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Implications of e-Commerce for Banking and Finance

Michael S. H. Heng
University of South Australia

Abstract: The aim of the paper is to show that e-commerce holds the potential to transform banking and financial systems. First, banks and financial firms can use the technology and business practice of e-commerce to market their products to the customers. Second, e-commerce provides a business opportunity for banks to offer new products and services to serve the needs of e-commerce. Third, the new business environment associated with e-commerce provides opportunity for institutional innovations in banking and finance, which can help to lay a sounder foundation for the international financial system. The paper focuses on the second and third aspects.

1. INTRODUCTION

Before e-commerce captured public imagination and business participation, the Internet was seen by the conservative and established banks as at best just another distribution channel. The advent of e-commerce has changed such perception.[33] Now almost every financial firm, from the most prestigious Wall Street investment bank to the provider of micro credit to the very poor, has found that it has no choice but to invest in an Internet strategy. "And having invested in it, it will need to persuade its customers to use it. (Long 2000)" Bank customers who enjoy the convenience of on-line purchase from Amazon.com may expect their banks to improve the services. However, banks and financial firms need to be more than becoming Internet savvy and embracing the practices of e-commerce. They need to see themselves as worthy contributors of e-business and to play their roles in a positive way in institutional innovators. The aim of the paper is to show that e-commerce holds the potential to transform banking and financial systems in a radical way.

[33] It must be noted here that innovative financial firms, e.g. e-trade and Schwab,. can claim some credit for their contribution to e-commerce.

There are three aspects in which e-commerce can affect banking and finance. First, banks and financial firms can use the technology and business practice of e-commerce to market their products to the customers. Second, e-commerce provides a business opportunity for banks to offer new products and services to serve the needs of e-commerce. Third, the new business environment associated with e-commerce holds potential for institutional innovations in banking and finance, which can help to lay a sounder foundation for the international financial system. The paper focuses on the second and third aspects. For the sake of completeness, the first aspect will be discussed here in the Introduction. Separate sections below will be devoted to dealing with the second and third aspects in greater detail.

Now, let us consider the first aspect. As customers we are witnessing these changes before our nose as banks adopt the Internet infrastructure and business practices of e-commerce. Many of us would have direct experience with electronic banking, for example Internet bank and e-brokerage, and have seen the disappearance of some brick-and-mortar branches of our familiar banks. The beauty of Internet banking lies in its low cost, convenience and availability. It enables banks and financial companies to offer services with the following qualities: 24-hour, seven-days-a-week availability, convenience, fast delivery, customer focus and personal service. Banks can reduce the time taken to approve mortgage application from weeks to hours. Many of the back office activities like data entry are now performed by the customers, reducing costs and improving services. The commercial use of the 128-bit encryption opens the way for secure on-line financial transaction. The Internet as a technological platform is to financial transaction what money as a common medium of exchange is to the economy. Just consider the convenience and flexibility provided by money in economic activity. Much more important than these is the need for bans and financial firms to operate in a *radically new* way. For example, act as an open shop for customers to buy services from you and your competitors. It is founded on the on-line world principle of getting the customers coming back to you, and has been adopted by Fidelity and Schwab selling competitors' mutual funds on their websites (Keen 2001).

Second, e-commerce represents a business opportunity for banks to offer new products and services to serve the needs of e-commerce. E-commerce has created a demand for low cost facility for micro payments (Choi et al 1997). Some other areas wherein banks can develop services are: protection for e-commerce participants against fraud, electronic billing and assistance for small businesses (Wenninger 2000), acting as information intermediary to safeguard the privacy of on-line customers, and acting as a rating agency for e-commerce.

Third, the new business environment associated with e-commerce represents an opportunity for re-structuring the banking and financial systems. As the capital market is assuming more and more the role of financing business ventures, banks have become less crucial as intermediary between savers and investors. Together with the dangers associated with moral hazard, this forms a good reason for

governments to withdraw the safety net from banks and set up an independent agency to operate on a totally secure basis the payment and transaction systems. Another potential impact is that central banks may find it more difficult to set interest rates, thereby giving up their important function in monetary policy.

There is a strong historical precedent to the second and third aspects I just outlined in the two passages above. Many of the standard business practices of banks today evolved in response to the needs of modern commerce[34]. Modern commerce also shaped the business environment, which in turn introduced some major institutional innovations. A significant one was the commodity exchange which evolved to become the stock exchange, and futures market.

The rest of the paper is organized as follows. The next section will give a brief review of the development of banks in modern Europe, showing how banking emerged as an established business activity in response to the needs of commerce. Subsequently, section 3 describes some areas where banks are offering or can offer new services to support e-commerce. Section 4 discusses two main areas where e-commerce and the Internet can provide the opportunity to restructure the banking and financial systems, and the possible effects on financing of public projects. I close the paper with a conclusion in section 5.

2. LEARNING FROM ECONOMIC HISTORY

The early history of banking in the West can be read as a story of the evolution of banks in the process of meeting the needs of modem commerce. Banks in Europe began as moneychangers who specialized in assaying and valuing the coins used in the market centres (De Roover 1948; Lane and Muller 1985; Summer 1971). In the early 13th century, cities like Venice, Florence and Genoa bloomed and grew to become economic and cultural engines. These cities drove and expressed new aspirations and ways of thinking directed to material purposes, in the process creating new social behaviours. Venice was a great commercial centre, and it was here that banking for the first time separated itself from the changing of money (Roberts 1996). They evolved to become deposit banks, acting as custodians of their clients' money. This proved to be very useful to traders who gradually learned to trust the banks. With traders coming to accept book entry transfers as payment for their merchandise, banks acquired the role as payment intermediary between buyers and sellers. As long as the depositors could trust the banks, most of their money was laying idle there. This was soon discovered by the bankers. They realized that they could hold some reserves against deposits, and could lend out the rest against some

[34] Commerce had existed as early as the division of labour ushered in by the agricultural revolution. But commerce then had not stimulated the emergence of banks in the form that we know it. The task was left to modern commerce, i.e. commerce in modern history.

collateral or invest in promising business ventures. "Banks began when men saw from experience that there was not sufficient money in specie for great commerce and great enterprise." (Summer 1971, p.200.) With this new business activity, they carried out an additional role as financial intermediary between savers and investors/borrowers or become investors themselves. The second role allowed banks to provide liquidity in the economy. This has far-reaching economic consequences, both in the form of economic benefits and risks.

The intellectual life in Italy at that time was fermenting and vigorous. Florence was the focus of the most intense and influential cultural activity in the whole of Europe. From 1350 to 1450, more scholars, artists, scientists, architects, and poets lived and worked in Italy than anywhere else in the western world. Many of them came from other countries to participate and contribute to that great unplanned historical phenomenon known later as the Renaissance. "Europe went, as it were, to school there." (Roberts 1996: p. 193.) Against this background of intellectual vitality, flourishing commerce brought with it a chain of institutional innovations. The Bill of Exchange appeared in the 13th century along with the first bankers. Limited liability was known in Florence in 1408, and marine insurance was available before that (Roberts 1996). Double entry bookkeeping evolved to meet the needs of merchants (Bodie and Merton 1998). By 1500, Italians had invented new credit instruments for the financing of international commerce. The Amsterdam stock exchange was established in early 17th century (Braudel 1968). The 19th century saw the regular market being replaced by continuous trading, purchase by sample, the rise of shop keeping, and replacement of fairs by produce exchanges or bourses.

The contribution of traders to the establishment of banks is well documented (Summer 1971; Clough and Cole 1968). In Europe, banks were established in centres of great foreign commerce such as Venice, Amsterdam, Hamburg and Nuremberg. It was "merchant capital which created markets, financed manufactures, floated the American colonial economies and launched banking and insurance." (Grassby 1970: p.106.) Even today, we still see the role of traders as modest providers of credit to peasants and farmers in developing countries. In emerging economies the activities of traders promote not only the more efficient deployment of available resources, but also the growth of resources (Bauer 1991).

Traders were risk-takers who under the right conditions underwent a metamorphosis to become financial and industrial capitalists. The instruments of capitalism were invented in the course of turning the wheels of commerce. For this paper, the most significant one is the principle and practice of limited liability. The practice of limiting the liability of passive partners made it easier for companies to attract investors to participate in new business ventures. It provided an efficient means for entrepreneurs to pool together public financial resources by selling them shares on the stock exchange. It is an instrument for sharing risks and profits that proved crucial in the growth of capitalism.

3. NEW PRODUCTS AND SERVICES TO SERVE E-COMMERCE

Commerce in our age inevitably involves monetary transaction. It would thus come as no surprise that e-commerce could affect banking in a very fundamental way, and would be affected by the ways banks respond to the new demands. For example, e-commerce will further undermine the power of bank branches (Lawrence et al 1998). It is also a business opportunity for banks to offer new products and services to serve the needs of e-commerce. In the following sub-sections below, we look at five areas where banks can offer their services to electronic commerce - payment services, information intermediary, rating services, fraud protection, and providing technological support for small businesses to enter e-commerce.

3.1 Payment and Billing Services

Credit card is one of the few remarkable innovations introduced successfully by banks in the last five decades (Drucker 1999), and it is currently being used extensively in B2C electronic commerce. But it is an expensive means of payment for e-commerce and many on-line shoppers will prefer other forms of paying their purchase (Long 2000). So will many on-line retailers who have to cough up set up and transaction costs and 2-3% of every payment. Moreover credit cards are not suitable for person-to-person trade on the Internet. Such inadequacy shows up in on-line auction. The American government has expressed misgivings about the reliance on credit cards for e-commerce. In short, e-commerce has created a demand for low cost facility for micro payments and flexible payment (Choi et al 1997; Long 2000).

New ways of on-line payments are appearing in the market, such as deduction from a pre-paid account, electronic billing services, direct transfer out of bank accounts. An interesting one is provided by X.com and PayPal which allows account holders to email money to each other (Long 2000).

3.2 As Information Intermediary

A recent issue of *The Economist* (Dec 9th 2000) reports the possibility for credit card companies and banks to act as information intermediaries. In such a construction, a bank customer downloads software from the bank that he knows and can trust. With the help of the software he can browse without the target websites knowing his identity at all. When he decides to buy an article on-line, the software generates a new identity for him, with a fictitious name and e-mail address, a coded postal address, and a one-off credit card number. The new identity is sent, via the online merchant, back to the bank. The bank would then check the details of the

transaction and approves the transaction. The post office receives a decoded address label and the coded name.

3.3 Rating Services

Trading in cyberspace has its risk. This is the sense of uncertainty associated with lack of relevant information that matters (Bodie and Merton 1998). It is similar to the risk faced by buyers in nascent industrial societies when they began buying goods produced by strangers. Before the Industrial Revolution, they bought shoes from the shoemaker whom they knew directly or whom they knew from friends in the community. In the new business environment brought on by the Industrial Revolution, they had no such direct knowledge, and brand emerged as an innovation to serve customers' need for identification when buying products made by "strangers".

There are interesting parallels in the new trading environment in cyberspace. For example, there is a demand for rating agencies whose main function is to monitor and grade, on a regular basis, the quality of goods and services, as well as to rate the ability of buyers and sellers to meet their commitment. The electronic market supports an efficient use of information dispersed among economic agents. It provides a concrete example of a rational economic order, as described by Hayek (1945). He argues that the economic problem of society is a problem of the utilization of knowledge not given to anyone in its totality. "The peculiar character of the problem of a *rational economic order* is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and contradictory knowledge which all the separate individuals possess. (emphasis added, ibid, p.519)".

3.4 Fraud Protection

Besides the issues about quality, there is the related concern of fraud which is often expressed by on-line customers. From the seller's point of view, there is a new need for him to be guaranteed that the buyers would pay. Banks can enter the picture by being a supportive party in on-line transaction. A buyer of a car (say) offered for sales on-line would get the quality guarantee from a rating agency. After striking the deal with the seller, he would deposit the money with the bank associated with the electronic market. As soon as the buyer is given the keys of the car, the seller can collect the money from the bank. A business opportunity is thus created for banks with global spread, to offer a service that has some parallels to letter of credit.

There is a related business in the area of verifying identities (Wenninger 2000). Banks can offer a product that would protect e-commerce participants against fraud arising from false identities. With the help of encryption technique, a bank would certify the identities of its own account holders and act on behalf of its account

holders to verify the identities of account holders at other banks. Such intermediary role increases the security of the on-line business.

3.5 Other Support to Business Clients in E-Commerce

E-commerce provides a new avenue for a few of the biggest commercial banks with technological capabilities to offer other business firms the technology to conduct business-to-business e-commerce (Wenninger 2000). These big players are assuming the role of automating the entire information flow associated with the procurement and distribution of goods and services among B2B partners[35] . Being information based and related to financial transactions, these services are seen by banks as an extension of the cash management services they have been providing to large corporations.

Banks with technological know-how can offer their expertise to assist businesses to participate in e-commerce. In concrete terms, they can help smaller firms set up the infrastructure and payment capabilities to engage in e-commerce. A few banks are offering small businesses in coping with the negotiation of volume discounts from vendors and electronic procurement services (Dalton 1999; Wilder 1999).

4. INSTITUTIONAL INNOVATION OF BANKING AND FINANCE

The new business environment associated with e-commerce represents an occasion for the banking system to re-structure as part of the bigger project of setting up a new financial architecture. The more profound consequences are in the broader area of financial systems where the Internet serves as the technological platform for all kinds of financial transactions, the so-called e-finance. Here I touch on two potential impacts. The first is the function of central banks in the area of monetary policy; the second is the stability of international financial systems and the modus operandi of national politics. It has been argued that Internet related technologies could increase the speed of financial operations, raising the question of how interest rates should be set and whether the short end of interest setting needs to become shorter *i.e.* time units smaller than a day (Friedman 1999b). Some economists have even envisaged a world where technological developments emasculate altogether the monetary controls of central banks (King 1999). This could occur if new technologies (and regulators) permitted real time pricing and exchange of goods across the Internet without the intercession of an independent

[35] Fore more information, please refer to corporate and institutional e-commerce services available at www.chase.com and www.citibank.com/singapore/gct/english (Wenninger 2000).

monetary system administered by a central bank. In such an environment the government earns no seignorage and would no longer be able to provide liquidity support by printing money.

The second potential impact is in international financial systems and national politics. Currently, banks are being squeezed from both the deposit and payment system side and the lending side (Claessens et al 2000). On the deposit and payment system side, many deposits substitutes are emerging and many non-banks such as mutual funds are offering transaction accounts. With Internet banking, consumers no longer have to pay high prices to transfer money from one country to another. On the lending side, the technology and deregulation allow non-deposit-taking financial institutions and capital markets to serve many more segments of borrowers including small and medium size borrowers. Transaction costs are lower, information is better and more widely available. I concur with Claessens et al (2000) in arguing that current developments in technology and deregulation are eroding the special nature of banks. An opportunity now presents itself for governments to re-evaluate the overall need for a public safety net.

This position is echoed by Heng and Peters (2001) who work out the idea in greater detail. In an unpublished paper, they explain that conditions are ripe for the re-invention of a core component of the banking system by having an autonomous institution to house the deposit accounts of individuals and companies. This institution would own and operate the payment and settlement systems. It is not profit-orientated, and will be managed by experienced bankers reputed for their competence, prudence and integrity. The new structure does not provide deposit guarantee for commercial banks, thereby removing a key factor of moral hazard. One manifestation of moral hazard was the reckless lending practices of banks in rich countries to East Asian companies. This was a crucial factor in the Asian economic crisis (Friedman 1999a). By encouraging banks to be more prudent in their lending habits, the new set-up would contribute to a sounder financial system in emerging economies and a sounder international financial architecture. The proposed set-up would constitute an important building block in a new international financial architecture. Banks could continue to thrive but they would need to innovate and earn their revenue by providing value-added services to their customers.

If accepted and implemented, Heng and Peters' (2001) proposal has two very interesting consequences. First, it removes one key factor in moral hazard which is diagnosed to be a cause in financial crises (Eichengreen 1999). So while the modern information technology infrastructure has made the financial market more volatile, it also provides an opportunity for designing a sounder and more stable international financial architecture. Second, the new setup would remove from politicians the powerful lever of supplying loans to their pet projects or supporters. The public would have a bigger say in the allocation of the public money. Politicians are then required to persuade the public of the merits of financing projects on the basis of,

say, strategic long-term value for the economy, defense, or cultural life. The long-term consequences of this for the countries concerned will certainly be very interesting to watch.

5. CONCLUSION

Electronic commerce is associated with IT as an enabler, facilitator, and even inhibitor of business activities both within and among all types of organizations (Applegate et al 1996). It is thus creating enormous interest in the world of IT as well as many other industries (Pan et al 2000). There is little doubt that growth in this area will continue as more organizations join in the festivities, establishing and cultivating business relationships, performing business transactions, distributing knowledge, and implementing competitive strategy. Corporate life, particularly in America, is being transformed by the Internet (Micklethwait and Wooldridge 2000). Banks and financial firms are currently operating in such a new business environment, and they are responding to the changes in myriad ways.

The new environment provides an opportunity for banks and financial firms to develop new products and services. They can even to enter the traditional turf of technological firms. However, business players from other fields are planning to engage or are already moving into the traditional hunting grounds of banks and financial companies. Microsoft and computer network companies are known to be gearing up to offer financial services to the public. Of late, telephone companies are planning to allow customers to use their mobile phones to pay for goods and services. The charge will be added onto the monthly telephone bill of the customers. With the advent of Wireless Application Protocol (WAP) technology, mobile phones can provide customers with direct access to the Internet. This would enable mobile online shoppers to use their WAP phones to make purchases without having a credit card. And as pointed by one reviewer, in Finland people already pay through mobile phones through calling, not even througn WAP

Another source of competitive pressure comes from the relatively business activity known as navigation (Evans and Wurster 1999; Wenninger 2000). Navigators or intelligent search agents are information aggregators which search the web for similar products across a large number of companies, compare them for attributes such as prices, terms of delivery and goodies, and report their findings to the on-line customers. Banks and financial firms will have to compete with a bigger number of players, and face serious threats from nimble and innovative newcomers like Charles Schwab.

Banks and financial firms are sailing into new water that holds both promises and dangers. On one hand they have the know-how specific to banking and financial, and for the large players, they enjoy the trust of their customers. But they are burdened with legacy systems consisting of their management structures, reward

systems and computer systems. They would certainly have to prepare themselves properly for the cut and thrust of life in the brave new world.

One of the most important challenges facing organizations in the age of electronic commerce has become the development of new business strategies and models. New business models are challenging the logic and assumptions of traditional models. Referring to the chapter 1 or first phase of electronic commerce, Keen (2001) recalls that the focus was on the technology as the driver. "Now companies are recognizing that this is about commerce: business models, process/technology integration, service, and relationships (Keen 2001, p.164)." This is a manifestation of the fact that the new environment presents opportunities for some and threats for others. Bill Gates knows that competition today is not among products, but among business models; irrelevance is a bigger risk than inefficiency (Turban et al 2000, p.xxvii). Indeed, inability to outgrow the dominant, outdated business design and thinking is often what leads to business failure (Kalakota and Robinson 1999). The pressure is now on companies to function in a state of more or less constant transformation. Senior management has to live with the challenges of earning revenues from well-tested practices while being prepared to experiment with new ideas which may undo these old practices.

As a way to study the impact of e-commerce, I turn to the early history banking and its relation to modern commerce, for history is indispensable in shaping our understanding. If history can be a guide to us, then we may see e-commerce exerting radical changes in banking and finance. Some of these changes have happened while others are emergent. Of these, the changes with the most far-reaching consequences are likely to be those in the area of institutional innovation. If carried out successfully, they would help to strengthen the international financial system.

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