Proposal for Introducing NFC Technology into the Electronic Government System in Egypt

(Application on Payment system of the Governmental employees' salaries in Egypt)

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Abstract

Became obvious as we are in the second decade of the twenty-first century that the Information systems technology made a clear development in the performance of doing business in the governmental organizations whether the commercial organizations, the advanced countries like Japan, Southern Korea and Russia started the application of the near field technology in them transactions.

This research aims completely on transfer, spread and introduce this technology in Egypt through develop a proposed plan to the government agency that responsible for the implementing of the Electronic government system in Egypt in order to conceder applying it in the current stage.

Keywords: *E.Gov, "NFC" technology, E.Gov and NFC Relation, new proposal*

1. Introduction

Currently, paying method in governmental salaries is totally dependent on the commercial governmental banks, through the credit card system and the automated teller Machine system "ATM" which are spreads across the republic. one of its Advantages are they can contact with the machine 24 hour a day 7 days a week, from anywhere have ATM machine with no need to get to the bank location [1].

2. Research problem

The Egyptian government now is applying the E.Gov system so we can maximize the benefits of this system by entering the near field technology (NFC), in the governmental financial transactions as the first step follows by other steps therefore the problem is limited in:

Despite of the success that the Egyptian government had reached in applying the E.Gov system in its first and second stages However, you can maximize the benefit from this system in its third stage through applying the near-field communication technology NFC in the governmental financial transactions as a first step [2].

3. Research importance

The governmental sector in Egypt is conceder as one of the most important sectors which doing a highly importance role in Egypt, on various economic levels and this shows the Scientific importance and the benefits of this research for each one of (the employees in the

governmental organizations in general, the employees in the field of information technology, the Electronic Government In particular). [3].

4. Research targets

This study aims to achieve the following:

- Design new proposed plan to transfer and spread NFC technology in the current stage in of the introduction of E.Gov system in Egypt.
- Spread the idea of NFC technology in governmental entities and business fields.

5. Research society

This research society consists of some working commercial state banks which handling the payment of the governmental employee's salaries instead of the government through the credit card system and ATM network and they are (Misr bank, National bank, Cairo bank).

5.1 Method of collecting information

This study adopted in its way of collecting information on doing In-depth interviews with the general managers for information systems department in these three banks, in order to know the ATM network and how possible we can apply NFC technology on it, develop NFC chips which will be placed in cell phones to apply the technology.

5.2 Analyzing the results of the In-depth interviews

After analyzing the results of the interviews we found:

1- Those three banks are using the ATM network in paying the salaries to the employees in governmental organizations.
2- The near field technology (NFC) has never been used in those banks.
3- The three banks interesting about the research in order to study the possibility of applying it

6. Research sample

The researcher chose the entire research society to be studied.

7. Electronic Government in Egypt

Egypt applied the system of E.Gov as a new entrance to provide better government services reaching the satisfaction of citizens, equivalent ambitious of the community as well and the various sectors of business (4).

7.1 The date of establishment the E-Gov system in Egypt

We can show the history of the E.Gov in Egypt as follows:

- First stage (from 2001 till 2006)
- Second stage (from 2007 till 2012)
- Third stage (from 2013 till 2018)
- Fourth stage (from 2019 till 2024)

7.2 The responsible ministry of applying the E.Gov system

The establishment and the entering of E-Gov system assigned to the Ministry of Administrative Development.

7.3 E.Gov system targets

1- Providing special services to citizens , Foreigners , businessmen , companies and the Investors with the following advantages:
   - Least effort
   - As fast as possible
   - Appropriate way.
   - Interactivity and responsiveness.

2- Provides time and effort to the service whether the service requester or the employee responsible for providing it.

3- The development of government work system, and raising the efficiency of performance in ministries and agencies through using information and communication technology.

4- Compression of the government spends through using new technologies for government purchases, inventory management and the optimal use of available resources.

5- Provide accurate and updated information to the decision maker and improving performance in the interties associated to Egyptian ministries.

6- Haplite the governmental system to integrate into the global system.

7.4 Contents of the E.Gov system

The program of the E.Gov includes three main themes as in figure number (1)

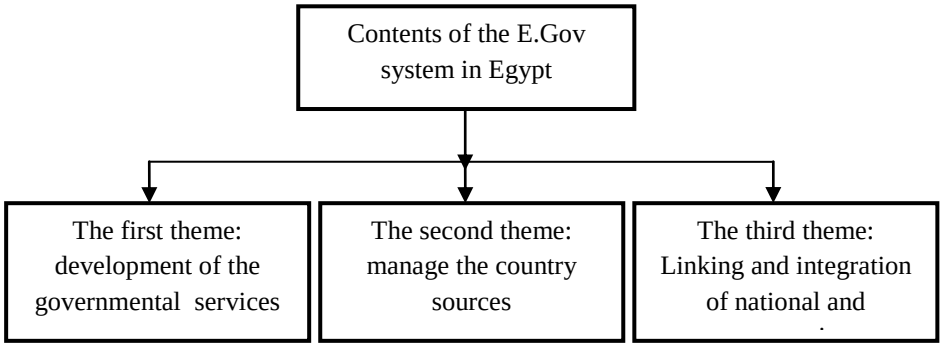

Fig (1) The main three themes in E.Gov system in Egypt

7.4.1 The development of government services

The idea of the program is Re-engineering work cycles for the government services in central managements whether local managements in its various stages, by a method which make it more easy to got it, through many serving channels which allows to citizens have the needed service easily (in case if they can deal with computers or they can't), In addition to install the principle of that the citizen is the government's client that it seeks to reach his satisfaction. [4].

7.4.2 Enterprise resource planning and back automation program

The program main idea is to develop the government work system, lowering government expenditure, mechanization of work cycles in the governmental entities, which provides the higher degrees of accuracy and efficiency also it achieve secrecy and insurance in information and documents exchanging between various governmental entities. is deserve to mention that the Egyptian Ministry of Finance made a contract with the state commercial banks to pay the employees' salaries through using the credit card system and the ATM network which they provide.

7.4.3 Linking and integrating national and Economic Database Program

The vision of the program in to establish national databases and link them to each other, which will help in unifying the main data for the citizen and the investor

8. ATM network in Egyptian Commercial governmental banks

We can explain the way of working by the ATM network as follows [5].

Automated teller machine (ATM):

The automatic teller machine (ATM) is considering as the most important and most popular network throw it the bank is able to distribute services to its clients 24 hours a day, 7 days a week.

This type of network can also provide many banking services like:

1- The visual show of the customer data " view data "
2- Cash deposit
3- cash withdrawal
4- requesting a Summary account statement
5- Inquire about the account
6- Pay for taxes and customs
7- Pay for electricity bills and telephone bills.

And start making plastic cards for the ATM machine by processing the outer surface of it magnetically and digging the customer's account number and them code number to verify the customer personality, and these plastic cards developed by entering the chip system, and it working by on-line system between the bank branch or any place has (ATM) machine and The main center for the network which has the main computer in it.

9. Near field communication (NFC)

Traces its roots and its creation to 2004 , when the institutions" NOKIA , SONY , PHILIPS" have done a Standardized researches group which emerged through them this technology and they put its global standards to work it out, it extend from radio-frequency identification(RFID), in 2006 the first cell phone named NFC-compatible it was a NOKIA cell phone number 6131, in 2010 SAMSUNG company produces mobile phone runs on Android and has a relevant technology calls SAMSUNG Nexus S , after that this technology starts to spread gradually in Japan, Asia , Europe and in the United states of America.

8.1 The idea of the near-field communications

The technology of the near field communication is very similar to the old infrared technology which were available on the old NOKIA cell phones it was using for transferring any kind of data (files like photos, songs, videos etc,) [6].

It is a near field connection; it is able to transfer data between two smart cell phones in a narrow scope not more than 4 centimeters between the two devices at nearly 474 kilobytes speed in second

After the approval on this technology from the international banks and institutions, it's became possible to put the banking chip inside smart phones which contain inside it NFC technology, as example Samsung note 4 smart phone , these phones have an a secured information store for this technology and it independent from the basic information store and it knows as secure element SE , the secured store is used in saving banking data and by that

the user of technology will be able to deal with the ATM machines that supporting the technology. " [7].

Figure (2) shows the way of dealing with the ATM machine which supports this technology:

9.2 What is NFC chip? What it contains?

It is a flexible chip contains the NFC iota, small processor to use it in saving the operating program of the chip, it also contain a very tiny wires work as a detector so when the chip exposed to the magnetic field from the device that will provide electricity power to start the processor and the control units. Figure number (3) explain the form of the chip"

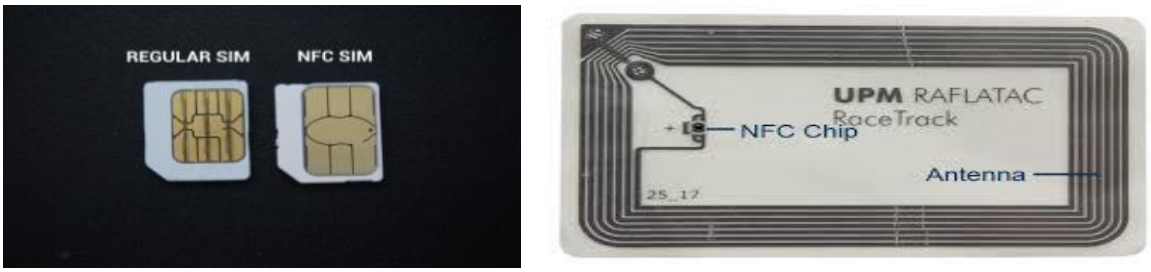

Figure (3) the form of the chip

9.3 the global institutions which provides the NFC technology chips

Nowadays many institutions provide this type of chips such as "Visa card, Master card, FREE institution "instead of providing the plastic cards "credit cards" [8].

9.4 Safety degree in banking chips used in smart phones?

The using banking chips in smart phones are much secured because data transfers to the chip from the bank by using a highly service developed program which approved from the international institutions like "Visa, Master card", it also has a document to save the card banking information which doing the communication between the bank and the user smart phone and transferring the coded data from the bank to the customer's smart phone too , that nearly changing the customer smart phone into a banking card.

The (NFC) Technology dependents on enormous encryption possibilities, any data saved on the device cannot be copying or deleting or getting access into it.

In case if someone had lost his cell phone , no one will be able to use the chip because there is a password to get access to it, also he will be have to submit a report to the bank to stop the chip service, if he found it again all the data could be reapplying on the chip It's

important to mention that, the customer will be able to deal with the NFC technology even if his cell phone's battery is gone empty with all safety conditions he need.

9.5 Benefits of using NFC technology?

In a brief we can tell that one of the most important benefits of using the technology is making the processes of financial transactions with the ATM machines network easier, also it can identify the person ID. [9].

9.6 Examples for countries using NFC technology

One of the first leading countries in this field is Japan and northern Korea since 2007 and United Russia joined at 2010.

9.7 The effect of using this technology in United Russia

The number of the users of the mentioned technology is nearly 50% of the total number of the sold out smart phones.

9.8 Examples of the leading banks are using this technology

The U BANK in united Russia is the bank had achieved a success in this field

9.9 Comparison between the dealing method by credit cards and NFC technology

Table "1": Explain the deferens

No.	Comparison Subject	Credit card	Pay by NFC technology
1	Keep pace with technical progress	It doesn't keep pace in banking services field with the leading countries	It does keep pace in banking services field with the leading countries
2	Protection system	Secured with password , in case of lost submit a report to the bank to stop its service	Secured with password , in case of lost the smart cell phone submit a report to the bank to stop its service
3	Accounting System	Regular payment system	A new phrase show called the untouched payment method
4	The importance of carrying the card	Have to carry the card itself	Doesn't Have to carry the card and there is the NFC technology instead of it

9.10 The future of the NFC technology

LG institution had officially announced about a new version of stylish smart watches called LG watch urbane and this watch supporting the 4G network which mean it can to make and receiving calls and messages with no need to connect it with the device plus it also support the NFC technology that will allow to the customers to do them financial transactions processes with the ATM machine by using them watches in the future [10].

10. The relation between the E.Gov and NFC technology

We can say that this technology is using in the advanced countries not just in the governmental financial transactions but it extended to replace dealings with the national ID card by using NFC chip for the national ID in smart cell phones and through coded developed reader device it can identify the citizen data as if he used his regular national ID plastic card.

Also in the other official cards like Health Card, driving license, insurance card, supply card, etc... . Therefore future of the E.Gov is associated with NFC technology.

11. The proposed development plan

The study suggested the following:

1- Adding fourth theme for the contents of the E.Gov system in Egypt by applying NFC technology.

2- Consider the possibility of the application of the mentioned proposed plan ,in the current stage of E.Gov system in Egypt , it call (Applied proposed model for development of the third stage of the E.Gov system in Egypt) if it could not be applied in the current stage you can consider taking him in the fourth stage, frame(4) explains the proposed model:

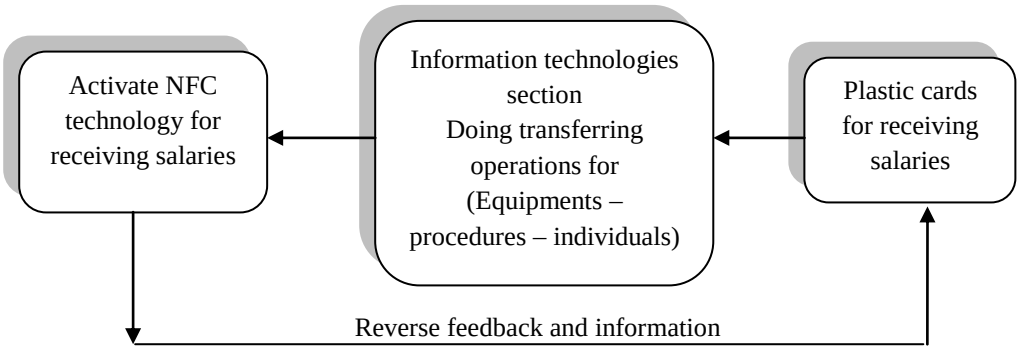

Figure (4)

The idea of the proposed model:

The idea of the model is depended on gathering each of (the introduction of system theory, the main three Axis of the E.Gov system in Egypt in order to apply NFC technology in state banks system):.

- Development in the devices and the equipments.
- Development in the using procedures.
- Development in human resources

3- Ability of baying salaries to employees through using this technology.

4- Replacing the personal cards like IDs, Health insurance cards etc, governmental cards and others with the mentioned technology.

5- Expecting results of applying the mentioned model :

1- Keep pace with the technological advances in the field of banking services as the developed countries as first step.

2- Replacing the governmental cards like (ID , Healthy , Insurance , etc .) with NFC technology.

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