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The aspects of e-Banking
Report in Greece and a linguistic
approach

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Abstract: It is obvious that technology has transformed the banking industry. Nowadays e-banking brings your bank to your computer or smartphone screen, thus drastically reducing the cost for both the clients and the banks. This new channel of banking product and services distribution has many advantages, its adoption, however, involves risks which have to be effectively managed. For the bank to remain competitive in this new environment, e-banking should become one of its strategic goals, and it has to invest in quality online customer support services. Innovation and the application of best practices along with investment in electronic systems security offer competitive advantages to the banks that embrace them, therefore creating leaders in the Internet banking area. The banking industry has realized the importance and the effect of the Internet on the operation and competitiveness of banks, and for that reason e-banking is now considered essential for every bank. Even though the use of the Internet and e-banking in Greece is still fairly limited, Greek banks have generously invested in e-banking systems.

Keywords: E – Banking · internet banking · mobile banking · phone banking · e - Banking in Greece

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Introduction

Since the differentiation margins of new products and interest rates are getting narrow, banks have turned to new services in order to attract new customers. Alternative networks are a very competitive field in the financial sector, with the most important being electronic banking. In addition, an easy to use system has to be created to cover all the needs of the users while being perfectly safe. Bank customers also have to become familiar with the electronic banking systems and the advantages they offer them.

E-banking allows a bank to empower and expand its relationship with its customers as it brings banking services directly to the customer's home or office. At the same time, despite the initial high costs required for an electronic banking system to install, by doing that the banks manage to reduce their operating costs and remain competitive while also attracting new loyal customers. Besides these opportunities and advantages E-banking offers to financial institutions, there are risks associated with it, especially with the increased use of information technology. Thus, depending on the size and its position, each bank must adopt different approaches and strategies for E-banking. The most important of the success factors of E-banking services is the efficient and quality on-line support service.

The Internet has a major influence on the competitive forces and the banking sector is a good example of its impact. It goes without saying that companies that delay to seize the advantages of the Internet will find themselves in a worse competing position.

One of this thesis' goals is to highlight the role of e-banking based on the potential benefits to both the users and banks who adopt it. Furthermore, the risks that banks will have to take are also discussed, along with how effective ways of handling them should be found.

The main body of this thesis is divided into two parts, the theoretical and the empirical one. The first part presents the banking, technical and economic context of the development of online banking, while the second focuses on the presentation and analysis of the current situation in Greece.

The theoretical part consists of four chapters, and aims to lay the theoretical and research groundwork of the thesis. Thus the current banking presence online is analyzed. This analysis aims to showcase the importance of being able to perform banking transactions online. The first chapter describes in detail the condition of E-banking and briefly describes all the modern alternative transaction networks in the banking sector, and the history of E-banking in our country.

The second chapter analyzes the advantages as well as disadvantages of using these services, both from the side of banks and from the customers' side and the costs involved.

The third chapter of this research describes the most important e-banking services offered to customers from the Greek banks.

The fourth chapter analyzes the importance of the security level required by e-banking, the advanced technological methods used to verify the identity of the bank and the customer, possible threats and cases of cyber-attacks of the past.

Finally, the empirical part of this thesis aims to document the current situation on performing online banking transactions in Greece. It is an insight on how e-banking has evolved during the past five years in Greece, and how it is compared to other countries of the European Union.

CHAPTER 1

1.1 The definition of e-banking

Electronic banking, also known as electronic funds transfer (EFT), is simply the use of electronic means to transfer funds directly from one account to another, rather than by check or cash. In general is a method of banking which the clients conducts transactions electronically via the Internet.

Traditional banks offer many services to their customers, including accepting customer money deposits, providing various banking services to customers, and making loans to individuals and companies. Compared with traditional channels of offering banking services through physical branches, e-banking uses the Internet to deliver traditional banking services to their customers, such as opening accounts, transferring funds, and electronic bill payment. Generally speaking e-banking covers a wide spectrum of banking transactions which the customer can perform electronically without the need to visit a branch. According to this broad definition a lot of services and technologies constitute what is known as e-banking. For example the ATMs could be considered as the first technology utilized by bank institutions giving birth to e-banking. Although some banks consider ATMs as one of the channels of e-banking, some others do not consider them as such and this is the reason that we are not going to speak about ATMs.

1.2 History and evolution of e-banking

For e-banking to work, access to the internet - the tool that has invaded our lives the past few years and is an important part of our everyday routines - is required. It all started in the late 60s, when the ARPA organization in the USA, focused on high technology research programs, began a research project on networking, creating ARPAnet in the process, which was the forerunner of the Internet. In 1971, only four supercomputers were connected to the network.

An important milestone in e-banking history was also the late 80s, when the major banks in the USA introduced Home Banking. Home Banking allowed customers to perform simple banking transactions at home, using their personal computers. Having developed the required networks and supplying their customers with free software, the banks attempted to spread this new service to their most demanding and wealthy customers. Home Banking's lifespan was short, since Internet banking and e-banking in general prevailed mid-90s. The most important advantage e-banking offered compared to its predecessor was the fact that banks weren't required to maintain private networks, which was a costly operation. Furthermore, the customers didn't have to acquire special software to access the bank's system.

The Internet was a challenge to the banks, which saw the opportunity to expand their clientele through it. Another important milestone in the history of the Internet was year 1993, when the World Wide Web was realized in CERN, Switzerland. The World Wide Web helped in the creation of a wider and more easily accessible networking framework. In 1994, the first Internet browser, Netscape Navigator, was developed, which allowed everyone that owned a personal computer and a modem to browse the Internet. In October 1995, the first electronic bank, Security First Network Bank, was opened in America, which served its clientele solely through the Internet, without having a branch network.

In February 1988 was the year when the first e-banking application was announced in Greece. Egnatia bank brought this innovative service to Greece, which then had around 100.000 Internet users, announcing the Web Teller service, which allowed the clients to carry out their banking transactions through the Internet. This trend continued in the future. The undeniable advantages of

this new kind of banks seemed to be overestimated. The impressive growth in the customer base of the new banks was overshadowed by the fact that customers of online banks eventually had to resort back to traditional banks to cover what electronic banks were unable to fulfill.

At the same time, traditional banks which promoted their products and services, and handled their customers' transactions through their stores they felt threatened. Since they found that parts of their client base were beginning to turn to the new form of banks. Those banks had to react to this, so they quickly began to develop alternative service networks to the standards of the electronic banks. In many cases, they were forced to completely revise their IT systems and some of their business functions to handle their customers' requests that reach them electronically. Eventually, both traditional and electronic banks started to converge towards an operation mode that justifiably focused on the synergy between the physical and electronic networks, taking advantage of their complementarity. The electronic networks can exceptionally handle repeated banking/financial operations, give required information, inform the clients, and assist them with their personal financial management, whereas the branch network is hard to replace when it comes to approaching clients to analyze their needs, explaining the details of complicated products, introducing the clients to new products and networks, and finally handling all the transactions that require the client to be physically present at the branch. Being the exception that does not negate but confirms the rule, exclusively online banks operate today, addressed mainly to specific consumer groups and remain successful in the areas they have chosen to operate.

The current standard of operation of distribution networks of banking products and services resembles a scale. Clearly any attempt to predict the moment at which the scale will tilt to the side of the electronic banking with a simultaneous substantial shrinkage of the role of the branch, is risky. Certainly the current banking system has several differences from previous decades. Surely it does not remain uninvolved in the development of electronic banking, since apart from the e-Banking, it's hosting more and more electronic networks, usually in a self-service lobby, with devices such as ATMs, a telephone for direct connection with the Telephone Service and special units for paying bills with cash. Furthermore, the staff is getting accustomed to its new role: selling products and helping the customers using the new technologies, both while speaking with the customer and completing different tasks inside the branch.

In conclusion we can say that:

- Purely online banks have been a starting point that turned out to be a destination as well, since their subsequent course and further development is bound to require their cooperating with a branch network.
- Electronic banking services remain a final destination and its development speed depends largely on the rate of penetration of new technologies in everyday life. At the same time, it is also the starting point for the optimization of operational functions in traditional banks, which are now necessarily tied to the growth of electronic banking and should gain internal efficiency. This efficiency should enable them to perform internal operations with speed and immediacy equivalent to that with which the customer is working with the bank through electronic networks.

1.3 E-banking classification

In the viewpoint of use and access media, E-Banking can be classified into three narrow (sometimes broad) sections:

Telephone Banking (The Oldest & Poorest one)

Internet Banking (or Online Banking)

Mobile Banking (Including SMS Banking)

1.3.1 Telephone Banking

With phone banking service the user can perform his/her banking and brokerage transactions securely over the phone, landline. His/her transactions are carried out 24 hours a day through the service representative call center service or through advanced interactive voice response system (IVR). To use the service of the phone banking, if he/she is a customer of a bank's debit card and phone. Here we have some phone banking services:

- Detail account information,
- Balance inquiry,
- Information about products or services,
- ATM card activation,
- Check book related service,
- Bills payment,
- Credit card service and so on.

1.3.2 Internet (Online) Banking¹

Online and internet banking nowadays has the same meaning. A few years ago online banking was a system consisting of two parts:

- I. A bank computer program
- II. A program in the client's computer.

Over the years online use decreased. As a result internet banking becomes more useful and popular.

Internet Banking lets the use to handle many banking transactions via his/her personal computer. For instance, he/she may use his/her computer to view his/her account balance, request transfers between accounts, and pay bills electronically.

Internet banking systems and method in which a personal computer is connected by a network service provider directly to a host computer system of a bank such that customer service requests can be processed automatically without need for intervention by customer service representatives. The system is capable of distinguishing between those customer services requests which are capable of automated fulfillment and those requests which require handling by customer service representative. The system is integrated with the host computer system of the bank so that the remote banking customer can access other automated services of the bank. The method of the invention includes the steps of inputting customer banking request from among a menu of banking request at a remote personal computer over a network, receiving the request at the host computer, identifying the type of customer banking request received, automatic logging of the service request, comparing the received request to a stored table of request types, each of the request types having an attribute to indicate whether the request type is capable of being fulfilled by a customer service representative or by an automated system; and depending up on the attribute, directing the request either to a queue for handling by a customer service representative or to a queue for processing by an automated system.

¹ Αγγέλης Βασιλείος, Η βίβλος του e-banking, Εκδόσεις Νέων τεχνολογιών, 2005

1.3.3 Mobile Banking

By mobile banking means any transaction with monetary value over a mobile network. It is noteworthy that a cross section in computing, communication and e-commerce simultaneously. It also provides the ability to manage bank accounts and instant information 24 hours in 24 hours.

Mobile banking despite the advantages and handiness in its use has not managed to convince the Greek general public to use it, therefore it has not been established compared to internet and phone banking.

However, considering the development of mobile telephone use in the domestic market, mobile banking has all the potential to become in the near future a widely used trading channel. Great importance in mobile banking is also given to secure transactions and user certification/authenticity. Transactions that do the mobile banking App application guaranteed by advanced electronic payment security systems at any bank.

Mobile banking users have the ability to monitor their portfolio, bank account balances, to transfer money, pay credit cards, bills and to request bank products and services.

CHAPTER 2

2.1 The services offered by e-banking

We will study separately each of the categories of the services offered by e-banking (Internet banking, phone banking and mobile banking).

2.2 The services offered by the Internet banking

Internet banking is the basis of e-banking with regard to the variety of the services it offers. These services are subdivided into four big distinct categories:

- Financial transactions
- Information transactions
- Applications
- Other services

2.2.1 Financial transactions

The financial transactions cover all the transactions which the trader can carry out in a bank, too. These transactions concern interbank transactions, like transfers of funds, credit cards and loan payments, transactions carried out after bilateral agreements between the bank and a third party, like fixed and mobile telephony bill payments, and transactions carried out within the interbank systems, like DIAS S.A., as well as others, like “ERMIS” system.

2.2.2 Transfers within the bank

The transfers of funds within the bank are divided into:

Transfers to own account, where the user chooses the bank debit account and the credit account, enters the amount which they want to transfer, as well as the date on which he/she wishes the payment to be carried out and he/she is able to print the transfer order, which serves as the transaction document.

Transfers to a third-party account, where in this case, as well, the user chooses the bank debit account and then he/she is required to enter the beneficiary's number of the credit account. At this point the user should pay particular attention, in order the amount to be

credited to the right account. Afterwards, he/she enters the desired amount and the date on which the payment will be carried out.

2.2.3 Domestic and international remittances

In order for the user to remit money, he/she chooses the bank debit account, then selects the beneficiary's bank from an area which includes all the domestic and foreign banks. Afterwards he/she enters the beneficiary's account number and the beneficiary's name.

2.2.4 Loan payments

The loan payment is a transaction within the bank and it is carried out promptly, just like the above mentioned cases of transactions carried out within a bank. The user chooses the bank debit account and the loan account and then enters the amount he/she wishes to transfer for the loan instalment payment and the date on which he/she wishes the payment to be carried out, as well.

2.2.5 Credit cards payments

The credit cards payments are divided into three categories:

Own credit card payments: The user chooses the bank debit account and the number of the credit card, for which he/she wishes to pay. Afterwards he/she enters the amount he/she wishes to transfer for the payment of the credit card and the date on which he/she wishes the payment to be carried out.

Third-party credit card payments: The user chooses the bank debit account and then he/she is required to enter the credit card number. The user should pay particular attention at this point, in order the money to be transferred to the right card. Afterwards he/she enters the amount that he/she wishes to transfer for the payment of the credit card and the date on which he/she wishes the payment to be carried out.

Another bank's credit card payments: The credit card payments of another bank are processed in the interbank funds transfer system "DIAS transfer". In order for the user to pay for credit cards of another bank, he/she chooses the bank debit account and then the beneficiary's bank from an area which includes all the domestic banks. Then the customer is required to enter the credit card number. Afterwards he/she enters the amount that he/she wishes to transfer for the payment of the credit card and the date on which he/she wishes the payment to be carried out.

2.2.6 Payments to the State

Many of the customer's payments to the State can be completed via e-banking. Most of them are processed in the interbank funds transfer system "DIAS DEBIT". The payments to the State offer the entire package of electronic payments, making it more attractive to many businessmen of our country. The payments to the State concern:

- VAT
- Employer's contributions of the Social Insurance Foundation
- social security contributions of the Small Businesses and Trades Insurance Fund (TEVE)
- Receipt of income tax of a natural person
- Circulation Taxes

2.2.7 Public Corporations and Organizations (DEKO) bill payments

Almost all of the units in the country using the Internet banking provide to their customers an entire pay package for Public Corporations and Organizations (DEKO) bill payments. These payments by name are the following:

- HTO (Hellenic Telecommunications Organisation)
- PPC (Public Power Corporation)
- EYDAP (Athens Water Supply and Sewerage Company)

2.2.8 Payments for fixed and mobile telephony

The payments for fixed and mobile telephony now can be carried out in most banks. Some of these payments are processed in the interbank funds transfer system “DIAS DEBIT”, while others derive from bilateral agreements between the bank and companies.

2.2.9 Insurance payments

Several insurance companies enter into cooperation agreements with banks, leaving their customers the possibility to pay for their insurance premium through them.

2.2.10 Payments to third-parties

Several companies enter into cooperation agreements with banks, leaving their customers the possibility to pay for their liabilities to them through the services offered by the bank.

2.2.11 Bulk payments – Payrolls

Another service that many banks offer is the carrying out of payrolls or bulk payments through a file. These files can be created either by the companies themselves with the use of their computer systems, or through a specific application, which the banks provide to their customers.

2.2.12 Status of orders

Internet banking should provide to their customers easily accessed information on the status of orders of economic nature.

An order recorded via Internet can pass through various stages until it adopts a final status. Thus, the e-banking user should be well-informed and monitor the status of his/her transactions very closely, in order to know which of the orders have been executed and which have not.

The statuses of the orders can be the following:

- Processing
- Cancelled by the user
- Cancelled by the bank
- Cancelled by organization
- Confirmed by the bank
- Executed
- Partly executed

2.2.13 Commissions for transactions

Prior to a transaction via Internet banking, the user should be notified of the commissions resulted from the transactions. The banks ought to display their invoice in public view. Because of the strong competition, it is possible for the banks to make adjustments to their invoices. A major advantage of the electronic transactions is the reduced commissions. Nowadays no bank charges for individual transfers of funds within the bank, while most of them do not charge commission for payments to the State, as well.

2.2.14 Information transactions

The information transactions are a very important part covered by the Internet banking. The user can obtain information about all the products available in the bank. These transactions are divided into four categories detailed below.

2.2.15 Accounts' information

The user can be informed about all the information regarding his/her bank account online. The account number appears in its international IBAN form. The user can see the name of the beneficiary, the sort of the bank account, the local bank managing the account, the interest rate and its currency. Moreover, the user is informed about the available balance, the audit balance, the remunerated balance and any commitments in his/her account. In addition, several banks display the last credit and the last charge of the user's account, and the data of the co-beneficiaries, as well, if such accounts do exist.

2.2.16 Cards' information

In this case the user can see the credit card number, the beneficiary's name, the type of the card, its interest rate and its currency. Information about the interest rate for delayed payment, the amount of assistance, the available balance, the uncleared balance, the amount of the uncleared transactions, the date of adoption of the last statement, the minimum amount of payment and the payment deadline are displayed. In addition, several banks display the last payment and the date on which it was carried out, as well.

2.2.17 Information on checks

After the user has chosen the bank account linked to his/her check book, he/she is able to see in detail all of his/her checks and their status, as well.

The banks leave the users the possibility even to withdraw a check. Along with that, several banks also allow the editing of the checks to enable the users to monitor them.

2.2.18 Information on loans

A user who has taken a loan of any kind from a bank is able to be updated about it via Internet. At any time the user can be updated about the remaining amount of money to be repaid, the status of the instalments, of payment, the interest rate and other useful information concerning the loan.

2.2.19 Applications

For the convenience of their customers, the banks have embedded to internet banking electronic applications for almost all of their services. Some of the electronic applications are the following:

- Application to open an account
- Loan application
- Application for currency order
- Application for checkbook order

2.2.20 Support services

In addition to the other services offered, many banks provide their users with useful tools for their convenience. Usually these tools are available to the website visitors, as well.

Such support services are the following:

- IBAN calculation
- Currency conversion
- Calculation of loan instalments

2.3 The services offered by Phone banking

The Phone banking is an alternative e-banking channel, which allows the bank users to carry out banking transactions 24 hours a day, using every phone.

The users are able to be served via:

- The interactive voice response (IVR) system, where the user's identity is confirmed without human intervention, just by entering his/her codes to the phone device.
- The specialized representatives of the call center. The bank's employee's (representatives) who are on the other side of the telephone line with the assistance of modern systems (CTI, CRM) are able to provide their users with constant support via telephone and information about an increasing range of banking products and services.

There are many banks which either with their own resources or through outsourcing allow their customers to carry out transactions via every phone device.

The transactions available through phone banking are the following:

- Activation and cancellation of the card for cash withdrawal
- Cancellation of credit cards
- Change of personal data of the cardholders
- Cardholder service in case of disputes concerning charges
- Information on the performance and evaluation of funds
- Information on the goods that the customer keeps in the bank
- Account balance analysis
- Credit card balance analysis and information on account statement
- Account statement
- Issue and withdrawal of checkbook
- Transfers – payments
- Customer services (e.g. change to security code)
- Applications

2.4 The services offered by Mobile banking

The services offered by mobile banking aren't so widespread in Greece and, consequently, there are available applications but only a few clients use them. The mobile banking is supported by new technology devices with built-in browser or from applications, such as:

- Advanced Technology Mobile Phones (smartphones)
- Handheld computers (PDAs)

The access to the services is available to every mobile phone company customer, is direct and fast and does not require additional settings.

The customer is able to have access to the bank electronic services website:

- Directly via its URL address
- Via i-mode

The only precondition in terms of accessing the electronic services website is the user to have the necessary passwords in order to log in to the mobile banking services and to have activated the internet connection.

The mobile banking makes the following services available:

- Accounts management
- Cards management
- Loan management
- Payments – transfers
- Customer personal services
- Complete statements order
- Purchase and sale of shares
- Update for the execution of an order within minutes
- Real time update for the prices of the shares for purchase or sale
- Portfolio monitoring and evaluation
- Detailed information on previous activities concerning the portfolio
- Information and advertisements for services, products and bank offers
- Change of PIN code
- Personal messages

2.4.1 Available applications from the banks

2.4.1.1 Piraeus Bank

1. Winbank easy pay App: The ground-breaking way to make payments:
 - DEI
 - OTE
 - VODAFONE
 - EYDAP
 - COSMOTE
 - WIND

Simply scan the barcode on the bill, take a photo of the bill or fill-in all the necessary data.

Available to all Banks' clients.

2. Winbank Instant Cash App: The new way to withdraw or transfer money via mobile
 - No cash card needed
 - At any Piraeus Bank ATM
 - Simply by using a one-off code

(To activate the app, the client uses the winbank web banking codes and the extra pin. After the activation, the user will only need the pin.)

3. Winbank Mobile App: The client can manage his/her banking and stock exchange transactions 24/7 via his/her mobile.
 - Balances and transactions, for cards and loans
 - Prepaid card winbank WEBUY

- Transfers
- Payments
- Remittances
- Stock Market

To access the application, users need winbank web banking codes.

Piraeus Bank's apps can be installed either on Androids or IOS operating platform.

2.4.1.2 National Bank of Greece

1. NBG Mobile Banking: The user Logs-in using usual i- bank Internet Banking User ID and Password and discovers what our new i- bank Internet Banking offers.
 - User's total product holdings displayed on the homepage.
 - Information about the balance and activity of user's deposit accounts and NBG credit and debit cards.
 - Information about the balance and activity of client's Virtual MasterCard, as well as the option for loading and unloading of the card.
 - Payment of client's credit cards whether issued by NBG or other banks, as well as telecom, utility, and other bills such as: Vodafone, Cosmote, Wind, OTE Hellenic Telecoms, DEH Public Power Corp, Assessed Tax Debts, IKA and OAEE social insurance funds, EYDAP Water Co., Thessaloniki Water Co., EPA Attikis, EPA Thessaloniki's, and more.
 - Payment of bills by scanning the barcode (where supported).
 - Money transfers to domestic and non-domestic banks (using IBAN).
2. i- bank Simple Pay: All user's payments with one touch using i-bank Simple Pay service from National Bank of Greece Perform user's payments 24 hours a day, 365 days a year, quickly, easily and simply by using i-bank Simple Pay from National Bank of Greece.

By using i-bank Simple Pay the user have:

- Flexible real time service 24/7
- Zero or low cost transaction fees
- High-level security for client's transactions

NBG's apps are available on Androids, IOS and Windows operating platform.

2.4.1.3 Eurobank

1. Eurobank App: Download the Eurobank m-Banking application and transfer money between his/her Eurobank accounts, pay bills, find an ATM near to him/her and much more, while he/she is on the way.

(The user downloads the Eurobank m-Banking application and transfers money between his/her own Eurobank accounts, pay bills, finds the nearest ATM and much more.)

Application futures:

- BANKING SERVICES
 - Accounts, Cards, Loans and Investments Information
 - Transfers funds to own accounts

- Transfer funds to 3rd party Eurobank accounts and other Greek banks. Log-in to your e-Banking account and select the accounts you wish to credit.
- Bill Payments (with Barcode Scanning)
- Prepaid Card Refill

- BANKING TOOLS AND NEWS
 - Eurobank News
 - IBAN Calculator
 - Loan Calculator
 - Currency Converter
 - Exchange Rates

- CUSTOMER SUPPORT TOOLS
 - Callback Service
 - Branch / ATM Locator

Live Pay: Live-Pay is a 24/7 innovative payments service where users can pay through their credit card (issued by any Bank) more than 500 businesses directly from their mobile phone.

The user can pay these obligations:

- Public Sector payments
- Utility payments (Telecoms – Internet, Energy – Water Supply)
- Insurance Companies
- Travel Related Businesses (Hotels, Travel Agencies, Car Rentals)

How the user can pay?

He/she just need to select the payment he/she wants to make and the amount and use his/her credit card issued by any bank in order to make the payment. Using the Barcode Scanner makes the payment even easier. Payments supporting barcode scanning capabilities automatically prompt users to scan their bills and proceed with the payment faster and easier.

Eurobank's apps can be installed on Androids, IOS, Windows and Blackberry operating platform.

2.4.1.4 Alpha Bank

1. Alpha Bank Mobile Banking: Banking Services and instant support with this powerful yet handy application by Alpha Bank.

Alpha bank's mobile banking services:

- Update for account, credit card and loan balances and transactions
- Update for credit card bonus points
- Bill payments to Public, Utilities, Telephony / Internet services, Insurance companies, Power and Natural Gas companies
- Credit Card and Loan Payments
- Fund transfers to Alpha Bank accounts (Between your accounts or accounts of 3rd parties)
- Fund transfers to accounts at another domestic bank or bank abroad
- Locate nearest ATM & Branches and see route directions
- Search ATM & Branches and see route directions
- Update for personal/business interest rates, mutual fund prices and euro daily exchange rates

- IBAN Calculation Tool and IBAN SMS sharing with contacts
 - Instant voice connection for report of lost/stolen card, transactions, customer service and support
 -
2. Alpha Safe Access:

Alpha Safe Access is an application which produces one – time security codes which in turn can be used to secure user’s transactions at Alpha Web and Alpha Mobile Banking, as well as at any VIP member site that displays the VeriSign Identity Protection. The user just after the registration of the application in his/her mobile device, should submit the Credential ID via Alpha Web Banking from the menu “Maintenance > Additional password services.

Alpha Safe Access application substitutes the physical one – time password device. The producing security codes which are being displayed in user’s mobile screen, can be entered in addition to his/her user name and password when he/she access his/her Alpha Web / Mobile Banking profile as well as at any case similar to the physical device (i.e. sign on, transfer to non – declared accounts, addition / modification of banking products such as accounts / cards / loans)

Alpha bank’s apps are available on Androids, IOS and Windows operating platforms.

CHAPTER 3

3.1 Advantages and disadvantages by using e-banking

The opportunities, which the e-banking services and technologies offer to the banking sector in order to fulfil existing customer needs and to attract new prospective customers, are the driving forces for banks in order to design, develop and operate their own e-banking systems. Except the positive effects that these technologies have, there are also very significant risks that must be taken into consideration. Banks and customers must be aware of such risks and take appropriate actions in order to benefit from such services.

In this chapter we are going to see the pros and cons of e-banking. Firstly, we are going to analyze the benefits and the disadvantages for banks and after that, we’ll do the same for the customers.

3.2 Advantages and disadvantages of e-banking services

Both banks and customers (individuals or companies) benefit from the use of alternative channels and e-banking services. Nevertheless, advantages come together with disadvantages, which banks, customers and companies must take into account in order for e-banking to be a valuable alternative and not a disaster. A bibliographical research was conducted in order to define and evaluate such advantages and disadvantages. The findings of this research helped us to design the questionnaires sent to banks and the interviews with bank officers.

3.3 Benefits for banks

Banks can access new customers: Sullivan, J. S. (2000)² argues that Internet technology has the potential to fundamentally change banks and banking industry. All banks can benefit from Internet banking by offering innovative products and access new customers. According to Hitt and Frei³,

² How has the adoption of Internet banking affected performance and risk in banks? Federal Reserve Bank of Kansas City.

³ Do better customers utilize electronic distribution channels? The case of PC banking. Management Science

PC banking customers (who are defined by the authors as customers that utilize personal-computer-based home banking) are apparently more profitable than other bank customers. The Hitt-Frei study has made three initial observations:

1. PC banking customers are consistently wealthier. They are more likely married and they more likely own a home; they are also younger from two to six years than customers who do not use PC banking.
2. PC banking users offer greater (estimated) Profitability they have more banking products and greater asset balances.
3. The Hitt-Frei study observed that the differences between PC banking and non-PC banking customers persist across different institutions, although some variation on the degree of the difference was apparent.

Banks can access new geographical areas: Banks can offer their services in areas where they have no physical presence in the form of a branch. They can benefit from the reduced costs of e-banking instead of establishing a new branch in a rural or distant area.

Banks can reduce their operational costs: Banking transactions through alternative channels cost less than those performed in a branch by a human teller. According to a study of Booz, Allen & Hamilton the average cost of a banking transaction in a branch is 0.97€. The same transaction performed through phone banking costs 0.49€ and through Internet banking only 0.01€.

The workload in branches is reduced, tellers and bank officers can spend their working time more efficiently by promoting products and services to customers instead of being burdened with the accomplishment of simple transactions. At the same time queues can be decreased in length and therefore customers and bank employees feel more comfortable and less stressed.

Banks can increase the quality of offered services the processes of designing and implementing e-banking services help to improve their perceived quality. According to BusinessDictionary.com [Accessed 11 February 2009]: Perceived quality is consumer's opinion of a product's (or a brand's) ability to fulfil his or her expectations. It may have little or nothing to do with the actual excellence of the product, and is based on the firm's (or brands) current public image, consumer's experience with the firm's other products, and the influence of the opinion leaders, consumer's peer group, and others. A bank offering e-banking services may improve its public image if it can be perceived as an innovator and technological leader in banking industry. The good name and reputation of a bank helps to establish a strong brand in customers' minds.

Acquisition of knowledge: Computerized systems such as the systems which support e-banking provide invaluable sources of information about customers and their usage patterns. Banks with the use of statistical and data mining software have a very powerful tool at their disposal in order to find out the preferences, open and latent needs or usage trends of their customers. They are in a position to efficiently design, develop and provide new financial services and products by their own or jointly with their affiliates.

New business opportunities: The Internet gave birth to new business models. Ecommerce, e-money, e-payments, e-shopping and many new business activities (the majority of which have in their name the prefix "e-") have the potential to become invaluable sources of profits for banks. For example as the online purchases are increasing so does the amount of fees paid by the customers to card issuers and banks. There are also some banks which have presence only online (Internet-only banks).

3.3 Disadvantages for banks

More intense competition: Every existent and potential customer can easily access the web sites of many banks without having to spend a lot of time and effort; therefore he/she can compare the best offers, products and services. Additionally not only banks offer financial services nowadays, but the deregulation has enabled other financial institutions to involve themselves in banking and financial activities.

Time and money costs: Banks should spend time and invest money in order to promote the use of e-banking services, especially in the case of Internet and mobile banking.

Investments for establishing, maintaining and replacing the technological infrastructure: Except from the initial costs required to design, develop and implement e - banking services and their supporting technological infrastructure (servers, database systems, firewalls, security systems etc.) there are maintenance costs for the systems and software and replacement costs for degraded technologies. Computer systems, network components, software, telecommunications technology are becoming rapidly outdated; therefore maintenance and replacement costs may have a great impact on the budget of a bank.

Training costs: Although it argues that the members of staff, which are responsible for the operation of alternative channels, need to have a very strong background in technological, business and legal matters. Up until the publication of his book the number of qualified and skilled people in Greece was limited. Although not a single person need to possess knowledge of all the sectors, nevertheless every bank should have strong policies and adequate planning in order to train its staff employed in the operation of alternative channels. There should also be training programs for the personnel working in branches in order to acquire the skills and background required for promoting the use of e-banking to customers of their branch.

3.4 Benefits for customers

No time limitations: Customers of e-banking services are free to accomplish their transactions 24 hours per day all the year. This is one of the most significant advantages of alternative channels for their users, since they are not limited to the working hours of branches.

Better time organization: The customer can spend his/her time more efficiently rather than standing in queues. Companies can use their employee's time more productively, since the accounting department can use e-banking services in order to automate various procedures, such as labor payments.

No geographical limits: The customer can gain access to his/her accounts, monitor cards and loans and perform administrative tasks regardless of the location. The only requirement is to have access to Internet, or to a phone, or to a mobile phone network.

Lower costs: Banks charge less fees for transactions performed through e-banking than those through branches. The majority of transactions accomplished through alternative channels are free of cost for the customers of the bank. One significant exception regards the transactions made through an ATM, which belongs to another bank from that which has issued the user's card.

Increased competition: What is a disadvantage for banks is an advantage for their customers, as they have now the opportunity to compare products and services from different banks without having to spend a lot of time and effort. Some clicks to keyboard and mouse buttons are enough in order to find and choose the best offer for them.

Security: Although security concerns are of greatest importance for the adoption of e-banking services, enhanced security of alternative channels benefits the customers. For example fund transfers between accounts of different banks are safer when they are made through electronic channels than through cash transfers as we can say that risk of robbery is minimized.

Twenty-four hours support: Usually banks maintain helpdesks dedicated to the support of e-banking customers for 24 hours per day all the week. Internet banking sites provide ways (for example there is almost always a support page with a list of Frequently Asked Questions (FAQs)) in order for a customer to solve the most common problems. In the case that a customer cannot solve the problem by himself/herself, there is the option to send an e-mail asking for help.

Effortless accessibility for disabled people: The benefit for this group of people is self-evident, as they do not have to discomfort themselves with needles movements.

Integrated environment for e-banking transactions: Companies have an integrated environment in order to administer their accounts, to be informed about their loans and other liabilities, to pay their suppliers and employees, to pay their taxes and insurance fees and to perform a variety of business transactions. Banks offer usually the capability to incorporate e-banking customers to allow different levels of access rights for their employees.

3.5 Disadvantages for customers

Security concerns: This is probably the most critical factor that influences negatively the prospective customers of e-banking services. Every channel of e-banking has its own security problems, but it may be argued that when somebody concerns about security in e-banking then the first that comes to his/her mind is the Internet. This is substantiated by the numerous articles in the press concerning Internet security breaches. People see and hear everywhere about hackers, crackers, computer viruses, identity theft, phishing attacks, spyware, malware and many more other terms which refer to security issues regarding the Internet. Nevertheless it is not only the Internet that is fraught with security breaches. There are numerous incidents regarding frauds through the use of fake ATM cards, or cases of theft of identity data through the infiltration of inadequately guarded information systems.

Non-familiarity and lack of required technological skills: A lot of bank customers lack the required skills to operate technologically advanced devices (personal computers and new generation mobile phones) or they are not familiar with browsing the Internet. These people therefore can't have benefits from e-banking services.

Lack of personal contact: A lot of people prefer to visit a branch instead of using e-banking services, because they are used to have a face-to-face contact with a bank officer. They feel more comfortable in situations when a human listens to their needs and responds to them and sometimes it's easier for them to ask questions that they have.

CHAPTER 4

4.1 E-banking security

As was mentioned before, during the last two decades the banking industry has adopted new service channels (like e-banking) based on technology progress. The most widely known ones are Internet banking, mobile banking and phone banking. With these alternative channels customers are able to perform banking transactions without having to be physically present at a branch, even if they are abroad. Year to year, more and more bank customers use these channels for their transactions. With that said, security is considered to be the ultimate prerequisite for accomplishing and performing successful operations or transactions and gives confidence to the customers to use these methods. Security measures are not the same for all the channels but each one of them depends on the national rules and each bank policy. Most of the times banks should comply with regulations defined from international organizations or from local authorities. With the increase of threats that have recently appeared on alternative channels, banks are obliged to implement the higher and the newest security levels. Even though most of the Greek banks have adopted very strict security measures to all channels with extremely good results so far, they have proceeded to the adoption of a new two factor authentication to strengthen the security of e-banking methods.

4.2 Opportunities and threats

Banks invest on e-banking methods and they want to develop and enhance them. Researches point that, customers choose bank in light of e-banking services that banks offering. But, even if they invest a lot of money on that, bank's managers declare that branch remains the main service point, with e-banking to be for complementary services. Moreover, the first e-banking established on 1998 and the complete version of this on 2000. During all these years the information technology systems have rapidly changed and a new generation e-banking system is being planned under portal technology. Threats are increased and new threats appear year to year. So, banks decided to strengthen its security measures. So they set some rules and measures for e-banking services which are being followed.

4.2.1 General security policies

Recognizing the fundamental importance of security in accomplishing electronic transactions, banks try to provide the newest, most advanced and pioneering methods of safeguarding transactions via e-banking. This security police, guarantees the secrecy and the inviolability in transactions. The parameters of security policy focus mainly on the following:

User authentication: It is the recognition of a user's identity by the system, so that it's ensured that only the authorized user has access.

Transaction authentication: The user enters a disposable number called TAN⁴, nowadays are OTP codes, for each monetary transaction or when important elements, like change of password, are modified. TAN and check TAN numbers were printed on a sheet of paper called TAN list. It's important to say that most of the banks don't use TAN codes but they are in a new phase with an improved solution by using OTP⁵ devices or by sending a code, with a specific valid time, in the phone number that the customers gave. The move from TAN list to OTP codes is something that we will describe later.

⁴ Transaction Authentication Number)

⁵ One time password

4.2.2 Strengthen of e-banking services.

There are many methodologies that bank institutions can use in order to authenticate their customers. Some of them can include the use of usernames and personal identification numbers (PIN), digital signatures, one time passwords, transaction profile scripts, biometric identification and others. Each bank decides which methods of security are going to assimilate. Existing authentication methodologies involve three basic factors:

- 1) Something the user **knows**, like username and password.
- 2) Something the user **has**, like security devices, TAN lists.
- 3) Something the user **is**, like biometric characteristics (fingerprint).

Properly designed and implemented multifactor authentication methods are more reliable and the possibility to be hacked is reduced. For example, the use of a username and password is single factor, it's something that users know, and moreover it's the most common in use. So if we have to put a username and password and we should combine with something that users have, like OTP devices, this is twofold authentication. This way mitigates a lot more the risk of being hacked.

The success of a particular authentication method depends on appropriate policies, procedures, controls and technology. To be an affective authentication method should have a customer's acceptance, reliable performance and scalability with existing systems and future plans. Nowadays, all the Greek financial institutions have implemented two factor authentication, with the first one to be always the "username" and "password" when people enter their account. The second is always something that "user has" (see basic factor 2), it could be a security device or for example, a code which has been sent on the mobile phone that have been registered in the bank. Most of times, if the person wants just to take information about the account, needs only the first basic factor, "username" and "password", but if the person wants to make a money transaction, it must proceed to the second basic factor. Phone banking now, offered by the Greek banks too, with a minimum set of transactions but, year by year they offer more choices for the customers, with the institutions to do the best they can with the user authentication. The most common authentication is a password, that banks institution give in their customers and it's always a second step verification. This step for example, could be a code with an OTP device, or the phone number of the customer. Moreover the financial institutions offer in the Mobile banking the same user authentication as in Phone banking and in Internet banking.

It's important to say that e-banking provides more security than this that we describe above. Depending on the bank institution of course, most of the banks have:

Privacy of Data Transfer through Encryption, from the beginning of your connection until the end (online session), all your data and personal information are encrypted with the SSL 128-bit encryption protocol. Encryption is actually a way to encode the information until it reaches a specific recipient, who will be able to decode this piece of information by means of an appropriate key. Every time that you are connecting to Piraeus Online Banking, all the communication between your PC and the Bank's systems is encrypted through the use of a 128 bits key: every time you are sending information to the system, your browser first encrypts it through the 128-bits key and then sends them to the Bank's system. This means that, exist 2^{128} possible keys which can be used for the data encryption but only one can work in every connection. The Bank's system in its turn first decodes the information it receives by using the same key (as defined at the beginning of your on-line session) and then process it. The Bank's systems follow the same encryption process in order to send information to you.

Bank's certification authenticity, is another way to be secured. This is provided at the Bank site via Certificate of Authenticity, a certification published by independent companies - permitted for this aim. It ensures that no other can pretend to be the Bank and gain access to the user personal data.

Filters of access in the IT systems of Bank, hardware and software equipment are placed between the Internet and the IT systems of the Bank. It filters the entering data according to the policies of safety determined by the Bank's security group and the international models. Through this infiltration, all points of the Bank's network are protected in such a way that neither external nor internal unauthorized users have any access

Session Time-out, after a period of time. By this we mean that, for safety reasons, exist a limit of time (depending on the bank institutions) for accomplishing the transactions, and after the end of that the connection is going to be disconnected automatically by the system. In addition, if by using the system of e-banking the user hasn't transact any transaction, between a limit of time, the system is going to be disconnected automatically (Idle Timeout).

Short Message Service (SMS), this method has been applied in some banking systems to notify users about transactions requiring their authorization. It provides a second authentication channel for transactions that fit certain characteristics by sending to the user a set of characters which have to inform in order to authorize and process the transaction through the online banking system.

Mandatory Password Change, with the first account login of the new user in the e-Banking, the system requires the immediate change of personal password with someone of his choice, which is easier to be memorized. Furthermore, some banks have the policy to demand from the e-banking users to change their password every 2 or 4 or 6 months (it's up to them to choose what they prefer).

Security Code Lock, after a specific number of incorrect attempts to log-in, for your own safety the system locks your security codes and denies you access to Online Banking. To unlock them, you must contact with your bank.

4.3 The step to OTP devices

The purpose of a One Time Password (OTP) is to make it more difficult to gain unauthorized access to restricted resources. An unauthorized intruder given enough attempts and time can more easily access traditional static passwords. By constantly altering the password, as is done with one-time password, this risk can be greatly reduced. Moreover using OTPs, as the second factor in a two factors authentication schema, we eliminate security weaknesses. Using small electronic devices is the most popular way for producing One Time Passwords. The advantages of OTP devices (token) against TAN list are the following:

- a) Increase in transactions security level (each OTP is active for only 30 seconds more or less, depending on the bank institution policy.)
- b) Simplification of the provided service (the issuer neither has to administrate the TAN list nor to assure their proper delivery, the customer has not to have the TAN lists on hand during transactions)
- c) Decrease of the investment. Actually OTP devices cost about \$ 50 per item and the price can be decreased to \$ 3 per item in case the bank purchases quantities in the range of one million items [Allan et. al. (2006)]. Therefore, the cost in the latter case is affordable for the activity level of Greek banks. The most important factor is that in case of computing gadgets there is a disposal for sharing the cost between financial institutions and their clients. On the other hand the TAN lists demand a considerable administrative cost (associate the TAN codes with the clients record, keep

track for the utilization of every single TAN (used / not-used), issue new TAN lists, etc.). Consequently, in the long run, OTP devices present decreased overall cost.

d) Increased flexibility and quality in service (life expectancy is 5 years).

As a result, the use of OTP devices not only eliminates possible difficulties in the customer service arising from TAN list (e.g. time delays, problems in the service of Internet Banking users who are non-residents, permanent renewal of lists etc.) but it also saves additional cost for the Bank (communication with the customers, postal expenses etc.). Even the non-familiarized user, irrespective of age, can carry the OTP device and with the push of a button can produce a disposable code, using Internet, Mobile or Phone Banking with any device (PC, PDA, mobile phone, telephone). The use of dynamic disposable codes renders any violation or interception practically impossible, because of an exceptionally limited time duration effect and an output (via powerful algorithms of encryption) by the device also based on the parameter “time”. At the same time, special software in Host system of the Bank confirms the genuineness and validity of each dynamic disposable code. Obviously all the transactions (successful or not) are kept on an audit log. Each token (device) is unique and personalized for each user / customer. Consequently, it is ensured that no third person has access either to the accounts or the electronic transactions (e-banking) even in the case of disclosure of a user’s identification codes. In our days there is a wide acceptance of OTP devices.

4.3.1 Algorithms for producing OTP

The security devices offered by the supplier support a broad range of algorithms by which the response is generated. Each of these algorithms has its unique set of properties, allowing use of time, event or challenge based methods (or any combination of the previous parameters) in order to calculate the response (OTP).

Time-based operation: In the case of time-based operations, the security device allows you to choose between different granularities. The granularity indicates the frequency by which the response will change. When using the Time-Based Response only, the typical granularity is 36 seconds. This means that the security device will generate a new password every 36 seconds. Other granularities are possible as well e.g. 8 seconds, 16 seconds and 30 seconds. Time-based can also be used in conjunction with challenge, e.g. performing a Time-Based Challenge/Response. This will prevent replay attacks for Challenge/Response authentication.

Event-based operation: The security device supports event-based (counter-based) operations, where the counter is incremented at every calculation (response generation).

Challenge-based operation: The security device supports challenge/response authentication. This can be compared with a question /answer scheme, where the server issues the challenge (question) which must be typed into the security device, which in turn will generate a response (answer) based upon this challenge. Challenge / Response is often used in combination with time, to prevent replay attacks.

Signature operation: Typically in banking applications the security device can be used to sign transactions, where the user is asked to type specific data in the transaction (e.g. destination account number, transaction number, amount, etc.). The security device will generate a response based upon these input parameters acting as a transaction signature

4.3.2 Advantages of OTP devices

- When OTP is used once, it becomes invalid and it is later invalidated by the fact that it falls outside the time window.
- Immune to replay attacks
- No risk of sync lost compared with event based synchronous system in particularly when taking full advantage of the time management synchronization functions.

4.3.3 Distribution & activation

The customers have two options depending on if they are e-banking users or not. In the case they are not, they can visit a bank's branch to complete an application form to activate their account's e-banking capabilities. If yes, they have the choice to activate and request to send them the device at their address and all that by internet banking or by going to the branch. The token activation begins when the serial number of the device is associated with the User ID and both data are transmitted to the host. It's important to mention that Alpha Bank has create an application that can create OTP codes, so the customers have the choice to choose between a token that creates codes, or an application which do totally the same work.

4.4 Threats and risks by using e-banking

Currently there is a clear need for efficient security models by all the banks which offer online access to their banking systems. In face of the growing number of transactions processed through online banking systems, several new security technologies and models, which aim at providing authenticated secure communications through known insecure channels, have been introduced in current literature. The number of malware and exploits focused on online banking systems vulnerabilities has been steadily growing during past years. In fact, 2013 saw almost a million of new banking malware kinds – double the volume of the previous year. The rise of new banking malware into this year continues with sophisticated techniques in an effort to target as many as victims as possible. These malicious applications employ two kinds of attack vector, local attacks which occur on the local computer, and remote attacks, which redirect the victim to a remote site. Security experts have calculated that a bank can spend up to 1 million€ in equipment and safety advisors to correct deficiencies. It's important to notice, that for a naïve⁶ user it's really easy to become a victim of a malicious program. As a matter of fact, users by their self will give access to the hacker to “control” their computer (Γεωργιάδου, Ζιαζιάς, 2007).

4.4.1 Threats which a user may deal with

4.4.1.1 Sniffers

A sniffer can also be used legitimately or illegitimately to capture data being transmitted on a network. A network router reads every packet of data passed to it, determining whether it is intended for a destination within the router's own network or whether it should be passed further along the Internet. A router with a sniffer, however, may be able to read the data in the packet as well as the source and destination addresses. Sniffers are often used on academic networks to prevent traffic bottlenecks caused by file-sharing applications, but they are also popular with Internet hackers. In fact, in 2013 a new network sniffer, called EMOTET has been discovered. This malware have the ability to steal the electronic access details like username and password.

⁶ Having or showing a lack of experience, judgment or information

4.4.1.2 Key Loggers

Key loggers do exactly what their name suggests – they log your keystrokes. If you type your online banking username and password, this information will be stored in the key logger and forwarded to a remote location. Key loggers are the reason most bank accounts now require you to generate a number from a token to log in (or require a code sent to your mobile phone). This unique number will work just once, so people with key loggers won't be able to use that number to access your finances. Key loggers should be discovered by good anti-virus software.

4.4.1.3 Banker Trojan

In computer and network security terminology, a Banker Trojan-horse (commonly called Banker Trojan) is a malicious program used in an attempt to obtain confidential information about customers and clients using online banking and payment systems. Malware continues to grow up at exponential rates, with Trojans now being the most common type at 66 percent of all malware. Trojans infect a victim's computer to enable a cybercriminal to perform malicious functions like making it part of a botnet (collection of remotely-controlled computers) or stealing confidential data like passwords and credit card information. Banker Trojan is a Trojan horse that redirects traffic from banking and financial websites to another website, ostensibly a website that the attacker has access to. When the software is executed it copies itself onto the host computer, creating folders and setting Registry entries each time the system is started. It searches for specific cookie files relating to personal finance, which have been stored on the computer by financial websites during an Internet visit. The Trojan horse can execute a number of operations, including running executable files, downloading and sending files remotely, stealing information from a clipboard, and logging keystrokes. It collects cookies and passwords, and may remove itself from a computer when commanded. Criminals have become more sophisticated in how they obtain confidential financial information. Viruses, malware, and Trojan horses can still steal usernames and passwords, but many are moving to real-time collection and can transfer money to other accounts in clever ways.

4.4.1.4 Phishing

Internet and email users across the world are often targeted by an internet scam called "phishing". By means of fraudulent emails that appear to be from a legitimate company (banks, popular social web sites, online payment services, et al.), fraudsters aim to collect personal and financial data that they will use to their benefit and to your detriment. Phishing falls into the so-called social engineering techniques used to manipulate people into giving away sensitive information. The fraudsters send out thousands of emails to random email accounts and prompt the recipients to confirm their personal or financial details by clicking on a provided link that will supposedly lead them to this company's website. Phishing emails usually have subject lines that appear to be genuinely related to who the email is from, in an attempt to entice the user to open the email. For example, subject lines such as "Important notice for all Internet Banking Users". Also there may be a sense of urgency, e.g.: "Your account will be closed or temporarily suspended" or "You'll be charged a fee if you don't respond". The fraudulent web site that is linked to the phishing email is designed to mirror the legitimate web site it is purporting to be. The fraudsters use multiple methods to do this, including using genuine looking images and text, disguising the URL in the address bar or removing the address bar altogether. The purpose of the web site is to trick consumers into thinking they are at the company's genuine web site, and giving their personal information to the trusted company they think they are dealing with. Once fraudsters have "phished" out your information, they could use it in a number of ways. Your credit card could be used for unauthorized purchases, or your bank account could be cleared out, or they may simply gather the information for an identity theft scam, or sell your information to identity theft rings. Nowadays, phishing is famous to the users, as a result, they are suspicious about these emails.

Phishing is really effective because:

- 44% of users of e-banking use the same password for all the electronic banking services in all banks.
37% of users of e-banking using the same password in less secure sites, like electronic libraries and make it easier for the hackers to find their passwords.

4.5 Bank's suggestions for the users

- **Protect your PC:**
 - Install anti-virus software and keep it updated on a regular basis to guard against new viruses
 - Install anti-spyware security software against those programs that monitor, record and extract the personal information you type in your PC (passwords, card numbers, ID numbers, etc.)
 - Install personal firewalls to protect your PC against unauthorized access by hackers
 - Keep your operating system and internet browser up to date, checking for and downloading new versions/security enhancements from the vendor's web site
- **Protect your personal information:**
 - Create hard-to-guess security access codes (User ID & password) for your e-banking account and make them unique (e.g. they should not be the same as those you use to access your e-mail account)
 - Change your security access codes periodically
 - Memorize your security access codes, avoid writing them down and keep them strictly personal and confidential
 - Do not disclose to ANYONE your security access codes: Banks will never initiate a contact with you to ask for your e-banking or ATM PINs, card or account numbers, personal identification information, neither over the phone nor in any electronic or written message
 - Never leave your PC unattended when logged into your e-banking account
 - Always remember to log off from your online session using the "Log-off" button when finished using the e-banking services
- **Use the Internet cautiously:**
 - Always access your e-banking account through the official Bank's website
 - Never attempt to access your bank's online e-banking through an external link of unknown or suspicious origin appearing on other websites, search engines or e-mails
 - Before logging in, check for the Bank's Security Certificate details and the various signs.
 - Ignore and delete immediately suspicious fraudulent (phishing, spoof, hoax) e-mails that appear to be from your bank, asking you to urgently click a link to a fraudulent (spoof) website that tries to mimic the Bank's site and to lure you into giving out your sensitive personal information (password, account or card numbers, personal identification information et al.)
 - Never click on a link contained in suspicious e-mails
 - Avoid using e-banking services from public shared PCs (as in internet cafes, libraries, etc.) to avoid the risk of having your sensitive private information copied and abused
- **Stay alerted:**
 - Sign-on to your bank's site regularly and review your account transactions, checking for any fraudulent activity on your account (e.g. transactions you do not recognize)

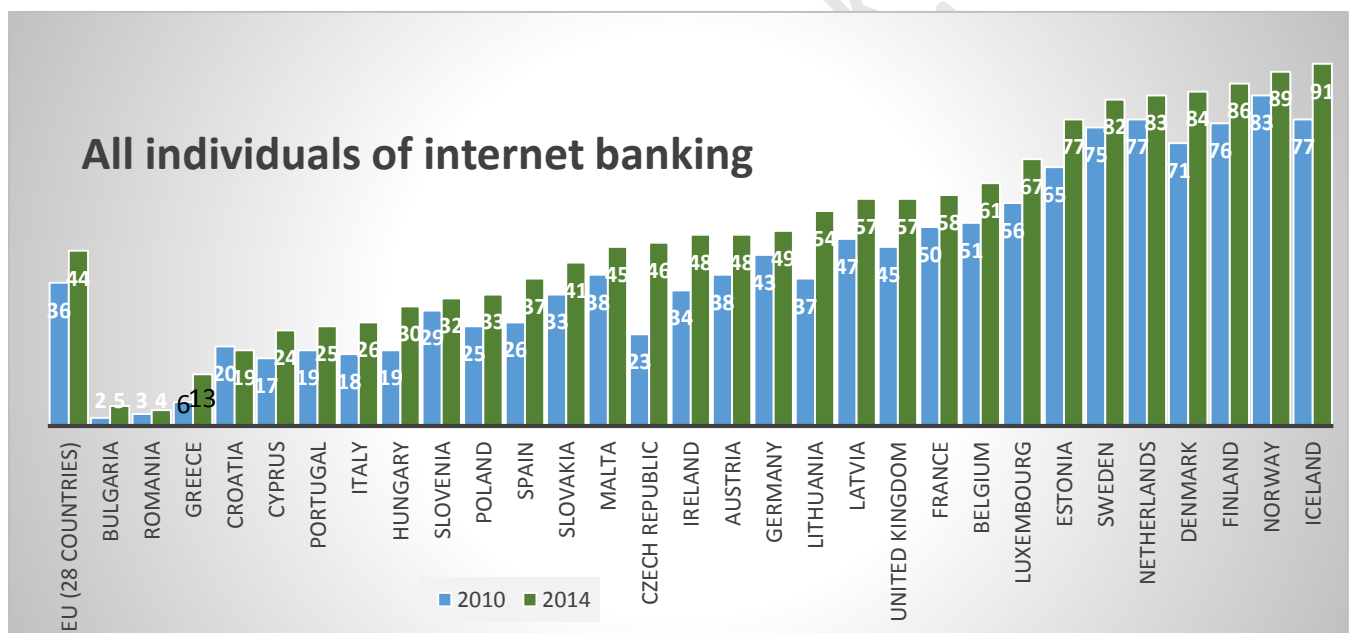
CHAPTER 5

5.1 Analysis results of Eurostat

5.1.2 Methodology

On this chapter, we are going to analyze and comment the results of the Eurostat’s research, which make every year. We are going to see the last five years of the researches, from 2010 to 2014. Firstly, we will present some graphs that we created with the help of the Eurostat’s table research. In the first one, we chose 30 countries and the Europe’s average of 28 countries from the Eurostat’s table and after this, we chose to display only 7 countries and the Europe’s average of 28 countries. Indicatively, we chose 3 countries from the *South Europe*, **Greece** – Italy – Spain, 2 countries from the *Center of the Europe*, Germany – France and 2 countries from the *North Europe*, Sweden – Netherlands. As Eurostat “inform” us the research become from 16 to 74 year’s old people, moreover it allows us to see the percentage of the people who use the e-banking depending on individual categories, like males – females – students - age range etc.

With all that said above, the resulting graphs are as follows:



Graph 1: All individuals included. It’s possible to see the table at the appendix.

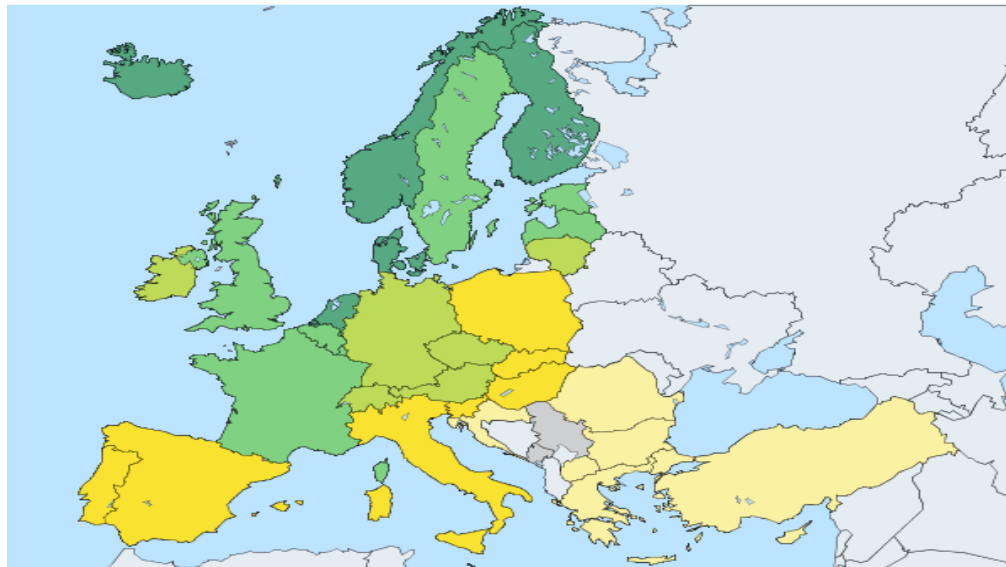
Source: <http://ec.europa.eu/eurostat/tgm/table.do?jsessionid=VRQ0ZMM5xaAs4iZ9796jCf7YXlCfHHINt9-B77CZa4NTiIkxeOxW!-1902225176?tab=table&plugin=1&language=en&pcode=tin00099>

From the graph 1 it’s easy understandable that people in **Greece** doesn’t make a lot use of internet banking. It’s in the *third place from the last*, in front of *Bulgaria* and *Romania* and behind from all the big countries like *Italy*, *Spain*, *Germany*, *Sweden* etc. Moreover, we see that the percentage of the people who use the internet banking in Northern countries is really high and the average percentage for 2014 is 84.5% while in Mediterranean countries and in Eastern Europe countries is only 27.9%. This is not something new, because Northern countries except from the high standard of living, show an extended spread of both Internet and innovative technologies. From the other side, speaking for Greece, people are really unfamiliar with the new technologies and the internet in general. This fact creates a mistrust, even until nowadays, for the Greek people.

The follow map show us the percentage of internet banking usage in color groups:

Individuals using the internet for internet banking

% of individuals aged 16 to 74 - 2014
All Individuals



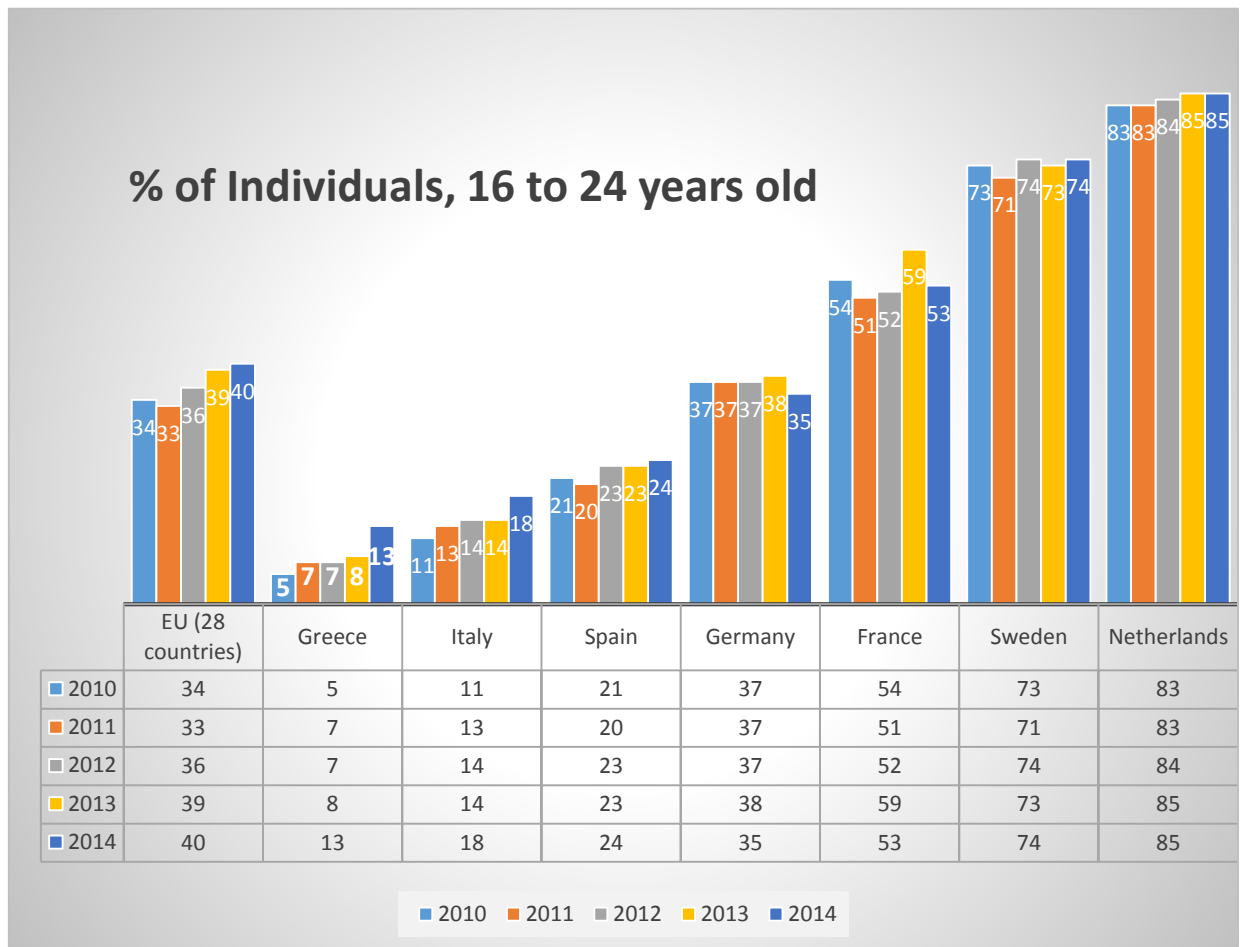
Legend
4.0 - 24.0 24.0 - 41.0 41.0 - 54.0
54.0 - 82.0 82.0 - 91.0 Not available
Minimum value:4.0 Maximum value:91.0

Source: <http://ec.europa.eu/eurostat/tgm/mapToolClosed.do?tab=map&init=1&plugin=1&language=en&pcode=tin00099&toolbox=types>

The last 5 years (2010-2014), we see that the percentage of Greece has been increased from 6% to 13% (graph 1), it's almost double. This is something encouraging to see, but still the percentage of the year 2014, is really low compared it with Europe's (28 countries) average which is 44%. According to the bank institutions, the basic factor for the low familiarity of Greek people with e-banking is the behindhand of the new technologies and internet in general. Security is another important factor. Greeks deal with this new kind of banking with caution, due to the unsafe nature of financial transactions.

5.2 Individuals 16-24 years old

At this paragraph we will see the role and the participation percentage of the people who are from 16 to 24 years old and they answered that they use internet banking



Graph 2: % of individuals 16-24 years old, for 5 years 2010-2014

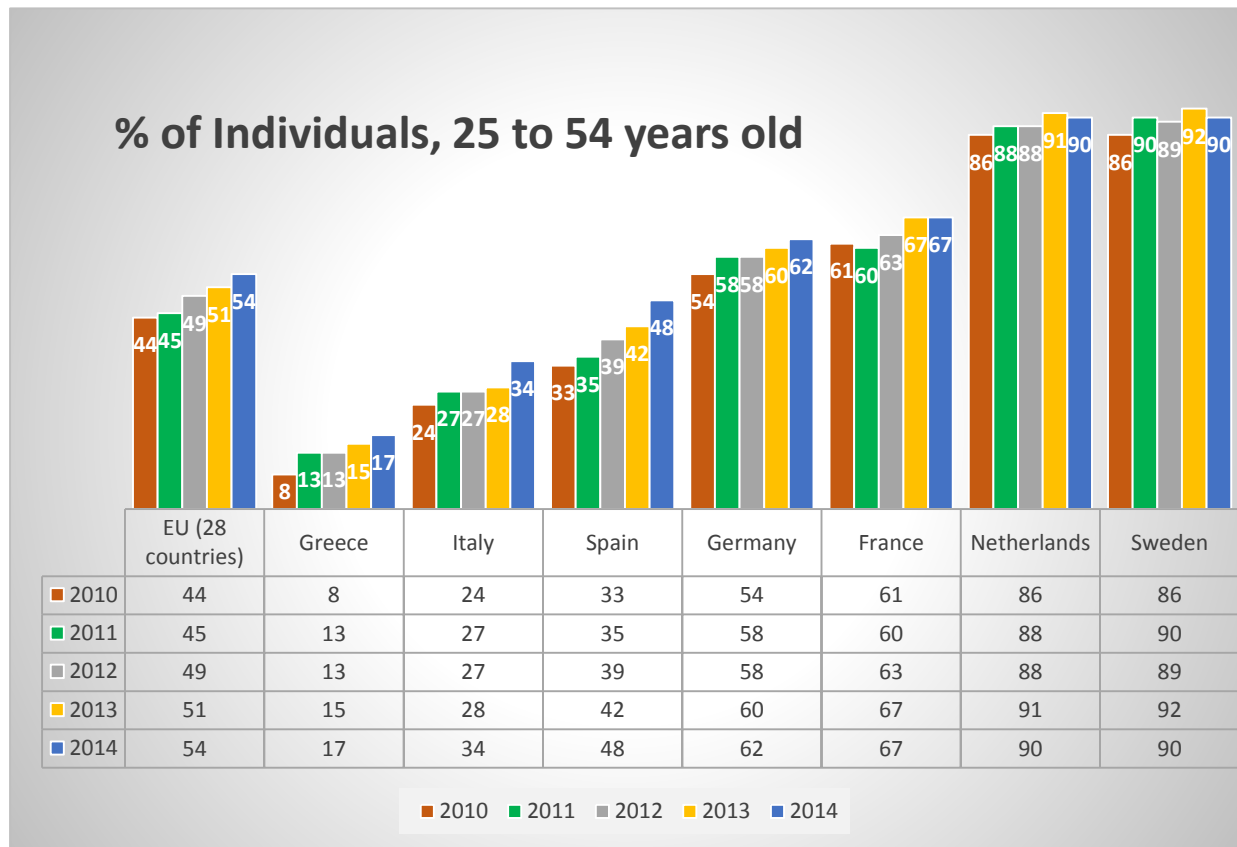
Source:

<http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tin00099&language=en>

By seeing this graph we understand that in 2014 in Greece, the individuals from 16 to 24 who took part in the research the 13% said that they use internet banking while in 2010 was only 5%. It's something encouraging to see that young people use these kind of new technologies more and more every year but, if someone will compare it with the percentage of the average of Europe's (28 countries) he/she understand that it's really low and it's almost three times lower. In Mediterranean countries the first place is holding by Spain, in general (see Graph 1) but in this category too, while the first one is Netherlands with the huge percentage of 85%. It's really interesting the fact that Netherlands has more than 80% all these years from 2010 in this category.

5.3 Individuals 25-54 years old

Like before, we will see the participation percentage of the individuals who are from 25-54 years old and they said that they use internet banking.



Graph 3: % of individuals 25-54 years old, for 5 years 2010-2014

Source:

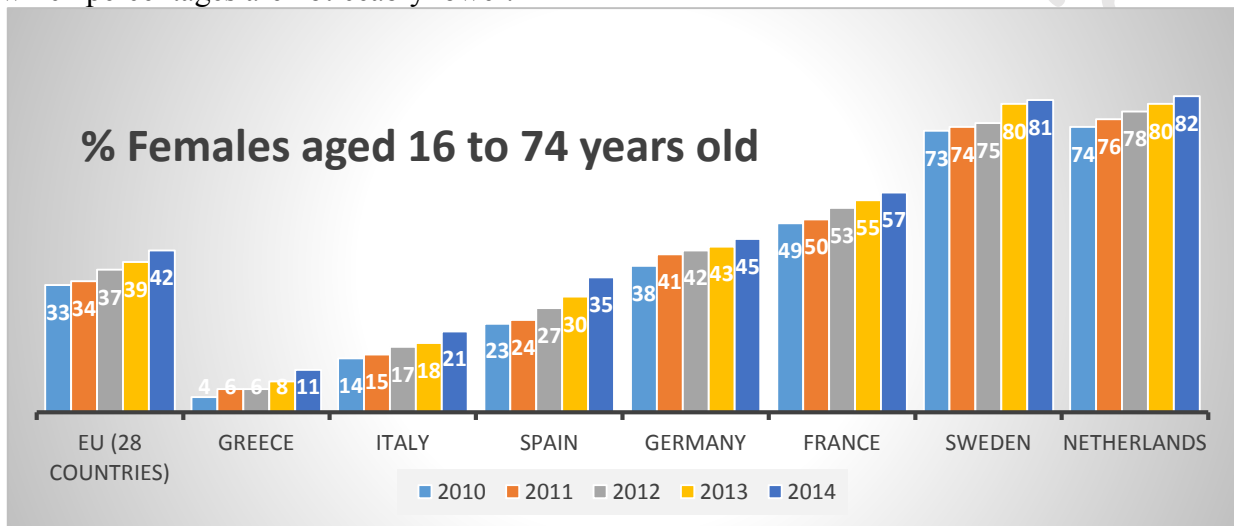
<http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tin00099>

In this individual category even we can see that Greece has better percentage all these years than the individuals from 16 to 24 years old, doesn't mean it's a good "sign" because all the countries have better percentages than Greece. It is normal for all the countries to have better rates as people in this age have more liabilities with the banks, so they need to make more transactions. Greece's rate in 2014 is 3 times lower than the average and this is really low for a country which want to be in the "elite of the Europe".

5.4 Males and females 16-74 years old

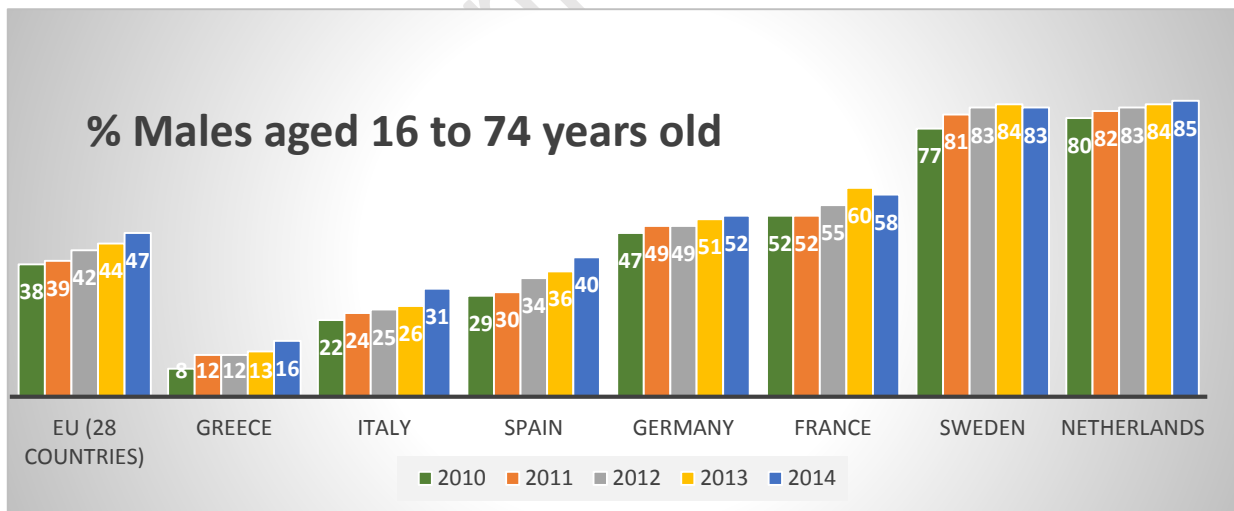
We believe it's important to mention the differences between the 2 genders, females and males. According to a different research of Eurostat's concerning to the computer skill of the male – female, the percentage of men who have high computer skills is much higher than the respective percentage of women. Although, the difference has been decreasing steadily year to year. Moreover, at the same time women tend to outnumber men in the low and medium skill levels, by a few percentage points, but again the difference is gradually bridged over time.⁷

In all countries, males who use e-banking have better percentages in all the years, than females which percentages are noticeably lower.



Graph 4: Females aged 16 to 74

Source: <http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tin00099&language=en>



Graph 5: Males aged 16 to 74

Source: <http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tin00099&language=en>

⁷Eurostat: https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/scoreboard_digital_skills.pdf

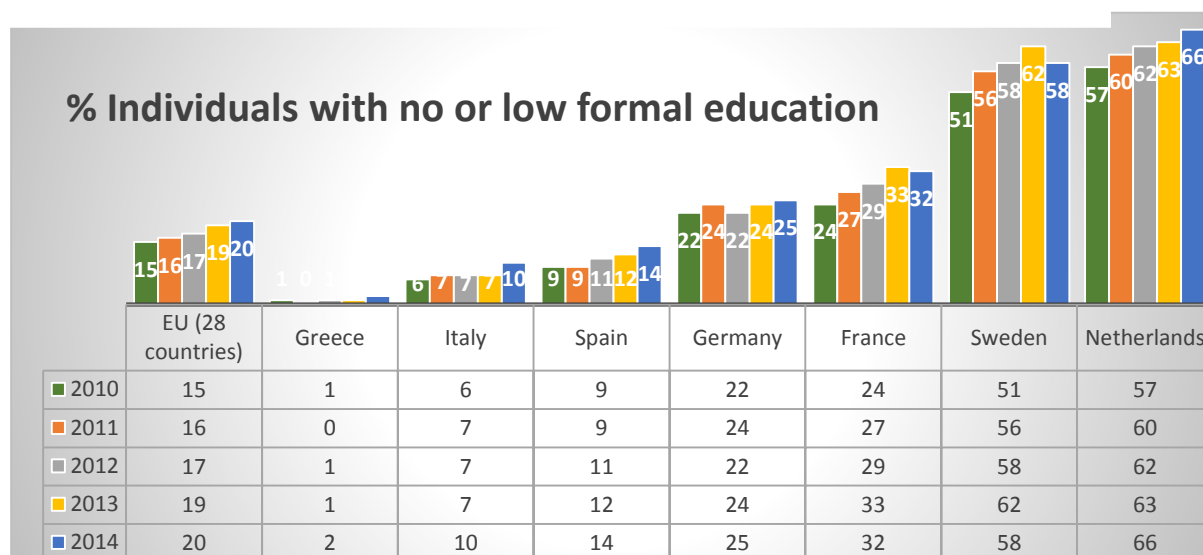
5.5 Individuals depending on formal education

According to Eurostat formal education has a really close relationship with the use of the new technologies⁸.

		Low internet skills					Medium internet skills					High Internet skills				
		2006	2007	2010	2011	Δ (2006 - 2011) in p.p.	2006	2007	2010	2011	Δ (2006 - 2011) in p.p.	2006	2007	2010	2011	Δ (2006 - 2011) in p.p.
Individuals aged 16-24	Low formal education	27%	22%	21%	18%	-10	40%	43%	49%	51%	11	14%	18%	22%	22%	8
	Medium formal education	27%	24%	19%	17%	-10	40%	42%	50%	51%	11	16%	24%	26%	28%	12
	High formal education	32%	17%	16%	13%	-18	42%	46%	50%	47%	4	21%	35%	33%	39%	18
Individuals aged 25-54	Low formal education	21%	22%	29%	30%	9	9%	12%	18%	21%	12	2%	3%	5%	5%	3
	Medium formal education	39%	39%	42%	40%	1	19%	23%	33%	35%	16	5%	7%	8%	9%	4
	High formal education	45%	39%	33%	29%	-16	35%	39%	46%	48%	14	11%	14%	18%	20%	9
Individuals aged 55-74	Low formal education	8%	9%	15%	15%	7	1%	3%	4%	5%	4	0%	0%	0%	0%	0
	Medium formal education	24%	26%	36%	36%	12	6%	8%	13%	16%	10	1%	1%	1%	2%	1
	High formal education	43%	43%	48%	45%	2	16%	21%	29%	33%	17	2%	3%	4%	6%	3

Source: https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/scoreboard_digital_skills.pdf

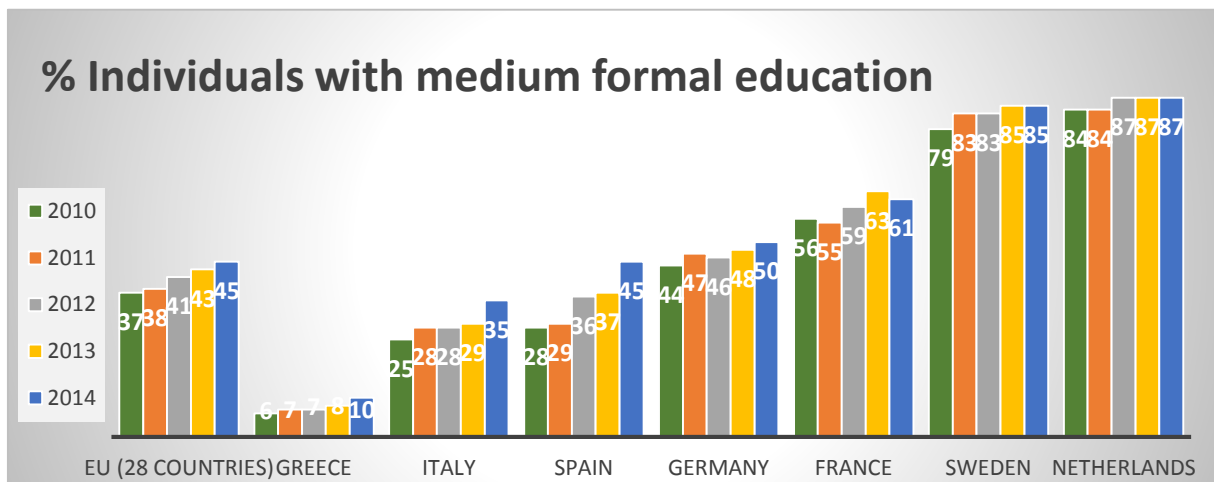
With that said, we can see now the findings of Eurostat's research:



Graph 6: Individuals with no or low formal education

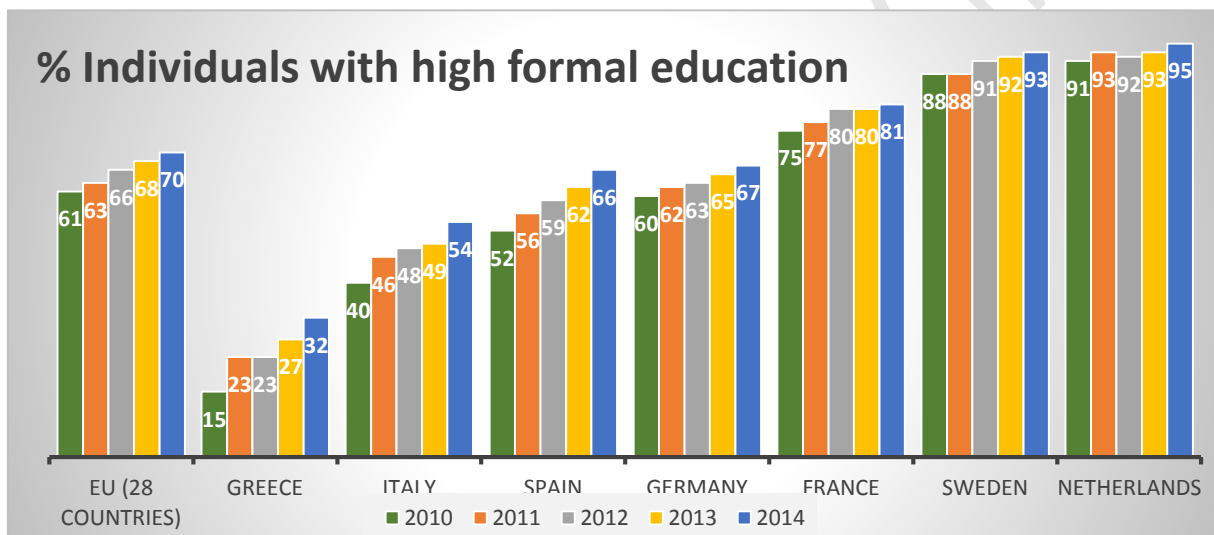
Source: <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tin00099>

⁸ https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/scoreboard_digital_skills.pdf



Graph 7: Individuals with medium formal education

Source: <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tin00099>



Graph 8: Individuals with high formal education.

Source: <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tin00099>

It's easily understandable from the graphs 6, 7, 8 that education is a really important factor for the use of e-banking. The percentage of the individuals with no or low formal education is really low for all the countries even for the Northern countries which in general are really high. On the other hand, we see that individuals with high formal education have really high percentages, while individuals with medium formal education are in the "middle" of the other two categories. As a result, we believe that education is one of the most significant factors. Having analyzed the research of Eurostat for the use of internet banking, we strongly believe that Greece has a lot of margins of growth in this session. As we already said one of the main factors for the individuals is the education, so individuals need to start from the fundamentals of the internet and step by step to become more professionals and start to use these kind of new technologies for their ease. For Greece the results are really disappointing since it wants to be in the elite of the Europe and play a determinant role. Researches like this one show that people in Greece can't assimilate new technologies and this make the country to be stationary.

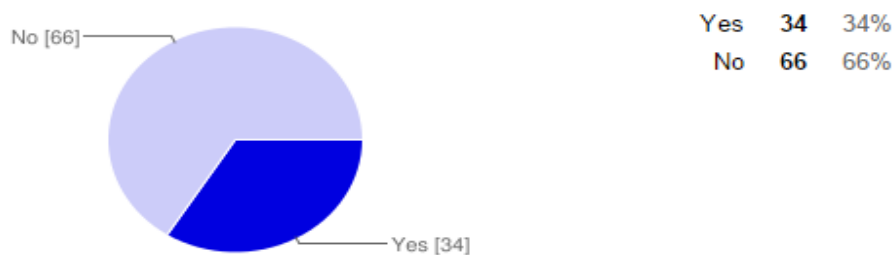
CHAPTER 6

6.1 EMPIRICAL RESEARCH – QUESTIONNAIRE

We created a questionnaire which has 3 parts. The first part has only one question (if the individual use e-banking or not), depending on his/her answer moves in the relevant part. We used closed type of questions and questions with scales. Moreover we decided to asked people from 16-54 years old, to have a smaller width. Finally, we created the questionnaire in google docs, so it was easier for us to share it online in social media etc., but we created a QR scan image too and we posted on the roads.

Studies in domestic behavior of E-banking resulted in the following:

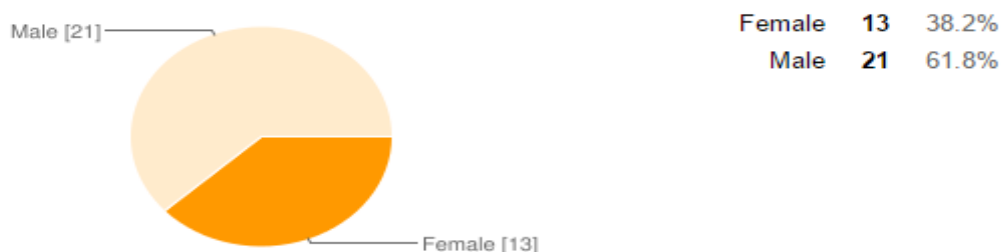
Are you using the functions of e-banking?



Users of E-banking a fairly low rate, namely 1/3 (a third) of the individuals who partook in the questionnaire. Even if the benefits are quite in the costumers favor, unfortunately in Greece, increasing use of E-banking is relatively slow.

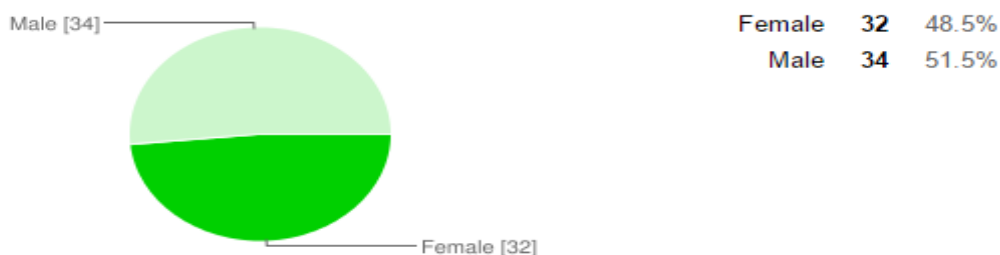
Users of e-banking

Gender



Nonusers of e-banking

Gender

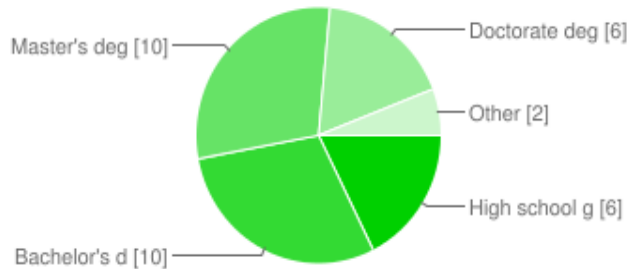


Through our own research, it seems that men are highest users of e-banking. The percentage of males is slightly larger than that of the opposite sex. As we have already mentioned, in the Eurostat results it is obvious that men have a better relationship with technology and are also more skilled

and adept. However, there are still those in both sexes who are not yet convinced of the functions of E-banking as we can see in the diagram/graph.

Users of e-banking

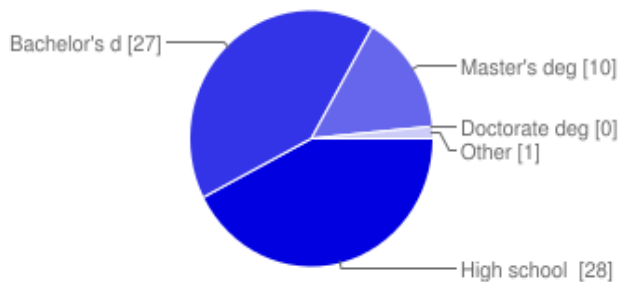
Education completed



High school graduate	6	17.6%
Bachelor's degree	10	29.4%
Master's degree	10	29.4%
Doctorate degree	6	17.6%
Other	2	5.9%

Nonusers of e-banking

Education completed

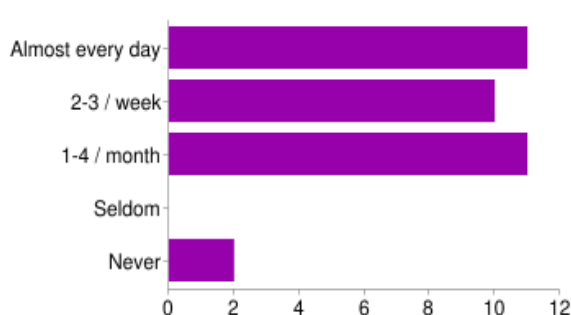


High school graduate	28	42.4%
Bachelor's degree	27	40.9%
Master's degree	10	15.2%
Doctorate degree	0	0%
Other	1	1.5%

As we can see the users level of education seems to be one of the main factors. In the first graph we observe that those who make use of e-banking have a better educational background in relation to those who do not use these functions. On the other hand, in the graph of nonusers we note that people with a lower educational background, did not wish or need to be users. Furthermore, they may not have had adequate information of the functions involving e-banking.

Users of e-banking

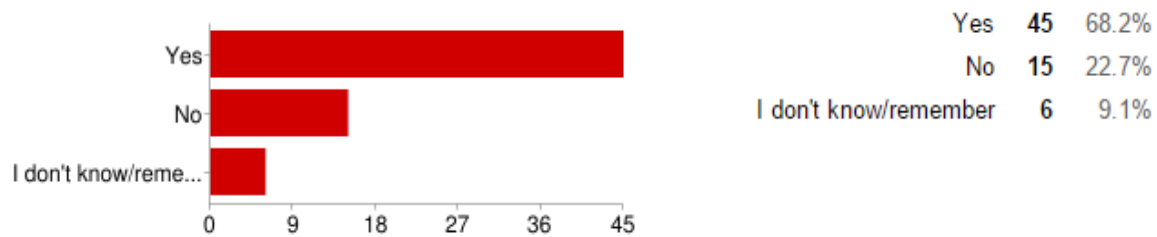
PC-banking [How often do you use the following methods to accomplish your banking transactions?]



Almost every day	11	32.4%
2-3 / week	10	29.4%
1-4 / month	11	32.4%
Seldom	0	0%
Never	2	5.9%

Nonusers of e-banking

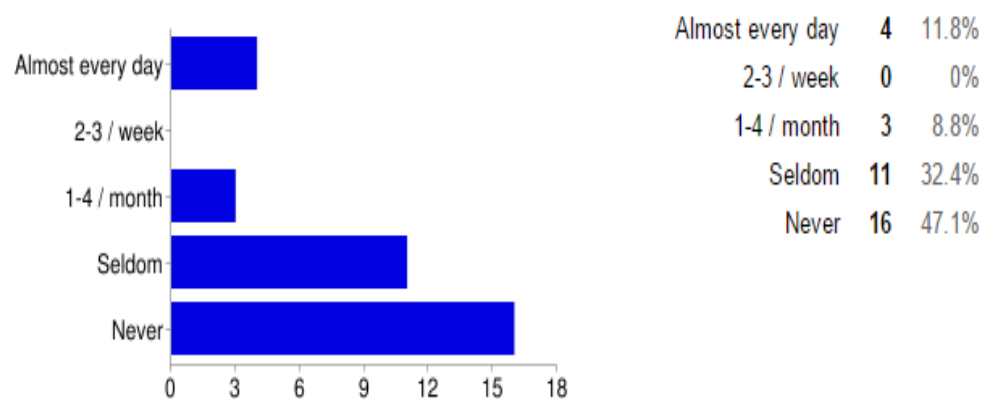
PC-banking [Have you been ever informed about the following e-banking methods?]



In our first graph it is apparent that the use of PC Banking is a daily phenomenon. Users choose PC Banking to make their transactions frequently. The percentage that does not carry out transactions via this method is small. However, many people who do not belong in the category of E-banking use are informed of PC Banking and those who are totally uninformed are few.

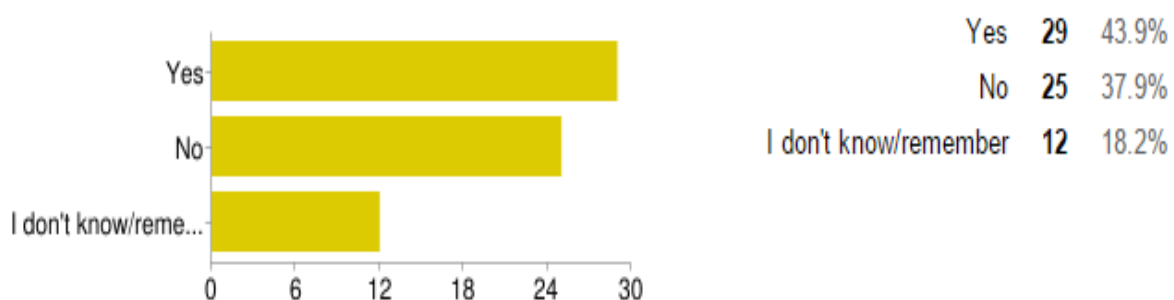
Users of e-banking

Phone-banking [How often do you use the following methods to accomplish your banking transactions?]



Nonusers of e-banking

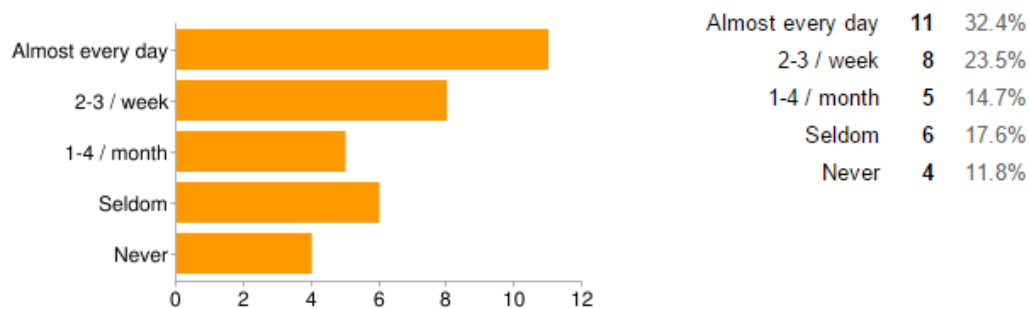
Phone-banking [Have you been ever informed about the following e-banking methods?]



Phone Banking is not a favorite habit of users. In the first we see that its use is from rare to none and that these responses have the highest percentage. Nevertheless nonusers of E-banking are fairly knowledgeable of this type of electronic banking method.

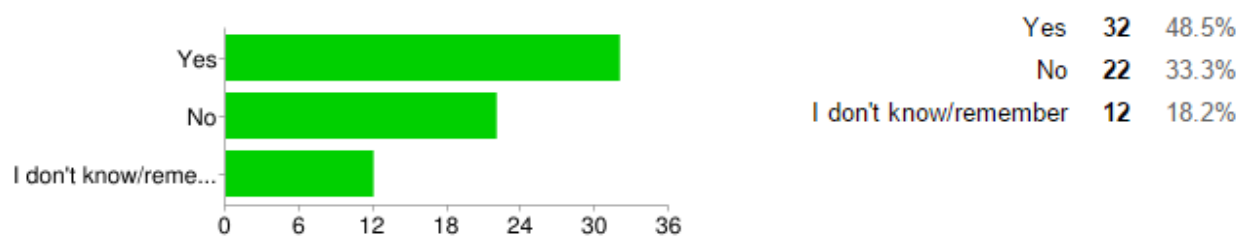
Users of e-banking

Mobile-banking [How often do you use the following methods to accomplish your banking transactions?]



Nonusers of e-banking

Mobile-banking [Have you been ever informed about the following e-banking methods?]



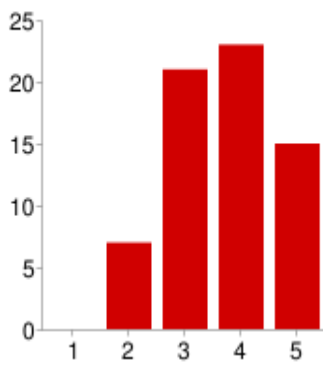
Mobile Banking holds a place of preference by users. In the first graph it is obvious that it is used at frequent time intervals. It is encouraging to see that this method is one of the Greek's favorites, although a lot of individuals answered that they seldom use or does not use at all the mobile banking method. Furthermore the percentage of those informed of Mobile Banking is large, even though they are not E-banking users.

Nonusers of e-banking

I believe it's safe to accomplish my transactions with e-banking.

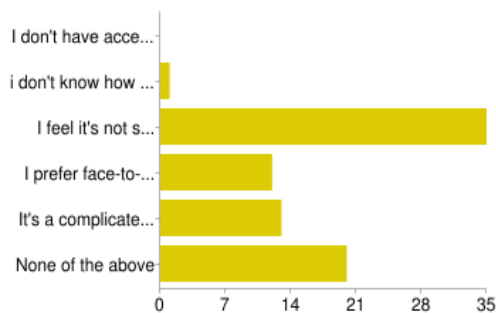


I fear I might lose control of my personal data by using e-banking.



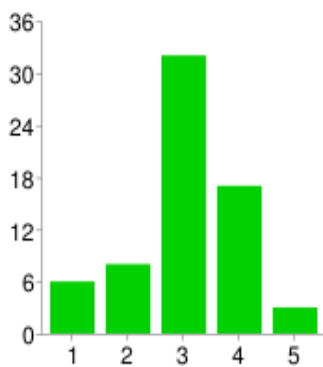
Totally disagree:	1	0	0%
	2	7	10.6%
	3	21	31.8%
	4	23	34.8%
Totally agree:	5	15	22.7%

What are the main reasons why you don't use e-banking?



I don't have access to a computer or internet	0	0%
i don't know how to use a computer	1	1.5%
I feel it's not safe enough for my personal data	35	53%
I prefer face-to-face interaction with a bank employee	12	18.2%
It's a complicated process	13	19.7%
None of the above	20	30.3%

How likely are you, to use e-banking in the future?



Very unlikely:	1	6	9.1%
	2	8	12.1%
	3	32	48.5%
	4	17	25.8%
Very likely:	5	3	4.5%

By seeing the 4 graphs above, we can end up in a conclusion that in our research individuals who are not E-banking users, is that there is a big lack of total trust in its use. Finally most of them they are not sure if they are likely to use e-banking in the future, but there are 21 individuals who seems that they are going to use it and this is really important data.

Conclusions and overall estimations for the future of e-banking

In recent years e-banking has received the increasing attention of bankers, other economic actors, businessmen, analysts and the press, as well, around the world. According to the data available so far, e-banking is expected to have a positive impact on the profitability and the development of the banking sector and to contribute to a better level of service to the customers. However, this particular new way of carrying out transactions has not gained market uptake yet, at least for now. In some cases, both the customers and the banks have several reservations about it. There is no doubt that the prospects for e-banking are great, as long as the general public gets acquainted with the new communication channels. The rapid evolution of Internet will give a new dimension to the way customers and banks make transactions with each other. It would not be too far from the truth to say that the banks are one “click” far away from their customers throughout the day, every day. The majority of the banks is currently able to offer a plethora of services via Internet. However such development is not always followed by success. The financial results of such implementations are not always the ones expected by the banks, since several of them have suffered or suffer from losses due to the low acceptance of their services and products by the customers and due to the increased cost of the investments in the development of the e-banking services. This situation demands that the banks should redesign their services, but also redefine their relationship with their customers through Internet. It could be said that in this field the banks operate along three lines:

- Information to the customers – Internet users
- Provision of innovative services
- Improvement of the bank – customers relationships

The banks have a lot to gain from e-banking. The major ones are the enlargement of their customer base, the shorter queues of people waiting for routine transactions, the enhanced promotion of products and services (cross selling potentials), the low cost of the provision of specialist information and services to the customers and the lower cost of the transactions in comparison with the conventional networks. In addition, the customers’ loyalty to the bank is enhanced, since they develop relationships via Internet with each other, as well, and synergies with other companies are created in the wider field of the electronic transactions and payments. The fact that the customers do not have to visit a bank store reduces with no doubt the service cost, gradually leads to the reduction of human resources in the stores, by giving them at the same time the potential to engage in more profitable activities. At the same time, the reduced service cost due to the alternative electronic networks will gradually lead to the privileged pricing of the products and services offered, making them even more attractive to the customers.

On the other hand, the consumers demand new communication channels with the banks, which they will provide them with easy, fast and maybe cheaper transactions. These benefits, in combination with the new technologies, the safety and the tempting offers make e-banking an alternative for the financial transactions and gradually replace the traditional stores accompanied by time-consuming procedures and working restricted hours. A major issue is also the sensitivity of the relationships built between electronic banks and customers. It requires great effort, cost and time for a customer to be gained and seconds to be lost. On a daily basis, the banks should make good use of the models analyzing their customers’ behavior and transactions for all their products and across all the networks, becoming thus aware of the entire picture of their banking relationship. The lack of a proper view of their customers’ behavior is a major weakness for many banks. The banks usually label their customers as profitable (or not), being aware of their behavior by reference to specific products or networks, having failed to analyze it thoroughly. Nowadays the profitability and the competitiveness are not measured only by numbers, but also by the knowledge

of the customers, in order long-term relationships leading to loyal customers to be created. The banks realize that they could lose their customers when they cannot satisfy their demands and expectations and the only way to respond to them is to make their customers the center of their attention. Besides, result of the above is the fact that nowadays the banks are considered to be among the highest advertised ones, with high costs. Especially over recent years, the banks spend too much money for the promotion of the e-banking services, which contributes to a better comprehension of the e-banking by the general public.

A. Solomonidou - K. Chanis

Appendix

Questionnaire for e - Banking

Part 1.Main question of the questionnaire

*Required

1. Are you using the functions of e-banking? *

(Based on your answer you will be transferred on the right form page) Mark only one oval.

- Yes Skip to question 2.
 No Skip to question 15.

BASIC QUESTIONNAIRE (USERS)

(Refers to the users of e-banking)

2. Gender * Mark only one oval.

- Female
 Male

3. Age *

Mark only one oval.

- 16-24
 25-54

4. Professional or Employment status * Mark only one oval.

- Self-employed
 Private employee
 Public employee
 Student
 Unemployed
 Other

5 Education completed * Mark

only one oval.

- High school graduate
- Bachelor's degree
- Master's degree
- Doctorate degree
- Other

6. How often do you use the following methods to accomplish your banking transactions? * For each line choose only one answer. Mark only one oval per row.

	Almost every day	2-3 / week	1-4 / month	Seldom	Never
PC-banking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone-banking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile-banking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. How did you find out about the services of e-banking? * You have the option of multiple choice Tick all that apply.

- I was informed by my bank
- Advertisements
- Friends / Family

8. What are the main reasons that made you use e-banking? * You have the option of multiple choice Tick all that apply.

- It is available 24 hours a day
- It's fast
- It is easy to use
- Low cost of transactions

The aspects of e-Banking: Report in Greece and a linguistic approach

9. It's easier for me to take the banking information i need by using e-banking than visit a bank branch. *

Evaluate the above proposal by choosing a number from 1 to 5 (1= totally disagree, 2= disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

10. The online trade systems are safe enough to protect my personal data. *

Evaluate the above proposal by choosing a number from 1 to 5 (1= totally disagree, 2= disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

11. E- banking is the only method to complete my transactions. *

Evaluate the above proposal by choosing a number from 1 to 5 (1= totally disagree, 2= disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

12. The use of e-banking has decrease my number of my visits to the bank branch. *

Evaluate the above proposal by choosing a number from 1 to 5 (1= totally disagree, 2= disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

13. How many banks do you have access on e-banking with? * Mark only one oval.

- At least 1
- 2-3
- Up to 3
- Other:

14. Will you recommend to your friends to use the e-banking? * Mark only one oval.

- Yes
- Maybe
- No

BASIC QUESTIONNAIRE (NONUSERS)

Refers to the non-users of e-banking

15. Gender *

Mark only one oval.

- Female
- Male

16. Age *

Mark only one oval.

- 16-24
- 25-54

17. Education completed * Mark only one oval.

- High school graduate
- Bachelor's degree
- Master's degree
- Doctorate degree
- Other

18. Professional or Employment status * Mark only one oval.

- Self-employed
- Private employee
- Public employee
- Student
- Unemployed
- Other

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19. Have you been ever informed about the following e-banking methods? * For each line choose only one answer. Mark only one oval per row.

	Yes	No	I don't know/remember
PC-banking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Phone-banking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile-banking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 20 It's easier for me to take the banking information i need by visiting a bank branch, than check them by e-banking. *

Evaluate the above proposal by choosing a number from 1 to 5 (1= totally disagree, 2= disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

21. By using e-banking i could save valuable time. *

Evaluate the above proposal by choosing a number from 1 to 5 (1= totally disagree, 2= disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

22. I believe it's safe to accomplish my transactions with e-banking. *

Evaluate the above proposal by choosing a number from 1 to 5 (1= totally disagree, 2= disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

23. I fear I might lose control of my personal data by using e-banking. *

Evaluate the above proposal by choosing a number from 1 to 5 (1= totally disagree, 2= disagree, 3 = neither agree nor disagree, 4 = agree, 5 = totally agree Mark only one oval.

	1	2	3	4	5	
Totally disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Totally agree

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24. What are the main reasons why you don't use e-banking? * You have the option to check until 3 proposals.
Tick all that apply.

- I don't have access to a computer or internet
- i don't know how to use a computer
- I feel it's not safe enough for my pesonal data
- I prefer face-to-face interaction with a bank employee
- It's a complicated process
- None of the above

- 25 How likely are you, to use e-banking in the future? *

Evaluate the above proposal by choosing a number from 1 to 5 (1= Very unlikely, 2= unlikely, 3 = Neither unlikely nor likely , 4 = likely, 5 = Very likely Mark only one oval.

	1	2	3	4	5	
Very unlikely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very likely

Link of the questionnaire: <http://bit.ly/1JH4Zel>

Individuals using the internet for internet banking					
% of individuals aged 16 to 74					
All Individuals					
Geo/time	2010	2011	2012	2013	2014
EU (28 countries)	36	36	40	42	44
Belgium	51	54	56	58	61
Bulgaria	2	3	4	5	5
Czech Republic	23	30	34	41	46
Denmark	71	75	79	82	84
Germany	43	45	45	47	49
Estonia	65	68	68	72	77
Ireland	34	33	43	46	48
Greece	6	9	9	11	13
Spain	26	27	31	33	37
France	50	51	54	58	58
Croatia	20	20	21	23	19
Italy	18	20	21	22	26
Cyprus	17	20	21	23	24
Latvia	47	53	47	55	57
Lithuania	37	40	43	46	54
Luxembourg	56	59	63	63	67
Hungary	19	21	26	26	30
Malta	38	42	41	43	45
Netherlands	77	79	80	82	83
Austria	38	44	45	49	48
Poland	25	27	32	32	33
Portugal	19	22	25	23	25
Romania	3	4	3	4	4
Slovenia	29	31	28	32	32
Slovakia	33	34	40	39	41
Finland	76	79	82	84	86
Sweden	75	78	79	82	82
United Kingdom	45	:	52	54	57
Iceland	77	80	86	87	91
Norway	83	85	86	87	89

Table of the Graph 1

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