A preliminary empirical investigation of electronic banking presence in the United Arab Emirates

Bruce Q. Budd
College of Business Sciences,
Zayed University
P.O. Box 19282, Dubai, UAE
Email: bruce.budd@zu.ac.ae
Tel:+9714 2082545

Daniel B. Budd
School of Accounting, Finance & Economics,
Edith Cowan University,
Joondalup, Western Australia 6027

ABSTRACT
This preliminary study undertakes to investigate the extent and quality of electronic banking in the United Arab Emirates (UAE). Banks worldwide are now moving rapidly to an era of technological change. Online versions of nearly all existing payment methods are appearing rapidly bringing about profound changes in the whole system of financial services and intermediation. While many banks especially in Europe and the U.S. have adopted internet banking, this research shows that the majority of banks in U.A.E. are still in the early stages of developing e-banking. Only 18 of the 46 banks in this emerging nation have well-developed e-banking facilities, despite all banks having an internet banking website for the convenience of their customers. This preliminary study sets out to answer several important questions. Namely, what is e-banking? What services does e-banking provide in the UAE and what provisions are made to improve customer relationship using this technology?

Using a functionality-interactivity matrix cell model and a survey of 46 banks, evidence shows that the development of electronic banking services within the UAE are moving closer towards western models, albeit, slowly. Evidence shows that foreign banks providing e-banking, though low in number, provide a better more advanced system compared to the more reluctant local national banks. One reason may be attributed to the economies of scale of western banks with an already developed and proven track records of well-established home-based e-banking systems supported with latest security technology – an 'early-start' advantage that local banks are striving to achieve and compete with. On the demand-side, factors that may have further contributed to the slowness in e-banking adoption by UAE banks, may be attributed to a banking scam that hit the UAE in 2003, which fueled clients' apprehension to participate in financial e-banking transactions, together with security concerns and the lack of strong laws governing e-banking services in the UAE

Keywords: E-banking, intermediation, functionality-interactivity matrix cell.

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INTRODUCTION:

The UAE banks are now entering a crucial stage of banking development and harmonization associated with global competition. Over recent years banking rules and regulations are increasingly exposing UAE banks to wider competition. In response, these banks are now moving closer to western banking models introducing new products and services beyond the traditional banking activities of attracting deposits and using them to provide loans. An imminent new banking law is expected to fully liberalize the financial and banking sectors in the UAE. In addition, the implementation of the three pillars of the Basel II capital accord, (solvency ratio, market discipline and supervisory action), is expected to be effective in 2007. This will require that banks (world-wide) have the technology to capture, report and store data, and determine the minimum level of capital required. The international emergence and successful developments by developed economies of cost reducing electronic banking (e-banking) practices and services has now provided the impetus for emerging countries, such as the UAE banks, to harmonize towards their own e-banking system.

As income per capita rises, telecommunications deregulates, and information knowledge and technology improves, the UAE banks now have the opportunity to move closer to western banking models where much of the labour intensive banking services are now delivered online. Improved quality of trade services and access to more accurate information, at the same time, generally exposing any potential data malpractices, has improved the reputation, efficiency and security of the e-banking industry. The UAE

banks can now profit from these new opportunities by exploiting the competitive advantages that were not achievable by previous traditional banking methods.

Increased productivity and cutting of transaction costs are the most obvious benefits of e-banking. The dramatic difference in cost and speed between traditional 'brick-to-brick' banking and Internet-mediated financial 'brick-to-click' banking services and related information delivery has led to rapid growth of online payments, e-banking and online credit risk management, thus bringing about profound changes in the whole system of financial services and intermediation. Online versions of nearly all existing payment methods are appearing globally.

While many banks especially in Europe and the U.S. have adopted internet banking, this preliminary research shows that the majority of banks in U.A.E. are still in the early stages of developing e-banking. Only 18 of the 48 banks in 2005, of this oil-rich nation have well-developed e-banking facilities, despite all banks having an internet banking website for the convenience of their customers. This preliminary survey shows that many banks launch e-banking as an additional service rather than a substitution for traditional branching operations (local banks continue to expand their number of branches). Further, banks, and in particular their corporate customers, are also concerned about security issues even though some of these have been alleviated with the introduction of the 128-bit key technology encryption.

It is against this backdrop that very important research questions are asked. Namely, what is e-banking? What services does e-banking provide in the UAE to-date, and what provisions are being made to enhance customer service and security of customer and the banks' own transactions? Using a functionality-interactivity matrix cell, 18 UAE banks are surveyed identifying three distinct functions of e-banking: information delivery, transactionary operations, and customer service and security provisions. The levels of sophistication of development of these functions are identified by three ranges: basic, intermediate and advanced. The extent and quality of financial intermediation can therefore be quantified.

The paper is structured as follows: section two provides a brief literature review, section three a background of UAE e-banking; section four describes the methodology. Section five describes the results, and finally section six provides discussion and conclusions.

BRIEF LITERATURE REVIEW

Studies which investigate internet banking are of interest to both academics, and the banking industry from the point of view of consumer and manager. Scholarly literature seemingly divides its research into two classifications. Firstly investigations into the understanding of why more users are accepting e-banking services and secondly the development of electronic banking services.

A small but growing number of studies have investigated the diffusion of financial services. The self-service technology studies to date have focused on certain aspects of the adoption process relating to ATMs (Rugimbana & Iversen, 1994), telephone banking(Al-Ashban & Burney, 2001), and Internet banking(Black, Lockett, Winklhofer, & Ennew, 2001). The relative success of e-banking can be monitored by identifying the number of current and anticipated registered users. Barto(Barto, 1999), for example, reported that just over ten million consumers in the USA used on-line PC banking and that the number was expected to grow to 35 million by the end of 2003. Gandy (Gandy, 1999) reported that some seven per cent of UK customers used PC based internet banking and this was expected to rise to 28 per cent by 2004, these figures being similar to those of Sweden, Norway and Germany (Bons, 1999). In Singapore, about 15 per cent of adult consumers were reported to be using Internet banking by 2000 (Loo, 2001; Tee, 2000).

Quality-focused models evaluating customer relationships using electronic banking can be investigated from two view points. Firstly from the usefulness of internet banking as the primary reason why customers use internet banking, (Davis, 1989). Secondly by evaluating the performance of electronic banking from the viewpoint of customer services it provides, investigating the development of information delivery; the range and provision of transaction services, and finally, customer applications and security standards, (Diniz, 2006; Garau, 2002; Goi, 2005; Mbarika & Okoli, 2003; Rotchanakitumnuai & Speece, 2003).

Usefulness of Internet Banking

Knowledge about why consumers use internet banking services is in its infancy. Most research uses the Technology Acceptance Model (TAM) which is an information systems theory that models how users come to accept and use technology. The model suggests that when users are presented with a new software package, a number of factors influence their decision about how and when they use it. TAM is one of the most influential extensions of Ajzen and Fishbein's theory of reasoned action (TRA)[1] in the literature. Developed by Davis and Bagozzi (Bagozzi, Davis, & Warshaw, 1992; Davis, Bagozzi, & Warshaw, 1989), TAM replaces many of the TRA's attitude measures with the two technology acceptances measures – ease of use, and usefulness. TRA and TAM, both of which have strong behavioral elements, assume that when someone forms an intention to act, that they will be free to act without limitation. In the real world there will be many constraints, such as limited ability, time constraint, environmental or organizational limits, or unconscious habits which will limit the freedom to act (Bagozzi et al., 1992).

Several researchers have replicated Davis's original study (Davis et al., 1989) to provide empirical evidence on the relationships that exist between usefulness, ease of use and system use (Adams, Nelson, & Todd, 1992; Davis, 1989; Hendrickson, Masey, & Cronan, 1993; Segars & Grover, 1993; Subramanian, 1994; Szajna, 1994). Much attention has focused on testing the robustness and validity of the questionnaire instrument used by Davis. Adams (Adams et al., 1992) replicated the work of Davis (Davis, 1989; Davis et al., 1989) to demonstrate the validity and reliability of his instrument and his measurement scales. They also extended it to different settings and,

[1] TRA posits that individual behavior is driven by behavioral intentions where behavioural intentions are a function of an individual's attitude toward the behaviour and subjective norms surrounding the performance of the behavior.

using two different samples, they demonstrated the internal consistency and replication reliability of the two scales. Hendrickson et al.(Hendrickson et al., 1993) found high reliability and good test-reliability. Szajna (Szajna, 1994) found that the instrument had predictive validity for intent to use, self-reported usage and attitude toward use. The sum of this research has confirmed the validity of the Davis instrument, and to support its use with different populations of users and different software choices.

Venkatesh and Davis extended the original TAM model to explain perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. The extended model, referred to as TAM2, was tested in both voluntary and mandatory settings. The results strongly supported TAM2 (Davis, 1989; Suganthi, Balachandher, & Balachandran, 2001; Venkatesh, Morris, & Davis, 2003).

In an attempt to integrate the main competing user acceptance models, Venkatesh et al. formulated the Unified Theory of Acceptance and Use of Technology (UTAUT). This model was found to outperform each of the individual models(Venkatesh et al., 2003).

(Black et al., 2001; Ostlund, 1974; Rogers, 1995) investigate the consumer perceptions of the characteristics of the usefulness innovation. Rogers (Rogers, 1995) identifies five 'main' characteristics of innovations: relative advantage, compatibility, complexity, observability and trialability. Gerrard & Barton Cunningham (Gerrard & Barton Cunningham, 2003) use these characteristics for measuring diffusion of internet banking in Singapore. Their conceptual framework relies upon three of the five characteristics and

additional characteristic of risk derived by Ostlund (Ostlund, 1974). Their empirical findings and that of Suganthi, Balachandher and Balachandran (Suganthi et al., 2001) (Suganthi et al., 2001) show that further research needs to be conducted in a variety of settings in order to determine an appropriate range of characteristics to model the adoption of Internet banking.

Using Structural Equation Models, Eriksson *et al. (Eriksson, Kerem, & Nilsson, 2005)* studied the technology acceptance of internet banking in Estonia. The findings suggest that internet bank use increases insofar as customers perceive it as useful. The perceived usefulness is central because it determines whether the perceived ease of internet bank use will lead to increased use of the internet bank. In other words, a well-designed and easy to use internet bank may not be used if it is not perceived as useful.

Diniz (Diniz, 2006) researches web use by corporate and retail banks in Brazil. Based on a multiple case study in three large banks in Brazil, he proposes and tests a model of three dimensions to evaluate virtual business environments from the user's point of view: functionality, which evaluates the offered services profile; reliability, which investigates the security of a transactional site; and usability, which evaluates the quality of user interaction with the site. The model provides a replicative, robust instrument to test e-banking in other countries.

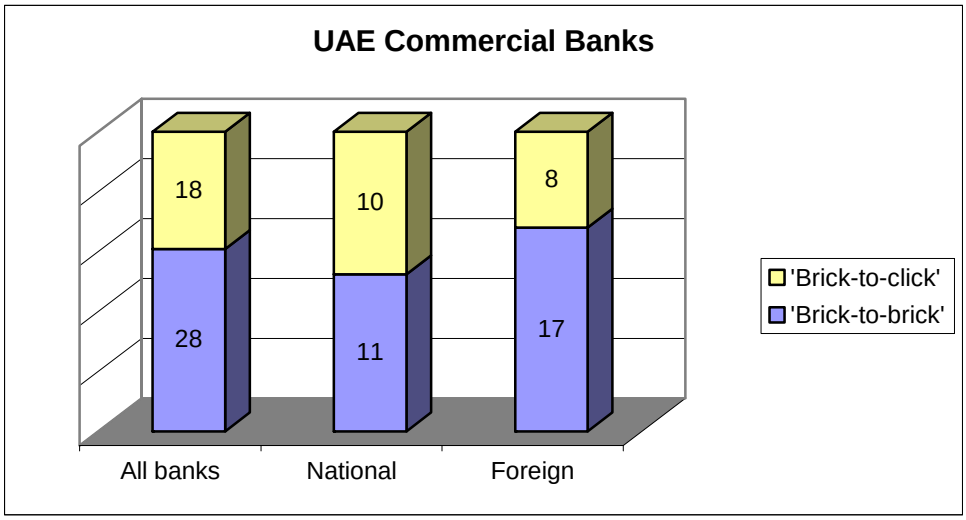
Research Gaps

To-date there is no evidence of journal published research of the UAE banking internet economy. Several published descriptive reports exist, such as Accenture Research, (AccentureA. Research, 2001) and M. Research (A. Research, 2001; M. Research, 2006). These reports show that many banks have turned to e-banking, among other services, to both lower operational costs and retain existing clients or attract new ones. Some banks offer clients lower rates and charges on their e-banking services, in order to encourage then to migrate from traditional to online channels. With foreign competition entering UAE, local banks will have to increase their cost effectiveness, as well as offer their existing and potential clients more competitive and value-added services, in order to retain their share of the market. Jasimuddin (Jasimuddin, 2002), who looked at Saudi Arabian banks on the web, and Vijayan and Shanmugam (Vijayan & Shanmugam, 2003) who researched internet banking in Malaysia, provide some evidence of electronic bank development in emerging countries, but no theoretical contributions.

BACKGROUND OF UAE BANKING.

E-banking broadly refers to the ability of banks to operate internal and external banking transactions and information securely through an array of electronic technological devices and software. As a result new business models are replacing outdated ones and organizations are re-thinking business process designs and practices, and customer relationship management strategies.

Emirates Bank International was the first to offer e-banking in UAE in 1996. By the end of 2005, ten national banks from a total of twenty-one, and eight foreign banks from a total of twenty-five, launched their electronic banking services.

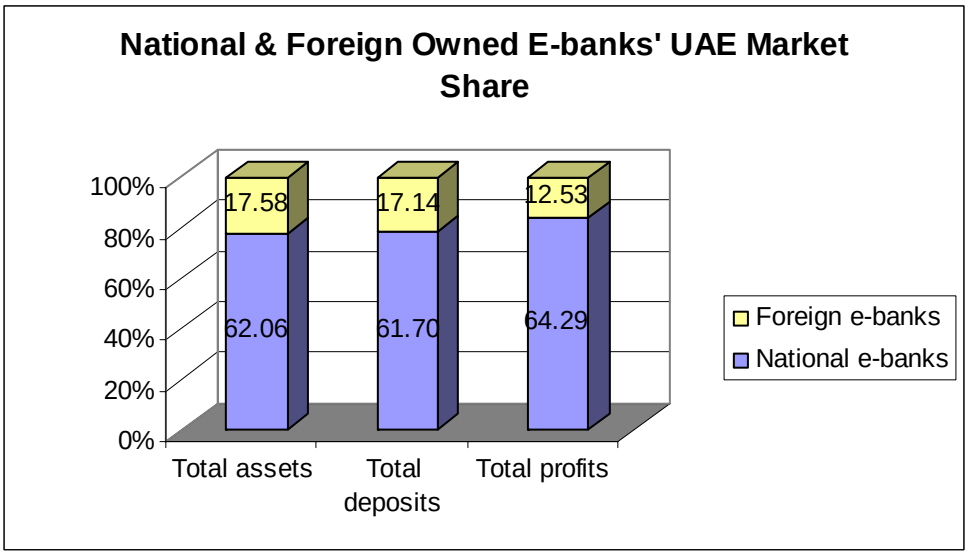


UAE commercial banks have been investing heavily in their ICT infrastructures. By the end of 2005, an electronic inter-bank switch system was connected to forty-three national and foreign banks to link their automated teller machines (ATMs) nationwide.[2] The UAE commercial banks' total IT operating and capital budget in 2005 was estimated at $190 million, including an estimated $40 million for IT employees' salaries. (M. Research, 2006). In contrast the majority of some individual UAE banks have been rather slow to meet the potential growth of customer electronic banking demands which has been stimulated by the rapid pace of domestic broadband connection and internet penetration in the country. With membership to the World Trade Organisation (WTO) and subsequent entry of foreign competition into the UAE, national banks will have to be prepared for potential future challenges. Hence in order to retain their share of the market, improvements in cost effectiveness as well as offering more competitive and

[2] Rafidain Bank, Janata Bank and Calyon Corporate and Investment bank are the exceptions.

value-added services to their existing and potential clients is needed. There are no e-banking standards governing the provisions of services, nor technology in use, in the country. Generally e-banking services are divided into retail and corporate clients, though sub-divided into further categories reflecting the customers value and business dealings. The e-banking services on offer are largely similar across both national and foreign banks. Retailing e-banking incorporates mainly transfer of funds between accounts within the same bank, and sometimes with other banks, the payment of bills and account and balance enquiries.

In addition to retail e-banking services, five national banks and six foreign banks offer corporate services from a total of 18 banks. All the major national banks, in terms of highest total assets, profits and market share of deposits, dominate the e-banking market. This suggests that it may be the size of market share (customer demand) and cost of technology that may be important considerations when establishing e-banking for the first time in the UAE. National banks dominate the market share of total deposits, total assets and total profits, as seen in the diagram below.



METHODOLOGY

Using a functionality-interactivity matrix cell model, 18 individual banks are surveyed.

Functionality-interactivity matrix cell model

Functions	*Basic level*	*Intermediate level*	*Advanced level*	*Possible total points (15)*
Information delivery	5	5	5	15
Transactionary provisions	5	5	5	15
Customer Service/security	5	5	5	15

Three separate interactive functions are identified and within each function, three different levels of development are measured: basic, intermediate and advanced.[3] Within this preliminary investigation, information is gathered from each bank's website. Five e-banking services/items are sort within each standard level. The five

[3] Based on Diniz (1999) model.

items providing a maximum five points. Collectively a potential fifteen points for each bank can be allocated for the best performing banks. The extent and quality of financial intermediation of the e-banking performance can therefore be quantified and compared.

The first category identifies the range and level of development of information delivery provided by banks. The basic level identifies the existence of account and balance enquiries, information procedures to request and cancellation of ATM cards, information about products and services; clear, informative and user friendly website which is easy to access, suggestion forms for complaints and general feedback, opinions and request services in a generic way, clear channels and directions for service requests. Easy to find and customer details such as bank balances, interest rates, prices of transactions; economic information such as financial reports availability and download; general information such as interest rates, inflation rates, and general macroeconomic data; and requests for cheque books. Intermediate level identifies: setup and cancellation of standing instructions; search engines, opening new accounts, redemption of reward points; email access, and requests for credit cards. The advance level identifies: interface customization (changing the desk-top format to user friendly), demonstrations/simulations, interactive features to facilitate client banking; corporate banking; on-line insurance information; on-line wealth management information; commercial real estate information.

The second category is “transactionary provisions”. With efficient electronic information financial intermediation becomes more effective and more cost efficient. The basic level of interactivity for transactions are: ability to transfer funds to another account from the same bank, transfer of funds to a third party (other) bank account, payment of additional bills such as utility, telephone, and credit card payment. Postal bills, outward remittances, purchases of deposit certificates, mortgage payments, standing orders, and payments of additional bills such as cable television, are categorizes under intermediate level. Advance level classifies electronic cash and electronic cheques as a way to develop transactions through the Web, on-line mutual funds transaction, on-line insurance and wealth management transactions, and any asset management or investment banking transaction avenues.

The third category is customer service and security, which at the basic level includes: complaints box, email facilities, contact and numbers etc for discussion and requests; banking products and services and provisions for improving customer-bank relationship; security SMS message announcing transaction; telephone call on remittances to nominated accounts not listed; anti-phishing techniques to prevent fraudulently acquiring sensitive information such as passwords and credit details; establishment of firewalls, and educating by mail customers of types of fraud. Intermediate level includes: monitoring on daily basis to ward off any virus attempts; RSA token which has a six digit code which changes every 60 seconds; what-if calculators, and advising. The intermediate level identifies links to other sites; exchange rates; application forms for job vacancies; financial reports; and access to

databanks. Finally the advance level identifies the possible services such as: discussion groups, customizing resources, advising tools and demonstrations to help customers with advanced loan and investment decisions; corporate and investment banking services; on-line wealth management services; commercial real estate finance services; videoconference; and gathering information for product and service development[4].

Ultimately the scores of each category and each stage of development are summated, and the model therefore derives comparative values, of each individual institution, which in turn measures the extent and quality of the electronic banking in UAE.

RESULTS.

Statistical evidence shows that the development of e-banking services within the UAE are moving closer towards western models, albeit, slowly. Results from this preliminary survey show the existing 18 e-banks are well developed, though not predominately at the advance stage as many western banks located in the UAE. More foreign banks have better e-banking services than their UAE counterparts providing many additional retail and corporate commercial banking services such as: personal corporate services, investment, real estate finance, on-line wealth management, payment of bills on-line, remittance services, insurance, interface customization, and search engines for general economic information. Evidence from this preliminary survey shows in Table 1 below, that foreign banks providing e-banking services, though comparatively low in number

[4] Extremely difficult, if not impossible, to access detailed information about individual bank security protocol.

compared to national banks and smaller in total assets and total deposits, provide a better, more advanced service compared to the more reluctant local national banks. One reason on the supply-side, may be attributed to the economies of scale of western banks with already developed and proven track records of well-established home-based e-banking systems supported with latest security technology in their respective home base. On the demand-side, a banking scam that hit the UAE in 2003 may have fueled clients' apprehension of requesting financial e-banking transactions, together with security concerns and the lack of strong laws governing e-banking services in the UAE, may well add to the slowness in e-banking adoption and development by UAE national banks to-date.

Table 1. Weighted total scores of e-banking performances of 18 UAE national and foreign owned banks, in percentages.

Functions	Status	National (10 banks)	Foreign (8 banks)
Information delivery	Basic	100%	100%
	Intermediate	100%	100%
	Advanced	60%	75%
Transactionary	Basic	100%	100%
	Intermediate	72%	80%
	Advanced	56%	75%
Customer service/security	Basic	100%	100%
	Intermediate	58%	68%
	Advanced	48%	70%

CONCLUSIONS.

Inevitably the banking sector will be a leading player in future electronic commerce in the UAE. The dramatic difference in cost and speed between traditional and internet-mediated financial services and related information delivery has led to rapid growth of online payments, e-banking and online credit risk management, thus bringing about profound changes in the whole system of financial services and intermediation. As the UAE move closer towards full WTO membership compliance, the UAE banks must be prepared to meet global market demands and electronic financial competition. It is important that all banks continue to adopt and improve their information technology and electronic banking services. Domestic broadband connection *per capita* within the UAE is one of the highest in the world. Clearly online banking is an essential role for future UAE banking. Preliminary empirical results suggest that the UAE banking is at a crucial stage of development, supported by high ICT capital investment but by only a minority of individual banks. Only 18 of the 46 banks in this emerging nation have well-developed e-banking facilities, despite all banks having an internet banking website for the convenience of their customers. At the moment it is the larger banks providing these e-banking services. Small banks rely on their websites to provide information and financial direction. All banks need to provide electronic banking services.

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