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## The Adoption of Electronic Banking in Tunisia: An Exploratory Study


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## Abstract

This paper aims to check if the current and prompt technological revolution altering the whole world has crucial impacts on the Tunisian banking sector. Particularly, this study seeks some clues on which we can rely in order to understand the customers' behavior regarding the adoption of electronic banking. To achieve this purpose, an empirical research is carried out in Tunisia and it reveals that a panoply of factors is affecting the customers-attitude toward e-banking. For instance; age, gender and educational qualifications seem to be important and they split up the group into electronic banking adopters and traditional banking defenders and so, they have significant influence on the customers' adoption of e-banking.

Furthermore, this study shows that despite the presidential incentives and in spite of being fully aware of the e-banking's benefits, numerous respondents are still using the conventional banking. It is worthy to mention that the fear of loss because of transactions errors or hackers plays a significant role in alienating Tunisian customers from online banking. Finally, a number of this study's limitations are highlighted and some research perspectives are suggested.

Keywords: **Customer behavior; Electronic banking; Tunisia.**



## INTRODUCTION

The prompt explosion of innovations from the stirrup and the steam engine, which shattered the world, to technological innovations led Bill Clinton to affirm that the information technology is affecting the whole world, it is altering the manner with it people used to work, to live, to learn and to communicate and does not except the banking industry from that revolution.

In fact, the last decade of the 20th century was a credible witness to the crucial implication of technology in business and finance: traditional, paper-based transactions were surrogated by electronic network transactions which include primarily Internet-based electronic stock exchange, electronic banking (e-banking), e-cash services and smart cards (Herbst, 2001, p. 207-208): automated teller machines (ATM) substitute cashier tellers, the Internet surrogates mail, electronic cash and smart cards replace traditional bank operations, the bank branch is displaced by call centers,… For this reason, it seems worthy to note that the impact of information technology has been significant in the banking and financial services industry as it was mentioned by Bughin (2004, p.2). Although Information technology is changing drastically the way in which people live and particularly banks offer their products and services, studies focusing on factors behind the customer's adoption of new technologies are remaining scarce (Al-Somali *et al.*, 2009, p. 130; Meuter *et al.*, 2000, p.50) especially in North Africa. This paper focuses upon Tunisia that was among pioneer countries to adopt technological innovations and it promulgated on the 9th of August, 2000 a law[1] regulating electronic commerce and exchanges. This law was passed after the National Commission for electronic commerce and electronic exchanges creation in 1997 and before the National Digital Certification Agency creation in 2001. In addition, Tunisia is, according to the «Global Information Technology Report 2008-2009»[2] (ApiNew n°3/2009), classified as the 38th country in the world (among 134) using information technology, it also remains the leader in Africa and succeeds to be the 7th one in the Mediterranean. This panoply of features makes from Tunisia a relevant case study. The only study centered on e-banking in Tunisia was conducted by Ayadi and Kaffela (2004) who tried to analyze the actual development of on-line banks. However, the hard core of this study consists in surrounding Tunisian customers' attitudes toward the new phenomenon called e-banking.

This study may be fruitful for banks; it will enable them to bring out the impact of information technology and to seek for suitable strategies allowing them to develop customers' loyalty.

[1] Law n° 2000 – 00083.

[2] http://www.tunisieindustrie.nat.tn/textes/apinews/TIC32009.pdf

In the next section, we will cast a glance at the relevant literature related to e-banking. Then, background information on Tunisian actual development of information technology and on its involvement in banking sector is laid. The following section is devoted to describe the research methodology, the results from the survey will be summarized in the forth section. The conclusion will point out the findings of this study and its limitations.

## LITERATURE REVIEW

Bill Gates (2008) announced that « *banking is essential, banks are not* ». This quotation means that the traditional bank branch is going to vanish in order to be surrogated by electronic banking which continues to attract new users. For instance, according to TNS Canadian Facts[3], "six out of ten Canadians with Internet access have signed up for online banking". The first and crucial threshold that is worthy to cross consists on defining this new son resulting from the compatible union between technology and banking industry. In fact, the FFIEC (2003; p.2) published a booklet in which it advanced a very specific definition of e-banking: it is *"the automated delivery of new and traditional banking products and services directly to customers through electronic, interactive communication channels."* In other words, customers are allowed, henceforth, to enquire about their accounts, to access their funds and to carry out multiple transactions through networks and intelligent interactive devices such as Personal Computers (PC), Personal Digital Assistants (PDA), Automated Teller Machines (ATM), mobile phones, Minitel, Wireless Application Protocol (WAP), TV… without surely forgetting the famous device called the internet which could lead e-banking to achieve its apogee since the number of surfers, in the world, has exceeded one billion at the dawn of 2009, as it was declared by *the "ComScore Institute"[4].*

The crucial question to care about, at this stage, is if this unrivaled evolution of information technologies would be accepted by consumers. Are they willing to relinquish traditional bank branch and to adopt e-banking without any reluctance?

Undoubtedly, online banking has played, since its emergence an important role in favor of banks and customers. However, this growing phenomenon is perceived differently among consumers: it is accepted by the first clan and refused by the second one. Features attracting the first clan composed primarily of individuals preferring impersonal relationships, described by Clark and Mills (1993) as "exchange oriented customers", are the round-the-clock availability, the ease of transactions and the avoidance of queues and restrictive operating branch hours (Al-Somali *et al.*, 2009, p.130) while customers looking for social benefits and personal relationships, the "communally oriented customers" (Clark and Mills; 1993), are the best defenders of traditional banking.

In order to understand the customers' attitudes towards adoption of electronic banking, a bird's eye view on different dimensions impacting the customers' choices is recommended.

[3] http://www.finextra.com/fullstory.asp?id=16508

[4] http://www.infos-du-net.com/actualite/15119-internautes-monde-milliard.html

**Factors influencing e-banking adoption:**

According to Lee (2009, p.2), the scope of the adoption decision is large, it depends on customers' benefits and risks perceptions and it includes both positive and negative factors: "perceived benefits" and "perceived risks" of online banking.

**The perceived risk:**

Featherman and Pavlou (2003; p.453-454) began by reporting previous perceived risk's definitions advanced by Bauer (1967) as "a combination of uncertainty plus seriousness of outcome involved" and by Peter and Ryan (1976) who considered it as "the expectation of losses associated with purchase and acts as an inhibitor to purchase behavior''; they finished by defining the perceived risk as "the potential for loss in the pursuit of a desired outcome of using an e-service.''

Since Uncertainty is inherent in innovations, they always entail at least some degree of perceived risk (Kuisma *et al.*, 2007, p.77). Consequently, there is undoubtedly a perceived risk in online banking and it can be defined as the expected loss suffered by an e-banking customer following an electronic transaction.

According to Cunningham (1967), in order to understand how do consumers evaluate a product or a service, this multidimensional perceived risk is split in six components: financial, performance, social, physical, privacy, and time-loss (Jacoby and Kaplan,1972 and Bellman *et al.*, 1999). However, these perceived risk facets can vary from a product (a service) to another: Featherman and Pavlou (2003; p.454) mentioned that using e-services does not threaten the human life; so that, the physical risk will be removed from such a study.

**Perceived risks in e-banking:**

Details of the five perceived risk's facets related to on line banking will be provided in the next part:

Financial risk: it is the constant and terrible fear of transactions errors causing a potential monetary loss suffered by customers who perform online transactions. So, it is clear that e-banking is lacking actually the assurance provided in traditional banking (Lee *et al.*, 2009, p.2) and this is due to the fact that online banking is considered as an innovation which is incompatible with consumers' habits (Kuisma *et al.*, 2007, p.77).

Performance risk: This risk is born from the consumers' fear of losses incurred by malfunctions of online banking websites. Customers are often afraid that a disconnection from the Internet will occur while performing electronic transactions that can lead to "huge" unexpected losses (Kuisma *et al.*, 2007). This idea was confirmed by Sathye (1999) who argued that Internet access is a crucial variable on which the adoption of online banking depends and by Almogbil (2005) who succeeded to show that a significant relationship exists between the speed of Internet access and the acceptance of electronic banking.

Social risk: it stems from the fear of being seen in a negative way by others (Kuisma *et al.*, 2007, p.77) or causing the disapproval of one's friends/family/work group by adopting online banking (Agarwal *et al.*, 2009, p.4). Venkatesh and Morris (2000,

p.119) confirm that social influence plays an important role in determining the acceptance of new information technologies. However, it is worthy to note that others' opinions are particularly informative in the early stages of experience (Hartwick and Barki, 1994) when potential information technologies' adopters are not sufficiently informed.

Privacy risk: it refers to the potential loss due to fraud or a hacker compromising the security of an online bank user (Lee *et al.*, 2009, p.2). This risk is accentuated since the emergence of phishers whose hobby consists on attempting to fraudulently collect personal information, such as usernames, passwords and credit card details; they not only lead to users' monetary loss, but also violate users' privacy (Entrust, 2008). Suh and Han (2002) point out that, unlike in offline banking; trust is an urgent need in online banking.

Time risk: It is the time's loss; the lateness in receiving the payment or the difficulty of navigation (Lee *et al.*, 2009, p.2). This can be due to a disorganized Web site, to slow-downloadable pages, to the long time needed to be a PC-literate.

**Perceived benefits in e-banking:**

Online banking has recently been an ideal solution for a large category of customers, despite its disadvantages. It is credited with many advantages for consumers: Lee (2009) distinguished between direct and indirect perceived benefits: the former type consists of immediate (short-term) and tangible benefits offered to customers who use online banking. The latter includes all advantages sharing these two characteristics: intangibility and difficult assessment.

In fact, direct advantages are the mainspring of electronic banking adoption. For instance, e-banking provides customers with a wide range of financial benefits such as "the lower transaction handling fees, higher deposit rates, opportunities to win prizes and extra credit card bonus points" (Lee, 2009), it allows customers to save time by conducting their transactions quickly without having to queue up, to use paper documents thanks to websites that offer customers the opportunity to interchange electronic data or to communicate with bank staff since all important transaction details are laid out at the website. Lee (2009) added that online banking provides customers with immediately available and transparent information.

Nevertheless, indirect advantages are notably the round-the-clock availability allowing customers to beneficiate from banking services anywhere in the world at any time and the wide range of investment opportunities such as stock quotations and news updates (Lee, 2009).

**Tunisian banking sector-background information**

*At the hands of this huge technological revolution, Tunisia has invested enormous funds in order to increase the number of online channels and to establish the needed infrastructure. In fact, since 1997, this country has created* the National Commission for electronic commerce and electronic exchanges, promulgated on the 9$^{th}$ of August, 2000 a law regulating this new kind of exchanges and established the National Digital Certification Agency in 2001. These efforts were not futile, they not only allowed the number of Tunisian internet users to be around 2 810 000 in January 2009 and the

number of mobiles subscribers to reach 8.55 million[5] at the end of 2008 but it also offers to Tunisia the opportunity to be, according to the «Global Information Technology Report 2008-2009» (ApiNews n°3/2009), classified as the 38th country using information technology in the world (among 134) and to remain the leader in Africa by succeeding to be the 7th one in the Mediterranean.

The Information Technologies and Telecommunications minister added that the main aim to achieve in 2009 is to hoist the number of internet subscribers to 400 million and pointed out that the Multi-Protocol Label Switching (MPLS) is functioning in Tunisia since 2008 in order to fulfill the banks and firms needs and, hence, improve the investment conditions in Tunisia.

Besides, on the 30th of March, 2009; the number of credit cards was about 1 912 333[6] and available ATMs were about 1 289.

It is worthy to note that Tunisia is trying to anchor the use of information technologies in the consumer behavior and habits: the Tunisian Post has launched several electronic services over the past few years, such as the WebTelegram (2003), and has encouraged the electronic payment by offering a large range of electronic financial services via its e-DINAR electronic payment platform (Le Blanc, 2005). This platform, called SPS, is guaranteeing a secured payment and allowing customers to pay their bills, taxes, tuition fees on line.

The Tunisian Post did not settle its encouragements for these services, it enlarged them by launching the CCPnet which can be used by every company or citizen having a CCP account at the Tunisian Post Office via a digital certificate. This service enables customers to consult the balance of one's account on internet, make electronic transfers in full security using one's digital signature and receiving signed digital proof of every transaction performed, consult the record of one's transactions and make requests for checkbooks, withdrawal/payment cards[7].

The Tunisian Post created also the E-clearing interbank company, in 1999, which scope of expertise covers different fields such as E-clearing, security and fraud risks linked to the electronic means of payment, «SWIFT» and «SWIFTNet» networks and Digital archiving[8].

Are these efforts fruitful? Are they able to increase the number of Tunisian on line banking customers? Our mission in the following section is to answer to these questions.

## RESEARCH METHODOLOGY

This study aims to test these hypotheses:

[5] http://www.investir-en-tunisie.net/index.php?option=com_content&task=view&id=165&Itemid=147
[6] http://www.apbt.org.tn/fr/htm/statistiques/pdfs/monetique/stat_monetique_mars_2009.pdf
[7] http://www.certification.tn/index.php?id=260
[8] http://www.sibtel.com.tn/sibtel/en/services/index.php

- the younger generation are more computer savvy and thereby are more willing to adopt e-banking (Sadiq Sohail & Shanmugham, 2003);
- the higher the respondent is literate and particularly PC-literate, is the more likely to adopt e-banking (Brown et al. (2003) and Sadiq Sohail & Shanmugham (2003)).

and to determine the main factors influencing the adoption of electronic banking in Tunisia. It is based on a questionnaire developed in order to gather data, and it consisted of two parts: the first one is dealing with the demographic profile of respondents and the second one gives an idea about the banking attitude of each respondent.

**Pilot study**

A pilot study was undertaken thanks to an array of people: a French teacher, a student, a doctor, a finance assistant, and a housewife. This step revealed that the questionnaire is clear and easy to understand.

**Data collection method and sampling**

The sample population used for this study consists of any person having a current account. A number of schools, universities and houses were visited in order to maximize the number of interviewees and numerous online questionnaires were mailed with the aim of extending the geographic profile of the sample.

**Respondent demographic profile**

The entire sample is composed of 82 respondents. Many people refused to participate to this research under the pretext of having no interest in such a topic. The demographic profile is described in Table 1 which can be considered as a result of the data analysis based on the fifth version of the Sphinx : Most respondents were between 18 and 30 (61%) and there is no disequilibrium in the gender distribution of the respondents: 43.9% were male and 56.1% female. The great majority of respondents were at least bachelors' degree (87.9%).

Thus, it appears that the respondent profile is known by its youngness and its high level of instruction.

**Table 1: Demographic profile**

| Demographic characteristics | Count | Percentage |
|---|---|---|
| Age | | |
| Between 18 and 30 | 50 | 61% |
| Between 31 and 40 | 17 | 20.7% |
| Between 41 and 50 | 6 | 7.3% |
| Above 50 | 9 | 11% |
| Gender | | |
| Male | 36 | 43.9% |
| Female | 46 | 56.1% |

| | | |
|---|---|---|
| Instruction-level | | |
| Baccalaureate degree | 8 | 9.8% |
| Master's degree | 48 | 58.6% |
| Doctorate | 16 | 19.5% |
| Others | 10 | 12.2% |

**Respondent banking profile**

Despite the fact that a great majority of respondents (95%) have access to internet, only few of them use it as a primary banking channel. In fact, 52.4% of the respondents prefer to go directly to banks and continue to emphasize their loyalty to traditional banking; that is the first important characteristic in the respondents' banking behavior. The ATM is the most popular electronic channel for banking; it is used solely or jointly to traditional bank branch (48.8%) like Internet banking which attracts 25.6% of the respondents. However, minitel banking appears to be doomed to failure; it is used jointly to traditional banking or to ATM by only 1.2% of respondents.

A thorough diagnostic of data reveals that young, PC-literate respondents are using or are willing to use electronic banking particularly ATMs: it appears that women (56.5%) prefer conventional banking more than men (47.2%) while the scheme is reversed when light is shed on the use of ATM and 52.8% of men seem choosing this channel against 45.7% of women. It is also clear that young respondents are favoring on line banking where as all old ones are traditional banking defenders and only one respondent whose old is 55 years is liking to use ATMs. Besides, instruction's and PC familiarization's levels seem to be two fundamental variables influencing the adoption of electronic banking: 75% of novices in using computers are loyal to traditional banking against 25% trying to use ATMs; 57.1% of experts are relying on ATMs in order to bank and 61.1% of respondents having advanced computer knowledge are loyal ATMs' customers. It is worthy to note that the number of internet banking's adopters is growing as and when the respondents' computer knowledge is brushed up as it is shown in the following table.

**Table 2: PC familiarization's level and preference for banking**

| **Banking's channel**<br>**PC familiarization's level** | ATM | Traditional banking | Minitel | Internet |
|---|---|---|---|---|
| Expert | 57.1% | 21.4% | 0.0% | 57.1% |
| Advanced computer knowledge | 61.1% | 58.3% | 2.8% | 25.% |
| Average knowledge | 39.1% | 47.8% | 0.0% | 17.4% |
| Novice | 25.0% | 75.0% | 0.0% | 0.0% |
| No knowledge of computer | 0.0% | 100% | 0.0% | 0.0% |

Sphinx (V5)'s output.

So, it appears that gender, instruction and PC familiarization levels as well as age are crucial variables impacting the customers' attitudes toward the adoption of e-banking.

After reading the paper written by Sadiq Sohail and Shanmugham (2003), a bird's eye is

being essential in order to surround the pertinent factors that may influence the adoption of e-banking. Sphinx (V5) analysis shows, via the chi-2 test, that awareness of e-banking products and services, ease of use, willingness to adopt e-banking, convenience, internet access and attitudes toward change are the most pertinent factors; they have a huge weight and influence significantly the adoption and the use of e-banking. These results differ slightly from those found by Sadiq Sohail and Shanmugham (2003, p. 215).

## CONCLUSION

The growth of information technologies in the world has been phenomenal. Thanks to these technologies, banks are being able to reach their customers anywhere at any time. For example, many financial services have been already launched on Facebook (Bill Gates, 2008). However, this success is not universal since numerous people still prefer the traditional banking. According to these findings' study, the conventional banking amateurs are primarily the older women having no computer knowledge. Furthermore, many factors were detected as important influences on electronic banking adoption such as awareness of e-banking products and services, ease of use, willingness to adopt e-banking, convenience, internet access. The respondents' attitudes toward change was a crucial factor considered as an important responsible of e-banking non-adoption; in contrast, the perceived risk was not significant.

On the basis of these results, banks may be able to ameliorate the online banking. However, this study is not exempt from critics and limitations. Firstly, the sample size is limited. Secondly, the sample was primarily composed of the educated Tunisians and various opinions might therefore be not represented. So, future research should be founded on a more representative sample of Tunisians. Despite all these limitations and given the exploratory nature of the study, the sample was adequate.

Finally, it is worthy to mention that comparative studies focusing on differences in adoption processes between different forms of banking channels will be an enriching vector for this work.

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