

MACROECONOMIC DETERMINANTS OF RADICAL INNOVATIONS AND INTERNET BANKING IN EUROPE

*Associate Professor PhD Erhan Atay, Trakya University of Edirne, Turkey,
e-mail: naftalanjam@yahoo.com*

ABSTRACT: Current technological development has various implications for the banking sector. Especially, the banks prefer internet banking to keep up their customers, reduce transaction costs, enhance their customers' portfolio, and accelerate financial transactions. In this regard, this study aims at finding out the use of intensity of internet banking. Extensive technological innovation boosts internet banking. Banks use internet services as an aggressive business strategy to gain market share rather than for making profits. The importance of the innovation for the banking sector is that the competition forces banks to be innovative in order to survive in the market. In the macroeconomic level, R&D expenditures, education expenditures, skilled human capital, level of the information and communication infrastructure and the accessing the internet by the individuals, patent protection laws, the level of the competition in national and international markets, the cost of inputs such as energy or wages can affect the innovation.

Keywords: Radical Innovation, Internet Banking, Macroeconomy

JEL Codes: O31, O32, O39

Introduction-Theoretical Background

Over the last century, the typewriter industry experienced four successive waves of such technology transformation; from manual to electric typewriters to word processors to PC, each wave leading to changes in the fortunes of the firms involved.

More recently, the hard disk drive industry witnessed six successive waves of technology change over a 20-year period, all of which resulted in the destruction of the previous generation of products.

In this regard, economic growth is increasingly related to the capacity of world economies to chance to innovate. Therefore, it is possible to differentiate between incremental and radical innovations. An incremental innovation involves small technological changes, thus the existing products are able to remain competitive in the market; a radical innovation, on the other hand, involves sizeable technological developments, thus the existing products cease to be competitive in the market.

In the case of incremental innovations, incumbents can use their resources and knowledge in order to leverage technology development; while in the case of radical innovations, new entrants may have a significant competitive advantage as they need not change their resources and know-how.

Banks started to use the internet not only as an innovative payment method and to increase customer convenience, but also as a way to reduce costs and enhance profits. Internet banking seems to represent a viable strategy also for new entrants in the banking sector. Nearly half of US banks were using transactional websites at the beginning of 2002.

General economic features such as the level of investment in technology (ICT, broadband, internet access, and so forth), R&D expenses, and the skill of end-users with new technologies may influence the development of online banking.

Fragmentation of the European banking system hinders the creation of pan-European banking groups. Yet this division allows looking in the consequences of different banking systems and the level of technological development on innovation in the banking industry.

The relevant literature on this topic may be divided into two groups: on the one hand some authors focus on the internet as an innovative delivery channel representing new challenges to the financial sector. Referring to the first group, Birch and Young (1997) argue that the internet may be exploited as a new delivery channel by the financial services industry to completely reorganise the structure of banks. The second group of studies examines the consequences on bank performance of different strategic models of online banking.

Few studies attempt to assess the performance of internet banks. Nearly all studies refer to the US banking system. Sullivan (2000) argues that traditional banks are not affected by the adoption of the internet as a distribution channel. At the same time, there are few attempts to empirically investigate internet banking performance in Europe.

The paper is structured as follows. In section 2, we discuss macroeconomic determinants of radical innovations relative to banking sector. We argue, in section 3, internet banking activities in selected European countries, respectively; Finland, Italy, Spain and the UK.

Macroeconomic Determinants of The Radical Innovations

Within the knowledge-based economy, innovation is seen to play a central role, but until recently the complex processes of innovation have been understood insufficiently. (Apak:2007:327) Macroeconomic analysis involves the effects of the macroeconomic variables on the production of innovations. In the classical growth models, the technological change is determined exogenously and can not be managed. However, endogenous growth models claim that technological change can be triggered by the stimulating the technology-driven factors such as research and development expenditures, researchers on science and development, education, qualified human capital, information and communication technologies, accessing internet, government policies etc. Therefore, it is important to improve the climate of these technology – driven factors.

At the macro-level, there is a substantial body of evidence that innovation is the dominant factor in national economic growth and international patterns of banking sector. We analyse the determinants of production of the innovations in macroeconomic level by considering the macroeconomic, institutional variables, such as GDP, the expenditure of research and development, patent laws, human capital, education, information and communication technologies, liberalization, market structure and competition level, government policies.

Many types of innovation, including software and some biological innovations are not patentable in many countries. Also, patent laws can be very different in different countries. On the other hand, patents are better indicators of innovation as an output than is Research and Development. Economic objectives of innovation, replacing products being maintain market share, increase market share, opening up new markets, new domestic target groups, improving production flexibility, lowering production costs, cutting the consumption of materials, improving product quality, improving working conditions, reducing environmental damage. (OECD:2007:49)

Expected macroeconomic determinants of the innovation can be classified as follows;

- The expenditures of Research and Development,
- Human Capital
- Information and Communication Technologies
- International Competition and Market Structures
- Financial System Supporting Small Firms
- Innovative and Creative Culture
- Education

- Property Rights and Royalty Payments
- Government Policies
- Technology Bases and Clusters for Firms
- Foreign Direct Investment
- Other factors.

Internet Banking in the Selected European Countries

As technology evolves, different kinds of electronic banking systems emerge. Among these, we see the Automated Teller Machine (ATM), Phone banking, Mobile banking and Internet banking (IB). In addition, we can notice that banks which developed Internet banking web sites have also developed other distant delivery channels such as phone banking, and SMS .

In this regard, we explore knowledge creation processes operating in European Banking sector. Knowledge creation occurs via two main processes, namely “ interaction “ place and “action”. Interaction processes promoting the creation of knowledge in European Banking sector take place through formal meetings, informal communities, project teams, external interaction, and IT-tools.

The internet, whose usage is increasing rapidly all around the world enables banking sector to operate in a borderless world by removing barriers to international transactions. Retail banking is an important industry which contributes to a large part of a country’s GDP and the employed workforce. However, more recently, there have been numerous authors who claim that internet-based banking might be a disruptive innovation in retail banking after all. **(Enders:2008:68)**

Meanwhile, in the last ten years, innovation has gained increasing importance in the context of European development policies. The European Commission has increasingly bet on innovation policies as a tool to improve Europe’s economic growth, competitiveness and social cohesion. **(Russo and Rossi:2008:4)**

Some banking institutions limit their Internet Banking services to an informational website. Others are using their web sites not only to provide the basic operations such as fund transfer or account details, but also to provide new services such as securities trading, bill payments, check book requests, credit card requests and investment advice.

In addition, these organisations rushed to provide Internet based services in order to gain competitive advantage: **(Achour, and Bensedrine:2005:2)**

- These services permit to banks and other financial institutions to lower their overhead costs on one side and to add extra fees on the online services on the other side, increasing therefore their margins and profit base.
- Internet also permits to tap a larger client base with its positive impact on the banks turnover.
- Internet is also an excellent vehicle with its interactivity and multimedia features in order to attract the client base.

Internet banking is predominantly used for basic deposit-based transactions roughly to the same extent as for buying goods and services. Specialised bank services are only a fraction of the total transactions carried out online. **(Amaboldi:2008:6)**

Banks started to use the internet not only as an innovative payment method and to increase customer convenience, but also as a way to reduce costs and enhance profits. Fierce competition between banks, both in retail and wholesale, has forced banks to find new and profitable areas where to expand. But Internet banking seems to represent a viable strategy also for new entrants in the banking sector. **(Amaboldi:2008:1)**

It would be particular interest to conduct a study across different continents and cultures since banking systems and processes differ from country to country for instance; while US is a check-based society, Finland had an established gyro system even before the advent of the

internet. Thus, it is possible that disruptiveness of the internet to retail banking differs depending on the country at hand. (Enders:2006:76)

Furthermore, rich endowments of financial resources and high industry profitability have enabled retail banks to continuously innovate; credit cards, ATMs, and electronic payments are past examples of innovative products, channels and technologies.

Internet may act as a facilitator in payment systems as it provides a broader range of services at all times, and thus assists the growth of electronic commerce. Finally, internet has been analysed as a substitute/complementary channel in delivering certain bank products, like current accounts. (Amaboldi:2008:4)

Therefore, the innovation developed by one system represents a threat for other payment systems, which have only one course of action to take in order to survive-to innovate in return. (Calabrese, et al :2008:119)

On the other hand, in a knowledge based economy, we witness the increasing value of innovation in such an economy entrepreneurs as creative workers, have to create continuously new products, process and services. Otherwise, they could disappear, thus innovation is an integral part entrepreneurship.

Table no. 1.

Worldwide Online Banking 2000-2004

Region (Millions of Users)	2000	2001	2002	2003*	2004*
Western Europe	18.6	28.0	37.8	47.7	57.9
U S A	9.9	14.7	17.1	20.4	22.8
Japan	2.5	6.5	11.9	19.6	21.8
Asia-Pasific (Excl.Japan)	2.4	4.4	6.8	9.8	13.8
Rest of the World	1.0	1.7	3.1	5.1	6.1
Total	34.4	55.3	76.7	102.6	122.3

Source :International Data Cooperation,2004 (www.idc.com)

*Projected figures.

As it can be seen Table 1 above, approximately half of the online banking comes from "Western Europe Countries", in 2004 with projected figures. The USA and Japan follow this trend respectively.

On the other hand, Table 2 shows the Internet banking activities in Finland, Italy, Spain and the UK. We consider the four European Union countries have a somewhat different financial market structure. According to Table 2 below access to computers, and to the internet, is much lower in Spain and Italy. Finland is characterized by high concentration in the banking sector according and the use of online bank products is more widespread in Finland than in the UK, and much more than in the Southern countries.

Even if the total expenditure on new technologies is fairly uniform, the extent to which new communication technologies are used is quite different between the Northern and Southern countries (see. Table no. 2).

In recent years, the dominant industrial strategy in European countries is for banking groups to own both pure internet banks and more traditional banks with an internet portal, thus exploiting both business models.

Table no. 2.

Availability and Usage of Internet in Selected European Countries (2005)

	Spain	Finland	Italy	UK
Accessibility	% of households having access to			
Internet at home	34	51	34	56
A Personal Computer	55	64	46	65
Usage of Internet	% of individuals who used Internet in the last 3 months for			
Financial services (Internet Banking)	14	56	8	27
Other financial services (e.g.share purchasing)	5	14	2	5
Purchasing/ordering good or services	11	33	4	38

Source: Eurostat, 2006

After the initial internet hype faded, some were forced to exit the market via liquidation or acquisition; others developed a mixed model and opened physical branches. Only a few pure online banks were able to achieve profits and survive. We observe instead banks integrating pure online banks in the banking group: a pure IB (Internet bank) is part of a banking group but perceived by clients as an “external”, innovative bank. (Amaboldi:2008:2)

Our results in the context of European internet banking suggests that inherent advantages from being a non-dominant first-mover or early-mover are likely to be limited and short-lived.(Schile :2008:53)

Conclusions

Fruitful future avenues can be found in the broader context of Internet Technologies as a radical innovation in order to understand the new phenomenon and its implications better. Internet banking is now established as an integral component of the retail banking model (pending the next radical innovation perhaps),thus bank managers should now devote more attention to more sophisticated customer relationship management (CRM) tools and further channel integration.

Despite of late and small adoption of Internet Banking, banks seem today to be aware of Internet opportunities. In fact, they are all planning to move very rapidly to Internet Banking and to offer more sophisticated services for those who are already on the web.

The strategy of banking groups to incorporate internet banks reflects some competitive edge that these banks have in their business models. While developing their Internet Banking sites, banks should take into account the quality of online products and services, the web site usability and its security which is crucial in Internet Banking.

Therefore,it seems that the goal of the so-called Lisbon strategy,i.e.,the European Union to become by 2010 the most dynamic and competitive knowledge based-economy in the world,is far away from reality.Finally, the evolution of electronic-finance in developed countries like Europe and the US can equally have implications for emerging countries as a development tool.

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