

E-Government in Saudi Arabia: Analysis on present and future

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ABSTRACT: The extensive use of technology by the Saudi Government is poised to embrace a new technological era, one in which technology is utilized as a tool for the maximization of information exposure, services, connectivity and opportunities. This technology, popularly referred to as e-Government, has significantly contributed to the governance of the state machinery more importantly, has emerged as an efficient and effective tool for the people. The objective of this research is to gauge the extent to which e-Government initiatives have come to fructify and to the shortcomings in the e-Government approach adopted by the Government of Saudi Arabia. Saudi national e-Government project (Yesser) has been studied with depth to uncover their achievements and ongoing efforts. In this paper, a comparison between e-Government in Saudi Arabia, United States of America and United Kingdom has been conducted and finally a suggested framework for e-Government in Saudi Arabia has been proposed.

Keywords: e-Government, Comparison model, Saudi e-Government Framework, Yesser.

I. INTRODUCTION

The Saudi Arabian Government has started adopting latest trends in which technology is utilized in the form of e-Government. E-Government systems have shown a great potential in their system needs to be more specifically used here, that is, Systematic framework give direct benefits to citizens, businesses, government employees and government itself. The use of the internet as a medium to impart information and services has experienced unprecedented growth over the past years. The 21st century witnessed acceptance of the internet as the preferred medium of sharing information and rendering online services in quite a few nations of Western Europe and United States of America (USA) itself. Saudi government has also taken the initiative to implement e-Government technologies, as it continues to serve the Saudi people to a large extent. Just like other successful mega projects initiated with a long term plan by the Saudi Government, e-Government Project of Saudi Arabia (SA) is moving in the fast pace and shows strong potential for growth in the future. The plans have been set very well, aims and objectives are defined and the goals are clear. The Saudi Government seems to be moving very gracefully whilst sticking strongly to the plan. The comparison of Saudi e-Government (Se-G) system with other e-Government systems has shown a prominent difference in the maturity levels and Se-G system was the lowest in comparison with the countries in the scope. Having said that, comparison of the Se-G system was made with the world's best e-Government systems, that is, e-Government systems of USA and United Kingdom. Website was also taken on the under development Se-G project named Yesser which showed that the Saudi government is not too far away from becoming an e-Kingdom by taking the utmost benefits from e-Government technologies.

While the research on e-Government is still in its infancy, the impact which this technology has had on the people is incontrovertible. E-Government has to all intents and purposes, assumed a life of its own and is expanding and growing at a pace and rate which exceeds prior expectations. The reason largely lies in the fact that it accommodates the circumstances of people, allowing them the opportunity to fetch information and avail benefits from various online services and most importantly, irrespective of time, place and distance. E-Government has revolutionized government systems, if only because it is fundamentally geared towards the obliteration of the more common of the obstacles towards time and place.

The main aim of this research is to gauge the extent to which e-Government initiatives have come to fruition and to the shortcomings in the e-Government approach adopted by Saudi Arabia. This study aims to assess the Saudi Government's awareness and contribution in establishing an e-Government System based on the Project Yesser. This study also aims to assess the areas where the Se-G system is lacking by comparing its maturity level with the modern e-Government paradigms used worldwide and a final need for a conceptual model for Saudi Arabia has not been ignored.

The rest of this paper is organized as follows: Section 2 presents the related works in detail. In section 3, the E-Government in Saudi Arabia is presented. E-Government Maturity Level Test is given in detail in section 4. Conceptual framework for e-Government in Saudi Arabia is given in section 5 and finally, conclusion in section 6.

II. RELATED WORKS

Proposed conceptual model for e-Government is decomposed. In decomposition model beneficiaries of the e-government services to citizens/community, business, other departments, and employees are benefitted. Another approach presents focal domains for e-Government initiatives, these domains focused on government processes: e-Administration, e-Citizens, e-Services and e-Society. The conceptual model for e-government consists of four main entities: public services, business operations, employees, and government internal departments. The e-Government model and decomposed environment to internal operations as well as external operations. In another comparative study three models and frameworks concerning the development of best practices in e-government is communicated. Another model define e-government as a matrix of stakeholders; governments to governments (G2G), governments to business (G2B) and governments to citizens (G2C) using information and communications technology to deliver and consume services [1-6].

In this paper the conceptual framework for e-Government in Saudi Arabia was proposed. This conceptual framework consist of five layers: Relation layer (Internal, external), Electronic services offered layer, Government Service Bus layer, Applications layer, and Government Main Web Site layer.

III. E-GOVERNMENT IN SAUDI ARABIA

Saudi Arabia has always adopted an international up-to-the-minute system that does not have a negative impact on its system as it is modernizing slowly and gradually. The modernizing history of Saudi Arabia clearly shows that they always move forward carefully, keeping in mind all the Social, Religious, Cultural and Economic aspects. E-Government has been the need of the day and its adoption is inevitable.

3.1 Yesser

Yesser is the Saudi National e-Government Project that has been initiated to implement country wide e-Government system to help speed up the operations of public sector. The Yesser's website has been studied to know their objectives, strategies and plans. The Ministry of Communications and Information Technology (MCIT) has contributed to initiate the e-Government Program. Ministry of Finance and the Communication & Information Technology Commission (CITC) are also working in collaboration with MCIT [7].

The Yesser website gives detailed information about this project. The key features of this project are given below:

3.1.1 Objectives of Yesser

The key objectives are; firstly, raising the productivity and efficiency of the public sector, secondly, providing better and more easy-to-use services for individual and business customers. Thirdly, increasing return on investment (ROI) and lastly, providing the required information in a timely and highly accurate fashion.

The above mentioned objectives show that the SA Government has adopted the right path in accordance with the application of the Yesser Project. If properly adopted and implemented, the productivity and efficiency of the public sector will definitely increase. There will be no need for documentation, since all information will be in a Digital framework. The time involved in the public sector operations will reduce and thus the efficiency in the operations will be visible. This will also help the consumers and vendors as

well as businessmen in accords to have easy access of information and facility, escalating the productivity of the businesses, and thus the economy of the country will exceed.

3.1.2 Strategy and Action Plan

Yesser, strategy and action plans for the years 2012 and 2016 adopting the following strategies:

3.1.2.1 Vision Statement

The vision of the Yesser program is based totally on providing ease of access to the operators. Consumers include the individuals, businesses, government agencies and employees. It says; "Enabling everyone to use effective government services, in a secure integrated and easy way, through multiple electronic channels" [8].

3.1.2.2. Components of Action Plan

The key component of the action plan is to; first, build a sustainable e-Government workforce. Secondly, improve the experience of the public in their interaction with government. Third, develop a culture of collaboration and innovation and lastly to improve government efficiency.

3.1.2.3 Framework for measurement

The framework for measurement observed the model is given below in Figure 1. This model shown, keeps the solid infrastructure to provide e-Services. The quality and availability depends on the dedication offered by the organization and the technical infrastructure. The measurement framework model is only planed for near future [9].

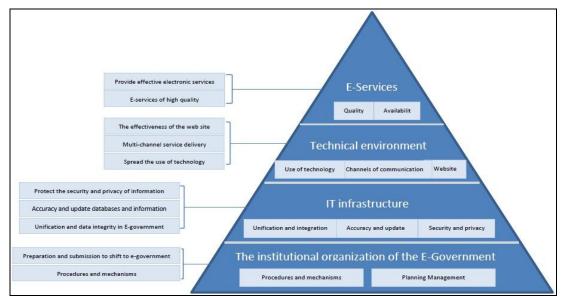


Figure 1: Components of e-Government framework for measurement for Saudi Arabia

3.1.2.4 Yesser services and initiatives

Yesser has launched several projects, some are given below:

3.1.2.4.1 Government Secure Network

Project was initiated to connect government agencies with e-Government data center by taking into account a strong secure mechanism that will eventually be used for the government portal. The aim is to link 98 government agencies with the data center. In first phase 13 agencies are considered, which will be followed by other agencies [10].

3.1.2.4.2 Government Portal

A web portal has been launched to provide information and services to the users, governmental services, organizations, systems, regulations, national plans and initiatives, electronic services, and news and activities are the area this portal covers by providing related information. The users have been given priority; in addition the portal is very user friendly and properly organized [11].

3.1.2.4.3 National Contact Center

The purpose to establish this center is to help the government agencies and citizens regarding different technical problems. This center responds to different queries regarding the electronic services using different channels in both Arabic and English language [12].

3.1.2.4.4 Digital Certification

The main purpose of the center is to establish a secure system that is responsible for managing of public keys to ensure the data integrity by using digital signatures that will be used for e-Government and e-Commerce application for both citizens and businessmen [13].

IV. E-GOVERNMENT MATURITY LEVEL TEST

To analyze the maturity level of the E-Government system of Saudi Arabia, a comparison with two other countries, United States of America and United Kingdom is conducted. According to UN e-Government, these two countries are among the top five countries that are having best e-Government system [14]. The comparison is based on the model, in which each statement will be tested against each country and then ratings will be given accordingly.

4.1 Comparison Model

Usually, there are huge repositories of information on various topics and huge lists of services available on the e-Government portals. But here the test is restricted to the basic essential information and services for the citizens, businesses and employees and thus the statements and sub-statements included in the model are based on the same constraints. The portal of United States of America has been kept as a reference in building this comparison model because of its superb features in terms of electronic information and services and according to the UN e-Government; it stands on the fifth number among all the countries of the world [14]. United States of America and United Kingdom may achieve full points in the test but here the point to ponder is achieved by Saudi Arabia. The comparison models are as follows:

4.1.1 Information offered via e-Government platform

The main points are: laws and regulations, jobs, health, taxes and employee benefits.

4.1.2 Services offered via e-Government platform

The main points are: driver's license renewal service, birth, marriage and death Certificates Service, complaints service, business licensing service, and government jobs application service.

4.2 Testing Mechanism

In a comparison model, there are 5 sub-statements in each of the two main statements. Each substatement carries the maximum of 10 points and minimum of 0 points. In total there are 10 sub-statements, thus the total points will be 100. Each sub-statement will be tested with each e-Government system of the countries in scope and points will be given accordingly. The Greater the completion of the tested statement, the greater will be the points and vice versa. As mentioned, USA portal has been considered as the reference model so it will be given full points for each of the sub-statements. Then UK portal will be compared with it and points will be given accordingly. Last but not least, Saudi Arabian government portal will be analyzed and will be given points accordingly. Finally, the total points of each country will be calculated and compared with Saudi Arabia. The demonstration will take place with the help of Tables and graphs. In-return the tables and graphs will help in pointing out the areas where Saudi Arabia e-Government system is lacking.

Country	A-Information offered via e-Government platform				
	Law & Regulations	Jobs	Health	Taxes	Employee Benefits
USA	Laws and Regulations [15]: very simple and easy to reach to the desired topic- long list covers all the major topics- links to the pages of information such as Department of Justice, House of Representatives, and Senate etc. Score :10	Jobs, Education and Volunteerism [16]: valid links to the private and public sector jobs- career management details which is very much helpful for the people seeking for a good career. Score :10	Health and Nutrition [17]: links to all the necessary information related to health- directory of all the doctors and dentists- Link to the information about the health insurance- link to the comparison of various hospitals. Score :1 0	Taxes: Federal and State [18]: links section wise i.e. Tax Form e.g. tax payers', Federal Taxes e.g. tax changes, tax violations, tax payer rights and finally State Taxes e.g. gasoline rates, states sales tax holidays, states sales tax rates. Score :10	Federal Employees [19]: links to federal pay, leave, work schedules, insurance, retirement etc.State and Local Employees [20]: links to Crime, drug control, homeland security, state courts etc. Score :10
UK	Crime, Justice and Law [21]: topics related to crime, justice and law e.g. crime prevention, incapacity and the law, prison and probation, victims of the crime, etc. Sections are further divided into sub - sections and contain multiple links. So a tree like structure gives benefits to user in understanding the interface and easily reaching the desired information. Score :10	Employment [22]: categories and then sub sections inside them is used. Categories like jobseekers, employment terms and conditions, trade unions, leaving your job, problems at work etc having all needed information a user looking for .Score :10	There were no such links or information named Health found on the portal of United Kingdom .All main categories were browsed but there was no section found. Then full portal search was also performed but still results were the same. This shows that the UK government is currently not offering any Health information within the portal. Score: 0	Money, tax and benefits [23]: links to the various taxes section e.g. capital allowances, cooperation tax sales, capital gain tax. The information links available seem to be general and not representing the content available e.g. if a person wants to find out tax penalties, then there is no link for that. Score : 7	Employment [22]: contains links to various employees' topics but doesn't show any obvious links towards the information repository of employees' benefits. A government employee seeking for information on his job benefits will definitely have a difficulty in finding the information by going to other categories. Score: 8
KSA	Acts and Bylaws Directory [24]: links to various topics of Laws i.e. employment, socialism matters, justice and the	Links to various sections such as admission and employing at different governmental organization. Different	Health [25] page contains links such as search for a doctor, expired food reporting, sick leave enquiry, patient complaints etc.	The information on taxes on the portal of Saudi Government was not found in the main categories. However, when searched, we were	I was able to find various links to various information repositories about employment. However, there were no such links found which

Table-1: Comparison model for information offered in USA, UK and Saudi Arabia Government Portal

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e	Absence of the				
crumb Score 3	navigation bread				
	crumb. Score :3				

4.3 E-Government Portals Comparison

In Tables 2, the web portal of the government of United States of America and the web portal of the government of United Kingdom and finally the web portal of the government of Saudi Arabia will be tested against each sub-statement of the comparison model one by one with previous determined scope and scoring mechanism and only a brief overview that validated the scoring will be mentioned.

Table-2:	Comparison model for Services offered in USA, UK and Saudi Arabia Government Portal
Country	B-Services offered via E-Government platform

Renewal ServiceServiceLicensingJobs	D-Services offered via D-Soverimient platform					
Servi	rnment ication ce					

TICA	Dese		0	Q () 1	Q
USA	Renew your driver's license [27]: links to all the states' driver's license portals. A user who wants to renew his driver's license online can visit this page and then click on his/her state and step into the portal where the driver's license renewal request can easily be sent. the steps are simple and easy to navigate and while sitting at home, people of America can renew their driver's license. Score :10	Get it done online [28]: links to various services offered and Birth, Marriage and death certificates service link is one of them. When clicked, it redirects the user to another portal, Center for Disease Control and Prevention [29], which contains a list of all the states in US. Here users can easily request for the re-issuance of their desired certificate. Score :10	Get it done online [28]: links to various services offered and Complaint service link is one of them. When clicked, Filing a Complaint [30] page opens. This page contains various sections for complaints e.g. Bank Complaints, Internet Fraud etc. Each of these sections contains links to the web portal of the respective departments This service is helping the country to keep all their systems on track because any company can be sued if they are not providing proper services to the people of US.	Get it done online – for Businesses [31]: links to various licensing services from where a business can get registered online e.g. submitting of license applications, state business licensing office finder, registering patents trademarks etc. The links are redirected to the specific portal where a business seeking certain licensing service can easily send its request within no time. Score :10	Get it done online [28] :links of various services offered and Government Jobs Application service link is one of them. When clicked, it redirects to the USAJOBS [32]. On this portal, user can get registered and then search and apply for the specific government job. So, the system has got better for government job seekers and they can apply for multiple jobs with just few clicks. Score
UK	Driver Licensing [33]: links to the various driver license related services e.g. Applying for provisional drivers license, changing name and address on the driver's license and replacing your driver license. For example, if a user wants to issue a new driver's license in case of theft or lost, then he/she will click on the link named "replace a lost,	Order Birth, Marriage and Death certificates [34] page contains the guidelines to avail these services. The users are able to search online for their respective local General Register Office and then submit their online request to issue any of these certificates. Score :10	Score :10OntheUnitedKingdom'swebportal(www.direct.gov.uk), therewas nosectionfound forthecomplaintservice.But afterperformingthesearchby typingthestring"complaint" in thesearchform,variouslinkstheseservicesopenede.g.makingaComplaintagainstgovernmentorpublicbodies,makingacomplaintaboutjudicialoffice	Businesses and self-employed [35]: links to licensing services from where a business can get registered online e.g. submitting of license applications for many different ee businesses. The links are redirected to the specific portal where a business seeking certain licensing service can easily send its	10 Applying for ajobonline[36]:containstheinformation onhow to applyforforagovernmentorgovernmentorjob.Thedetailsshowthe system ofjobcenterseverywhere inthecountrythathelppeoplefindjobs.Thesejob centers canalsoalsobereached onlineand submitting

	stolen, damaged or destroyed driving license". After clicking a new page replacing your driver's license will open with a further link to apply online. So in these simple steps users are able to send such kind of requests. Score :10		holder etc. The complaint system services are there, but these services are not easy to be reached. Score :5	request. Score :10	the resume for specific jobs. Both the employers and the job seekers come to the platform of job centers, where an employer looking for an employee or a job seeker looking for a job can fulfill their needs. Score :10
KSA	Among the main categories on the portal of Saudi Government, the driver's license renewal link was not found and thus search on the whole portal was performed and transport page was found after the search but the page contained renewal of vehicle license only and there were no links to this service. Score: 0	There were links found related to issuance of such certificates. However those were linking to Ministerial Agency of Civil Affairs and not in the main portal and when we tried to go on with those services we found they are only application forms for printing but you still need to go in person to the office to submit them and to get those certificates .Score :3	Complaints [37] links to complaint services for citizen and visitors for different purposes. some of the links of complaints of the portal are not working like complaint of violation for Ministry of Water and Electricity is not working .Moreover this section are not only dedicated for complaints but shared with queries in which they both have 21 pages which make the navigation for a certain complaint difficult. Score :6	Among the main categories on the portal of Saudi Government, there were just links to Business Licensing for different governmental bodies which again sometimes have broken links e.g. the link for issuing a license in the Municipality of Eastern Region are just broken. Score :5	Among the main categories on the portal of Saudi Government, there was links to job application in different governmental agencies. Also we found that the government is offering a special system named Jadara (to which is link in the portal) to make a nation al wide job application for its citizen applying in different government agencies in Jadar [38] any citizen can apply for a job using only his national ID and attaching related qualification. Score :10

4.4 Combine Rating

The above two Tables 1 & 2 scores are depicted in Figure 2(a&b) to Figure 4(a&b) for each substatement among the three countries.

4.4.1 Final Ratings of USA Portal

From Tables 1 & 2 scores for USA are depicted in Figures 2 (a&b) for each sub-statement as shown below:

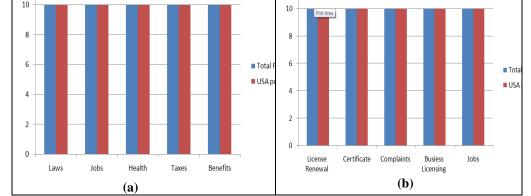


Figure 2: (a) Final Result for Information offered on USA portal (b) Final Result for Services offered on USA portal

Figure 2(a), gives the results of individual testing of each sub-statement with the information offered which is reported 50 out of 50 points. Whereas Figure 2(b), gives the results of individual testing of each sub-statement for the services offered has reported 50 out of 50 points.

4.4.2 Final Ratings of UK Portal

From Tables 1 & 2 scores for UK are depicted in Figures 3 (a&b) for each sub-statement as shown below:

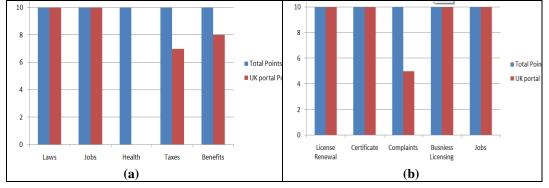


Figure 3: (a) Final Result for Information offered on UK portal (b) Final Result for Services offered on UK portal

Figure 3(a), gives the results of individual testing of each sub-statement with the information offered which is reported 35 out of 50 points. Similarly Figure 3(b), gives the results of individual testing of each sub-statement for the services offered has reported 45 out of 50 points.

4.4.3 Final Ratings of Saudi Arabia Portal

From Tables 1 & 2 scores for SA are depicted in Figures 4 (a&b) for each sub-statement as shown below:

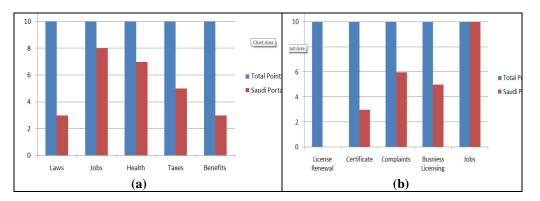


Figure 4: (a) Final Result for Information offered on Saudi Arabia portal (b) Final Result for Services offered on Saudi Arabia portal

Figure 4(a), gives the results of individual testing of each sub-statement with the information offered which is reported 28 out of 50 points. Whereas Figure 2(b), gives the results of individual testing of each sub-statement for the services offered has reported 24 out of 50 points.

4.5 Discussion on Results

The final results comparison based on Figures 2 to 4, shows a remarkable difference between the e-Government readiness of United States of America, United Kingdom and Saudi Arabia. Saudi Arabia is at the last position according to the test. The e-Information offered points achieved by USA, UK and SA are 50, 35 and 28 and the e-Services offered points achieved by USA, UK and SA are 50, 45 and 24, respectfully. The graphical representation of the result points for the three countries is given below:

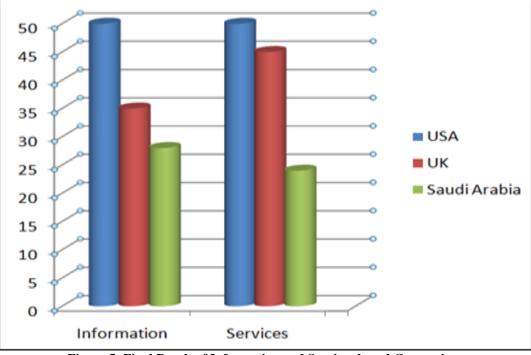


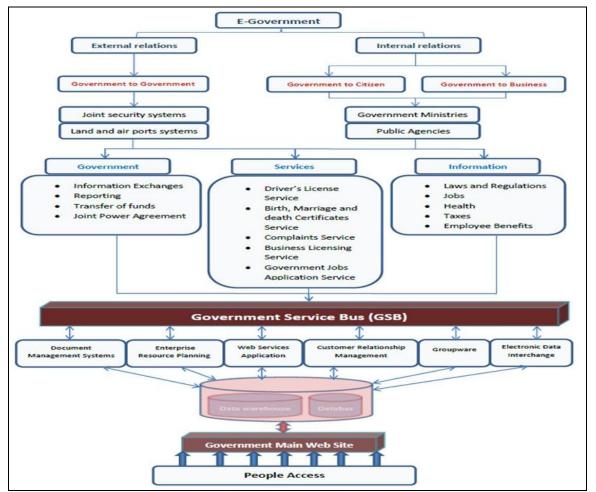
Figure 5: Final Result of Information and Services based Comparison Test between USA, UK and Saudi Arabia.

The results bring USA on top because of its properly organized information and services on the portal, huge repositories of information, vast bands of services, user friendly flow of websites etc. The USA portal contained main categories of citizens, businesses and employees which help users in refining their search automatically but this organization of categories was not found in the UK government portal. In the UK portal, all the categories lacked simplicity so a business, citizen or government employee would have

problems in finding their desired information or services. Another good thing observed in the portal of USA, that it kept the services and information sections separately rather than keeping all information and services links together like United Kingdom and Saudi Arabia portals. The major reason of the fewer points for the Saudi Arabia's portal is the unavailability of the information and services. However, the portal is properly organized and the flow of portal of United States has been adopted. It seems that they have kept sections for every area of information and service but currently they are in pending mode. Another problem was the top navigational bread crumb. The users would face troubles while navigating back and forth, since there is a complex structure of parent and child categories on the portal. Before the test it was already expected that the Saudi government portal will achieve fewer marks as it is in the early development stage and the countries that were chosen in comparison with Saudi Arabia are having best e-Government systems. A nonbiased analysis was conducted in order to realize the current status, and thus the results have shown the output. Keeping all drawbacks aside, one impressive aspect that has been noticed in the portal of Saudi Arabia is that it shows the potential of growth and no doubt within a few ample years it will be able to fill up the current gap and the e-Government system of Saudi Arabia will become one of the best.

V. CONCEPTUAL FRAMEWORK FOR E-GOVERNMENT IN SAUDI ARABIA

The main objective from Conceptual framework for e-Government is to explain the domain of electronic government and major divisions (internal and external), as well as to clarify the services and information that can be made to beneficiaries and application integration method and accessible by beneficiaries. Conceptual framework for e-Government consists of several layers that interact with each other to provide services and information to the beneficiary.



This conceptual framework consists of five layers as follows, as shown in Figure 6.

Figure 6: Suggested conceptual framework for Saudi Arabia e-government system

In Figure 6 the conceptual framework is divided into five layers as given: first, (Internal, external) relation layer; this layer describes types of government model used (G2C, G2B, and G2G). Internal relation used two governments' models G2C and G2B where it is to take advantage of all the services and information in the ministries, agencies and other Interior government systems. While for the external relation it can take information and service from the joint inter-governmental regimes. Second, *Electronic* services offered layer: This layer describes three types of electronic services offered (information, service, and government) and every service offered has a group of services as shown in conceptual model. Third, Government Service Bus (GSB) layer: The Government Service Bus is backbone of the national infrastructure projects that are implemented and managed by YESSER Program. GSB is an entity that contains intermediary systems of integrated infrastructure components of hardware and software designed to activating the exchange of shared government data among agencies that are authorized to access the data in order to deliver their respective e-Government services in an accurate, speedy and safe manner. Following GSB new production phase, integration process endeavors continued in order to establish, maintain and manage the channel and manage on boarding of government agencies either as service providers or users of the services and data that are made available through GSB. Moreover, endeavors have continued in the areas of planning, implementation and management of the digital identity for individuals and organizations. Fourthly, Applications layer: This layer describes the applications that web site should be connected to it as well as databases and a data warehouse. This application programs such as CRM (Customer Relationship Management System) to handle citizens' services such as Driver's License Service, Birth, Marriage and death Certificates Service, Complaints Service, Business Licensing Service, and Government Jobs Application Service. Other applications include ERP (Enterprise Resources Planning) that helps government organize its internal relation and offers services and information such as laws and Regulations, Jobs, Health, Taxes, and Employee Benefits. Other applications that may be integrated at this layer are document management systems, EDI (Electronic Data Interchange), groupware and web services. Fifthly, Government Main Web Site layer: This layer is enable people to access through it and reach to services and information that provided by e-government. All the five layers for conceptual framework are applied to generate reports for the concern layer during operations.

VI. CONCLUSION

This research has disclosed many facts related to the e-Government system of Saudi Arabia. The study's main focus was to find out where the e-Government system of Saudi Arabia stands. The section named "E-Government Maturity Level Test" has shown the reasons of Saudi e-Government portal needs more attention. In section, conducting Saudi e-Government comparison with United States and United Kingdom has helped in suggesting the Saudi Government various ways to improve their e-Government system. The Saudi e-Government project named Yesser shows the Saudi Government's positive intentions in developing an e-state with the help of e-Government. Their objectives and aims seem to be realistic and thus it can be said that they are on the right path towards achieving their goals; still the Saudi e-Government system has not been able to achieve the required maturity. The current state of e-Government in Saudi Arabia seems to be in its infancy, which holds great promise if ministered as it should be.

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