Factors Affecting Banking Agents to Adopt Groupware System: Empirical Evidence from the UTAUT Model

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Abstract
The introduction of the new technology of collaborative work (Groupware) by banks, expand the vertical organizational structure to the transverse work. However, Groupware use in the Tunisian Banks is still limited. This raises the problem of determinants influencing its use by banks. THIS research aims to identify the determinants of the technology groupware adoption by banking staff. The model chosen in this study is inspired from the unified theory of acceptance and use of technology. The purely experimental practice of the model was conducted on a sample of 272 front office Tunisian agents. The research results analysis was carried out through fractional analyses and structural equation methods. Our results show that the adoption of Groupware in Tunisian banks with mixed capital is influenced by the easing conditions, the social influence and the expected performance. However, the effort expectancy has no significant effect on the Groupware use in these banks. Knowing the determinants on Groupware adoption could help the human resource managers to develop more efficient policies for the use of the groupware system and to improve the collaborative work in their bank.

Keywords: groupware, adoption, UTAUT, Tunisian banks, determinants, structural equation.

INTRODUCTION
By opposition to the common view that states that collaborative technology (Groupware) diffusion is a phenomenon resulting from unplanned social interactions, the adoption of groupware by the staff of an organization seems to be a complex and well structured process (Orlikowski et al 1996). The history of Groupware adoption was subject to much resistance from both the employees and the organizational factors. The poor definition of the Groupware specifications has been one of the major problems of its failure.

In this context, Egido (1988) revealed that the early failure of applying video-conferencing was attributed to the ignorance of the employees of its vocation as a tool replacing face to face meetings. In addition, some companies integrated groupware into the culture of their companies as a new tool for the decision making and a non-cooperative system. This biased interpretation may be one of the causes of poor Groupware exploitation by employees (Orlikowski, 1993a).

Empirical studies showed that the failure of the adoption of collaborative technologies can also be explained by the lack of the management support to the users, the proliferation of collaborative tools incompatible with their needs, and the availability of the work practices work designed for individual but not collaborative work (Olson, 2000; Orlikowski, 1996 and Orlikowski, 2006).

However, the history of Groupware was not marked by the failure of its adoption only. Indeed, Naoui Ben (2003) and Stewart (2001) showed that the availability of technical assistance and the implementation of training circles can influence the users to adopt Groupware.

The conditions of using Groupware seem very limited in literature. Indeed, despite the frequent use of its concept, we are struck by the lack of studies (especially in the Tunisian case) which focus, in detail, on the factors that lead the banking staff to adopt collaborative technology on the basis of a specific theoretical foundation. This article tries to explain the determinants influencing Groupware acceptance by the front office banking staff according to the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh and Davis, 2003).

The advantage of this approach is multiple for the Human Resource Management. On the one hand, it takes into consideration the importance of the human capital in creating innovation in its development practice, and on the other hand, it enables to integrate the employees’ expectations and motivation in introducing plans for new practices of the human resource management.
LITERATURE REVIEW

Groupware is an intentional group of processes and procedures used to achieve specific purposes through SoftWare tools designed to support and facilitate group work (Saadoun et Whitaker, 1996). It is a computerized system of collaboration oriented towards organizational communication and based on the exchange and monitoring through the network or the Internet (Intranet and Extranet). It also helps the learns whose members are physically distant (Levan et al. 94).

Researches in information systems focused on the interpretations and clarification of the issue of the new technology acceptance according to the user’s perspective. Moreover, the information system cannot improve the performance of organizations if it isn’t sufficiently accepted by the users. The Groupware system would have several advantages for its users (Millen et al., 2002):

- It helps the organization documents of major interest for the group.
- It facilitates the access to a large amount of information and provides flexibility against the constraints of time and place.
- It reduces the psychosocial barriers between the so-called “distributed” work groups.
- It helps workers to work together through computer-mediated communication, collaboration and coordination.
- It can help improve knowledge and expertise of the team.

HYPOTHESIS DEVELOPMENT

A number of researchers used several technology adoption theories to deal with such phenomenon; however, these studies were fragmented. Thus, the Unified Theory of acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003) combined eight of those numerous theories and models of technology adoption to have a unified view. Four variables define the model of Venkatesh et al. (2003), performance expectancy, social influence, perceived ease of use, and facilitating conditions. The purpose of this study is to investigate the factors that make adopters use Groupware technology.

Perceived Usefulness

Researches on the adoption of technology showed that the concept of perceived usefulness had a very strong predictive power that had proven its robustness in the explanation of the behavioral use across several studies. Several models measure extrinsic motivation by its easy use, its social norm and its utility. Davis (1989) has operationalized this construct to measure its impact on the intention to behave. For this purpose, extrinsic motivation was measured in terms of perceived usefulness. Venkatesh et al. (2003) have chosen the variable "suitability for work" inspired from the model of the microcomputer use (MPCU) proposed by Thompson et al. (1991), which indicates the relevance of new technology. This variable reflects the level of its consistency with the type of the performed activity. In this sense, Groupware can be accepted by the banking staff only if they perceive its usefulness compared to their work needs and its impact in terms of performance and productivity gains if they are also convinced that this new technology will help them to evolve and be more efficient. According to Laukkonen et al. (2007), the elderly showed more resistance to changes and a negative attitude toward using mobile banking services. This idea helped us develop our first research hypothesis:

H1: Perceived usefulness significantly affects the front office staff’s intention to use Groupware.

H1a: The influence of performance expectancy on front office staffs intention will be moderated by age.

Social Influence

Venkatesh, and al. (2003) define social influence as the impact of the opinions of the social group in the formation of the intention to use a new system. This built includes subjective norms (Fishbein and Ajzen.1975), social factors (Thompson et al. 1991) and wait for recovery (Moore and Benbasat. 1991). Venkatesh et al. (2003) used social influence to represent subjective norms in TRA, TAM2, TPB/DTPB, and C-TAM-TPB, image in IDT and social factors in MPCU.

However, social factors, namely the role of the important people for the individual, affect the individual’s behavior in some way. It is preferable to assess the influence of certain social sources distinctively, taking account the line managers and the pending valorisation. In addition, since this has been often verified in literature (Yamin and Lee (2010), Cheng et al. (2011), Zhou et al (2012)), we expect a positive influence on the intention of the behavior of beliefs among the banking staff. The empirical studies of Yamin and Lee (2010), Cheng et al., (2011) and Zhou et al (2012), found that the individual decisions to adopt a new technology were influenced by the people surrounding them.

Accordingly, the following hypothesis is set:

H2: Social influence significantly affects the front office staff’s intention to use Groupware.

H2: The influence of supervisors has a positive effect on the intention to use Groupware.

H2: The expectation valorization positively influences the intention of using Groupware.

Yi et al (2006) and Venkatesh et al. (2008) revealed that voluntariness of an individual to try a new technology has a significant impact on the decision to accept this technology.

H2: Voluntariness will moderate the influence of social influence on the intention of Groupware adoption.
Perceived Ease of Use
Perceived ease of use was defined by Davis (1989) as the degree to which a person believes that using a system would be free of effort. In this study, perceived ease of use, which is considered to be a direct determinant of the behavior intention, is defined as « The degree of ease associated with the use of the system », (Morris, Davis and Venkatech 2003,p. 450).

Hence we set the following hypothesis:
H3: Perceived ease of use significantly affects the front office staff`s intention to use Groupware.

According to Venkatech, Viswanath and al. (2003), the influence of the perceived ease of use on the intention to behave will be moderated by the employees` age and experience. Therefore, we expect that the influence of perceived ease of use toward the front office staff`s behavior intention will be moderated by age and experience. Hence, we hypothesize that:
H3.a: Age and experience will moderate the influence of perceived ease of use on the front office staff`s intention to use the Groupware.

Facilitating Conditions
Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatech et al.,2003,p.45). Several previous studies on the UTAUT model (Al Awadi and Morris, 2008, Al-Gahtani, 2006 Al-Shafi and al.2009, Kijsanayoting et al, 2009), indicated that the facilitating conditions did have a direct influence on usage beyond the one explained by the behavioural intention alone. Thus, the following hypothesis is suggested:
H4: Facilitating conditions have a positive effect on the expected behavior.

Moreover, the influence on the facilitating conditions of use was moderated by age and experience, the stronger effect for young workers particularly with the increasing experience in the use of information systems (Venkatesh,Viswanath et al2003).

According to Larose and Karsenti (2002), the difficulties for the learners to use the equipment or the fear of being unable to negotiate the problems caused by computers, are the obstacles for the adoption of new technology. Hence, the "mastery of computers" in understanding the adoption behavior of Groupware technology is important.

From another point of view, Schillewaert et al (2005) and Thompson et al (1991) claimed that "technical assistance" is an important tool for the facilitation of the new technology acceptance. According to the above information, this study sets the following hypothesis:
H4 - 1: Computer knowledge has a positive effect on the adoption intention of Groupware by the banking agents.
H4 - 2: Technical assistance has a positive effect on the adoption intention of Groupware
H4-3: Previous experiences of younger front office staff in the use of information systems positively influence their perceived ease of the groupware use.

Behavioral Intention
Consistent to all models drawing from psychological theories, which argue that individual behavior is predictable and influenced by individual intention, UTAUT contended and proved behavioral intention to have significant influence on technology usage (Venkatesh et al. 2003; Venkatesh & Zhang 2010). Accordingly, this study hypothesizes:
H5: Intention of use has a positive effect on the expected behavior of using Groupware.
H6: Intention of use has a positive effect on the use of Groupware.
H7: The individual behavior has a positive effect on the use of Groupware.

Figure 1 shows the conceptual framework of this research. In this framework, the four factors or the independent variables are; performance expectancy, effort expectancy, social influence, and facilitating conditions, whereas the moderator variables are; perceived age, experience, and voluntariness.
METHODOLOGY
Research Method Approach
This is a descriptive research that investigates the factors that affect the front office staff to adopt the Groupware technology in Tunisian mixed capital banks. A cross-sectional survey research had been chosen as the approach where primary data were collected by requesting the respondents to fill up a questionnaire.

Measurement
The questionnaire was designed in line with the aim of the research. It consists of two parts; Part 1 has a set of questions that state the respondents’ agreement on whether the attributes are part of the factors that influence their adoption of Groupware. It is measured on the Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Part 2 is about the demographic profile of the respondents. In this research, the questionnaire is purely based on the previous instrument developed by various researcher Jawadi et al (2006) and Venkatech et al(2008).

Sampling Procedure
The population in this research consists of the users of Groupware in Tunisian mixed capital banks. Due to the difficulty of obtaining a survey frame of all front office staff working in Tunisian mixed capital banks, such as the Central Tunisian Bank (BCT), we selected a sample by the convenience method. With the help of some managers working in the (BCT) and their contacts made for the general managers of the Tunisian mixed capital banks, only four banks from different parts of the country agreed to collaborate.

Data Collection
Three hundred and eight questionnaires were distributed to eighty agency mixed capital Tunisian banks. A total of 308 questionnaires were collected from the front office agents but only 272 completed questionnaires were analyzed.

Data Analysis
The software used in analyzing the data was AMOSS16. The statistical analysis includes Principal Component Analysis (PCA) and the structural equation model (SEM).

RESULTS AND DISCUSSION
Table 1: The Profile of Respondents

<table>
<thead>
<tr>
<th>Variables</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>25-30 ans</td>
<td>47.5%</td>
</tr>
<tr>
<td>31-40 ans</td>
<td>33.7%</td>
</tr>
<tr>
<td>41-50 ans</td>
<td>18.8%</td>
</tr>
<tr>
<td>Bank</td>
<td></td>
</tr>
<tr>
<td>Attijari Bank</td>
<td></td>
</tr>
<tr>
<td>UBCI</td>
<td>29.4%</td>
</tr>
<tr>
<td>UBB</td>
<td>22.8%</td>
</tr>
<tr>
<td>BTK</td>
<td>29.4%</td>
</tr>
<tr>
<td>Computer knowledge</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18.4%</td>
</tr>
<tr>
<td>No</td>
<td>62.5%</td>
</tr>
</tbody>
</table>

Table 1 shows that the majority of respondents are from the ages of 25-30 (47.5%). They possess License degree (52.6%), they have Computer knowledge (62.5%) and they performed training on groupware organized by their banks.

Exploratory factor analysis:
Table2: Factor Loadings and Alpha de Cronbach

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Loadings</th>
<th>Alpha de Cronbach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectance</td>
<td>PE1</td>
<td>0.681</td>
<td>0.624</td>
</tr>
<tr>
<td></td>
<td>PE2</td>
<td>0.730</td>
<td></td>
</tr>
<tr>
<td>Effort Expectance</td>
<td>EE1</td>
<td>0.695</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE2</td>
<td>0.541</td>
<td>0.698</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>BI1</td>
<td>0.517</td>
<td></td>
</tr>
<tr>
<td>Social Influence</td>
<td>SI1</td>
<td>0.796</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SI2</td>
<td>0.703</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SI3</td>
<td>0.736</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SI4</td>
<td>0.745</td>
<td>0.791</td>
</tr>
<tr>
<td>Facilitating Conditions</td>
<td>FC1</td>
<td>0.729</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FC2</td>
<td>0.796</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FC3</td>
<td>0.703</td>
<td>0.617</td>
</tr>
<tr>
<td>Expected Behavior</td>
<td>EB1</td>
<td>0.667</td>
<td>0.711</td>
</tr>
<tr>
<td></td>
<td>EB2</td>
<td>0.628</td>
<td></td>
</tr>
</tbody>
</table>

The exploratory analysis was conducted using SPSS 18 of which the items with low factor contributions were deleted.

Table 2 shows that AFCP returns a single factor for all the variables with positive factor contributions and above 0.5, thus confirming the dimensionality of this construct.
The reliability analysis shows that alpha values are greater than 0.6 for all the variables. Concerning the quality of representation of items, it is also satisfactory (>0.5).

**Confirmatory Factor Analysis**

Table 3 shows the adjustment indices of the structural model

Table 3 shows that, except for AFM and RMSEA, all the fit indices are acceptable. The AFM can be considered satisfactory insofar as its value is very close to the recommended threshold of 0.9. This value may be due to the sensitivity of this measure to the number of parameter estimates and the sample size (Hair et al 1998. Roussel et al 2002.). The fit of the measurement model is therefore considered satisfactory.

**The SME Results with Moderators**

This study demonstrates the applicability of UTAUT to the groupware system. The empirical results strongly support the extended UTAUT in predicting individual intentions and behaviors of Groupware adoption. Table 4 also shows that the front office staff’s intention to adopt Groupware is significantly impacted by social influence and perceived usefulness. The expected behavior is significantly impacted by the facilitating conditions. However, the front office staff’s intention has no effect on the expected behavior. This result differs from the one of Venkatesh et al. (2008) where intention is found to be a predictor of expected behavior.

The empirical evidence of this study indicates that the facilitating conditions are the most powerful factor in affecting the front office staff’s intention to use Groupware. This seems to be consistent with the finding of Foon(2011) and Venkatesh et al (2011b). Besides, this study found that the respondents were significantly influenced by social factors, the thing which seems to be consistent with the finding of Sripalawat et al. (2010).

This result showed that supervisors have a degree of authority over the adoption of Groupware by the front office staff. However, results show that using Groupware is not necessarily associated with a better social image of the banking staff.
Regarding the effort expectance, the empirical evidence in this study isn’t consistent with that of Yamin and Lee, (2010), Huang et al. (2011), Gao and Deng (2012) and Wong and Dioko (2013), who showed the significant effect between effort expectancy and behavioral intention. This empirical study concluded that effort expectance did not play a determinant role in influencing the intention to adopt Groupware. This result may be due to the fact that the front office staff has a high level of computer knowledge. This can also be explained by the fact that these banks organize a regular training to support their staff in using Groupware applications. Furthermore, we found that age and experience have no moderating effect on the link between the easy use and intention to adopt Groupware.

Regarding the performance expectance, the empirical evidence in this study is consistent with that of Feon and Fah, (2011). The significant effect of this variable can also be explained by the front office staff’s association made between the use of Groupware and the work improvement. Indeed, Groupware presents several applications for coordination, cooperation and collaboration of the different users. The front office staff finds it useful and therefore can contribute to the improvement of their work performance.

Regarding the moderating effects of age on both constructs on the behavioral intention, this empirical result reveals that age considerably moderates the effect of performance expectancy on behavioral intention; but states that its easy use is not significantly moderated by age.

The detailed statistics reveal that younger staff has a higher voluntariness to adopt new technology products, the thing which matches the results of Venkatesh et al. (2003).

However, Viswanath et al.(2003) found that the effect of perceived easy use of Groupware on behavioral intention is moderated by both age and experience. The empirical evidence of this study states that neither age nor experience significantly moderates the perceived easy use of behavioral intention.

Concerning the moderating effects of age on one construct toward actual behavior, this study indicates that age considerably moderates the effect of the facilitating conditions on behavior adoption. Further analysis reveals that the facilitating conditions are more important for the respondents below 30. As for the moderating effects of experience on the facilitating conditions; this study indicates that the experience in information systems considerably moderated the effect of facilitating conditions on adoption behavior.

Consequently our results show that younger banking staff can easily enjoy their experiences with the information systems, which seems to be consistent with the findings of Morris et al. (2003).

Regarding the moderating effects of voluntariness on social behavior intention, this empirical result indicates that voluntariness considerably moderates the effect of social influence on the adoption behavior, which is consistent to the finding of Venkatesh et al. (2008).

The detailed statistical figures reveal that the front office staff’s intention has no effect on their expected behavior. This result differs from the one of Venkatesh et al. (2008) who considers that intention is a predictor of expected behavior.

THEORETICAL CONTRIBUTIONS
The result of this research provides a new validation of the UTAUT and confirms its contributions to the identification of the factors favoring the adoption of groupware. However, this study does not provide a major innovation in theory but can be considered original in two respects. On the one hand, it is one of the few applications of the UTAUT in the Tunisian context. By the way, most applications of the model were carried out in the context of Anglo-Saxon and Asian (China, Japan, Taiwan). Therefore, the cultural differences can then explain the discrepancy of our results regarding the previous researches. On the other hand, our study is the first conducted in the context of the Tunisian mixed capital banks on adopting the Groupware system.

MANAGERIAL IMPLICATIONS
Regarding the phenomenon of the groupware adoption, the utilization rate in banks is still marginal. This study shows that the facilitating conditions, the social influence and the expected performance, regarding their power of influence, are three powerful determinants of the groupware adoption by the front office staff.

For further analysis, we found that the respondents have been strongly influenced by the facilitating conditions. They estimate that, through their abilities, their mastery, as well as their level of knowledge of the information systems, they can become familiar with the Groupware system.

The belief of the respondents in their abilities and skills to use the functionality of the system is a positive sign for the designers and developers of the groupware system.

This implies that users can resist the technological changes as they may reject the new system if they do not believe they can control it. In a banking environment characterized by a high speed of
technological change, banks must pay attention to the availability of the technological resources (Internet, Intranet, hardware, applications) as well as to the continuous technical assistance.

Moreover, this empirical study shows that the social influence is an important factor in determining the intention to use groupware. The front office staff is strongly influenced by the opinions of their superiors. This result is consistent with those made by Suoranta and Mattila (2004). Therefore, banks are invited to improve the interpersonal interaction and deepen the relationships with the superiors.

However, no significant effect of the 'valorization' variable indicates that the front office agents do not care about improving their image after using Groupware. For them, the use of this technology has no business value in the eyes of their colleagues and superiors.

This link, which seems paradoxical, is perhaps due to the fact that the front office agents interviewed have a short experience in the use of the Groupware system. They do not contribute to the development of their skills and the improvement of their image in the bank through the use of the Groupware system.

This paradoxical relationship may also be explained by the absence of consistency between the Groupware use and the practices of professional advancement (MacDuffie, 1995). To reverse this effect, it would be interesting for the human resource managers to promote collaborative work and show its advantages, particularly through advocacy and training.

Finally, the expected performance seems to be a key factor for the acceptance of 'Groupware', especially for the younger agents.

This can be explained by the fact that the youngest front office agents are aware of the benefits to be learned from the adoption of Groupware. Unlike older agents, they often express their reluctance towards new technological products. This result implies the need for human resource managers to conduct training to educate older agents about the capital gains of Groupware (the acquisition of new knowledge, skills development, and the shortcuts in the execution of 'operations').

LIMITATION AND FUTURE RESEARCH
There are few limitations in this study. Firstly, the number of banks studied is limited. This survey did not interview all the Tunisian banks with mixed capital and hence, a larger number of the Front office agents was not included. Secondly, this study did not take into consideration the key factors of Groupware adoption as it only tested the influence of the determinants of the UTAUT model.

Future researches should examine other factors, such as financial motivation, complexity, anxiety... It would also be important to conduct a longitudinal study to better understand the determinants of the Groupware use and check their stability and validity over time.

CONCLUSION
The aim of this research is to identify the factors that influence the front office agents to adopt the Groupware system in the Tunisian mixed-capital banks. 272 questionnaires were used for data analysis. This research has shown that the facilitating conditions, the social influence, the performance expectancy and the individual characteristics (computer skills, seniority in the bank), influence the adoption of the Groupware system. These results can help the human resource managers develop more efficient policies and strategies for the use of the Groupware system. Stakeholders should pay more attention to the components of the facilitating conditions. Technical assistance is the main concern for the users. It can be a major reason about why some bank agents are not ready to adopt the Groupware system.

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