ensure coverage of publications in other databases.

Another approach was also used. The authors conducted research using the snowballing method. By going through the reference lists of the articles, they were able to identify the most relevant authors and literature.

To get a better overview about the articles, abstracts and conclusions of a first list of articles have been studied. Through this, the authors have been able to judge if an article
was relevant. After reading each article, they have been categorized into 3 groups. Group one covered the articles that are most relevant and deliver a wide range of information on the main topic. Group 2 covered articles that are partly relevant and group 3 included the articles that turned out not being specific enough after reading the full text. While reading the full texts, the authors concentrated on key questions regarding which key concepts, theories and models are used, what are the results and conclusions and in how far it is applicable to the main topic.

**Models**

The reviewed literature focuses on four main topics to explain Internet Banking and its characteristics. In the following the diffusion of innovation, the technology acceptance model and the factor of Trust are presented. The factor of segmentation is examined in parts of the literature but requires more advertency.

**Diffusion of Innovation**

This model views Internet Banking adoption as a social construct and it moves through the population over time. Individuals have different degrees of willingness to adopt an innovation as Internet Banking (Hanafizadeh et al., 2014). In the theoretical framework from Rogers (1995), the rate of Internet Banking adoption is impacted by five characteristics. The characteristics are relative advantage, compatibility, complexity, trialability and observability. This model is often used in information systems research to explain user adoption of new technologies (Sinha & Mukherjee, 2016).

Previous studies show that these factors have influence on the adoption and diffusion of internet-based technologies. The factors relative advantage, compatibility and complexity are the most salient factors (Koenig- Lewis et al. 2010, Liu & Li, 2010, Park & Chen, 2007).

**Relative advantage**

The relative advantage indicates the degree of how an innovation is perceived and to which degree it provides more benefits than its forerunner (Moore & Benbasat, 1991). Relative advantage has a positive influence on the adoption of new innovations (Holak & Lehmann, 1990). In the field of Internet Banking the relative advantage is the individual’s belief that Internet Banking provides more economic benefits than the traditional ways of banking (Yousafzai, 2012). Internet Banking allows the customer to access their banking accounts at any time and from any location. It provides tremendous advantage to the customer. The relative advantage has been identified as a major determinant of a customer’s intention to use Internet Banking. (Lichtenstein & Williamson, 2006; Nerme et al., 2013; Tan & Teo, 2000). Important for the financial institutions is the communication of the relative advantage to their customers. The customers need to be aware of the advantages (Lichtenstein & Williamson, 2006).

**Compatibility**

Compatibility indicates to which degree a service is consistent with the existing values, beliefs and habits of a costumer. It also refers to the present and previous experience of the customer (Chen et al., 2004). In the field of Internet Banking, it can also be defined as the fit between the
social and technological infrastructure of the customer and Internet Banking (Yousafzai, 2012). A study in Malaysia has shown a significant effect of compatibility on the consumers’ attitude towards the adoption of Internet Banking (Ndubisi & Sinti, 2006). Other studies in the field of e-commerce and electronic payment methods had also shown a significant correlation with the adoption (Chen et al., 2004; Chen, 2008; Koenig-Lewis, 2010; Lin, 2011, Püschel et al., 2010).

**Complexity**
Complexity can be defined as the extent to which an innovation can be considered difficult to understand and to use, relatively to its predecessor (Cheung et al., 2000). The factor complexity is generally negatively correlated with the rate of adoption (Rogers, 1995). Black’s et al. (2010) study supports this point of view from Rogers. There are other scientific papers, that suggests a strong impact of the perceived ease of use of Internet Banking on its adoption (Gu et al., 2009; Luarn & Lin, 2005; Wang et al., 2006).

**Trialability**
The trialability indicates the degree to which an individual can experiment with the innovation, in this case Internet Banking, before adoption (Al-Jabri & Sohail, 2012). Only a limited number of studies has shown the connection of trialability and the adoption of Internet Banking. Black et al. (2001) indicates, that trialability is crucial. The opportunities for trial should not only be available online, but also to non-computer owners. On the other hand, Püschel et al. (2010) did not find a connection between trialability and the adoption of Internet Banking.

**Observability**
Observability indicates to which extent the use of the innovation is visible to other members of a social system. The benefits of using the innovation can be easily observed and communicated (Rogers, 1995). In the field of Internet Banking, observability is considered irrelevant. This is caused by the important characteristic of doing banking, privacy. Therefore, it is difficult to observe other using Internet Banking (Tan & Teo, 2000, Koenig-Lewis et al, 2010). Other studies have found, that observability has marginal importance in predicting Internet Banking behaviour (Lee et al, 2005).

**Technology acceptance model**
The Technology acceptance model (Figure 1) explains the determinants of computer acceptance that are general and capable of explaining user behavior (Davis et al., 1989). This model is basically a construct of perceived usefulness (PU) and perceived ease of use (EU) to explain technology usage behaviour.

![Technology Acceptance Model](image)

Figure 1: Technology Acceptance Model (Davis et al., 1989)
PU is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Venkatesh & Davis, 2000). Perceived EU has been defined as “the degree to which a person believes that using a particular system would be free of effort” (Venkatesh & Davis, 2000). The resulting intention to use the technology is leading to the actual use of technology. TAM also suggests that the direct effect of ease of use (EU) on behavioural intention is significant only in the early stages of use (Venkatesh et al., 2003). In terms of numbers of the citations it has received, the TAM became the most influential theoretical tool for explaining the user acceptance of technology (Venkatesh, Davis & Morris, 2007). Furthermore, TAM is the most widely applied model to study Internet Banking behaviour (Yousafzai, 2012). TAM was first used to examine IB adoption by Bhattacherjee (2001) in which post-acceptance application of TAM was examined to understand the role of expectations in IB adoption and continued use among US banking customers (Hanafizadeh et al., 2014).

Venkatesh and Davis (2000) introduced an extension of the Technology Acceptance Model (TAM2) by identifying and theorizing social influence (SI) (subjective norm and image) and cognitive instrumental processes (job relevance, output quality, result demonstrability and EU) as the determinants of PU (Yousafzai, 2012). Furthermore, Venkatesh (2000) suggested computer self-efficacy, computer anxiety, and computer playfulness as determinants of EU (Yousafzai, 2012). To predict IB behaviour, TAM2 has been successfully applied (Hernandez and Mazzon, 2007; Alsajjan and Dennis, 2010). Al-Ajam and Nor (2013) found out, that individuals believe that it is convenient to use Internet Banking services and that it is also efficient to use it. This result goes along with the findings of Kolodinsky et al. (2004), Hernandez and Mazzon (2007) stating that perceived relative advantage is a major factor influencing individuals’ behavior toward adopting Internet Banking service. In their study Al-Ajam and Nor (2013) tested, that the perceived ease of use significantly influences the intention to use Internet Banking service. This positive attitude to use Internet Banking services is founded by the reasons that individuals may learn to use Internet Banking quickly and find out that it is easy to use (Al-Ajam and Nor, 2013).

Trust
Trust is defined as the willingness of a party to be vulnerable to the actions of another party, based on the expectation that the trustee will perform a particular action important to the trustor, without being able to control and monitor the other party (Mayer et al., 1995).

For banks to succeed in the long run, their ability to convince the customers to do Internet Banking is crucial. Consequently, customer trust is vital to Internet Banking (Jham, 2016). The impersonal nature of the online environment, the extensive use of technology, and the inherent uncertainty of using an open infrastructure for transactions are unique dimensions of customer’s trust in Internet Banking (Yousafzai et al., 2009). Following Yousafzai (2009) factors leading to customer trust in Internet Banking are for example, perceived trustworthiness, perceived security, and perceived privacy.
The perceived risk of using a service is generally decreased by trust (Garbarino and Johnson, 1999). Since e-customers do not deal directly with the organization, or its staff, the role of trust is even more important in e-commerce (Papadopoulou et al., 2001; Urban et al., 2000). In e-banking services all transactions are conducted with little or no face to face interaction, therefore trust is of high importance (Alrawahdeh, 2010). As satisfying customer’s needs is of high importance, trust in e-banking transaction is fundamental (Jham, 2016). Figure 2 shows a simple model of trust for Internet Banking (Yousafzai, 2009).

Figure 2: A model of trust for Internet Banking (adopted from Yousafzai, Pallister, & Foxall, 2003).

*Perceived risk* is defined as ‘a combination of uncertainty plus the seriousness of outcome involved’ (Bauer, 1967). Researchers agree, that trust lowers the perceived risk of facing a negative outcome of a transaction by reducing the intricacy of information (e.g. Mayer et al., 1995).

*Perceived security* has been widely recognized as one of the most significant barriers to the adoption of Internet Banking (Yousafzai, 2009). Security in e-commerce is defined as a threat that creates the ‘circumstance, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosure, modification of data, fraud, and abuse’ (Kalakota & Whinston, 1997). Following Ratnasingham (1998), the trust and confidence in the relationship will also increase when a customer develops positive perceptions of security.

*Perceived privacy* is the consumer’s ability to control the presence of other people in the environment during a transaction on the one hand, and the dissemination of provided information on the other hand (Goodwin, 1991). Due to their fear that their life will become an open book to the internet universe, financial service customers are more reluctant to use online services (Bestavros, 2000). Thus there is a risk of a loss of privacy, which is a significant factor in building trust (Yousafzai, 2009). The lack of empirical attention given to *perceived trustworthiness* is an issue that hinders a richer examination of customers’ trust on e-commerce (Yousafzai, 2009). The distinction between trust and trustworthiness was undertaken by Mayer et al. (1995). They demonstrated that perceived trustworthiness is the trustor’s perception of how trustworthy the trustee is, whereas trust is the trustor’s willingness to engage in a risky behaviour. Previous research has shown that perceived trustworthiness directly or indirectly influences the customer’s level of trust in e-commerce transactions (Jarvenpaa & Tractinsky, 1999).

Al-Ajam and Nor’s study (2013) presents a significant relationship between Internet Banking trust and attitude toward behavioral Intention. The findings indicate that trust of using the Internet Banking is high, and it is considered as one of the main factors
influencing the intention, because of the degree of uncertainty of a virtual setting of economic transactions is higher than in traditional settings (Md Nor & Pearson, 2007; Grabner-Kräuter & Faullant, 2008).

**Segmentation**

Another important factor for the financial institutions is the segmentation of their customers. Different studies have shown, that different characteristics differs among segments, per example trust. This leads to the following task for the financial institutions: Find the right way to communicate to their customers about Internet Banking and try to convince them to adapt to the Internet Banking. They have to use different marketing tools and channels to communicate with the different segments (Nerme et al., 2015).

There are different ways to put the customers in different segments. One characteristics can be the age. The different segments need different amounts of information and different ways the information is provided. The younger segment is riskier and will adopt to Internet Banking faster, than the older, more careful, segment. A reason for that is that the younger segment is more familiar with the technology (Nerme et al., 2015).

Other segmentation variables can be the attitudes and motivations regarding technology based distribution channels. Machauer and Morgner, (2001) have defined four clusters of bank customers in Germany. There were “transaction oriented”, “generally interested”, “service oriented” and “technology opposed” customers. Another approach was the segmentation along the income and education of a household (Mattila et al., 2003). The most relevant customer segments for the rapid development of the Internet Banking market are the group of young, educated, and wealthy customers (Sathye, 1999).

The most obvious differentiation can be made between corporate customers and private customers. For corporate customers, the main barrier were security concerns (Rotchanakitumnuai and Speece, 2003). For private customer, the main obstacle for non-adoption next to security concerns, was the lack of awareness about Internet Banking (Sathye, 1999).

**Discussion**

A clear majority of the studied reviews have either taken constructs from one or more technology adoption and diffusion models or added other constructs to these models. A careful reading of the definitions of the constructs, discussed in previous section, suggests that there are similarities between these constructs.

The TAM is a construct of perceived usefulness (PU) and perceived ease of use (EU) to explain technology usage behaviour, leading to the actual use of technology. There is a link between the TAM and the diffusion of innovation. The factor of *perceived usefulness* is connected to the *relative advantage*, as both factors deal with the issue of providing benefits to the user. The relative advantage has been identified as a major determinant of a customer’s intention to use Internet Banking. (Lichtenstein & Williamson, 2006; Nerme et al., 2013; Tan & Teo, 2000). The factor of *perceived privacy* leading to trust, as well as *observability* being factor of the diffusion of innovation, both models include privacy aspects. The fear of a loss of privacy and concerns about
other members of a social system combines the diffusion of innovation and the factor of trust.

All factors mentioned above have influence on the adoption of new innovations. Analysing different aspects of the studied models lead to the impression, that none of the present models is the key to understand the phenomenon of the adoption of innovation, especially in Internet Banking. A combination of the factors and different models mentioned above, are suitable to understand the process.

After reading several articles about Internet Banking the term innovation appeared in most of the articles. The diffusion of innovation model and the technology acceptance model to explain the adoption of Internet Banking in this paper. Therefore, it was obvious that within the field of study of Internet Banking, innovation and its adoption is one of the most important topics. One of the most influential authors in the field of innovation is Joseph Schumpeter.

Joseph Alois Schumpeter (1883-1950) is one of the founders of the innovation research. His work is cited by many researchers as a fundament. Schumpeter was raised in times of crucial economic and political changes. He studied economics in Vienna and is known for his work “Theorie der wirtschaftlichen Entwicklung” from 1911. Since the 1990’es there is a “Schumpeter-Renaissance” due to the number of citation in these years, especially in publications on innovation (Borbély, 2008). The radical technical development of the 20th century gives a focus back to innovation and improvement and Schumpeter’s theories. Schumpeter defines innovation as the implementation of new combinations into reality, which means „the doing of new things or the doing of things that are already done, in a new way “. Innovations are new and different combinations of existing things (Bernhauer, 1958, p.14).

Following Schumpeter there are five cases of innovation:

1. Production of new products or a new quality of a product
2. Implementation of a new and unknown production method
3. Exploitation of a new market
4. Exploitation of new resources
5. Execution of restructuring

An important characteristic of innovations is that they rise spontaneously out of the economy (Faulhaber, 2006, p.6). Comparing the Schumpeters’ five cases of innovation with Internet Banking there are two cases, which are obvious applicable. The first one is the implementation of a new and unknown production method. Internet Banking provides a new way for financial institutions to deliver their new product in a new way. This is a new way how their product and service is produced and delivered. The second case, that is very applicable to the case of Internet Banking is the execution of restructuring. Internet Banking allows financial institution to reorganize how their service is provided and leads to big restructuring within the organization.

**Implications and further research**

A potential gap in IB literature is the research on the factors that can minimize initial customer resistance and maximize the acceptance and use of IB. For example, TAM, the most widely applied model in IB literature, lacks factors enhancing the PU
and EU. It does not provide enough systematic guidance to practitioners on how they can influence the perceptions that can potentially lead to increased adoption.

Customers in the banking sector are faced continuously with new technologies and have to get through an adaption process, starting with telephone banking, the rise of the internet and continuing with mobile banking. Once they feel comfortable with the current technology, the introduction of a new technology requires them to start a new adaption process. Rogers’ diffusion of innovation model and TAM suggest that experience with similar technology facilitates and speeds up the adoption process. The final decision of an individual to adopt or to reject IB is influenced by a lot of different aspects that are constantly interacting with each other and this decision can be influenced through social interactions and societal norms for example (Yan, 2012).

Regarding all examined articles, IB research remains incomplete, as there is no consistency regarding the approaches and conceptualizations used. For further research in the field of Internet Banking, the focus should be on the segmentation of the customers and its influence on the adoption rate. Understanding the influence of the segmentation on Internet Banking is also interesting for financial institutions, as there is still potential to reduce costs by using the right communication channels.

References


