Adoption of Iris Recognition System in Financial Sectors: A Case of Saudi Arabia Point of View

Hanan Abdullah Fatani, Nour Elhouda Tabet

Abstract—The process of creating and protecting of a unique and safe identity for citizens or customers is one of the most difficult and major challenges for organizations whether public or private sectors because of the high rate of fraud, identity theft and Plagiarism personality for illegal purposes [1].Several studies conducted around the world have proven that identity theft and fraud is the most serious crime within the banking sector, this is the result of the new technology revolution [2],[3],[4]. Biometrics recognition proved it credibility, reliability, accuracy and validity, also, it had been implemented within many application at many countries towards maximum level of privacy and security in order of maximize accuracy identification and verification [5].The motivation of this study to be a good basis to stimulate the decision makers to apply Iris technology in both private and public sectors towards more secure and safe environment among Saudi citizens.

Index Terms— unique, identity theft, fraud, plagiarism, biometrics, recognition, iris technology.

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1 INTRODUCTION

When Almighty Allah (SWT) created the humans, He created them with some unique and distinctive features for identification. Those features are used to distinguish them from each other, and, as a form of identity to verify whether their physiological or behavioral and every feature of these properties are unique and enduring over time. Most organization facing difficult challenges in order to keep the business safe and secure by creating and protecting of a unique and safe identity for citizens or customers from any frauds or identity thefts [6],[7].

Several strategies and technology have been used to ensure the security and safety of the customers' [8],[9]. Some sectors used biometrics scanning technology of human body parts in order to strengthen security and curb counterfeiting of identities through the properties of behavior and physiological. Undoubtedly, the physiological characteristics considered the best and the trusted security methods in the process of identification, because, Biometrics cannot be forgotten or changed when use by the individual [1],[10],[11].

It is a technology that has a large proportion of credibility, usability and reliability. Physiological characteristic included all shapes of the person body, such as, DNA, fingerprint, iris recognition and palm print and other; meanwhile, behavioral characteristic is related to the person behavior like voice, signature and typing behavior "PIN number or password".

Traditionally every biometric device has its own way of utilization like camera or scanner in order to capture the images, and it is vary depending on the purpose and the application, it can be used generally in many areas such as, banking system,

immigration system , election system and governmental system so on [8],[9].

In the past few year, there were new solutions became surpasses of all identification and verification concepts. Furthermore, it can meet all the challenges that correlating with customers' verification. Recent studies proved that Iris recognition technology play an important role towards applications that related to identity verification and security issues [12].Regrettably, it has been a little effort to investigate the intention to use Iris recognition technology for conducting banking transactions, since; Iris recognition system is quite new technology to biometric technology. It is crucial to investigate the external factors that influence the customer's acceptance to use Iris technology so that the new technology can be implemented and benefits for both banks customers and bank sectors.

1.1 Costumers' identity theft

For most financial sector the main priorities is to insure safety and security of the customer's identification from frauds or identity thefts. With proximity of 27 million of Saudi Arabia population, a statistic in 2009 showed that more than 89% of Saudis working in public and private sector has bank loans [13]. Shocking fact yet it means that near of 90% of Saudi working citizen's deal with banks in Saudi Arabia.

All Banks must conform to the government- Saudi Arabian Monetary Agency (SAMA) - and application its regulation and recommendations [14].

1.2 ATMs pirating

Previous studies showed that, the innovation of the ATMs machines did not increase the number of customers using ATMs but also increased the fraudulent practices The studies recommended many solutions for customers in order to reduce ATMs fraud in the country one of these solutions was using biometrics technology [15],[16],[17]. Ensuring the safety and security of customer identity is a substantial nightmare to all banks and they have to prevent any frauds, swindling, or identity thefts as possible as can [18].

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2 BIOMETRICS BACKGROUND

2.1 Biometrics Technologies

It would be the perfect implementation for many sectors, such as, healthcare industry, educational sector, financial sector and governmental sector. Biometrics comes in many forms and each form needs its own special portions of hardware and software, from the very simple rigorous like fingerprint to the highly rigorous like iris and retina [19]. Despite the many benefits due to the use of biometrics technology including accuracy, reliability, quality of performance and ease of use, there are some disadvantages of privacy and culture and user's anxiety issues have to be taken into consideration [20], [21].

2.2 Iris recognition solution

In 1936 the Ophthalmologist Frank Burch proposed that the iris of the eye can be used to identify and verify the person. By 1985 the Ophthalmologists Leonard Flom and Aran Safir were awarded for their concept that no Iris of two humans is similar. In 1994, John Dougman was awarded for his "algorithms" for the iris. By the year 1995, the Iris prototype was completed and tested for implementation [22],[23].

The Iris is considered the best and most appropriate techniques that can be used in the process of identification and to ensure the correctness and accuracy of the data given by the customer of what the Iris holds of credibility, high-speed data extraction, ease of use of technical equipment in the process of scanning, small storage space in the system and the most important reasons that the Iris cannot be repeated between people, even if they were twins, remarkably, the two irises of the same person are different [24],[25],[26],[27].

Generally, the human iris as shows in figure 1, is the only internal organ that will be remains in a stable form from the first day of a person life until death, also, it appears clear and well protected from all the factors of life time. It has been a complex and a high stable structure over a person's life and this is what makes them unique from one person to another. Nor the use of glasses or contact lenses has a little effect on the clarification of the iris and thus it does not conflict with the recognition technology [28].


Fig. 1. Image of a human Iris showed the structure of the Iris [29].

Figure 2 shows a real life case issued in 2002 by National Geographic channel proved how a girl photographed in an Afghanistan in 1984 was found 18 years later and identified by her iris. In another word, that is why iris considered the best and most appropriate techniques that can be used in identification.

Fig. 2. Afghan girl was identified 18 year later by her eye [30].

2.3 Limitations
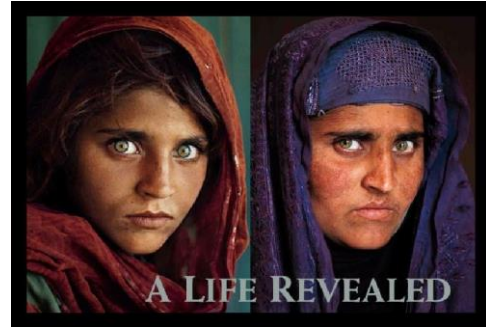
The nature of Iris technology makes adopting it limited by certain measures. There are a set of factors that are defined as the main factors influencing the adoption of new technologies. These factors are generally categorized by factors influencing users, developers, and technology providers [31].

On the users' side, there are two users that the system influences; the customers and the staff. Both users should have a level of acceptance to the technology in order to ensure the success of the adoption. The main factors influencing user acceptance are:

- Desiring the change:

  This factor is derived by the human nature of desiring comfort. Unless users realize the importance of change and the benefit of adopting the new technology, else it will be difficult to adapt Iris technology into the market.

- Self-disciplined and a high frustration tolerance:

  Even after technology is adopted, the user should have a level of discipline in order to maintain the changes, and tolerate the difficulties that might occur after the technology is adapted.

Developers on the other hand play an important role of allowing the adoption of the Iris technology. If developers were not qualified with the required skills to build an Iris-based system that aligns with the firms' regulations and strategies, there will be a barrier that limits the adoption. Furthermore, the firm will need to outsource in order to reach the desired system specifications. This will lead to other concerns such as increasing development cost.

On the other hand, technology providers also affect the adoption of Iris into the systems. In the case of financial sector, banks and government are the core service providers both should have a high level of technology understanding, and awareness of the benefits that it will bring to the financial sector, including increasing security level.

Moving from the main players of Iris-based systems, financial barrier could form a level of limitation to the adoption of the system. The financial sector should design a solid financial plan that does not only include development costs, but as well and maintenance costs. In order to ensure continues operation of the Iris system, these limitations should be studies and taken in consideration. All the limitations could be overcome by having a strong plan and strategies that takes all the different aspects into consideration.

2.4 Expectations

The main expected outcome of adopting Iris technology into

the financial sector is increasing the level of security, minimizing the cost of failure, preventing threats, and overcoming the current system vulnerabilities. These advantages can be seen in the sectors that have adopted such as the Cairo Amman Bank in Jordan. It is reported in The New York Times Magazine, that in 2010, Cairo Amman Bank in Jordan has won awards for its outstanding contribution to financial services in the Middle East and in recognition as the best bank in Jordan. However, the advantages can be seen, and the expectation could be based on the experience of financial sectors that already developed the Iris technology into their system.

3 RELATED WORK

The rapid evolution of the technology makes many ways to the massive use of it; unfortunately it can be misused for illegal process, such as, swindle or identity theft. In 2011 a study conducted in Nigeria by Adeoti illustrates that the growth of ATMs in Nigerian banks has not only increased the number of customer using ATMs, it has also increased the tendency of fraudulent practices by the fraud perpetrators. Therefore, the study recommended many solutions for customers in order to reduce ATMs fraud in the country one of these solutions using biometrics technology [15], [32].

In 2008 Cairo Amman Bank, Jordan had become the pioneer in the Arab world to implemented Iris system among their branches in Jordan and Palestine, which assist the bank to eliminated ATMs fraud and ID thefts. The system improved the customer service in banks branches and was ease of use by customers and tellers, also, help to protect the customer identification through a strong and secure authentication procedure, enhance customer confidence and security and reduce the overcoats of cards and pins [16].

In the fall of 2003 at the nationwide building society in Wiltshire, Swindon they implemented iris system to eliminate the need of a card for ATMs, and to reduce the effect of credit card theft [17].

3 CONCLUSION

The purpose of this study is to prove the important needs of adopting iris recognition technology among all sector, especially financial sector towards conducting banking transactions in Saudi Arabia, by enhancing the safety and security of our identification. The researcher wishes to confirm the important of adopting iris recognition technology in banks for customers' verification to reduce frauds and improve security to individual identification for better environment for Saudi citizens.

Iris recognition technology can be used to enhance business processes since it proved it credibility, reliability, highly accurate performance, stability, ease to use and the comparisons are made in few seconds so on [33]. The technology method had been already used in identification and authentication process in many banks around the global like Jordan and Swindon [16], [17].

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