



## Waves Of Multimedia Banking Development

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### Abstract

This exploratory study on the rise of multimedia banking highlighted the 'waves' of development experienced by the banking industry. The initial step being the ATM wave, followed by the PC wave and finally the E-cash wave. These three waves have revolutionised the banking industry. More changes have been seen over the last 30 years than over the last 300 years of banking /money lending.

The paper also outlined the opportunities and threats for banks due to the introduction of new technology as well as how banks are taking advantage of the opportunities and also attempting to remedy the threats.

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### Introduction

Evolution is an inevitable reality of existence and banking is no exception. Money changers and money

lenders of yore are respectable bankers today. Money held in trust became deposit taking and money lending became loan making. Over time banks became a necessity and the role of banks, became an integral part of economic reality. The growth and development of banks have been phenomenal with the latest fad being multimedia banking.

According to Dannenberg and Kellner (1998), the transition to Multimedia banking can be seen in three waves, each representing the point where technology capability meets consumer acceptance (*Table 1*). They argued that from today's vantage point, there appears to be a number of emerging themes:

- Most of the technology required to drive each new waves was based on existing technology.
- Each wave moved from a period of immaturity, initially with limited technology at high cost, next through a period of rapid acceleration of capabilities and finally acceptance into matured phase with stable technology at relative low cost and broad consumer acceptance.
- Each wave built on the consumer acceptance and technology trends of previous waves.

**Table 1: Three Technology Waves in Development of Multimedia Banking**

<b>Primary consumer benefits driving change</b>		
<b>WAVE 1</b>	<b>WAVE 2</b>	<b>WAVE 3</b>
<b>1990 –1996</b>	<b>1994 – 2005</b>	<b>2000 +</b>
<b>ATMs &amp; Telephone</b>	<b>PCs &amp; Online Services</b>	<b>E-Cash &amp; Interactive Video</b>
<b>Access &amp; Convenience</b>	<b>Information &amp; Financial Control</b>	<b>Price, Convenience &amp; Value Added Services</b>
Wide consumer acceptance of remote delivery: <ul style="list-style-type: none"> <li>• Telephone</li> <li>• ATMs</li> <li>• Mail</li> </ul> Proliferation of electronic payment delivery channels and networks: <ul style="list-style-type: none"> <li>• Debit</li> <li>• Credit</li> <li>• Electronic Payments</li> </ul>	Large segment of customers routinely accessing information online. Financial management software and gateways gain popularity. Electronic bill presentments and payment services become standard. Gateways and intelligent agents spur wave of "electronic commerce"	Electronic cash and smart cards displace cash and cheques for significant portion of financial transactions. Real time interactive two-ways video financial advisory services gain wide acceptance via Multimedia Financial Kiosks. Interconnectivity among various payments & information networks (credit, debit, and e-cash) allows funds to be easily transferred among various accounts.

Source: Dannenberg and Kellner (1998)

### **First Multimedia Technology Wave: ATMs & Telephones**

The first wave centred on the telephone (an invention over a century old) and the ATM (invented a good 30 years old). These technologies have created the shift to remote distribution and migrating branch transactions to off-site ATMs and telephones. The ATM offered U.S. banks an opportunity to circumvent the restrictions of inter-state banking embodied in the McFadden Act of 1927.

### **Second Multimedia Technology Wave: PCs & Online Services**

The second wave of technology changes focused on the personal computer as a financial management tool, combined with information reporting through online network services. The battle between content, delivery and the gateway providers for control of customer relationship produced a series of variations on Multimedia banking, all with very different strategic implications for industry participants.

### **Third Multimedia Technology Wave: E-cash and Interactive Video**

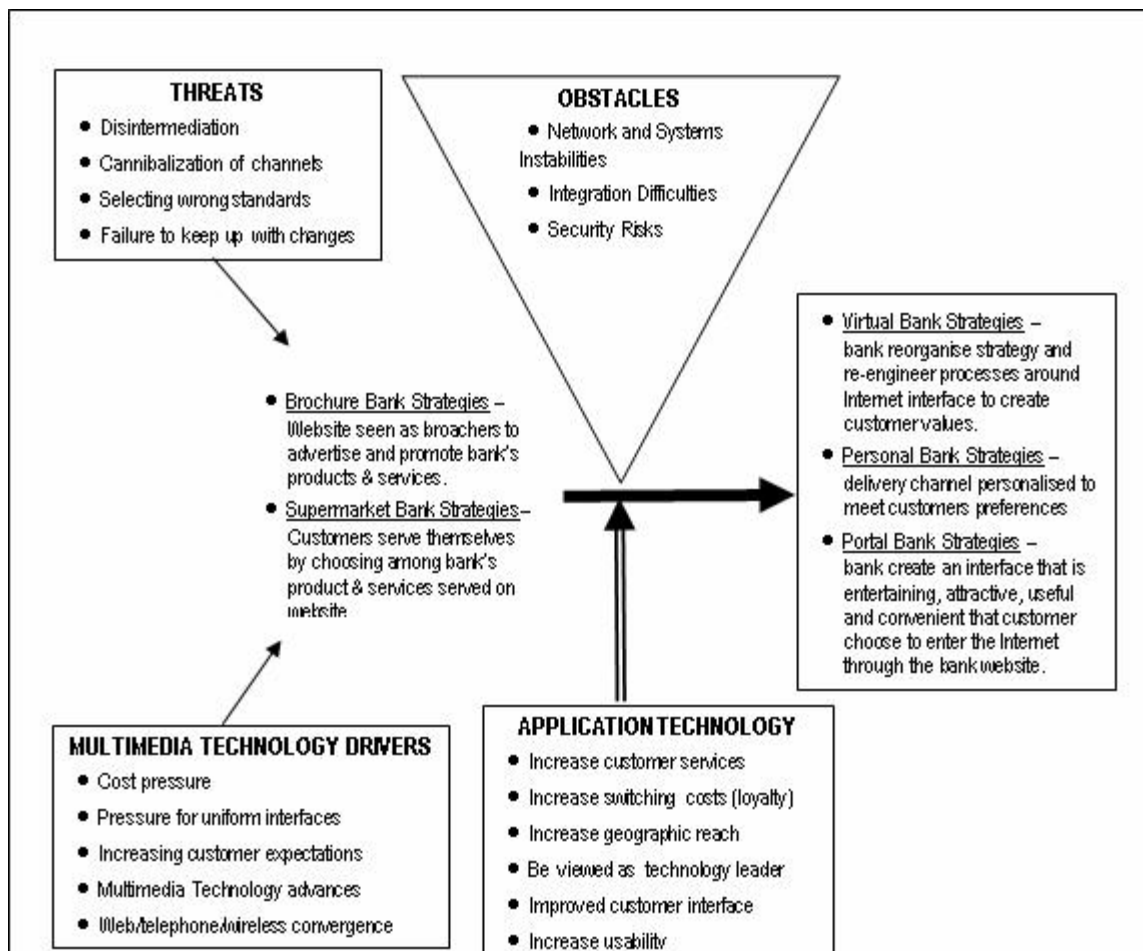
The third wave involved electronic cash stored in smart cards. Electronic cash (e-cash) evolved in two ways. First was the advance in encryption technology to permit secured online fund transfer over the Internet. Second was the development and use of “electronic wallets” that allowed convenient transport of small amounts of fund via smart cards for typical purchases. Customers wanting to make deposits or withdrawals need not visit branches or ATMs, instead cash can be transferred via smart card devices incorporating digital signature technology hooked to any multimedia communication devices such as PC, Personal Digital Assistant (PDA), Mobile Phone or Interactive Television .

### **Multimedia Technology Opportunities and Threats**

Each wave of new technology evolution however, had its own share of opportunities and threats. Gordon and Mulligan (2002) studied the impact of information technology in the financial services industry and investigated the threats, obstacles drivers and opportunities challenging managers in this industry. According to them the threats were disintegration, the cannibalisation of existing delivery channels, risk of standardising on the wrong technology platform and the inability to keep pace with changing technology. The obstacles included security risks, network and system instability and the difficulty of integrating different systems. They cited industry and customer pressure to develop “one-look, one-feel” interface technology for service delivery and increased customer readiness to adopt new forms of technology-enabled services. They argued that the state of future customer relationship will depend on the strength of the functions and technology available on multimedia delivery channels. On the other hand, Singer et al. (2000) commented that banks have traditionally adopted a conservative approach to technological changes and need to implement strategies that will include five elements for success. These being, portal attractiveness, customer empowerment, community service, content, entertainment and presentation from a customer perspective. An overview of forces shaping technology and strategies based on the findings of Gordon and Mulligan (2002) and Singer et al. (2000) is summarised in *Figure 1*.

The diagram shows that the banking industry’s strategies to improve customer relationship is pushed by a variety of threats and pulled by opportunities and the greatest of these is Multimedia digital technology. Opportunities identified are, the usage of technology to strengthen customer service levels, increase customer switching costs and expand geographic reach. New technology such as Multimedia application can improve customer service levels by providing new forms of service delivery and customer interface using the Internet to improve customer intimacy, rapid response to customer needs and affording customers the opportunity to ‘help’ (self-service) themselves. However, the same technology can also be seen as threats and obstacles to traditional banking strategies. New technology will destabilize traditional financial institutions that historically relied on established customer relationships to build profit margins and create loyalty by undermining customer loyalty and retention by the disintegration and commoditisation of product-service. Banks will find that the Internet has made the next competitor only a ‘click’ away. The attitude that will win in the Internet age is that: “the customer is king” and the technology applied must provide value in the form of right information, at the right time and delivered in the right media at the right price (Singer et al. 2000). Future strategies such as virtual, personal and portal bank strategies are also included in *Figure 1* as they form part of the processes shaping the bank of the future.

### ***Figure 1: Force Shaping Strategies and Technology***



Source: Adapted from Gordon and Mulligan(2002) and Singer et al.(2000)

## Basis of Multimedia Banking

The literature on multimedia banking seems to suggest that currently, the main multimedia delivery channel in banking is the Internet, accessed via personal computer. The terms, Multimedia banking, Internet banking, e-banking and online banking are often used in the literature interchangeably to refer to the same technology form. Although mobile banking and TV-based banking do not seem to play a big role in banking today, the future delivery platform is expected to shift from wired Internet connections to wireless mobile technologies and this would see an increased importance of mobile and TV-based banking. Wah (1999) pointed out that Multimedia banking does not necessarily have to be on a computer screen. It can, for example, be on the tiny screen of a mobile phone or any other wireless device such as Personal Digital Assistant (PDA). With these wireless applications, customers can consult their bank account balances and transaction histories, view pie charts of their investment holdings, initiate payments or orders to buy and sell securities and have interactive communication with their banks via “chat service”, interactive e-mail and Short-Message-Services (SMS). Furthermore, based on research carried out in the UK, Slack and Rowley (2002) found that Self Service Multimedia Kiosks/Internet Kiosks (SSMK/IK) and mobile phone/ PDA technologies have the potential to be a significant alternative to PC based online banking technologies. *Table 2* below compares SSMK/IK and mobile phone technology as an alternative channel to PC based Multimedia banking based on the customer’s lifestyle.

**Table 2: Comparison of Internet Kiosks and Mobile Technology as Alternative Multimedia Banking Delivery Technology**

Characteristics	Multimedia Kiosks Technology	PDA/Mobile phone/iWeb Technology	TV
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User lifestyle	General public, travellers, shoppers	Young, upward mobile, young professionals, students
Penetration	Under control of kiosk provider, that is, bank.	Varying between market segments
Bandwidth	High – suitable for multimedia technology	Lower – awaits enhancement
Cost to user	Mostly free if on same bank	Access and call charges
Reliability	Good	Depends on network coverage
Size of display	Large	Small
Input options	Touch screen, full function keyboard	Keypad that hinders normal typing
Integration	Full integration and access to information database after security check.	Difficult to download information and integrate with bank's database.
Printout option	Print vouchers, coupons, receipts	Often no print options.

Source: Wah (1999), Pastore (2001) & Williamson (2001)

Furthermore, as ownership of television is greater than PCs and watching television is a favourite pastime for many, Pastore (2001) and Williamson (2001) independently studied the use of interactive Web TV as a portal and multimedia delivery channel. This channel can be used by viewers to conduct online shopping, banking, education and be entertained. Vendors use this channel to build presence and brand loyalty of their viewers. They found that customers preferred a website which is entertaining, interactive and that which gave the viewer a pleasant experience while using the website and motivated them to return regularly.

As regards the future of traditional banks, Wah (1999), for example, remarked that they will not disappear in time. Instead, new technology will put them on to a new level of banking services. Wah (1999) concluded that traditional banks will benefit from multimedia technology as they will be able to care for their customers in a more efficient, be more productive and even more entertaining. Wah (1999) reiterated that unless Multimedia banking is fun for customers it would not gain popularity. Singer et al. (2000) gave some examples of banks which have creatively taken the online bank website to new heights and made Multimedia banking entertaining. The entertainment takes the form of games for children which teach them simple financial management, adult competition with random chance to win game tickets, virtual cards, building your own personal website hosted by the bank, 'dream machines' that allow customers to design their own home and a chance to win cruises, coupons and gifts vouchers. Examples of such banks given by Singer et al (2000) are American Bank ([www.american-bank.com](http://www.american-bank.com)), First Citizen National Bank ([www.firstcitizensnb.com](http://www.firstcitizensnb.com)) and Coastal Banc ([www.coastalbanc.com](http://www.coastalbanc.com)).

### Comparative E-Banking Developments

Some idea of the extent to which Multimedia banking has developed in various economies is given in *Table 3*. However, it must be emphasised that the numbers may not be fully comparable and should be treated only as pointers.

*Table 3* shows that the highest percentage of customers using online banking belongs to the Scandinavian countries of Finland (29%) and Sweden (31%). This may be due to the corresponding

high ownership of personal computers and high usage of mobile phones. In contrast, although the United States has a high percentage of ownership of computers, yet consumers in the United States (6%) appear not to have taken to Multimedia banking in large numbers. This may perhaps be due to the prevalence of community banks, greater usage of cheques and the availability of non-financial institutions like supermarkets and Telcos for bill payments and facilities for automated fund transfers, such as, a self-service terminal. In Malaysia (<1%) the figures are not encouraging and this could be due to low ownership of PCs. However, Claessens, Glaessner and Klingebiel (2001) have predicted that it will be the developing economies that would leapfrog to Multimedia banking rather than invest heavily in establishing branch networks

### Consumer Perception and Reaction to Multimedia Banking

There has been much discussion about the acceptance process of Multimedia banking services and consumer reactions to this new delivery channel. In theory, consumer attitudes seem to have an impact on the acceptance of Multimedia banking. For example, Athanassopoulos and Labrousos (1999) studied Multimedia banking in Greece and gave excellent insights into the consumer acceptance of Multimedia banking. Their research findings suggest that product-specific attributes such as price and speed are conceived differently by customers. The following were considered as important criteria in the adoption of Multimedia banking: service charges, price, speed of delivery, bank's reputation, bank's knowledge of customer and willingness to serve customers.

Another study by Daniel (1999), suggested that convenience, increased choice of delivery channels and improved personal control over the banking activities were the driving factors accelerating the adoption of electronic banking in the UK and Ireland. One interesting aspect of the study was that respondents stated that Multimedia banking was unimportant if it did not offer money transmission services.

**Table 3: Comparative e-Banking Developments**

Country	Real GNP per capita (US=100)	Internet users as % of inhabitants	Mobile phones per 100 inhabitants	Bank customers using online banking (%)	Personal computers per 1000 persons	% of Inhabitants with Mobile Phones	Computers with IP Address Connected to the Internet per 10,000 People
Australia	75	32	34	4	n/a	29	400
Finland	71	41	65	29	360	57	996
Germany	74	18	29	12	297	17	141
Japan	79	21	45	n/a	n/a	n/a	n/a
Sweden	69	41	58	31	451	46	430
United Kingdom	70	21	46	6	303	25	202
United States	100	27	31	6	511	26	975
Hong Kong	71	36	64	<2	298	47	108

<b>Korea</b>	49	23	50	3	182	30	38
<b>Singapore</b>	70	24	42	5	437	35	187
<b>Argentine</b>	37	2	12	3	49	8	16
<b>Brazil</b>	21	2	9	3	36	5	10
<b>China</b>	11	1	3	<1	12	n/a	n/a
<b>Czech Republic</b>	40	7	19	3	107	n/a	n/a
<b>India</b>	7	<1	<1	<1	3	1	<0
<b>MALAYSIA</b>	24	7	14	<1	69	10	18
<b>Mexico</b>	25	2	8	4	44	3	9
<b>Nigeria</b>	2	<1	<1	n/a	n/a	n/a	n/a
<b>Poland</b>	26	5	10	<1	62	n/a	n/a
<b>South Africa</b>	27	4	12	n/a	55	n/a	n/a
<b>Thailand</b>	19	1	4	<1	23	3	4

Sources: Claessens, S.T. Glaessner and D Klingebiel June 2002 & September 2002, Computimes New Strait Times, Sept, 2002

In another recent study of Multimedia banking in the UK, Jayawardhena and Foley (2000) demonstrated that time; privacy control and economic issues were some of the aspects that customers saw as important in Multimedia banking. Their study indicated that as consumers become busier, they seek convenience in performing their banking transactions.

Sathye (1999) emphasized several factors that had an impact on the acceptance of Multimedia banking in Australia. Consumers seemed unaware of the services and benefits of Multimedia banking and considered it as difficult to use. Consumers also had security and safety concerns about transactions via the Internet. A majority of Australian consumers perceived Multimedia banking as expensive. The study found that the fundamental barriers to customer adoption of Multimedia banking were: unable to access the Internet, absence of personal computer and resistance to change.

Other studies found that Multimedia banking quality was primarily associated with the product variety and diverse features and these played an important role in customer's perception of the overall quality of the bank. Strieter et al. (1999) noted that one of the most important developments in banking is the increased emphasis on marketing a wide array of financial services. They concluded that the key to getting more customers to adopt online banking was not the attraction of the Multimedia itself but the products and services offered to the customers. This argument was supported by Latimore, Watson and Maver (2000), who found that 87 per cent of Multimedia banking customers preferred to make a variety of financial transactions at one site, such as, paying their bills electronically, viewing their monthly bank statements and purchasing stocks and insurance online, a sort of one-stop financial supermarket. Furthermore, technology savvy customers using online banking services expect unlimited access to financial information, preferential rates compared with branch banking and a wider range of choices in

selecting competitive products and services (Mols, 2000). Similar findings were also highlighted by Shanmugam and Guru (2003).

## Conclusion

This exploratory study sought to trace the development of Multimedia banking. Researchers have been able to place the developments in three major tranches namely the ATM tranche, the PC tranche and the e-cash tranche. These consecutive waves of evolution have resulted in a major banking revolution. The more progressive banks are taking advantage of the opportunities offered by these tranches of technological advancements and the traditional brick and mortar banks are fast turning into click and mortar banks. Changes, will no doubt, bring about new threats which may alter established market shares bringing new players into the already saturated financial environment. This may in turn squeeze out those institutions which are not prepared to accept the change or flow with the wave.

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