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## Abstract

This study adopts the Diniz (1998) model to evaluate websites of foreign and local banks in the United Arab Emirates and through a survey of users ascertains factors that influence customer satisfaction of the internet banking service. These are convenience, independence, and security of internet banking transactions.

Results suggest that although the banking sector in the United Arab Emirates is a regional leader, internet banking in the United Arab Emirates is yet to be properly utilized as a real added value tool to improve customer relationship and to attain cost advantages. To identify factors influencing satisfaction of internet banking customers, data was collected from internet banking users in the United Arab Emirates. To examine the data, a factor analyses and multiple regression analyses were conducted. It was revealed that convenience and security of internet banking transactions have a significant impact on satisfaction. The effects of age, gender, number of years as an internet banking user were also explored. Security of internet banking transactions was significant for those using internet banking for more than two years, while not for others. Implications of results were discussed, and future research directions outlined.

## Keywords

Internet, Banking, empirical, investigation, into, extent, adoption, banks, determinants, customer, satisfaction, United, Arab, Emirates

## Disciplines

Business | Social and Behavioral Sciences

## Publication Details

Fernandes, C. & Awamleh, R. (2005). Internet Banking: an empirical investigation into the extent of adoption by banks and the determinants of customer satisfaction in the United Arab Emirates. *Journal of internet banking and commerce*, 10 (1), 1-12.



## **Internet Banking: An empirical investigation into the extent of adoption by banks and the determinants of customer satisfaction in the United Arab Emirates**

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### **Abstract**

This study adopts the Diniz (1998) model to evaluate websites of foreign and local banks in the United Arab Emirates and through a survey of users ascertains factors that influence customer satisfaction of the internet banking service. These are convenience, independence, and security of internet banking transactions.

Results suggest that although the banking sector in the United Arab Emirates is a regional leader, internet banking in the United Arab Emirates is yet to be properly utilized as a real added value tool to improve customer relationship and to attain cost advantages. To identify factors influencing satisfaction of internet banking customers, data was collected from internet banking users in the United Arab Emirates. To examine the data, a factor analyses and multiple regression analyses were conducted. It was revealed that convenience and security of internet banking transactions have a significant impact on satisfaction. The effects of age, gender, number of years as an internet banking user were also explored. Security of internet banking transactions was significant for those using internet banking for more than two years, while not for others. Implications of results were discussed, and future research directions outlined.

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### **Introduction**

The United Arab Emirates is fast emerging on the world's financial stage. The founding of Dubai International Financial Center in 2004 strengthened the United Arab Emirates credentials as a

key financial center. In the Emirates, the financial sector accounts for 6.5% of Gross Domestic Product (Ministry of Planning, 2003), and is dominated by a well established banking industry which is one the most profitable in the world with overall profitability increasing by 15% in 2003 alone. The International Monetary Fund has vouched for the soundness of the United Arab Emirates banking sector (IMF Report, 2004) as reflected in an 18 % capital-assets ratio (minimum is 10%), a net NPL ratio of below 2%, and diversified lending across industries.

There are 25 foreign banks and 21 local banks registered with the United Arab Emirates Central Bank. Local banks are those which are incorporated in Abu Dhabi, Dubai, Sharjah, and in the northern Emirates of Fujairah, Ras Al Kahima, Umn Al Qaiwain and Ajman. Despite the growth of electronic banking services, United Arab Emirates banks are increasing their branch networks. Between 2001 and 2003 local banks branches increased by 10% to 334 (Table 1). Meanwhile, foreign bank branches totaled 87. This gives a population of 8,653 per bank office which is high compared with developed countries such as the United States which has approximately 3,500 population per bank office (Spieker, 2004). Moreover, most of the bank offices are concentrated in the metropolis areas of Dubai, Abu Dhabi and Sharjah. This makes all the more necessary for banks to explore other channels in reaching customers.

**Table1- Bank Head Offices and Branches UAE**

	<b>1991</b>	<b>1998</b>	<b>2002</b>	<b>2003</b>
<b>Local Banks Head Offices</b>	21	20	21	21
<b>Local Bank Branches</b>	160	264	324	334
<b>Foreign Bans Head Office</b>	28	27	26	25
<b>Foreign Bank Branches</b>	91	83	86	87
<b>Population per office</b>	6,406	7,003	8,214	8,653

Source : United Arab Emirates Central Bank Reports

In spite of this apparent strength and serious potential of the banking sector in the United Arab Emirates, its products and services do not seem to be as developed compared to those in the Western economies (IMF Report, 2003). This is surprising given the prevalence of a number of strong international banks in the market. Specifically, physical branch banking, ATMs, and tele-banking are by far the most widely used channels of customer interaction with banks. Internet banking appears to be a slow starter in the United Arab Emirates despite the existence of well developed internet infrastructure. According to the Economist Intelligence Unit (2001), by the year 2000 only 20% of the banks in the region offered online transactions. However, our primary research has shown that in the United Arab Emirates the number of banks offering online banking services has increased considerably. Indeed, all 46 banks have a form of online presence.

According to the Internet World Stats (Internet World Stats, 2004), the United Arab Emirates internet penetration rate is very high with 33% compared to a regional average of 6.1 %. Out of a population of 3.4 million, 1.1 million are regular internet users. Moreover, the number of internet users increased by 51% between 2000 and 2004. However, only 21% of internet users have adopted internet banking (Economist Intelligence Unit, 2001). Considering that foreign banks are restricted by law in the number of branches they can have in the United Arab Emirates, it becomes imperative for these banks to reach out to customers via internet banking.

## Diniz Model

The role informational technology in the success of banking is well documented (Pollais, 1994; Van Aswegen, 1999; Martin, 1998; & Chatzky,1998). However, the acceptance of internet banking service has been mixed (Economist Intelligence Unit 2001). In an attempt to explain such conclusion, the Diniz (1998) model has been used to analyze the content of bank websites in the middle-east and Islamic countries (e.g., Awamleh et al , 2003; Guru et al, 2000; Jasimuddin, 2001). In the United Arab Emirates, there is no documented evidence of such an examination, accordingly, this study proposes to fill this void.

The Diniz model delineates three functional areas and three levels of activity:

### **1. Informational**

Basic – providing contact, electronic brochures and special events  
Intermediate – search engines, report downloads, economic information  
Advanced – subscriptions, interface customization and advertisements

### **2. Transactional**

Basic – opening accounts, check book requests, card requests  
Intermediate – balance enquiry, bill payments, fund transfers  
Advanced – electronic cash, electronic signature, electronic checks

### **3. Customer relationship**

Basic – electronic mail, suggestions and complaints forms, feedback forms  
Intermediate – advising tools, what-if calculations, and calculators  
Advanced – video conferences and service developments

The adoption of internet banking services is to a large extent dependent on the value added services they can offer. Diniz (1998) surveyed banks in the United States and reported that most of them offer basic and intermediate services at the transactional and informational levels. Awamleh et.al. (2003) surveyed Jordanian banks and found limited evidence of web usage at the intermediate level while the basic level use was dominant. Guru et al (2003) found that overall bank website evaluation ratings are clearly related to the three functional and interactivity levels.

There is evidence to suggest that banks are seeking to slowly move out of branch banking and into multi-channel banking, primarily internet banking, to attain cost advantages (Kurtas, 2000) and to improve customer service (Polatoglu & Ekin, 2001). This paper aims at assessing the extent to which UNITED ARAB EMIRATES banks have adopted internet banking to take advantage of opportunities in providing market information, delivering banking products, and improving customer relationship (Diniz, 1998). Additionally, we seek to understand the factors that determine the satisfaction of customers of internet banking services.

## **Method**

This study was conducted in two folds. Part 1 analyses the websites of banks in the United Arab Emirates using the Diniz (1998) model to assess the extent of adoption, while Part 2 is concerned with factors that impact the satisfaction of internet banking users.

### **Part One**

This part uses Diniz's model (1988) to evaluate United Arab Emirates bank websites. These are categorized into three channels, providing information, conducting transactions, and improving customer relations. Within each of these channels there are three level of interactivity, basic, intermediate, and advanced.

### **Population, Sample, and Instrument**

A representative sample of 35 of the 46 banks operating in the United Arab Emirates were included in this study. These were 19 foreign and 16 local banks. The instrument used was the one developed Diniz (1998).

### **Data Collection and Analyses**

Data on the sample banks was collected in September 2004. All pages and functions contained

in these banks websites were extracted, tabulated, and evaluated (Table 2). For each dimension and level of interactivity, the percentage of banks that have this activity on their website is shown in column 1 and 2 of Table 2. For example, 95 % of foreign banks and 93.75% local banks report instructional information at the basic level of interaction for informational dimension.

**Table 2- Bank website Evaluation Model**

	<b>1 Foreign Banks</b>	<b>2 Local Banks</b>
<b>Information Vehicle</b>		
<b>Interactivity Level &amp; Dimensions</b>		
<b><i>Basic Level:</i></b>		
- Institutional information	95.00%	93.75%
- Promotional Information	75.00%	81.25%
- Ways of contact	90.00%	93.75%
- Special events	5.00%	6.25%
- Addresses and Branches	95.00%	100.00%
- Board of Directors information	85.00%	87.50%
- News letters.	85.00%	68.75%
- Welcome letters.	50.00%	50.00%
<b><i>Intermediate Level:</i></b>		
- Search engines	<b>45.00%</b>	<b>25.00%</b>
- Report downloads	90.00%	50.00%
- Stock information	50.00%	31.25%
- Recruitment forms	<b>0.00%</b>	<b>62.50%</b>
- Job offers	<b>25.00%</b>	<b>68.75%</b>
- Hot links	55.00%	31.25%
- Economic Information	<b>45.00%</b>	<b>18.75%</b>
- Financial Markets Information	<b>65.00%</b>	<b>18.75%</b>
- Detailed Articles	<b>55.00%</b>	<b>12.50%</b>

<b>Advanced Level:</b>		
- Ability to customize the interface	0.00%	0.00%
- Subscription options	5.00%	0.00%
- Online chat with customer service	0.00%	0.00%
- Discussion groups	0.00%	0.00%
- Advertisement and Promotion	75.00%	68.75%
<b>Conducting transactions</b>		
<b>Interactivity Levels &amp; Dimensions</b>		
<b>Basic level :</b>		
- Opening accounts	85.00%	87.50%
- Card requests	65.00%	81.25%
- Loan applications	45.00%	25.00%
- Investment applications	45.00%	31.25%
- Exchange rates inquiry	<b>75.00%</b>	<b>43.75%</b>
- Check book request	5.00%	6.25%
<b>Intermediate level:</b>		
- Bill payment	5.00%	12.50%
- Fund transfer	80.00%	81.25%
- Balance inquiry	75.00%	68.75%
- History of the account	<b>20.00%</b>	<b>56.25%</b>
- Stock trading	<b>45.00%</b>	<b>12.50%</b>
<b>Advanced level :</b>		
Virtual banks with solutions such as e-cash, e-signature and e-checks	<b>50.00%</b>	<b>0.00%</b>

<b>Relationship with customers</b>		
<b>Interactivity Levels &amp; Dimensions</b>		
<b>Basic level:</b>		
- E-mail	90.00%	100.00%
- Suggestions and complaint forms.	55.00%	62.50%
<b>Intermediate Level:</b>		
Providing tools to make financial decisions.	0.00%	6.25%
- What if calculations	<b>0.00%</b>	<b>31.25%</b>
<b>Advanced level:</b>		
- Video conferencing.	0.00%	0.00%
- Information Gathering on products and services.	<b>55.00%</b>	<b>37.50%</b>

## **Part Two**

This part of the study is focused on assessing customer satisfaction with the level of service that United Arab Emirates banks provide through internet banking.

### **Population, Sample, Subjects, and Instrument**

The population of this study consisted of all bank customers in the United Arab Emirates across various sectors and industries. A total of 330 questionnaires were distributed by hand to several national and multinational companies that agreed to distribute them to their employees. Two hundred and twenty questionnaires were returned, again picked up by hand from company premises. Of these, 155 respondents indicated that they did not use internet banking services and were excluded from the study. Of the remaining 70 who use Internet banking services, 49 questionnaires were usable as the others had to be discarded due to incomplete data. Data was collected through a questionnaire developed by Polatoglu and Ekin (2001). Data collection took two months.

The first part of the instrument relates to internet usage habits, e.g., "how frequently I use internet banking", and "The time since I have been using internet banking is..". The second part relates to how satisfied is the internet banking user with the internet banking service ranked on a Likert scale ranging from 1 = Not at all satisfied to 5 = Very satisfied. E.g., "The internet banking service I use is secure", and "The web banking site transactions save me a lot of time". The third part consisted of demographic variables such as age, gender, education and salary levels.

## **Results**

As a first step, factor analysis was performed to extract the valid dimensions describing customer satisfaction among internet banking users in the UAE. Results of factor analysis are shown in Table 3. These results reveal that the 12 dimensions of customer service can be reduced to three factors. Two factors identified by Polatoglu and Ekin (2001) Convenience, and Security were substantiated by this study. However, a new factor emerged which is designated as independence. These three factors, Independence (INDEPT), Convenience (CONVIN), and Security (SECURT), together explained 64.81 % of the variance. Furthermore, scale reliability for each factor is very good as Cronbach Alphas are 0.725, 0.8123 and 0.8157 for independence, convenience, and security, respectively.



The independence dimension captures the concept of customers interacting with their bank using the internet without the need to directly interface with bank employees. This can be valuable if it reduces communication apprehension which may be caused by the profound cultural diversity that the United Arab Emirates' society exhibits. For example, virtual interaction provides customers with independence and control as they go about managing their accounts without the risk of mistakes due to language or perceptual biases. Convenience on the other hand depicts the ease and practicality of the channel. This includes the ability to access banking services from anywhere and around the clock. Lastly, the security dimension measures customers perceptions of channel reliability and safety, and also the speed by which transactions are completed. The latter is perhaps a reflection of the view that the longer the time taken for a transaction, the more likely that the service will be compromised on from a security point of view.

**Table 3-Factor analysis satisfaction of United Arab Emirates Internet banking users**

Factors	Loadings	Statistics
<b>Factor 1 – Independence</b>		
Privacy is maintained	.828	Percentage variance explained = 45.51 Cumulative percentage variance explained = 45.51 Cronbach's alpha = .7524
It is easy to use	.632	
Instant feedback on transactions	.579	
Satisfies all my banking needs	.576	
<b>Factor 2 - Convenience</b>		
Access from anywhere	.768	Percentage variance explained = 10.68 Cumulative percentage variance explained = 56.195 Cronbach's alpha = .8123
24 hour availability	.711	
Transactions have low or no cost	.698	
It provides time savings	.667	
<b>Factor 3 – Security</b>		
IB services are reliable	.817	Percentage variance explained = 8.26 Cumulative percentage variance explained = 64.81 Cronbach's alpha = .8157
IB services are secure	.770	
The transactions are done quickly	.530	

To further explore the data, and in an attempt to evaluate the impact of independence, convenience, and security dimensions on customer satisfaction of internet banking services, a multiple regression was performed. Table 4 shows results of the multiple regression with satisfaction ( $m = 4.16, SD = 0.912$ ) as dependent variable and entering independence ( $m = 4.06, SD = 0.634$ ), convenience ( $m = 4.45, SD = 0.63$ ), and security ( $m = 4.11, SD = 0.773$ ) as independent variables. The overall model is significant at the  $p < 0.001$  level. The model revealed significant impact for convenience and security. Surprisingly, however, independence failed to show significant relationship with satisfaction.

**Table 4-Multiple Regression. Satisfaction is dependent variable.**

Dependent variable... Satisfaction
------------------------------------

**R Square** 0.708      **Adjusted R Square** 0.689      **Standard Error** 0.517

**Analysis of Variance**

	<b>DF</b>	<b>Sum of Squares</b>	<b>Mean Square</b>
<b>Regression</b>	3	29.722	9.907
<b>Residual</b>	46	12.278	0.267

**F = 29.500 Sig. F = 0.0000**

**Variables in the Equation**

<b>Variable</b>	<b>B</b>	<b>SE</b>	<b>Beta</b>	<b>T</b>	<b>Sig.</b>
Indept	.265	.156	.181	1.696	.097
Convin	.451	.160	.307	2.822	.007
Securit	.560	.140	.469	4.009	.000
(Constant)	-1.386	.570		-2.431	.019

In order to test for the possible impact of demographic and behavioral variables on satisfaction of internet banking, a series of additional regression models were performed. More specifically, the data set was divided based on gender, monthly income (less than Dh.7000 Arab Emirates Dirams), and Dh.7,000 or more), and those who have used internet banking for 2 years or less and those who have used it for more than two years . These results are shown in Table 5.

**Table 5-Regression Models. Cultural and Demographic Variables**

<b>Category</b>	<b>Dependent : Satisfaction *</b>
<b>Gender</b>	
Male	CONVIN .011
	SECURT .008
Female	CONVIN .041
	SECURT .011
<b>Income</b>	
<=AED 7,000	CONVIN .001
>AED 7,000	SECURT .000
<b>Usage Time</b>	

<=2 year	INDEPT .032
>2 year	SECURT .000

\* All values show significance of T

Results of further regression analyses (Table 5) conform to the main regression model (Table 4), with two notable exceptions. Only convenience is significant for the group earning equal to or below AED 7000 a month. Independence, however, is significant for the group using internet for one year or less. Finally, gender does not appear to be a factor in determining satisfaction with internet banking.

## Discussion

Analyses of Part One results demonstrate that internet banking in the United Arab Emirates is in its infancy. Most of the interactivity provided by internet banking is at the basic informational and transactional levels. Applications at these levels are far from being developed in sophisticated ways that can give sustainable added value to all parties. The basic levels are what branches, ATM's and tele-banking channels provide, thus customers do not see valid reasons for using the internet banking channel and still get the same services. This conclusion has serious cost and customer service implications for banks in the United Arab Emirates. Business and Information Technology planners in United Arab Emirates banks ought to address this gap as it appears that their websites are strategically underutilized.

Analyses of Part Two results addressed the three dimensions that motivate customers to use internet banking and thus are the same bases that can be used to assess customer satisfaction with that service. Factor analysis substantiated independence, convenience, and security. Furthermore, regression analyses showed convenience and security to be strongly related to satisfaction, whereas independence unexpectedly was not. If the internet banking service provides convenience and is secure, customers' levels of satisfaction go up, but why doesn't the feeling of independence achieve the same result or at least support it? The answer could be that internet users in general, and internet banking users in particular, take the independence dimension for granted and most of them are experienced users who are quite used to independently manage their own accounts. This explanation becomes more apparent when we consider that the second regression analyses revealed that independence did indeed affect the satisfaction of the group that has used internet banking for less than a year but not the others. What does this say to banks? In part it says that customers in general, and increasingly so, expect any internet banking activity to give them independence, but are very keen on assessing the security and convenience of the service before they develop positive attitudes towards it. Embedded in convenience is the concept of added value discussed above, in other words, customers will not use internet banking to replace the traditional channels unless they see a real added value and added advantage in the new channel.

Income appears to be a factor in satisfaction. Customers who earn Dh.7000 or less saw convenience as their primary source of satisfaction with internet banking while those who earn more than Dh.7000 gave a priority to security. This finding seems logical as the higher the income the more likely for online transaction security to be an issue. Furthermore, those who earn less than Dh.7000 a month in the United Arab Emirates are likely to be working in non-managerial positions which means that they are not afforded much freedom time-wise to leave their workplace and do their banking during regular hours, making internet banking for them, therefore, a very convenient solution.

Future research in this area can focus on possible methods of introducing and advancing the interactivity levels towards the higher end of the matrix. For example, linkages between investments in web banks and organizational performance need to be established. In addition, it is worth investigating the impact of education on the adoption of and satisfaction with internet banking. Also, one would expect notable distinctions in the behaviors and attitudes towards internet banking between individual, small business, and corporate customers. Another area for future research is the impact of subjective norms as defined by Chan and Lu (2004) i.e., a potential internet adopter's belief that the salient referent thinks that he/she should or should not adopt internet banking.

## Conclusion

This paper investigated websites of banks in the United Arab Emirates and evaluated factors that are significant in determining the satisfaction of customers using internet banking. Banks in the United Arab Emirates do not use their websites strategically to improve customer relationship or to add real value. For instance, if banks want more of their customers to use internet banking, they will need to provide more value add services than the ones provided by ATMs or phone banking.

The study identified the factors that are significant for internet banking customer satisfaction. Security of transactions and convenience contribute significantly to satisfaction of internet banking customers. Banks while advertising their internet services should emphasize these points. In the case of new users of the internet banking service, banks should also concentrate on the independence aspect of this service.

Once proper developments in the design, infrastructure, and interface of internet banking in the United Arab Emirates are established, customers can be encouraged to take advantage of online banking by providing them with incentives. For example, successful online applications of frequent flyer programs in the airline industry may be a useful benchmarking exercise for internet banking.

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