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A Portal Banking Solution Research, SQM and Inspire 2012 Tampere Conference UTA 2012

Author: Jyrki Hemming, Information Science of UTA, 2012.

Abstract

The growth of the Internet as a financial business and core banking has done possible for everyday life for everyone. Core Banking solutions are banking applications on a platform enabling a phased, strategic approach that lets people improve operations, reduce costs, and prepare for growth. The main focus of this paper is the research of a Web Banking Service infrastructure and study with mixed method for its services functionality and use ability for a research of consumers view. Core Banking solutions are banking applications on a platform enabling a phased, strategic approach that lets people improve operations, reduce costs, and prepare for growth. Implementing a modular, component-based enterprise solution ensures strong integration with your existing technologies. An overall service-oriented-architecture (SOA) helps banks reduce the risk that can result from multiple data entries and out-of-date information, increase management approval, and avoid the potential disruption to business caused by replacing entire systems. Here, computer software is developed to perform core operations of banking like recording of transactions, passbook maintenance, and interest calculations on loans and deposits, customer records, balance of payments and withdrawal are done. This software is installed at different branches of bank and then interconnected by means of communication lines like telephones, satellite, Internet, etc. It allows the user a customer to operate accounts from any branch if it has installed core banking solutions.

In this paper, I've explored portal solutions system and software-design techniques for a core banking system. There is taken an example for card banking system (CBS) portal improvement and engineering. Also programming development and functionality of mainly banking class method are investigated for banking solutions.

Keywords: Liferay, Banking Solutions, MQ, JMS, SOAP, core banking, Mixed method, e-banking, portal solutions.

1.0 Introduction

The decision to become an independent financial software planner is a big one. There's the professional requires so many talents and is big ones business. The topics that there's deal about with, by their nature, are complex and very constantly evolving. The client or customer, who is the recipient of our services often looks to us because they don't have the time, or ability, to understand the issues on the hand. A good SW consult must muster art of being part number cruncher, a part of trusted advice, and sometimes the part of confidant. Do not go into this research and consult business solely to make money. If you do you will fail with this one in business markets. As you will see a numbers of these pages in this study, the best SW planers have a passion for helping peoples The best independent SW consult and planers get as much satisfaction from helping a client reach their goals as they do from earning a good living and being their own boss. The most clients feel this passion and find a comfort in knowing they have 'someone in their corner'. These clients become their adviser's best source of new business as they tell friends and associates about them. The word in the mouth is a most important for a SW designer and consults than almost any other business owner. As an independent SW planner the really product is you. That's your advice. With greater use of the internet financial services, more peoples are better educated about the generalities of personal finance. Because the basic level of knowledge a potential clients brings to the initial meeting is so much higher than it used to be, someone can form an opinion in seconds a quality of your advice and whether you are going to help. After gaining of financial SW designing and the experience to deliver your services to clients, opening your own independent SW designer and financial sector expert is an import step for your business.

These investigate attempts to explain a solution to the problem now so important to ensure the information flow in companies. Information flow is a common problem in companies. It is widely studied in true thing IT companies, if the flow of information could be improved, more efficient at the same time the company's operations. Portals offer a solution to the problem of information flow. It is commonly accepted in the financial industry that the 2000s is probably the most exciting time in history to be studying financial markets and institutions. In Finland, the current trend is the movement from traditional branch banking to electronic banking, which provides many benefits, challenges, and also opportunities for the whole banking sector. Let us begin the discussion of electronic banking with the phrase supply creates its own demand, which is known as Say's Law, after the French economist Jean Baptiste Say. Nobody could have predicted that electronic banking would become so popular in Finland.

1.1 Why use a Liferay portal solution in online banking?

Why use online banking portal solutions today for? Online banking services have grown from simply allowing customers to check balances, to trading assets. Commercial portals are aware of the flow of information relating to the challenges and offer solution to address the challenges. Commercial portals, the price is, however, obstacle for many small and medium-sized organization, which in Finland is more than one. The barrier is unfortunate, because just portals to solve many business problems related to the flow of information.

The pressure for faster development achievement through cost cutting in e-business solutions, better customer responsiveness, global markets utilization, sustainability, service oriented application solutions (SOAP), efficiency of use and profitability intensifies efforts for the usability of the available opportunities and capabilities provided by ICT.

Open source (Open Source), the idea was born of thousands of volunteer programmers to co-operation, who wanted to share results of their work for free. This simple principle has created trillions of dollars in market capitalization. Open Source success stories are well-known and more are emerging. Germany's third largest city of Munich elected office software Open Office.

A well-known online store Amazon.com chose the Linux server platform. Perhaps the biggest success story however, Apache, which is open source code based on an Internet server. Apache is the world's most widely used web server solution in the world (Woods & Giuliani 2005, 1-2.).

Around the world governments will adopt different open-source software. All this success has been the impact of open source's reputation. It is no longer to think about that open-source project is a small Programming bunch of accomplishment. Many large technology manufacturers have adopted the open source ideology and have decided to commit to its development. IBM is one of the biggest supporters of Linux. IBM is thanks to the open source developers is Eclipse compiler. Eclipse development cost IBM in \$ 40 million. [Woods & Giuliani 2005, 1-2.] Businesses from large to small have chosen the open-source solution for example the following three problems:

1. To save software development costs.
2. To get an open development platform to develop their own products, and for their sale.
3. To increase cooperation within the company and outside of the open source ideology [Woods & Giuliani 2005, 1-2.]

Successful open source software deployment can best improve efficiency, generate cost savings and prevent a company from being a resource supplier (vendor lock-in). Other significant benefits include: License fees savings, Software maintenance cost reduction, Integration costs decrease due to the open environment, Access to the software functions as well as thousands of other open source software activities (Woods & Giuliani 2005, 1-2).

With accelerating global competition emerged since late 1980s; there is a cry for a need to find new ways of doing financial banking solutions that would yield

quantum leaps in performance. Since it has been revealed that, Internet as a whole transcends national boundaries and geographical barriers there in Finland and globally finance market in the world. Internet has transformed and reshaped the nature of businesses methodologies in banking, and it has brought of several successful e-banking businesses solutions for everyday life of card users and business solutions in finance business. Thus, organizations which did not consider using ICT before, need to employ business strategies and action plans that intend to use ICT toward achieving their goals and business plans. It is important for organizations in every aspect of finance business operations to consider the following:

- Where technology stands in the finance business processes within the organization,
- How technology relates to the organization's strategies,
- How rapidly technology changes and evolves,
- How the organization and its business partners will respond to the changing technology.

Therefore, Internet stands to be a proven and most effective channel for banking companies to build global markets publicity and manage customers relationships beyond their closer boundaries at low cost. There are some dominating elements: which barriers in internet security we have to take into account there in future? How supporting tools should be designed for a web or mobile context? Establishment of rigor in research, on the other hand, is essential for satisfying the traditional quality standards demanded of academic disciplines: "IS academics need to conduct rigorous research to guarantee that it is of high quality in order to establish credibility, to publish in high quality journals, to attain tenure and promotion, and to compete for research funding"(Applegate and King 1999; Dennis et al. 2006; Galliers 1994; Robey and Markus 1998).

Open-source products are becoming more common in the business world. Open-source implementations are beginning to be at a level that every company should consider whether it would be some open-source implementation of the benefit. Many open-source products can enhance the company's operations without substantial costs.

Although there are the open-source products to attract cost-efficient because it is observed that the software is not as well packaged as commercial actors. Although the software does not pay anything, the software installation, support, development and maintenance costs can become larger than the commercial software costs. That is why the company should first determine whether it has available the necessary know-how of open source software deployment.

Why the portal solutions are in Internet banking so important? Convenience, control and cost savings are the three primary motivators that drive consumer adoption of online banking. In 2007, 30 percent of online bankers reported they joined to save time, according to Javelin Strategy & Research's 2007 Online Banking and Bill Payment Report Today, all banks there in Finland like Sampo, Merita, Tapiola or Sveabanken in Sweden and the other Scandinavian countries there are looking for, and functioning entirely online, with no brick and mortar building. There must to be a costs saved by requiring fewer employees and the lack

of facility expenses, these virtual banking systems can often be offer higher interest rates than their traditional counterparts. Internet banking gives you the power to control in example your finances completely with OMX (open finance market index, in Helsinki). You are no longer tied down to managing your money during the hours the bank is open. If you want to transfer a balance after business hours, you can. If you have access to the Internet and have a number of recurring monthly bills, then you should use Internet banking to make your life easier.

1.2 Features of online banking

Today, online banking services are quite varied. One of the best features of online banking is putting the user in control. The user controls all bill paying, transfers, and investments from home. There are other features, though of online banking. One of these is increased accessibility to your account information. Users of online banking services can access their account information from anywhere in the world. This is particularly helpful for businesses. Internet business banking is becoming increasingly popular, as businesses are becoming more global in their reach. In this study we must to aim to present results that have the potential to be extremely useful. With the emergence of electronic commerce as a viable means to conduct business, the need to design effective new delivery channels and solutions for finance business for has become imperative.

We will show the current state of consumers' beliefs and attitudes toward electronic banking and the new solutions. Now business people can access their accounts, even when on overseas business trips. Business Internet banking is extremely popular for this reason. A particularly popular aspect of online banking services is the ability to make bill payments electronically. With a minimum degree of set-up, customers can enter the amounts of their paper bills or opt to receive electronic bills and then process all their payments at one time, from one screen. The managerial implications of segmentation will be two-fold: By knowing their customers better, banks and other financial institutions will be able to serve them better, and more importantly, via the delivery channel customers are familiar with. For example, Finnish bank customers have a variety of delivery channels to choose from. Customers have a variety of electronic delivery channels (the Internet, telephone, mobile phone and other technologies) to use, or they can keep to traditional channels such as branch banking.

1.3 The key to content management success for

There was a presentation on portals at Ragan's annual Web Content Management Conference in Chicago. "Most however companies don't have the resources and expertise. There are a few exceptions. The Fidelity Investments portal looks to be an exception to the rule. But despite all the salesmanship and marketing, portal products have been wildly disappointing".

There's in USA the national association shares its experiences, and helpful advice, for the key to content management success. What is the best way to manage the flow of content and other materials on your organization's Web site?

James Heckman, director of Internet communications at the American Marketing Association(AMA), answered that question with proven examples and lessons learned throughout his five-plus years as writer, editor and online communicator at the association last week at Ragan's third annual Web Content Management Conference *Ragan's, 2006+.

1. Democracy: Content management strategy in which each department has full authority over "their section," and they are expected to act like grown-ups.
2. Benevolent dictatorship: Content strategy in which one person is responsible for approving all content before it gets posted on the site.
3. Republic: Content management strategy in which the lead manager shares authority with other administrators and stakeholders but maintains overall control. "Imagine a dictator who can delegate," said Heckman.

For the democracy there are some advantages, is those closest to the content are responsible for quality. That is recognizes that one person does not have time to play "content cop" for a large site, and labor is not excessive for individual administrators and stakeholders. There's buy-in for overall site from individual departments is easier to secure if they are "in control."

The disadvantages for the democracy are the difficulties to measure or track progress. There's some site sections get a lot of attention, some get none. There's difficult to enforce standards. The AMA project attempted the democracy model several years ago and they disadvantages for. There are included drastic variations in quality and design across site pages just likes for the outweighed the advantages.

The second case for the dictatorship there are the advantages, like tight controls over quality and appropriateness of content. There it's the easier workflow management and consistent look and feel. It's fairly easy to answer the question, "How's the site doing?" Disadvantages are, like labor intensive for the dictator. The departments are less invested in site and, as a result, less motivated. There it must to be creativity inhibited. That's for only one real source of ideas, and fairly easy to answer the question, "How's the site doing?" Heckman said that, in most cases, the republic is the strongest model, provided that you have the staff to make it work. And that's the model AMA publishers are molding today. Advantages for the republic management are for the site maintains a single voice. The monitoring is more evenly spread out among an organization's stakeholders. There are more sources for new ideas, and sense of ownership among a wider group of stakeholders. This allows for specialization within particular content areas. The disadvantages there are the dependent on staff support, which means for i.e., no team, means no republic for this system. There it must to be maintaining strong influence over content coordinators, and it means loss of a connection between the leader and those doing daily updates. The most important factor in the AMA's recent shift in content management success was team development or personnel selection The AMA's republic includes about five people, and others are brought in on a short-term basis when needed. The group meets at least once a quarter to plan and develop new content.

1.4 The problems for portal a investigate

There are some problems for portal solutions with the new technology too. In this research we are asking ourselves that: "Could the Liferay's core banking solution have to be platform model overcome these problems?" The fact that using better technology and systems, banks can garner more customers, retain existing ones and channel more of the customer's business to its counters has forced business department to now look at IT as an effective marketing tool. On the operational side, the power of IT in reducing transaction costs, providing better customer service and offering an over-all customer convenience has basically made this a wining situation for both banks as well as its clients. These have become the main drivers for getting IT the importance it has got in banks in recent times. Such infrastructure that could be employed is e-banking platform. E-Business can facilitate an environment for easy access of products to the community. Many people will be served and will be able to access credits information very easily through platform. Likewise, the platform will be helpful to few credit beneficiaries card banking solution (CBS) clients who are already in different e-banking programs to market their existing finance business products they have to the global market as well as within the various parts of the country.

The pressure for faster development achievement through cost cutting in e-business solutions, better customer responsiveness, global markets utilization, sustainability, service oriented application solutions (SOAP), efficiency of use and profitability intensifies efforts for the usability of the available opportunities and capabilities provided by ICT.

In this research we are asking ourselves shortly: "How the Liferay's core banking solution has to be platform model that overcome these problems?" Based on this perspective, this research is going to explore much into developing a card banking system to the portal platform for enhancing e-banking between finance Institutions, banking credit solutions and card users.

1.5. Goals

The main goal of this thesis work is to provide study for an e-banking card system portal solution and develop the CBS for a core banking solution with the Liferay platform. This card banking solution for core banking system (CBS) has been evaluated for a test banking system and designed that could be used to follow development by banking customers, and finance Institutions and a card user also credit societies there in core banking. There in Finland banking solutions that can be used as a model to any institution and other banking business which offers financial services and account services to consumers.

This Licentiate thesis focus was to investigate the open source Liferay portal suitability of the enterprise environment in banking system back office solution. That was made with a testing banking system case. Liferay suitability studied using different research objectives. The research objectives were:

- Non-functional requirements (user interface poise, maintenance, performance).
- Public website, intranet and extranet services. Key features (customization, personalization, access control, search function).
- Single sign-on, integration and modularity.
- The required portlet for back office banking system (account balance, credit, debit, card solution, e-mail, calendar, wiki, document management, discussion boards, announcements, instant messaging, bookmarks).

Research objectives as a result, it was found that the Liferay Portal environment meets the financial business requirements. Liferay offers businesses a cost-effective and features a large portal. If the company of finance market or in IT technology decides to use Liferay solution, the company will pay attention to information security, performance and quality of documentation.

1.6 *Critic of Liferay solutions*

However, the Internet has also been criticized. Critics often question the need for such a system. To answer these criticisms, the network of networks has often been compared to the history of railroads. Imagine the situation in the US in the 18th century. The only means of transportation in those days was walking, riding or shipping. During the construction of the railroads, people heavily criticized their necessity.

Fundamentally, it was the question of opposing change. After some years, the railroads allowed people to visit new places that earlier they could only visit in their imagination. In addition, railroads were accepted by all social classes. The point of this small analogy is to highlight the potential of the Internet. We should remember that this technology is only a few years old, and the real potential of the Internet lies in its ability to connect people between countries and continents. In summary, the Internet should be viewed as a linkage, like railroads, offering new opportunities in several business areas. There have especially commented the Liferay portal solutions for criticized especially from outside developers. Outside developers are the ones who want to include develop their own portlets. Outside developers said for example that Liferay is very difficult to carry out development work for, because Liferay Portal documentation is lacking. There's the Liferay developers have admitted problem and pointed out that Liferay's development was the stage when the features were added at a fast pace without any documentation [Liferay in 2007, Gupta 2009]. Some of the Liferay users have criticized the performance of Liferay.

According to users, the using of Liferay is sometimes slow. Criticism can also be Liferay portlet 60 solutions. According to users, many of the portlets are in vain, and the user should be able to choose what you want the installation of the portlets. In this case, would Liferay less space on the server and its performance would be better. Liferay developers justify the performance problem, the fact that Liferay is

a lot of functions that are required due to the power of the computer. Liferay cannot expect everything functionality and at the same time assume that Liferay does not require server resources. Liferay Portlet developers have recognized the problem and the future, the intention Liferay has changed so that the user can select the portlets that need. [Liferay 2007]

2.1 The Trends of e-Banking

Convergence is one of the clear visible trends in the banking industry. Here, convergence does not mean offering banking, broking and insurance services under one corporate name through the Internet. It covers different dimensions, including channel delivery, sales culture, back-office processes, and the knowledge management infrastructure all being integrated via Internet. There's a view of e-Banking trends and new risks of different transactions Andrea Schaechter is an Economist in the IMF's Monetary and Exchange Affairs Department, and also Saleh M. Nsouli is Deputy Director in the IMF Institute. "Few banks take these different dimensions into consideration. Instead, they view convergence purely as a product-centric development that will enable them to cross-sell products. A strategy that does not go beyond product convergence is bound to have some limitations. For example, imagine a situation where customer service personnel in a so called 'converged' bank is required to answer banking, brokerage, and insurance questions coming through multiple channels including the Internet, branches, call centers, or ATMs. This bank is unlikely to succeed since, though it has expanded the product line, it has not made any efforts to broaden the skill sets of the personnel who support these channels. Effective knowledge management is the key to the e-business success of converged banking institutions."

However, this requires high level of cross-organizational cooperation and information sharing. An effective knowledge management system will vastly improve the institution's ability to know its customers. Robust customer information management systems at the front-end, coupled with efficient fulfillment processes, can enable banks to shorten the delivery time of their products and services.

Successful convergence will help them in the development of a seamless supply chain that will be transparent to the customers. Another trend in e-banking is a shift of focus of banks from being product-centric to customer-centric. Access to the Internet has put wealth management decisions and demand-side technology in customers' hands, and they can dictate the types of products and services they require. While the Internet has enabled banks to deliver desired products and services more quickly and inexpensively, the challenge for them is to enhance customer touch using e-channels, which is very important for client retention. To succeed on the Internet, banks must continually differentiate from their competitors, broaden their market and provide value through their products and services. For example, Wells Fargo had shifted 1.4 million of its traditional banking customers online within five years of the development of its transactional website. However, the company had maintained its Internet strategy as a

complement to existing channels and had found that its e-banking customers were more than 50 percent less likely to leave the bank than non-Internet customers.

The bank continued to enter new alliances and expanded its web offerings to maintain its dominant position. Finally, developing just a me-too website would not work for banks. Several banks are creating electronic financial communities in which customers assemble to present and pay bills while satisfying other financial and informational needs. By bringing consumers and vendors together at one site, financial institutions can leverage the trust, clients have in them, and act as the intermediary to ensure billers get paid and consumers get satisfactory services. Last but not the least, banks may conduct periodical surveys and take customer views on the simplicity and ease of operation of their websites and other e-banking initiatives. "The flip side of this technological boom is that electronic banking is not only susceptible to, but may exacerbate, some of the same risks—particularly governance, legal, operational, and reputational—inherent in traditional banking. In addition, it poses new challenges.

In response, many national regulators have already modified their regulations to achieve their main objectives: ensuring the safety and soundness of the domestic banking system, promoting market discipline, and protecting customer rights and the public trust in the banking system. Policymakers are also becoming increasingly aware of the greater potential impact of macroeconomic policy on capital movements. "There's a report of Bank for International Settlements, Basel Committee on Banking Supervision, 2000, "Electronic Banking Group Initiatives and White Papers," October (Basel) (referred, 15.05.2012).

"Internet banking is gaining ground. Banks increasingly operate websites through which customers are able not only to inquire about account balances and interest and exchange rates but also to conduct a range of transactions. "Unfortunately, data on Internet banking are scarce, and differences in definitions make cross-country comparisons difficult. Even so, one finds that Internet banking is particularly widespread in Austria, Korea, the Scandinavian countries, Singapore, Spain, and Switzerland, where more than 75 percent of all banks offer such services (see chart). The Scandinavian countries have the largest number of Internet users, with up to one-third of bank customers in Finland and Sweden taking advantage of e-banking.

In the United States, Internet banking is still concentrated in the largest banks. In mid-2001, 44 percent of national banks maintained transactional websites almost double the number in the third quarter of 1999. These banks account for over 90 percent of national banking system assets. The larger banks tend to offer a wider array of electronic banking services, including loan applications and brokerage services. While most U.S. consumers have accounts with banks that offer Internet services, only about 6 percent of them use these services.

"To date, most banks have combined the new electronic delivery channels with traditional brick and mortar branches ("brick and click" banks), but a small number have emerged that offer their products and services predominantly, or only, through electronic distribution channels. These "virtual" or Internet-only banks do not have a branch network but might have a physical presence, for example, an administrative office or no branch facilities like kiosks or automatic teller machines. The United States has about 30 virtual banks; Asia has 2, launched in

2000 and 2001; and the European Union has several is either as separately licensed entities or as subsidiaries or branches of brick and mortar banks.” Stijn Claessens, Thomas Glaessner, and Daniela Klingebiel, 2002a, "Electronic Finance: Reshaping the Financial Landscape around the World," *Journal of Financial Services Research*, Vol. 22, pp. 29-61.

2.2 Summary

While electronic banking can provide a number of benefits for customers and new business opportunities for banks, it exacerbates traditional banking risks. Even though considerable work has been done in some countries in adapting banking and supervision regulations, continuous vigilance and revisions will be essential as the scope of e-banking increases. In particular, there is still a need to establish greater harmonization and coordination at the international level. Moreover, the ease with which capital can potentially be moved between banks and across borders in an electronic environment creates a greater sensitivity to economic policy management. To understand the impact of e-banking on the conduct of economic policy, policymakers need a solid analytical foundation. Without one, the markets will provide the answer, possibly at a high economic cost. Further research on policy-related issues in the period ahead is therefore critical.

Core Banking, where the CORE stands for "Centralized Online Real-time Exchange" that is normally defined as the business conducted by a banking institution with its retail and small business customers. Normal core banking functions will include deposit accounts, loans, mortgages and payments. Many banks treat the retail customers as their core banking customers, and have a separate line of business to manage small businesses. Larger businesses are managed via the Corporate Banking division of the institution. Core banking basically is depositing and lending of money.

The advancement in technology, especially internet and information technology has led to new ways of doing financial business in banking. These technologies have cut down time, working simultaneously on different issues and increasing efficiency. The platform where communication technology and information technology are merged to suit core needs of banking is known as Core Banking Solutions. Core banking solutions are banking applications on a platform enabling a phased, strategic approach that is intended to allow banks to improve operations, reduce costs, and be prepared for growth. Implementing a modular, component-based enterprise solution facilitates integration with a bank's existing technologies.

3. Liferay banking system

In this paper the investigating is going to elaborate the approach used in this research and it articulates difference resources used during research and development phase of technology and solution techniques of an e-banking portal platform. Banking, among other service sector businesses, has witnessed an extensive change what comes to its operational environment. The rapid diffusion of

the internet has revolutionized the traditional delivery channel strategies. Globally, the amount of consumers using internet banking (IB) has grown steadily, from a total of 34.4 million users in 2000 to 122.3 million users in 2004, the most users being in the Western Europe (International Data Corporation, 2005). Thus, there is strong consensus among scholars about the increasing importance of the internet in today's competitive and increasingly global banking environment (e.g. Bauer and Colgan, 2001; Hughes, 2001; Li, 2001; Mols, 1999; Thornton and White, 2001).

"Governments around the world are making or considering efforts to promote open source software is typically produced by cooperatives of individuals, and at the expense of proprietary software. It's generally sold by for-profit software developers." Evans is with NERA Economic Consulting in Cambridge, MA and the Center for the New Europe in Brussels, Belgium. Reddy is with NERA Economic Consulting in Cambridge, MA. We are grateful for financial support for our research from Microsoft. We also thank Robert Hahn and Anne Layne-Farrar for helpful comments and James Hunter, Bryan Martin-Keating, and Irina Danilkina for exceptional research assistance. Proposals include having government agencies standardize on using open-source software, providing procurement preferences to open-source software, and subsidizing research and development of open-source software. The European Parliament, for example, adopted a resolution in September 2001 that calls on the Commission and Member States "to promote software projects whose source text is made public." The European Parliament Resolution on the Existence of a Global System for the Interception of Private and Commercial Communications, September 5, 2001, <http://www.europarl.europa.eu/>.

There's used the term "open-source" to refer to software that is made readily available in the form of source code. The e-Banking or core banking systems are basically the heart of all systems running in a bank and it forms the Core of the bank's IT platform. Core banking systems are basically the heart of all systems running in a bank and it forms the Core of the bank's IT platform. Amongst other functionalities, it provides the customer information management, central accounting and the transaction-processing functions, which by far are the most fundamental processes in a bank. With the advancement in technology and with passage of time, core systems now-days tend to cover more and more functionality giving the bank an integrated solution for most of its operations in different business lines. Alongside, it also provides a central operational database of customers' assets and liabilities giving facility to generate a 360 degree view of the customer's relationship with the bank, which is fundamental for the CRM strategy of the bank. Core banking systems reside either in the heart of a bank's data center or in other words can also be termed as the heart of the data-Centre itself.

Consumers have varying amounts of knowledge about the products they use and about the environments in which they access these products (Hammond, McWilliam and Diaz, 1998). Iterative product use in certain medium results behavioural routines, which in turn constitute procedural knowledge (Anderson, 1983; Cohen, 2000). Procedural knowledge refers to knowledge of rules for taking action, and it is stored and organized into production systems that are representations of cognitive skills (Brucks, 1986). Procedural knowledge is task-specific knowledge (Leigh and McCraw, 1989), i.e. knowing how to operate in an

environment in question (Colonia-Willner, 2004). According to Philippe and Ngobo (1999), procedural knowledge equates expertise, which divides to objective and subjective expertise. The former corresponds to consumers' actual performance on product-related tasks whereas the latter implies consumer's self-perceived ability to carry out such tasks.

3.1 Open-Source interventions in the portal solutions

There's open-source interventions for some portal application, and must to be did many things before go into the creation of computer software before there is any code generated. The creation of a software package follows some conception of the purpose of the package is for example, to check spelling in documents, to determine whether a number is prime, or to control a particular piece of hardware. "Going from the conception to a workable package requires the producers to develop architecture for the software that will guide programmers in the coding process. It may also require special numerical algorithms or programming tricks.

As a result, a software package may depend on certain intellectual property, protected by patents or trade secret that is independent of the code that is actually written" referred Reddy, Bernard and Evans, David S., Government Preferences for Promoting Open-Source Software: A Solution in Search of a Problem (May 21, 2002). Today the most of the programs are written with so called higher level languages that mean the 3rd generation Java, C++ etc. software solutions. The commands look like written in English language and have meanings that are consistent with written language. For example, "IF" and "While" are common commands in many languages.

The commands in high-level languages provide shorthand for more detailed instructions that are given to the computers, and they enable the programmer to avoid many repetitive tasks. Popular high-level languages include C, C++, Java, Visual Basic, and Pascal. For example, Windows is written in C and C++, many custom applications written by corporate programmers for their companies' internal use are written with Liferay solution that uses Java technology.

There's the most computer games are written with Delphi' object Pascal. There's much server-side "business logic" for Web sites is written in Java, with Linux environment. It's a very popular open-source operating system and it's written predominantly in C. These languages have "compilers" that translate the commands into binary code, and a series of 1s and 0s, that the computer hardware understands. That binary code is written in hexadecimal, which provides a compact way of writing sequences of 0s and 1s.

What is now called "open-source" software is distributed under very different terms than is typical proprietary software. The source code is protected by copyright. However, it is distributed under a license that enables people to use the source code only if they comply with certain conditions. Perhaps the oldest open-source license, the BSD license, has been modified over time, but it has typically allowed people to use the source code for free so long as they acknowledge the original copyright. People who modify the source code can choose to redistribute the binary code, the source code, both, or neither. For example, early versions of

Sun's variant of the UNIX operating system were based on a BSD version of UNIX; the latest version of the Macintosh operating system is also based in part on a BSD version of UNIX. 1986" (Samuel Kortum and Josh Lerner, "Stronger Protection or Technological Revolution: What Is Behind the Recent Surge in Patenting?" Carnegie-Rochester Conference Series on Public Policy, Volume 48, June 1998, pp. 247-304).

3.2 Overview of the Commercial Software Business

An analysis of government intervention in an industry should begin with an examination of that industry: is there a market failure that can be addressed by intervention? To that end, we provide an overview of the commercial software industry and how it has changed over time. "The size of the software industry has increased dramatically over the past few decades. From 1988 to 2000, revenues from worldwide proprietary software increased from \$35 billion to \$171 billion. There's measured in 2000 U.S. dollars. There's an annual growth rate of over 14 percent. "IDC Report #8324, "1993 Worldwide Software Review and Forecast," December 1993, Table 2, pp. 10-16; IDC Report #25569, "Worldwide Software Market Forecast Summary, 2001– 2005," September 2001, The first thing that all bankers should concern about is the requirement of awareness. Even though these people are inclined towards the manual banking, these can be turned to potential customers, it is well proven thing, which says the surrounding influences the individual's behavior or in India only environment that surrounds the public determines the behavior and decisions of the individuals. So if consumer sees most of their colleagues or friends who surround him using Internet banking then it may influence his decision to follow Internet banking option. As discussed above, the development of commercial software generally involves high Initial costs and relatively low marginal costs. In order to stay in business, a successful firm must charge substantially more than marginal cost in order to cover its fixed costs. If a firm produces complementary products, this need not be true for every product. For example, a financial bank in Finland gives away its access software and attempts to make money by selling its Internet service, by selling advertising, and by making financial arrangements with vendors that sell their own goods and services through online banking. "Most software projects are losers in the marketplace, but the financial bonanza available for a winner gives firms incentives to invest." Josh Lerner, "The Returns to Investments in Innovative Activities: An Overview and an Analysis of the Software Industry," in Microsoft, Antitrust and the New Economy: Selected Essays, ed. David S. Evans, New York: Kluwer Academic Publishing, 2002, p. 463.

Given the high first costs and low marginal costs of software, competition within any particular product category has at least some elements of a "natural monopoly": higher volume means lower average costs, which means profitability can be achieved at a lower price. This potential for "natural monopoly" is increased if a software category exhibits "network effects." Network effects can arise purely on the demand side: if most business users of computers use the same word processing program, then it makes it relatively easy to trade files, to transfer

knowledge of how to use software from a job in one firm to a job in another, and so forth.

As a result, the existence of a “dominant” firm in such a software category does not imply that some type of “market failure” exists that government intervention can, and it should to try fix. By no means do all software categories have this characteristic is a lack of network effects and the existence of heterogeneous groups of customers can enable multiple software firms to coexist in the same category.

The production of commercial software consists primarily of initial costs. Software development is generally an iterative process, with the development of typical commercial software including the following steps:

1. Identifying customer needs. After starting with a good idea, the developer needs to learn which features customers are likely to value, which features are likely to be considered essential, how different user interfaces can make the software easier to use, and so forth. The importance of these aspects of software design may well differ substantially across different types of software; computer games and email server software are likely to be used by different customers, with different capabilities.

2. Designing the software. This generally includes high-level concepts, such as what major modules will do, how the modules will communicate with each other (and with other computers, if relevant), and so forth.

3. Coding, building, and testing. Programmers typically test their code frequently, often in small pieces. Large software systems go through frequent “builds,” in which all the different modules that have been initially tested by the coders are collected together, “built” into the complete product, and then subjected to a battery of tests. The testing reveals flaws, which require recoding and sometimes redesign. Flaws can include “bugs” (errors that cause the program to behave in undesirable ways in some circumstances) and performance problems. Software for large servers is often expensive in the tens of thousands of dollars, or more, and is often sold through a direct sales force. Mass-market software for end users of PCs is often priced at less than \$100 and might be sold through retail stores, over the Web, through computer manufacturers, via direct mail solicitation, and so forth.

Support costs can also vary widely, depending on the type of software. Complicated software such as for large servers might have a separate support agreement. Mass-market software for end users might provide for limited support via phone or email. Developers of mass-market software have incentives to design software in ways that will provide desired functionality without requiring support; one or two technical support calls can wipe out much or the entire margin on a product retailing for less than \$100.

After a product ships, two processes often begin: maintenance work on the just-shipped product, primarily to fix bugs but sometimes to add new features; and the design stage for the next version of the software. Kluwer Academic Publishing, 2002, p. 265; Stan J. Liebowitz and Stephen E. Margolis, *Winners, Losers & Microsoft: Competition and Antitrust in High Technology* (revised edition), Oakland, CA: The Independent Institute, 2001.

3.3 The Economics of GPL Open-Source Software

An analysis of whether governments should intervene in the marketplace to support open-source software requires an understanding of what open source is about and of the incentives that various players may (or may not) already have to support the development of open source.

Software developed and licensed under the GPL shares many features with other types of open-source software, but it differs in some regards. For example, some observers have claimed that programmers are more inclined to donate their time to develop GPL software than other open-source software. And commercial firms may have different incentives for supporting the development of GPL software than for other open-source software with fewer restrictions on commercialization.

Work began in the 1980s, by Stallman and the FSF, on the building blocks for an operating system. This effort started with development tools such as editors (Emacs) and compilers (GCC). In 1989, the FSF came out with the first version of the GPL. The GPL was designed to drive the software industry toward the “free software” model. As one FSF document points out:

“If we amass a collection of powerful GPL-covered libraries that have no parallel available to proprietary software, they will provide a range of useful modules to serve as building blocks in new free programs. This will be a significant advantage for further free software development, and some projects will decide to make software free in order to use these libraries. University projects can easily be influenced; nowadays, as companies begin to consider making software free, even some commercial projects can be influenced in this way”. Free Software Foundation, “Why You Shouldn’t Use the Library GPL for Your Next Library,” (referred April 2, 2002).

The GPL helps advance the FSF’s goals by forming a kind of club. As the FSF views it, the people who develop software under its licenses are members of a special club; anyone wanting to distribute modified versions of the club’s software must make the source code for the modified software available (essentially without charge) to the other members of the club:” We encourage two-way cooperation by rejecting parasites: whoever wishes to copy parts of our software into his program must let us use parts of that program in our programs. Nobody is forced to join our club, but those who wish to participate must offer us the same cooperation they receive from us”. Free Software Foundation, “The GNU GPL and the American Way,” (April 2, 2012).

The terms of the GPL apply only to the distribution of software licensed under the GPL, although what “distribution” means in this context is not entirely clear either. It may be possible for an enterprise to modify a GPL program and use it internally without being legally bound to make the source code for its modified version available to others. On the other hand, if the same enterprise distributed its modified GPL program to a subsidiary, the terms of the GPL might well require it to make the source code available to all comers.

3.3.1 Production of Open-Source Software

At a time when one vendor increasingly dominates the PC industry (desktop operating system and office suite) and a growing part of the server industry, it is surprising to discover that its strongest challenger is not a commercial rival but a motley collection of free software tools and operating systems called "Open Source Software".

The power of this movement is multiple: nobody can buy it, and it is supported by thousands of enthusiasts that cannot be discouraged by anything. The quality and rapidity of OSS development is unanimously recognized as "amazing", even by proprietary vendors. A new dynamic is created by the fact that the source code of such software can easily be studied by other programmers and improved, the only condition being that such improvements must also be revealed publicly and distributed freely in a process that encourages continual innovation.

From an operating system called Linux, named after a student from Finland who wrote its core code, to a web server named Apache, put together as literally "a patchy" set of updates to older software by a band of volunteer programmers, these open source programs are emerging not just as inexpensive but also as more robust and dynamic alternatives to commercial software.

With some exceptions, open-source software has primarily been developed by individuals who donate their time to work on projects that interest them. In a typical situation, someone or a small group of people, gets an idea for a project that is interesting, useful, or both. The original developers begin work on the project and eventually solicit support from other interested programmers. Over the course of the project, programmers, including the original developers, may come and go as they complete work and as their interests wax or wane.

The programmers communicate with each other over the Internet. A core group, often consisting of one or more of the original developers, has responsibility for incorporating changes and suggesting things that need to be done. Modified versions of the source code are posted on the Internet and available for free to anyone who wants to use it or modify it further. Over time, users may end up running the software with other hardware/software combinations than did the original developers, identifying either problems that had originally escaped detection or worthwhile features to add. These users can provide feedback to the developers or become developers themselves.

Through this ongoing process the software becomes tested, debugged, and developed. This approach differs from the commercial approach in many ways. First, there is typically little analysis of consumer needs other than introspection: "what would I like my software to do?" This may be augmented by user feedback, but these users are self-selected; except in unusual circumstances, they are not drawn randomly from the universe of potential users of the software.

Second, there is little extensive, formal testing of the type those commercial firms often must engage in: internally test using hundreds, perhaps thousands of hardware or software configurations in a controlled manner. Testing is instead performed by the users who try versions of the software in uncontrolled environments, much like "beta" tests for commercial software developers (although perhaps with more sophisticated users providing feedback to the

developers). Third, the development of open source software is less structured than is the development of proprietary software. Although the core developers may provide direction, changes in the software result much more from individual action. Some observers might consider this a benefit: “innovations” can come from anywhere. Others might consider it a potential hindrance: it may prove difficult to move a project forward on a coherent basis.

4. Conclusion

Internet banking enables customers to save time, take control of their personal finances and even help the environment by opting to receive electronic statements. For Internet banking users, online banking services is the third most important driver of financial institution selection, falling just behind rates and fees, and also for better customer services. These days, it's not good enough to simply offer online banking services, however. To maintain existing customers and attract new ones, financial institutions need to keep their offerings up to date with the latest features. As the world becomes more global one it will be changed by paperless systems. The idea of a cashless society is the hope of the future. Thus more innovations will still evolve which will make cashless transactions easily accessible and affordable.

Information flow is a common problem in companies, but also in the financial markets, and especially the IT sector high-knowledge companies. If the flow of information could be improved, more efficient at the same time the company's operations. Portals offer a solution to the flow of information problem.

The aim of the thesis was to investigate the suitability of Liferay's business environment. Early stages of research it became clear quickly that Liferay is a very sophisticated Open-source project, which has a lot to the portal market.

Corporate Environmental compatibility was solved by using the research objectives, which aim was to investigate the ability of Liferay cope with the targets set. All Liferay performed in all the research objectives set out in an excellent manner. Although Liferay appearance of a new control panel still needs finishing, it fulfilled its set the most important task, the maintenance of a clear and simple.

On the other hand Liferay's user management is not the clearest and easiest to reach. In general, information systems management is built on a user by user role, and the grouping model. Liferay user management is implemented by using organizations, which can be connected to communities, which can also actin dependently. Communities and organizations connected to users who have different roles. Roles are much more: is an organization, community and user roles. When all roles and user groups combined can be a complex user management hierarchy, which can be Liferay advantage or weakness, depending on the environment.

Problems in the study resulted in the limited research environment. There were a lot of functions, which have not been tested in practice. Functions that were not possible to test included the single sign-on, integration and customization. Liferay development methods would also deserve their own section. Other notable problem was the search function Liferay faulty operation. The search function did not take

enough into account the effective content restrictions. As a result, the search seemed to prohibited content, and at the same time formed a security problem. Liferay problems were the lack of documentation and performance problems. These problems must be prepared.

Liferay should be reserved for powerful enough for the server. Efficient server need to be studied along with techniques for Liferay's performance can be improved. Liferay's performance is not optimized for this thesis. Documentation problems in turn, make it difficult to test. Documentation of problems because developers can to go to a lot of time understanding the structure of Liferay, and it will develop their own portlets can take a long time.

While electronic banking can provide a number of benefits for customers and new business opportunities for banks, it exacerbates traditional banking risks. Even though considerable work has been done in some countries in adapting banking and supervision regulations, continuous vigilance and revisions will be essential as the scope of e-banking increases. In particular, there is still a need to establish greater harmonization and coordination at the international level. Moreover, the ease with which capital can potentially be moved between banks and across borders in an electronic environment creates a greater sensitivity to economic policy management. To understand the impact of e-banking on the conduct of economic policy, policymakers need a solid analytical foundation. Without one, the markets will provide the answer, possibly at a high economic cost. Further research on policy-related issues in the period ahead is therefore critical of Multi methodology is desirable and feasible because it gives a more complete view, and because the requirement during the different phases of the intervention (or research project) make very specific demands on a general methodology. While it is demanding, it is more effective to choose the right tool for the job at hand. It can be used when you want to build from one phase of research to another. You may first want to explore the data qualitatively to develop an instrument or to identify variables to test in a later quantitative study. You engage in a mixed methods study when you want to follow up a quantitative study with a qualitative one to obtain more detailed specific information.

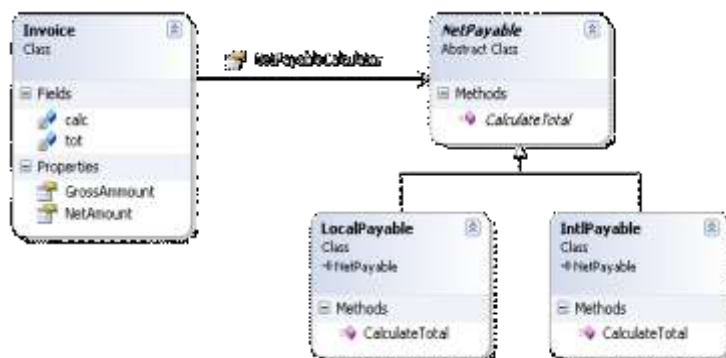


Figure 1 There's a Payment method facade.

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