

## AN OVERVIEW OF ARTIFICIAL INTELLIGENCE TECHNIQUES USED IN KINGDOM OF SAUDI ARABIA

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### ABSTRACT

The paper discussed an investigative study of of Artificial Intelligence Techniques used in the Kingdom of Saudi Arabia. The paper has adopted a methodology in which questionnaires were filled by different people, which help a researcher to investigate about level of acceptance of Biometric Technology in Kingdom of Saudi Arabia. The results of this study indicated that many people have accepted the presence of biometric technology in their life. However, there are some

people who could not accept this fact; it is due to a cultural gap with technology. People are accepting these changes but need to gain more awareness of the significance of Biometric technology. Based on the findings of this paper people need to be aware about these technologies before any implementation.

**KEYWORDS:** E-commerce; E-governance; Biometric; Technology; acceptance; Kingdom of Saudi Arabia.

### INTRODUCTION

Today, innovation in technology is consistently introducing new and various methods. These technologies are used to provide a short and more reliable ways of interaction amongst government and it users. Governments are working consistently to introduce more effective and efficient mediums of delivering services to their residents and users (Trady, 2016).

Therefore, E-governance is increasingly becoming popular across the globe, enabling every single individual to remain updated and stay safe from any unforeseen issues.

This application also enables government to remain updated with all necessary personal information of each individual. Main purpose of introducing E-governance is to enable a hold on personal information and ways to identify each individual (Gil Garcil, 2013). During a past decade the concept of E-governance is gaining high importance as it is playing a vital role in the security of a state. However, along with this significance it carries various questions in the mind of users related to chances of personal information leakage (Mahmood, 2013). A government holds on personal information of an individual which often is not taken positively. Therefore, it is essential for every government to hold integrity of its user personal information. Adaptation of biometric application in E-governance is now considered to be a core component of any type of political planning for many governments (Gil Garcil, 2013).

This research was conducted to highlight a level of acceptance and awareness of this technology in the Kingdom of Saudi Arabia. Key aim of this study is to gain more understanding of this technology in Kingdom of Saudi Arabia and also to highlight its perception amongst the users (Mahmood, 2013). Relevant literature and method will be provided in the paper and later it will conclude its results based on the finding and study of Biometric.

## **LITERATURE REVIEW**

### **E-government**

The concept of E-government and E- business are almost the same, these are the provision of various public services taken into account. Online services offered through IT and electronic media enables governments to have an access over information of users that leads it to become more efficient and accountable for the security of the nation. It is a use of communication and information technology in order to improve and maximum its activities in public sectors, businesses and organizations (Trady, 2016). However, this concept has a little conflict due to their concept, and interaction of outside group with the government or restriction of e-governance only to internet- enabled applications. These terms consists of four main categories, which includes G2G governments to other governments, G2C government to the citizens, G2E government to the employees and G2B government to the businesses (Mahmood, 2013).

## **Biometric Technology**

It offers a wide range of automated methods which are used to analyze and measure behavioral character and physiology of a person. It is mainly used to identify, authenticate and verify information and individuals. It is an analysis of citizen's behavioral and physical characteristics. It helps in identifying individuals who are under surveillance (Trady, 2016). Key concept behind biometric technology is every single person on earth is unique and can be identified by variance in behavior and intrinsic physical traits. There are various methods to obtain biometric for instance, finger prints, iris, retina, face analysis etc.

## **Types of biometrics in the Kingdom of Saudi Arabia**

### **Fingerprint**

Saudi Arab introduced this method in the telecommunication industry, this restricts users of mobile phones from participating in those activates which are the threats to the national security of the nation. The interior ministry of Saudi Arabia fingerprints everyone who is looking to buy sim cards as measures of security (Gritzalis, 2015). However, finger prints are shared with National information Centre of Saudi Arabia in order to identify buyer who purchased a sim card.

### **Multi Biometric**

Another initiative that Saudi Arabia has taken is a collection of biometric data of those people living outside of Saudi Arabia. All visitors are required to submit biometrics and finger prints while entering Saudi Arabia, also at the time of renewal of the identification card of their dependents (Gritzalis, 2015). This rule particularly focuses on the foreign employees who are working in Saudi Arabia from sometime this also helps to complete their immigration process.

### **Finger Print Attendance**

This technology has been introduced in many over businesses to keep a check on their employees. This also enables businesses to identify an individual in any unforeseen situation and can easily provide information to the government through the activity (Mahmood, 2013). However, Saudi Arabia's ministry of education also introduced this facility in the schools along with the installation of surveillance cameras in order to monitoring and to keep administrative system in a proper manner.

### **Facial Image**

During the process of immigration along with finger print every individual have to go through face image as well. Every time a person in going through an immigration process have go through this process along with biometric identification test (Gritzalis, 2015). These processes help the governments to have a complete check and balance of people coming in from other parts of the world.

### **Iris/Retina Biometric Test**

Like many countries there are several of biometric method, being introduced by many agencies, one of these test include iris or retina test (Gritzalis, 2015). A number of agencies such as foreign affair ministry, ministry of interior are the best examples due to the fact that they have installed many biometrics tests such as iris, finger print biometric at the entrance of their buildings and offices (Mahmood, 2013).

### **METHODOLOGY**

Literature reviews on biometric applications have guided the research and literature on the available methods for this exploratory study. Through the exploratory nature of this study a research question was set in order to gain information regarding the perception of different people living in Saudi Arabia. A research question was basically designed to answer the following questions.

What is a common perception of people regarding the emergence of biometric technology?

To what level people have found this technology helpful in to their daily life and government?

The research was carried amongst 100 people in different parts of Saudi Arabia to gain clear picture about the acceptance of biometric. Provided literature and further research was carried in order to make a questionnaire. This research carries a quantitative method due to the fact that in order to gain a clear picture it was vital this research not to engage in caring interviews or group discussions. However, questionnaires were filled by different resident that gave us a clear picture related to the acceptance of Biometric technology. It enabled to investigate larger numbers of people and enables to access their reaction and action s for that particular issue.

### **Data Collection and Analysis**

As explained above the data for this research was gathered through questionnaires and literature review. This justification for adopting this method was to engage as many people as we can. It is due to the fact that questionnaire offered us more numbers of participants and a save of time. Initially the questionnaire tries to gather basic information about each participants, however, all response were stored in (Statistical Package for the Social Science) SPSS which was utilized for the data collection and analyzing it. This system includes and highlights frequency level and percentage of each category of the participants which answered the questionnaire.

### **RESULTS**

It is worthy to note that 80% of the participants were utilizing various biometric methods for example most of the participants were using fingerprint system in their work place, school and gyms. They all were happy about it and have encouraged the presence of biometric as it keeps them away from any trouble. Whereas, 40% of the participant had experienced it but were not satisfied due the fact that there were possibilities personal data leakage and some of them faced difficulties in going through the processes. According to them, the system gives them error very often and mostly creates issue. This method of collecting data has turned out be very helpful as it has provided us more information about the biometrics and their utilization. Some of the people also highlighted that these application cannot be beneficial in the long run due to the difference in their cultures and technology gaps. The survey has also helped us to detect several problems as well in context of utilizing this research.

### **RESULTS FROM THE QUESTIONNAIRE**

In the questionnaire there were 10 main questions and their results are stated below.

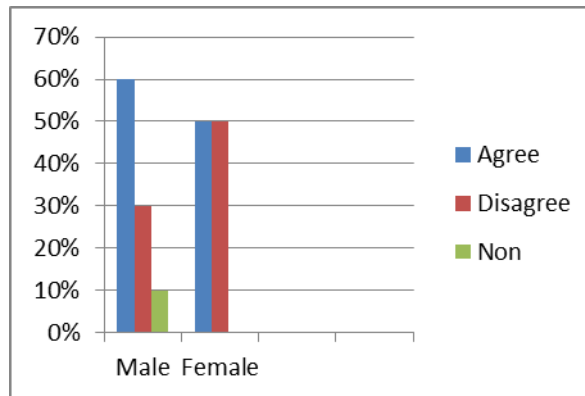
Initial 3 questions were to inquire some personal information related to their age, gender, occupation etc. However, rest of them with their results are stated below.

#### **What are the key issues of adopting biometric technology in the Kingdom of Saudi Arabia?**

The key focus of this question was the problems which an individual was or had faced utilizing this technology.

1. Many of the participants replied that they had neither issue nor they have faced any problem while practicing this application.

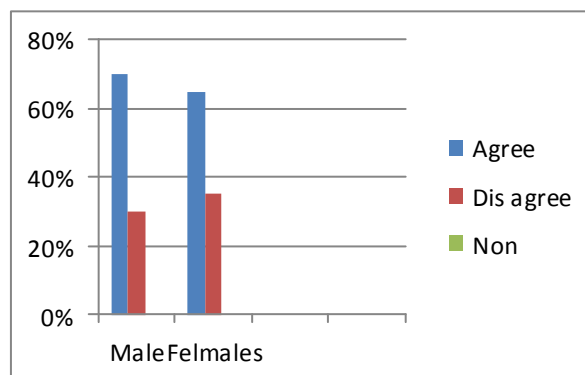
2. Some of the people replied that they often face problems in it due to the fact that it gives errors and sometimes is unable to recognize.
3. Few of them highlighted the fact of cultural gap between the users and the technology. They were resistant to the application of this technology and were not happy.



**What do you think biometric Technology is safe for us?**

The key focus of this question was know how people take this technology is it a blessing or a curse and also if people feel safe about it or not.

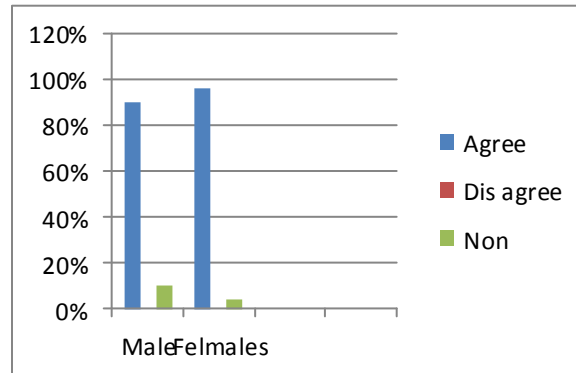
1. Many of the participants replied that no due to the fact that it carries personal information that is interlinked with other technologies and this factor gives them sense insecurity due to personal data leakage.
2. Some were happy and found the technology safe as it enables government to have a complete check and balance in the country leading all the citizens to live a safe life.
3. However, there were 0 numbers of participants who owned a neutral view.



**Do you require government to inform you before making or introducing any technology?**

The main concern of this question was to know about the importance of awareness and impact of uninformed situation from the government.

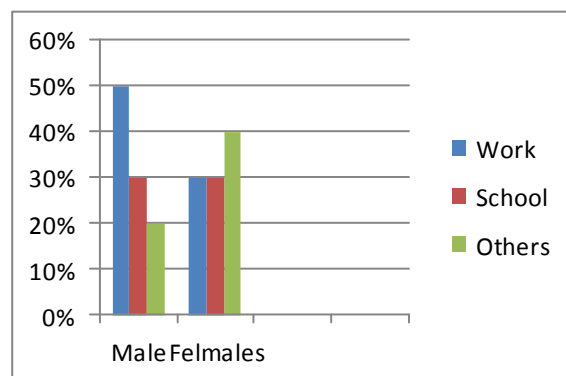
1. Nearly all of the participants replied that yes to this question and they feel highly important for them to know about any change otherwise they feel ignored and unwanted.
2. Very few of them were fine with any change as they believe whatever change a company will make, going to be beneficial for the state.



**What is the purpose of you using biometric technology?**

The main purpose of this particular question was to know that for which type of service or work they are using biometric technology.

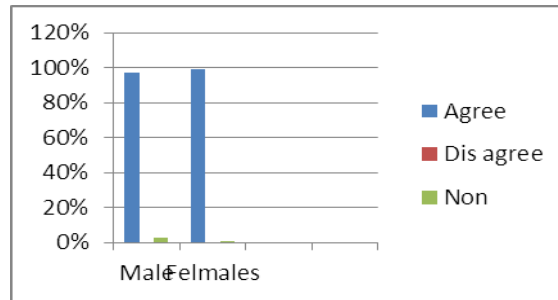
1. Most of the participants were working and they were using biometric technologies at their work.
2. Some of them used in their schools and gyms.
3. Mainly house wives and old people never used biometric technology.



**Introducing this technology means that your government does not trust you?**

1. This was a manly question that actually helped in concluding the whole research. Nearly all of the participants replied that they trust their government and whatever they will introduce will be beneficial for every individual. However it is not easy for everyone to adopt change quickly and not respond to any change.

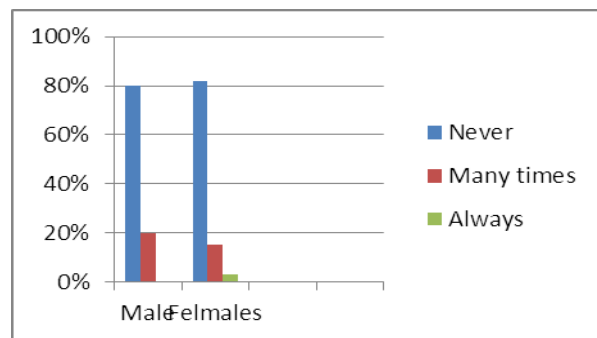
- There were very few numbers of participant who left this question unanswered which actually led a researcher to think over again if the government won the trust of its residents or not?



### What are the main barriers in using biometric applications?

This allowed customer to comment if there is any other unspecified issues that they face while using these technologies. Different people responded according to their experiences but there were few issues which were in common.

- They never used it before, so it is not easy to go through same procedure every time.
- Some of them were used to it and they never faced any issue.
- Few were the case in which participants tried using it but it mostly gave them error and it does not detect.



### DISCUSSION

All questions were in trusting and provided different dimension for a researcher to analysis and evaluate. Different people have different experiences and their views kept on changing according to the kind of experience they had. There are few points which are worth mentioning that although people rely on their governments and have a higher level of trust but it is essential for the government to inform it is people regarding any change they are about to make and also to educate them to the maximum. However, a government cannot please every single individual and there some times when it makes decision without making its people aware.



## CONCLUSION

This research has turned out to be very beneficial for a researcher due to the fact that it has technology is increasing day by day .So as the population in the world this makes its makes it more important because of terrorist threats, right calculation about the population and also remaining competent in world. E-governance has begun to be accepted by the Kingdom of Saudi Arabia, However, it is essential for the government to provide a proper knowledge to its residents about the application it is practicing and should also indicate them if they are about to introduce any new application. there are some people who could not accept this fact; it is due to a cultural gap with technology. People are accepting these changes but need to gain more awareness of the significance of Biometric technology. Based on the findings of this paper people need to be aware about these technologies before any implementation. One more point that worth's mention here is that government needs to take all majors to make sure that all the personal date of its residents is and updated.

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