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USING DIGITAL AND MOBILE TECHNOLOGIES FOR INCREASING EFFICIENCY OF FINANCIAL INSTITUTIONS

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Abstract: Possibilities and methods for increasing efficiency of financial institutions operation using digital and mobile electronic technologies are considered, proposed and presented in the paper. Digital and mobile electronic technologies are used in many areas and many practical solutions and applications. One of very important areas is financial business in many financial institutions. Using computers, computer networks, Internet and smart mobile phones, with appropriate software applications, enable to increase speed and security of all financial transactions and increase financial institutions efficiency. Also, it gives many advantages to users of financial services and institutions. Way to increase efficiency of operation of financial institutions using digital and mobile technologies on the example of the typical commercial bank is proposed and described. As an example of using such technologies for increasing efficiency of the bank was designed, developed, implemented and described one system for facilitating and accelerating issuance of bank loans using smart mobile phones. Implementation, used technologies, possibilities, advantages for bank and user and way of using of the system are described.
Keywords: digital electronic technologies; mobile technologies; financial institutions; smart mobile phones, information

INTRODUCTION

Digital and mobile electronic information and communication technologies are widely used in very many areas and practical solutions and applications. One of very important area is financial business and different financial services in many financial institutions, such as for example banks [1-3]. By using computers, computer networks, Internet, smart mobile phones, with appropriate software applications, it is possible to perform almost all bank activities and operations, to increase speed and security of all financial transactions and to increase financial institutions efficiency. It also gives many advantages to the financial institutions and also for users of financial services and institutions.

This paper proposes and describes possibility and way to increase efficiency of operation of financial institutions using digital and mobile electronic technologies on the example of the commercial bank. The paper presents one practically designed, developed and implemented solution as example of using such technologies for facilitating and accelerating issuance of bank loans using smart mobile phone and such increasing efficiency of the bank operation [4]. The developed and implemented solution can be also used in other financial institutions, for example in different types of micro credit organizations, leasing agencies and similar financial institutions. Modern digital and mobile technologies and smart mobile phones were used for the system implementation.

DIGITAL AND MOBILE TECHNOLOGIES IN FINANCIAL INSTITUTIONS

Since most of the banking products are virtual in nature they are very suitable for implementation using digital and mobile technologies. Modern computers and mobile devices are now the devices for processing and transfer of much information and for connecting people remotely. Such devices are becoming integral elements of the way of life and communicating of the people. Accordingly, such devices become unavoidable in the banking and financial business and operations [1-3]. Very soon using such devices will become one of the primary ways in providing banking business and services, as in some other spheres they already have used.

Modern digital and mobile electronic technologies influence on the way of organization, operation and implementation and on used applications in the financial and banking business. Such technologies also significantly change all that in the financial and banking sector. Under the influence of digital and mobile technologies financial and banking services, applications and Core banking systems (CBS) will be changed and adopted to new needs according to listed possibilities, principles and methods:

- All banking services and products will be supported, sooner or later, on mobile devices (mobile phones and mobile computers).
- The tendency will be that mobile applications will be with as less as possible differences from one to other operation system (OS) platform. It will be possible to start a service on one type of mobile device (for example on mobile computer) and end it on a different mobile device type (for example on mobile phone) with quite different OS. This will enable simple and quick training of the clients. The ultimate goal is that client does not consider how to

perform banking service from a technology perspective but to concentrate on service itself.

- The biggest transformation will not happen either in the interface or in the special technology but in the approach. The approach will have to enable easier anticipation of the client needs, habits and customs and adaptation of the banks to it.
- The emphasis will be on building application programming interface (API) functions and the modular principle of building individual modules and functionality. The concept of centralization at all costs is abandoned in favour of modularity and flexibility.
- Deconstruction of the information system (IS) into components, i.e. products. On that basis banks will be more profiled and will perform only some types of banking operations for what the bank looks that are profitable. Only the members of large bank groups maybe will remain to deal with complete banking operations, as it is now.
- Using services of the financial technology (Fintech) firms to complement and complete banking services and products, rather than spending time in the bank own often late and overdue design and development.
- Implementation of modern Customer Relationship Management (CRM) solutions because of as much as possible sophisticated using of data about financial habits of clients. It is needed for better segmentation of clients and creating successful campaigns among clients from the bank side.
- Symbiosis of CRM solution with Core Banking System (CBS) and Document Management System (DMS) solutions of the bank will be important precondition for successful implementation of modern FrontEnd application solutions. Existing solutions have focus on correctness of information input and entrance obtained by clients. The new modern solutions will have the possibility of interactive relation with clients. In such solutions the bank employee will have more time for contact and conversation with client. In that way the bank employee will be able to offer to client products and services that the program itself suggests to client, depending on already formerly collected information about the client.

PROPOSED AND IMPLEMENTED SOLUTION

An example of application of digital and mobile electronic technologies for the purpose of facilitating the use and acceleration of services to clients is presented here. The designed and developed application enables facilitating and acceleration of bank loan issues. It is one example how the digital and mobile technologies can be used for increasing efficiency of operation of banks and other financial institutions. It is presented and described the prototype of designed, developed and implemented application for loan issue with the name PhotoLoan [4].

PhotoLoan is application developed and implemented mainly on Android platform. But, there is also a customized the Web version that operates on all the platforms. The primary purpose of the PhotoLoan application is to offer and enable fast forwarding client service requests for financial services using mobile devices (smart mobile phones and mobile computers). It also uses photo (picture, photograph, image) of the goods for what client needs loan (for example television set, washing machine, furniture, car, apartment and similar), taken by mobile device and sent to bank application, to facilitate and accelerate issue of the requested loan.

The PhotoLoan application provides the following possibilities:

- All services are freely available and accessible by mobile and desktop devices.
- Fast and efficient online forming a loan claim to banks, micro credit organizations (MCO) and leasing agencies based on the photograph of the goods for which the loan was asked taken by the mobile device.
- An overview of the available banking loan services and products of each individual bank. The option in the application menu is "Loans - Best offer".
- All the exchange rates in one place. Calculation is with included banking charges. The option in the application menu is “Best offer”.
- Loan calculator and the annuity report.
- Geographical location of the nearest bank branch office and Automated Teller Machine (ATM), its GPS position.

The proposed application and solution proposes, presents and describes practical way how to connect the individual private person client (loan claimer) with the legal entity client (goods seller) through the bank. Saying simpler, it proposes, presents and shows how to effectively stimulate and organize buying and transfer of the goods that the client needs from the seller to the buyer (client). One of the best ways for performing all this is through the financial institutions by accelerated loan issuance using mobile devices what the application practically performs.

Using the PhotoLoan mobile application and the solution the user is in possibility to send the requests for the loan, to review the exchange rates, to find basic information about all appropriate banking branches, banking agencies and ATMs, shops/stores, touristic organizations. It can also find and see their location on the Google maps using already collected their GPS positions.

Figure 1 shows the main menu of Android version for mobile phones of developed, designed and implemented PhotoLoan application.

Especially interesting is the option of reviewing and searching the catalogue of the bank products in an interactive way. In such way the client can find the best bank product for client purposes and needs. For each listed bank product there are the buttons "Documentation", "Calculator" and the button for starting an appropriate and suitable presentation. Through the presentation and prepared documentation the user can

learn more about the product and find most suitable product for the user.

By starting the financial calculator the client is able to precisely calculate the monthly amount of the loan return, to receive a repayment (annuity) plan, according to the loan amount and selected number of loan return months. During that, the application takes into account all the specified and set criteria. So, there is no problem in specification and setting the necessary criteria. Such criteria can be, for example, the nominal loan interest rates, the desired loan amount, the number of loan repayment months. In addition, user can also send information about net amount of user salary that would cover obtained loan, brief description of additional information and attach the picture (photograph, image) of what user wants to obtain through such loan.

Figure 1 - PhotoLoan application main menu

Figure 2 shows example of loan calculation option (selected Calculator option) on mobile phone for Android version of PhotoLoan application.

Using picture (photograph, image) of goods that the client wants to be obtained through the loan, attached and sent to the bank and the application, facilitates and accelerates the process of approving and issuing of the requested loan. It increases efficiency of bank operation.

It is known that every so called non-purpose loan is just such called. Finally, each loan has its own purpose. By sending an image (picture, photograph) the client emphasizes what client actually wants to buy and chooses an easier way to perform it through the loan. In some way, such is performed conversion of so called non-purpose loan into a dedicated loan. The bank now knows very well what the client wants. It only remains to the bank to examine the loan ability of the client. It can be performed through the obtained information about the client. Then the bank can start the realization of the loan, request additional information from the client itself or refuse issuing of the loan due to poor loan ability of the client.

Figure 3 shows the loan request preparation for sending option for Android version of PhotoLoan application after selection of picture (photo, image) of needed goods/product (in this example the car Mercedes Benz, E class) to be obtained by the loan.

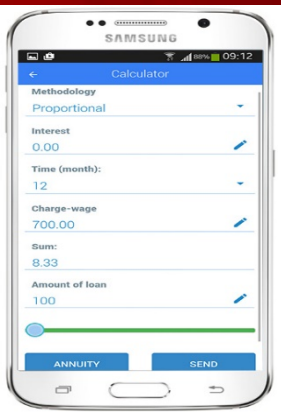

Figure 2 - Loan calculation option of PhotoLoan application

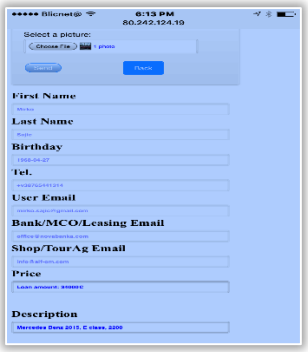

Figure 3 - Loan request preparation for sending option of PhotoLoan application

It also should not forget the third party interest, i.e. interest of appropriate shop or store to sell its products. The bank can use it for facilitating cooperation with sellers for whose products there is the biggest interest of the clients. The bank can find appropriate seller for needed client goods and enable contacts between clients (buyers) and appropriate shops/stores (sellers) such facilitating all process. It also can increase efficiency of the bank operation increasing number of issued loans.

The assumption is that in the future Personal Banker/Account Manager will be more profiled for certain groups of clients, physical persons or legal entities. He/she will be able to use this type of loan application and to use the knowledge of loan purpose (based on sent image, picture or photograph) in order to try to find to client better offer than the client got, by using bank network of contacts with appropriate sellers. In that way the entire circle will be naturally closed to the satisfaction of all parties. The client such gets an even more favourable offer than is the one client has found. That creates a certain kind of gratitude of the client to bank and a stronger connection of the client with the bank (so-called socialization of clients). It is the very same with the seller because bank finds the buyers to seller products or services. In the end, bank is also satisfied that issued more loans that were set on good basis and with good perspective.

In addition to all mentioned, the implemented application has ability to create a list of stores, shops and touristic agencies and their catalogues of products and services that could be purchased by issuing the bank loans. Also, existing stores, shops and travel agencies can be equally interesting

for the banks with which they already have some kind of cooperation as well as making new cooperation with a specific store/tourist agency through this application, expressed by the interest of users of the application.

The application PhotoLoan has a built-in local database that via the network (for example Wi-Fi, Internet) exchanges data with the server (MySQL database). In that way changes are made in the data on the user application. At this moment, the application uses the information available from the Web sites of the banks. But, for the quality of the application operation it would be especially important and recommended that the fresh information, especially information about bank product catalogue with all the relevant data with agreed document formats, be delivered directly from the bank to the application.

Although PhotoLoan application was developed and implemented mainly on Android operating system, there is also Web version that operates on all the operating system platforms. Figure 4 shows look of one example option of the Web version of the PhotoLoan application implemented. The shown example option is taking picture (photo, image) or choosing picture (photo, image) from some library of the goods for what the client wants the loan. The same look of this option is also for the Android version of PhotoLoan.

CONCLUSION

Based on predicted changes in the information systems of financial institutions and banks and based on the developed and described application example it can be concluded what is the most efficient way to build modern and effective banking and financial institutions information systems. Building of such information systems and mobile applications enable the clients to achieve their own goal in the banks and financial institutions more easily, much faster and much more effectively with much more increased efficiency. It also enables to the banks to be more active and more effective in their operations giving clients better and easier way to access to the bank services and products.

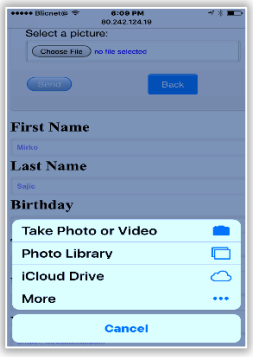

Figure 4 - Example option of Web version of PhotoLoan application

In the designed, developed and presented example application it is enabled to the client to request a loan from a distance without coming to the bank branch office. The client also can from distance to personally choose the type of offered bank product (loan) that suits to him/her. Client can also to choose the shop/store and the product that he/she is buying, without being dependent on whether the bank has any relationship with the selected shop/store. The application can be also used in other financial institutions such are for example micro credit organizations, leasing agencies and similar.

For the future of bank relation with customers it would be much better for banks to build a relationship with a clients based on such similar mobile applications and services. It would be better than to offering clients at all costs bank own revolving cards. With revolving cards banks limit number of shops/stores where client can buy desired product, take additional banking fee with higher loan rate, not considering whether or not the client uses the credit card and how much. Some banks sell their products and services to clients on that way although they know in advance that the clients would not use the products/services but only pay the fee. Also, some of banks condition the clients to take bank products only in whole package. Such a short-term strategy applied by some banks already is or will be proved as a bad strategy for the future of the banking sector.

Finding as much as possible information about clients and on the basis of that developing and designing proper bank services and products will also lead to strengthening of connections and mutual trust of clients and the bank. This is often referred as "client socialization" and is one of the most important assumptions and preconditions of strategy and operation of modern digital bank. All this can be achieved and accomplished by applying modern digital and mobile information and communication technologies.

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ISSN: 2067-3809