

E-Government in Egypt: An Analysis of Practices and Challenges

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Abstract

This research reveals that Egypt has acknowledged the growing importance of e-government at different levels since the official inauguration of Egypt's e-government portal in 2004. The country recognized the role of e-government in leveraging the economic, cultural and social development; providing effective and convenient services to publics: improving communication environment and the exchange of information among different governmental bodies, and so on. The research paper addresses services provided by e-government to citizens, businesses, government employees and other bodies. Egypt's e-government readiness ranking is also highlighted. Also, it explores the challenges encountered in e-government implementation, along with introducing generic and specific recommendations for policy makers to handle these challenges. Findings reveal that some achievements have been made, but more needs to be done to overcome the challenges encountered in e-government development and implementation. Furthermore, Egypt is still lagging far behind other Arab countries, particularly Gulf countries that launched their e-government programs recently.

Keywords: *E-Government, Egypt, Challenges*

1. Introduction

The growing role of Information and Communication Technologies (ICTs) in facilitating and expediting economic, social, cultural and political development is now being understood by most of developing countries. An increasing number of federal, state, and local governments are developing national ICT initiatives and strategies. The emerging ICT for development approach towards public sector transformation is creating new perceptions about government and governance.

The term E-Government emerged by late 1990's associated with the term E-Commerce during the internet booming era (Grönlund, 2002). Worldwide, many definitions have been given to explain the term e-government, either by the UN or other authors, such as, "*e-government can include virtually all information and communication technology (ICT) platforms and applications in use by the public sector*" (UN, 2002). Also, e-

government refers to "*utilizing the internet and the world-wide-web for delivering government information and services to citizens*"(UN, 2002). Additionally, e-government can be defined as "*the use of ICTs to promote more efficient and effective government, facilitate access to government services, allow greater public access to information, and make governments more accountable to citizens*" (Kitaw, 2006).

However, each definition relies on the basis of national strategies of those governments to achieve superiority based on internet and web technology. Nevertheless, the most common goals among those definitions are: to transform, and improve the relationship between governments and publics; promote citizens' empowerment; strengthen accountability and transparency; facilitate communication and improve the coordination of authorities at different levels of department, within organizations and even at the departmental level

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((Fountain, 2001; Fraga, 2002; UNPA and ASPA, 2001; Welch and Hinant, 2003; United Nations, 2008). Furthermore, e-government provides new or improved, more accessible and responsive services based on businesses' needs and expectations and enhances the momentum and efficiency of operations by streamlining processes, lowering costs, improving research capabilities and improving documentation and record-keeping. However, the real benefit of e-government lies not in the use of technology by itself, but in its application to processes of transformation (Gunter, 2006; United Nations, 2008).

Contemporary literature review of e-government neglects e-government implementation methods, practice and challenges in developing countries in general and in the Arab context in particular despite its importance to improve service delivery. Reliability of an e-government strategy can be the difference between success and failure of the whole effort. Even in practice, many public authorities do not have any e-government strategy at all (Heeks, 2003; 2006; Kitaw, 2006).

There have been a number of studies related to e-government initiatives, e-government development and e-government implementation challenges and opportunities in Arab countries (Mohammed et al., 2006; 2009; Maher et al., 2008; Elsheikh et al., 2008; Akemi and Omar, 2009; Tino, 2009; Tamara and Amer, 2010). Most of these studies, however, shed some light on challenges and opportunities for developing a successful e-government. Some other contributions sought to produce frameworks aimed at better understanding of e-government as a concept. Each attempt tackled the complexity of e-government from a certain perspective.

With regard to Egypt, there have been some studies related to the Egyptian information society initiatives, such as Egypt's information society strategy, the progression and assessment of ICT sector in Egypt and the emergence of e-commerce in Egypt with a focus on the challenges faced that are related to a number of social, technological, financial and legal issues (Kamel and Hussein, 2002; Aladwani, 2003; Ibrahim, 2007; Neil and Bernd, 2009; United Nations, 2011; MoCIT, 2011). While, a small number of studies addressed e-government issues in general, such as strategies towards interoperability in e-government and different e-government frameworks (Azab et al.,

2006; Ralf, 2011; Riad et al., 2011). Furthermore, none has discussed the e-government readiness ranking and therefore the challenges encountered in e-government implementation. This is where our contribution fits. Our study is believed to be the most up-to-date and comprehensive analysis of Egypt's e-government strategy and services, challenges and assessment of its level of readiness for delivery of e-government services. Hence, it comes in to fill a gap in literature concerning e-government implementation challenges. This paper promotes the inclusion of a strategic framework in all e-government programs in order to realize the benefits stated earlier.

The purpose of this study is to address services offered by e-government to citizens, businesses, government employees and other agencies in the context of Egyptian society. As well as, this paper is targeted to compare Egypt's e-government readiness ranking with other Arab countries in e-government development. Furthermore, the challenges encountered in e-government implementation in Egypt's context are deeply analyzed and specific recommendations developed.

This paper is organized in six sections. The second section addresses ICT and e-government development in the Egyptian Context. In section three research questions and methodology are introduced. Section four explores Egypt's e-government service portfolio and Egypt's e-government readiness ranking. Section five analyzes challenges encountered in e-government implementation in the context of Egyptian society. Finally, section six presents conclusions and future perspectives of this work regarding new approaches that could be used to improve the rigor and relevance of e-government implementation research.

2. ICT in the Egyptian Context

In mid 1980s, the government of Egypt in its efforts to adapt with the international IT revolution launched some initiatives to build an Information Society, providing citizens, businesses, visitors and other governmental bodies with a convenient collection of information and services to utilize the benefits of the new information era to achieve national goals. The Information and Decision Support Center (IDSC) was established in 1985 to

build up Egypt's IT industry and governmental decision support infrastructure. One of its key objectives was to provide public access to information, with a particular emphasis on facilitating business and investment. Over the past twenty six years, IDSC has successfully executed many IT projects in terms of legislative reform, public sector reform, human resources development and access to the Internet, commercial registration, natural resources management, cultural heritage preservation, urban planning, and sectorial development projects at the ministerial and governorates level, among many other areas. IDSC currently focuses on decision support for the Cabinet (Ministry of State for Administrative Development, 2010).

In 1999, the Ministry for Communications and Information Technology (MoCIT) was formed to build momentum to create an information society and to improve the information infrastructure (Hassanin, 2003). Shortly after its formation, the Ministry revealed the Egyptian National Communications and Information Technology Plan (NCITP) (Hashem, 2002).

The NCITP has paved the road for launching the Egyptian Information Society Initiative (EISI), which has been structured around seven major related mechanisms, each developed, when fully executed, to facilitate Egypt's evolution into an Information Society (MoCIT, 2004). These mechanisms are:

a) E-Readiness: Equal Access for All

All citizens must have easy and affordable access to the opportunities and benefits offered by ICTs. Developing appropriate communication infrastructure is a prerequisite for achieving this public access.

b) E-Learning: Nurturing Human Capital

ICT is a complementary mechanism for high education standards at all levels and for improving citizens' skills and productivity. This initiative aims to promote and encourage the use of ICT in education and to develop a new generation of people who are motivated to understand and use ICT in their daily lives.

c) E-Government: Government now Delivers

The Information Society should be able to provide publics with high quality government

services, where they are, and in the shape that satisfies their needs and expectations. This initiative is targeted to deliver a convenient collection of information and e-services, provide citizens with the opportunity to participate in the decision making process, and improve efficiency and quality.

d) E-Business: A New Way of Doing Business

ICT is an enabler to economic growth. It can contribute in creating new technology-based enterprises, evolving e-commerce and e-business, improving labor skills, using electronic documents, and developing online payment infrastructure. As well as, ICT can be a significant means to increase employment, create new jobs and improve competitiveness of Egyptian industries.

e) E-Health: Increasing Health Services Availability

ICT can be used in the health care sector to provide citizens with a better quality of life and create a more healthy work environment for service providers. In this context, the application of ICT can contribute in adding a clear value, such as reaching remote populations, providing continuous training for medical doctors, and offering the mechanisms for building a national health network.

f) E-Culture: Promoting Egyptian Culture

ICT can be used in the cultural arena for preserving manuscripts, archives and index materials, offering affordable worldwide access to Egypt's cultural heritage and historical materials, and generating and promoting interest in Egypt's cultural life.

g) ICT Export Initiative: Industry Development

This initiative is targeted to foster the creation of an export-oriented ICTCIT industry. Developing this industry can be a powerful engine for export growth and job creation particularly to Arab countries.

3. E-Government Development in the Egyptian Context

In this section, Egypt's e-government strategy is addressed in terms of its vision, mission, overall goals and objectives. Egypt's e-government program was launched by MoCIT in partnership with Ministry of State for Administrative Development (MoSAD). This program was divided into two stages. The first stage (2001-2007) incorporated setting and approving the e-government strategic plan, implementing and assessing pilot projects, and starting geographical & sectorial deployment of some projects. The second stage (2007-2012) aimed at expanding successful pilot projects on national level, and the development of government administrative body (MoSAD, 2006).

The government of Egypt inaugurated e-government portal (www.egypt.gov.eg) in January 2004. Some services were placed in the portal to pilot test the project such as telephone e-billing, birth certificate, issuing, etc. (Azab et al., 2006). Egypt's e-government stated with the following vision that comprises three main doctrines (MoCIT, 2004) (1) "public-centric service delivery" (the government orientation to develop a one stop-shop e-services approach emphasized on citizens' needs and expectations), (2) "Community participation" (citizens' needs are continuously being analyzed and considered, and private/public sector organizations are active participants in e-government implementation and management), and (3) "Optimal utilization of government resources" (i.e. productivity, cost reduction, and efficient allocation of resources are among the major expected outcomes from e-government implementation). To this end, the government developed its mission to put the vision into practice which focused on "*introducing better governance, in order to reduce government expenses and to increase the government efficiency*" (MoSAD, 2007).

Although, Egypt's e-government program was initiated by the MoCIT in 2000, the MoSAD that was founded in 1976 with the purpose of enhancing the efficiency of administrative systems and structures and modernizing public services, took over the leading role in e-government program in 2004. E-Government program management office was established to give support

for the program and manage its functions, which include e-services, shared services, operation management, technology services, and change management. These functions are interrelated and integrated, and do not operate independently. In 2004, the MoSAD launched new strategies and developed goals for the development and modernization of government, and for its implementation. More specifically, it has developed the following four interrelated and integrated programs (Site 2):

- *Institutional Development Program.* This program includes policies, plans, regulations and modern management structures, to regulate the wages and incentive systems, to improve the work environment, and to develop human resources.
- *Governmental Services Development Program.* It is targeted at providing citizens, businesses, government employees and other entities with services, throughout the country, in an efficient, effective and convenient shape.
- *Enterprise Resource Planning Program.* This program is aimed to improve the governmental work flows processes, to reduce government expenditures, and to automate government procedures through the effective and efficient usage of information and communication technologies.
- *Establishing and Integrating National Databases Program.* It is targeted to establish an integrated national database, where government bodies and institutions can efficiently and safely exchange information. The efforts to reach out for more interoperability are mainly driven through the Service Development program, but the other programs are benefiting from established interoperability and at the same time structuring the activities of its constant enhancement.

With regard to Governmental Services Development Program, the following objectives have been developed in order to achieve Egypt's e-government vision and mission (MoCIT, 2007; Site 2).

- a) To provide government services to citizens, businesses, travelers, and government agencies, irrespective of location, in a quick and efficient style; to ensure end users' involvement in decision-making process.

- b) To establish a good communication environment that is structured around cutting red tapes, creating easy access to government services and information, establishing efficient and effective technological clubs and centers, and providing government services through one stop-shop in order to robust local and foreign investments.
- c) To provide comprehensive, accurate, and updated information to support the decision-making process in the public and private sector in general and foster long term planning in particular.
- d) To implement new public management techniques in the government sector to increase its productivity.
- e) To reduce government expenses through adopting e-procurement techniques in the public sector.
- f) To improve the local competitiveness to be compatible with globalization and prepare Egypt's government sector to be integrated in the international economy.

4. Research Questions

The questions this research addresses can be structured as follows: The first question addresses Egypt's e-government readiness ranking and highlights e-services targeted towards citizens, businesses, government employees and other agencies. The second question focuses on the barriers and challenges that confront the Egyptian government in its efforts to implement the e-government program.

5. Research Methodology

To tackle these issues, this qualitative research conducts a detailed analysis of Egypt's published e-government strategy, it is introduced, together with a review of other relevant literature, particularly Egypt's e-government service portfolio, Egypt's e-government readiness ranking, government portals, UN e-government reports and surveys and the assessment of the Egyptian ICT sector conducted by the UN team and other e-government publications. Furthermore, it deepens

the exploration of Egypt's e-government portals, including education, investment and other government bodies for better understanding of barriers to e-government program and changes in business environment forces in Egypt, in order to develop corresponding recommendation to meet each challenge.

6. Egypt's E-Government Portfolio Summary

Before the deep analysis of challenges encountered in e-government implementation in Egypt, it is useful to provide readers with a brief summary of e-services delivered by the Egyptian government to citizens, business and government employees. This e-government portfolio summary delivered below is based on categorizing Egypt's E-Government Services conducted by Ramzy and Gebba (2012).

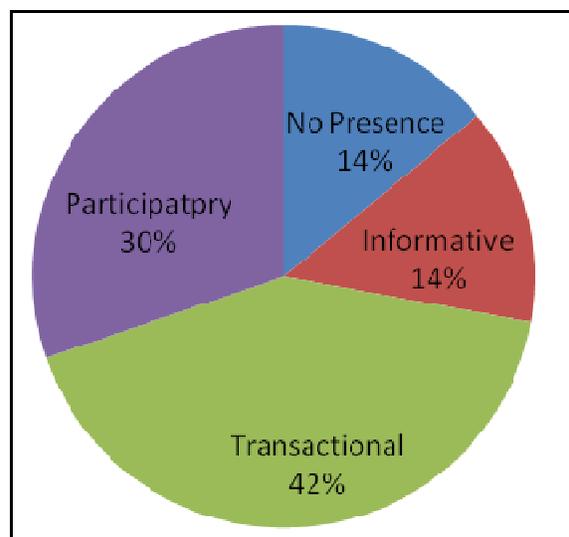


Figure 1: Egypt's E-Government Portfolio Summary (Ramzy and Gebba, 2012)

- **C0: No-Presence category.** This category combines the “not existing” e-services either through a broken link or through a corresponding page with under construction notation.
- **C1: Informative category** it involves a one way directional flow of information from the service provider to the public such as description of steps required to

complete an enquiry or form downloading etc. Moreover, it might include search criteria for the published information.

- **C2: Transactional category.** It represents a two way directional flow of information between the government and public. Furthermore, it is composed of two sub-classes:
 - Non-Financial (C2A): it includes online submission and files uploading
 - Financial (C2B): it represents online payment for the required service.
- **C3: Participatory category.** It incorporates e-services related to customer satisfaction side of the presented service. As a result, service providers enhance the quality of the offered e-services by investigating public opinion through providing a digital medium such as feedback form, blogs, forums or any other suitable mean. Additionally, C3 includes e-services used in political activities such as online voting and polling.

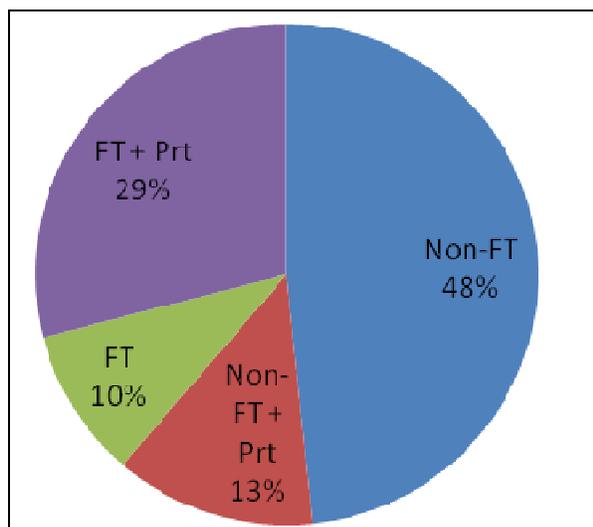


Figure 2: Egypt's E-Government Portfolio Summary (Ramzy and Gebba, 2012)

The above e-government portfolio analysis reveals some challenges encountered in e-government

implementation, such as the inability to use some broken service links, the dominating of one-way information and the limited number of e-service that permit on line payment (39% of total e-services offered) and e-democracy (around 30% of total e-services offered). It is noted that many service links that offer either information or requires documents and other requirements to apply to e-services need to be switched into interactive stage to allow for more interaction between service providers and users and to increase benefiting from e-government program.

7. Egypt's E-Government Readiness Ranking

It could be more useful to address Egypt's e-government readiness ranking compared with other Arab countries over the period from 2005 up to 2012, which might reveal some challenges faced by the country in its efforts to implement e-government program. E-Readiness is briefly defined as the degree to which a country is prepared to participate in the networked world (McConnell International Report, 2000). The e-government readiness ranking is a function of three variables or indices; Web measurement index (it reflects the content and delivery of e-government services); the telecommunications' infrastructure index (reflects the degree to which a country is prepared for e-transformation and e-delivery); and the human capital index (reflects the degree to which citizens are prepared to participate in the networked world).

In general, Egypt, has made some efforts to improve its e-government readiness ranking over the last few years. In terms of achievements in communication infrastructures; the connectivity and access have been improved by adopting a number of policy measures, including the deregulation of telecommunication sector with the launching of three mobile operators licenses. In addition, high quality of broadband connections is currently accessible in main cities and business parks, such as the Smart Village. Mobile uptake penetration increased from 25 subscriptions per 100 inhabitants in 2006 to 90 at the end of 2010. The number of citizens who have access to the internet using a mobile or USB modem has also increased from 7 million at the end of 2009 to 8.6

million at the end of 2010 (Azab et al., 2009; United Nations, 2011).

Regarding human capital aspect, the government has made some achievements through launching some initiatives in several institutions to provide the private sector with ICT engineers and technicians, in particular for the Information Technology Outsourcing (ITO) and Business Process Outsourcing (BPO) sectors. Therefore, the country has been ranked amongst the top ten

emerging markets for its IT skills. On the other side, the government has launched some initiatives in education field, such as the Smart Schools Network (around 5% of all schools) and IT clubs. These initiatives have extended computer-based education in the school system. However, still little has been done, if the huge number of both young population (around 12 million undergraduates) and primary and secondary schools (around 52 thousands) is considered (United Nations, 2011).

Table 1

E-Government Readiness's for Top Arab Countries

Country	2005 Ranking	2008 Ranking	2010 Ranking	2012
United Arab Emirates	42	32	49	28
Bahrain	53	42	13	36
Saudi Arabia	80	70	58	41
Qatar	62	53	62	48
Kuwait	75	57	50	63
Oman	112	84	82	64
Lebanon	71	74	93	87
Jordan	68	50	51	98
Tunisia	121	124	66	103
Egypt	99	79	86	107

Given that Egypt's government has made some initiatives to improve its e-government readiness ranking as mentioned above. But the UN E-Government Survey (2012) E-Government for people ranked Egypt as number 107 worldwide in 2012. Additionally, according to UN e-government surveys (2005; 2008; 2010 and 2012), it appears that Egypt lags far behind other Arab countries in e-government readiness as shown in table1. However, the country was a pioneer among Arab countries in launching its e-government program in 2000. This ranking might be attributed to several barriers to implement e-government program in Egypt, which will be analyzed in detail in the next section.

8. Challenges of E-Government in Egypt

This section opens with highlighting generic challenges in developing countries and in the Arab context, as Egypt belongs to the two groups. Then specific challenges faced by Egypt's government

are examined in detail. E-government implementations in developing countries are generally more problematic in comparison to those in the developed nations. Ndou (2004) explored these challenges by conducting an empirical, web-based research of 15 case studies in developing countries, which had launched and implemented e-government initiatives. The study found that e-government offers opportunities for governments; however, the ability of developing countries to obtain the full benefits of e-government is limited and is largely restricted by the existence of a combination of political, legal, social and economic barriers.

In the Arab context, few studies have been conducted in this regard. These studies summarized e-government challenges in some Arab countries, such as Saudi Arabia, Jordan, and UAE as follows (Abdel Nasser et al.,2007; Akemi and Omar,2009; Al-Fakhri et al., 2008; Almarabeh and Abuali, 2010; Mohammad et al., 2009; Elsheikh et al., 2008; Jawahitha and Gwendolyn, 2010; khasawneh et al., 2011):

- The lack of awareness regarding e-government services in Arab societies on the part of citizens and public organizations' employees;
- The current government regulations and structures are not appropriate for the requirements of e-government implementation;
- The lack of trust in accomplishing tasks online amongst government employees;
- The limited number of studies and research regarding e-government;
- The fear of consequences and results of the process of transition to e-government;
- The lack of training programs regarding use of computer and Internet;
- The security and privacy concerns (the lack of security of information);
- The shortage of IT skills;
- The fear that e-government program will result in a decrease in the role of intervention;
- The dominance of English language in Electronic content development;
- The fear that e-government will lead to reducing the role of employees in accomplishing work.

The above mentioned generic barriers to e-government in developing and Arab countries are faced by Egypt's government as well. The next part deeply analyses the specific challenges encountered in e-government implementation in Egypt.

The analysis of other relevant literature, particularly Egypt's e-government portal, UN e-government surveys, the assessment of the Egyptian ICT sector conducted by the UN teams, and other e-government publications reveals that Egypt faces some similar generic challenges to those of developing and Arab countries, and other specific challenges related to the Egyptian context, in its efforts to harvest e-government opportunities and to modernize government practices. These challenges facing e-government can be broadly categorized into social, economic, technological

issues (MoSAD, 2009). The Authors managed to identify these challenges clearly and proposed a group of recommendations to assist policy makers in Egypt in developing a coherent strategic vision for the future to overcoming the obstacles in the road for developing a successful e-government. These challenges and recommendations are analyzed and introduced as follows:

8.1 Legal and Regulatory Challenges:

8.1.1 The Lack of E-signature Mechanism. In general, the lack of comprehensive legislative framework for e-government has slowed the development of some e-services in the Egyptian context, such as such as tax procedures and documents completion and submission, online tax payment and issuing land property certificates. Building momentum to use and understand e-government services and processes remains restricted without a legal equivalence between digital and paper processes, which is still in progress in many developing countries including Egypt.

8.1.2 Security and Privacy Concerns. Egypt's Citizens are unlikely to use e-government services without a guarantee of privacy and security. It is central to e-government implementation success to make balance between respecting accepted privacy concerns and allowing the benefits of the Internet and other technologies to flow to citizens.

Recommendations:

- To urge the new Parliament to issue e-government law, including e-signature draft that permits for acceptance of authenticated documents among different entities.
- Government must work in close cooperation with the private sector and citizens for ensuring secure use of e-government portals.

8.2 Cultural, Social and Economic Challenges:

8.2.1 E-Payment Transactions Challenges (Low Penetration of Credit cards- Lack of Payment Tools for Simple Citizens). The e-payment framework in developed countries, which is highly dependent on credit cards, is not yet adequate for developing countries including Egypt, where penetration of credit cards is low and where many users are still hesitant about using credit cards for paying on line, along with, the lack of a wide spectrum of simple payment tools, such as

payment on fixed and mobile phone bills that facilitate using e-services on the part of simple citizens.

Recommendations:

- To develop a comprehensive e-payment framework that allows for several payment techniques, including credit cards, pre-paid cards and payment on fixed and mobile telephone bills. This type of payment requires a close cooperation with Telecom Egypt to meet all citizens' needs and expectations.
- To develop new applications based on citizens' needs or customers studies, which result in understanding their educational levels, traditions, customs, values, behavioral patterns and so on. Hence developing applications suits citizens' needs and characteristics, including simple and convenient payment methods.

8.2.2 Inconvenience of Delivery Mechanisms and its effects on Reputation of E-Services Quality.

Some e-government services are more likely not to be used or utilized due to difficulties in having access to them or in completing transactions due to technical problems. These difficulties might result in having negative perceptions and attitudes to e-services quality on the part of some users. As well as, the lack of e-service quality measurement, which might be attributed to the unavailability of information required for measuring the performance of the service delivered to users.

Recommendations:

- E-government services must be reviewed regularly by service providers to ensure that these services are workable, performing and accessible.
- Work flows and procedures must be reviewed to ensure accessibility, simplicity, efficiency and cost reduction, through the use of e-government services.
- To set measurable targets and indicators of performance, evaluate and report on these regularly to all stakeholders involved for the purpose of introducing corrective actions required.

- To develop a flexible implementation or action plan that can be changed over time in response to the rapidly changing environment.

8.2.3 Computer Illiteracy and Low Internet Penetration Rate.

The Internet penetration rate in Egypt reached 32.18% in June 2011, which is still low (MoCIT, 2011). However, some progress has been made in terms of the number of people accessing the internet using mobile phones, but more needs to be done with regard to the low penetration of PCs in the Egyptian context (United Nations, 2011); as well as, the high rate of Computer illiteracy, which hinders the majority of the people from benefiting from e-government. Furthermore, Internet remains English language-dominated, which results in a particular challenge for Arabic language speakers. Although, Egypt's government has made some achievements with regard to cultural and educational content development, electronic content remains a big challenge as much of it is still developed in English language, which is not adequate for many Egyptians who have modest English language capability (United Nations, 2011).

Recommendations:

- One of the key successful factors of e-government implementation in Egypt is to extend e-service access, and benefits from CITs through enhancing infrastructure coverage in underserved areas, promoting greater use of CITs among organizations located outside the technology parks, and launching innovative ways to reach to Arabic speaking users.
- Based on the higher penetration rate for mobile technology than regular PCs in Egypt, high attention must be given to the provision of services and content development using mobile platforms.
- To develop action plans to enhance new initiatives such as the free Internet and PC for each student or home, which can help in solving e-service access problems and improve the Internet penetration rate.
- The government in partnership with the private sector must develop and deliver free executive training programs to help citizens access, such as IDCL, Internet Driving computer license).

- To provide e-government services through kiosks, IT clubs, cyber cafes, and community centers, to ensure the benefit of the majority of the population from e-services.
- To develop free training programs for citizens on basic computer applications to break barriers between some people and IT.
- Work in partnership with the private sector in developing relevant e-content and training programs. Citizen-driven information content should be relevant to local population.
- The government must create a favorite environment that supports the development of e-content and company websites in local language.

8.2.4 Lack of Citizens Awareness, Participation and Study.

The lack of citizen awareness of the potential benefits that might result from the application of e-government and the less participation in e-government development on the part of users hinder the successful implementation of Egypt's e-government program. Furthermore, the government and private sector employees currently have very limited idea about what e-government is and how to benefit from it. This could lead to a big challenge for Egypt to move ahead in building successful e-government program. Finally, the analysis of citizen's pattern behavior and segmentation are made manually without using any software tools.

Recommendations:

Develop customer-centric strategies and policies, where the greater use of market and demand studies would help to identify citizens' needs with regard to information and services.

- Work in partnership with the private sector in conducting joint projects and sharing skills and expertise, which can help government bodies in providing e-government services.
- Develop relevant applications that use audio-visual components, along with written materials and incorporate educational programs in e-government projects.
- Plan and implement advertizing campaigns including broadcast media (TV and Radio programs), print media (newspapers and magazines articles and columns), and e-media

(Internet materials) where citizens can know and learn about e-government benefits and opportunities. Special treatment must be delivered to those who have difficulties to integrate (women, elderly, visitors).

- Deliver some basic educational materials on e-government at the school level.

8.2.5 Reluctance and Mistrust of Automation.

Egypt's government is faced by several challenges in its efforts to automate the process of workflows in government offices, such as the lack of standards and specifications for the process of government automation, which leads to difficulties in communication and integration across different government bodies. As well as, there is a reluctance to use automated systems due to various cultural factors; and security and privacy concerns.

Recommendations:

Develop standard specifications for networking, document management, security, and interoperability and use by government bodies in their automation efforts to assure a minimum level of integration between applications.

- Launch awareness programs for the purpose of increasing publics' knowledge about the benefits from automation for both government bodies (service providers) and users (service customers).

8.3 Bureaucratic Challenges:

8.3.1 Inflexibility to Modify Workflows.

Complexity of regulations and requirements on government agencies can be another challenge. Current workflows need to be re-engineered to ensure efficiency and effectiveness in government operations and to meet e-government program requirements and citizens' needs and expectations. Government is faced by several problems in this regard, including:

- Reluctance to modify workflows, which might be attributed to inflexibility or fear of change.
- Multiple auditing bodies, which might lead to a slowdown in workflows.
- Overlapping authority among government bodies, which might hinder cooperation and integration.

Recommendations:

- Study business process re-engineering to ensure efficiency and cost reduction, through the use of CITs.
- Develop an action plan for implementation according to the gradual approach, in order to handle resistance to change and to ensure the reforms will not seem devastating to the bureaucracy.
- Ensure the involvement of government employees in the workflows redesign process through organizing regular meetings between e-government policy makers and the key workforce.
- Develop incentives programs targeted towards those (individuals-institutions) who adopt the reforms rapidly.

8.3.2 Lack of Integration and Information Sharing among Governmental Bodies. In the situation in which the government moves from project-based e-government implementation to a more coherent plan for e-government development, Egypt is faced by some challenges with regard to establishing an institutional framework leveraging e-government initiatives. As well as, the lack of information exchange among government bodies hinder government capacity to efficiently and effectively co-ordinate and execute e-government initiatives.

Recommendations:

The new political orientation of Egypt paves the way for developing political, economic, social and administrative reform programs. The administrative reform program must pay more attention to the following objectives:

- To harmonize and integrate all governmental bodies' activities to achieve Egypt's e-government vision.
- To create easy flow and exchange of information among different governmental entities
- To eliminate red tapes
- To set up a high-level steering committee, monitoring implementation activities, ensuring e-government investment reviews

- To establish clear mandates and responsibilities for implementing e-government.
- To identify a clear mandates and responsibilities plan to allow effectively for e-government development and ensure proper co-ordination across government bodies.

8.4 Technical Challenges:

8.4.1 The Lack of Unified Standards and the Overlap among Service Providers. There is lack of unified standards for repetitive inquiries on the part of citizens who interact with different government bodies, such a situation could lead to inconsistent answers in several cases or situations, even for the same request. Furthermore, the lack of a common database storing citizens' interaction in all governmental agencies, where, several services require interaction with more than one Ministry, which makes it mandatory to provide a unified database for citizens in all governmental agencies, especially with the big number of ministries in Egypt (around 33). At this end, integration between them is considered to be a real challenge.

Seamless service delivery problems may be driven from the lack of information exchange among government bodies. In Egypt each channel is handled separately, and therefore each citizen's interaction history is not documented within all interaction channels. Egypt does not yet have a government communications network whereby different government bodies can interact and exchange information and documents.

Recommendations:

- Create a legal framework which could organize telecom competition, wireless and other digital technologies to expedite their deployment.
- The government must develop a coherent e-government vision for the future that would lead to unifying and harmonizing all government bodies' activities, procedures and services according to unified standards, combined with establishing action plans to ensure a rational and coordinated investment effort down the road.
- Encourage government sector to work in partnership with the private sector in developing appropriate solutions- they can

both improve the level of services to different stakeholders and simulate more content development among enterprises.

9. Discussion

The latest analysis of statistics revealed by the MoCIT (2011-May) shows that some achievements have been made by Egypt's ICT sector over the recent years. For example, ICT sector's contribution to the GDP growth rate is growing since the last five years; it contributed 0.5 percentage points (PPS) of the total 4.7% annual growth rate of the national economy in FY 2009/10. ICT sector expenditure as a percentage from GDP increased from 5.44% in year 2007 to reach 5.88% in year 2009. As well as, there has been considerable growth in the number of ICT firms in the country. This number (86% SMEs and 14% large enterprises) increased from 2,348 in 2007 to 3,934 in 2010. Furthermore, Egypt's Software exports grew by an annual average of 40% during the period from 2004 to 2010. However, other statistics, such as, the use of the Internet on the part of government and private entities, show that about 38% of government bodies and around 33% of private enterprises use the Internet respectively. Hence, the overall analysis of ICT sector performance reveals that several opportunities are available to Egypt. Meanwhile, many challenges are faced by the country in its efforts to enable ICT sector to play a significant role in the national economy.

Some achievements have been made by Egypt's government over the last ten years in terms of ICT infrastructure, human capital and the deregulation of telecommunication sector. However, many barriers to e-government implementation are still faced by the country, including generic challenges like other developing and Arab countries and specific challenges limited to Egypt.

These barriers to e-government program in Egypt have been listed by the MoSAD (2009) without further elaboration, according to the following categorization : legal challenges (remote authentication mechanism-security and privacy issues), technical challenges (lack of unified standards-multiple service providers-isolated communication islands) and cultural and economical challenges (fear of electronic payment-

low penetration of credit cards, no payment tools for simple citizens, reputation of quality of services-inconvenience of delivery mechanisms, overlap among service providers-computer illiteracy/low internet penetration). While the authors have identified, analyzed and re categorized the above barriers based on a framework adopted from other researchers (Almarabeh and AbuAli, 2010), particularly in the Arab context. These categories include legal challenges (the lack of E-signature mechanism-security and privacy concerns), social, cultural and economic challenges (e-payment transactions - inconvenience of delivery mechanisms and its effects on reputation of e-services, computer illiteracy and low internet penetration rate, lack of citizens awareness, participation and study), bureaucratic challenges (inflexibility to modify workflows, lack of integration and information sharing among government bodies) and technical challenges (the lack of unified standards and the overlap among service providers).

The identified challenges propose a group of recommendations to help policy makers in Egypt develop a coherent strategic vision for the future to overcome the barriers to developing a successful e-government. Recommendations have been developed based on deep revision and analysis of all relevant literature, including Egypt's e-government service portfolio, Egypt's e-government readiness ranking, UN e-government surveys and reports, the MoCIT and the MoSAD publications and annual reports, and Egypt's e-government portals, including investment and education portals.

10. Conclusions

While, many initial projects and efforts have been made, Egypt is still faced by many challenges in its endeavors to implementing e-government initiatives successfully. This is basically attributed to the conventional problems or obstacles that could restrict growth of any government, such as bureaucracy, lack of accountability and transparency, and lack of citizen involvement in decision-making process. In addition, there are e-government implementation challenges due to privacy and security concerns, lack of payment tools for simple citizens, lack of citizens'

awareness and participation, limited IT training, and lack of technical unified standards.

The research paper addressed the main initiatives and projects and presented achievements made by government to enable citizens, businesses, governmental employees and other agencies to benefit from e-government. Additionally, ICT initiatives in the Egyptian public sector organizations, as well as the important role of ICTs to help Egypt fostering the economic and social development were successfully introduced. An analysis to examine e-government services portfolio and Egypt's e-government readiness ranking was introduced. The challenges confronting e-government program in the context of Egyptian society were analyzed. Nevertheless, research findings indicate that Egypt is still lagging far behind some Arab countries from utilizing ICTs in delivering government services and information online. On the other hand, the review

indicates that the successful implementation of e-government applications go beyond the technical and technological aspects, requiring the government to adopt a new vision adapted to technological, social, economic, cultural and political environment in the Egyptian context.

11. Future Research

While, many studies have been undertaken to examine e-government from different perspectives, this study revealed some potential research ideas in the field of e-government, such as the effects of ICT applications in general and e-government, on corporate governance in the Arab countries in general, and in the context of Egypt in particular. Additionally, e-government portal versus public service portal need further examination, especially in Arab countries.

References

- Abdel Nasser, H., Faraj, A. and Wael, A. (2007), "Assessing e-Readiness in the Arab Countries: Perceptions Towards ICT Environment in Public Organizations in the State of Kuwait", *The Electronic Journal of e-Government*, Vol. 5, Issue 1, PP. 77-86
- Akemi, T. and Omar, A. (2009), "A Cross-Country Comparative Analysis of E-Government Service Delivery among Arab Countries", *Information Technology for Development*, Vol. 15 No. 3, pp. 151-170
- Aladwani, A. (2003), "Key Internet characteristics and e-commerce issues in Arab countries", *Information Technology and People*, Vol. 16, No. 1, pp. 20-32
- Al-Fakhri, M., Cropf, R., Higgas, G. and Kelly, P. (2008), "E-Government in Saudi Arabia: between Promise and Reality", *International Journal of Electronic Government Research*, Vol.4, No. 2, pp. 59 -82
- Almarabeh, T. And AbuAli, A. (2010), "A General Framework for E-Government: Definition Maturity Challenges, Opportunities, and Success", *European Journal of Scientific Research*, Vol.39, No.1, pp. 29-42
- Azab, N., Ali, M. and Dafoulas, G. (2006), "Incorporating CRM in E-Government: Case of Egypt", LADIS International Conference e-Commerce
- Azab, N., Kamel, S. and Dafoulas, G. (2009), "A Suggested Framework for Assessing Electronic Government Readiness in Egypt", *Electronic Journal of e-Government*, Vo. 7, pp.11-28
- Elsheikh, Y., Cullen, A. and Hobbs, D. (2008), "E-Government in Jordan: Challenges and Opportunities", *Transforming Government: People, Process and Policy*, Vol. 2, pp. 83-103
- Fountain, J. (2001), *Building the Virtual State: Information Technology and Institutional Change*, The Bookings Institution, Washington DC.
- Fraga, E. (2002), "Trends in e-Government How to Plan, Design, Secure, and Measure E-Government", *Government Management Information Science (GMIS) Conference*, Santa Fe, New Mexico
- Grönlund, A. (2002), *Electronic Government – Design, Applications, and Management*, Hershey, PA: Idea Group.

- Gunter, B. (2006), "Advances in E-Democracy: Overview", *Aslib Proceedings: New Information Perspectives*, Vol. 58 No. 5, pp. 361-70
- Hashem, M. (2002), "Bridging the digital divide in Egypt: facing the challenges", *UNCTAD E-Commerce First Expert Meeting*
- Hassanin, L. (2003), Africa ICT policy monitor project, *Egypt ICT Country Report*. 10-12 July
- Heeks, R. (2003). *E-government for Development: Success and Failure Rates of E-Government in Developing/Transitional Countries: An Overview*, University of Manchester. Manchester
- Heeks, R. (2006), *Implementing and Managing E-Government: An International Text*, Sage, London
- Ibrahim, E. (2007), "E-Commerce and Globalization: an Exploratory Study of Egypt", *Cross Cultural Management: An International Journal*, Vol. 14, No. 3, pp. 196-201
- Jawahitha, S. and Gwendolyn, R. (2010), "Gender Differences in E-Government Adoption in Dubai", *The Business review*, Vol. 16, No.2, pp.120-126
- Kamel, S. and Hussein, M. (2002), "The Emergence of E-Commerce in a Developing Nation: A Case of Egypt", *Benchmarking: An International Journal*, Vol. 9, No.2, pp.146-153
- Khasawneh, S., Jalghaum, Y., Harfoushi, O. and Obiedat, R. (2011), " E-Government Program in Jordan: from Inception to Future Plans", *International Journal of Computer Science Issues*, Vol. 8 No. 4, pp.568-582
- Kitaw Y. (2006). E-Government in Africa Prospects, Challenges and Practices. Available at: http://people.itu.int/~kitaw/egov/paper/EGovernment_in_Africa.pdf
- McConnell International Report (2000), "E-Readiness", Available Online at: www.mcconnellinternational.com/ereadiness/E-ReadinessReport.html (accessed May 5, 2007)
- Ministry of State Administrative Development (2009), Improving Take-Up E-Government Services: Challenges. Available Online at: sbedair@ad.gov.eg
- Ministry of State for Administrative development (2010) Egyptian Government, available at www.egtpt.gov.eg [accessed in May 2012]
- Ministry of State for Administrative development (2010), available online at; www.egtpt.gov.eg [accessed May 15, 2012]
- Ministry of State for Administrative Development, About MoSAD, available online at: <http://www.msad.gov.eg/About%20MSAD/Programs/> [accessed May 15, 2012]
- Mohammad, H.; Almarabeh, T. and Ali, A. (2009), "E-Government in Jordan", *European Journal of Scientific Research*, Vol.35, No. 2, pp. 188-197.
- Mohammed, A., Habib, T. and Mustafa, A. (2006), "Implementation of an E-Government Initiative at Dreamland Municipality", *International Journal of Cases on Electronic Commerce*, Vol.2, No. 2, pp.13-42
- Ndou, V. (2004), "E-government for developing countries: opportunities and challenges". *The Electronic Journal on Information Systems in Developing Countries*, Vo.18, No.1, pp. 1-24
- Neil, M. and Bernd, C. (2009), "Egypt's information society strategy: a critical lexicography", *Journal of International Technology and Information Management*, Vol. 18, No.1, pp.1-33
- Ralf, K. (2011), "Architectures for tinkering? contextual strategies towards interoperability in e-government", *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 6, Issue 1, pp. 26-42
- Ramzy, M. and Gebba, T. (2012), "Towards categorizing e-government services: the case of Egypt", *International Journal of Business Information and Technology*, Vol 1, No. 1, pp. 16-28
- Riad 1., Hazem, M. and Gamal H. (2011), "E-government frameworks survey", *International Journal of Computer Science Issues*, Vol. 8, Issue 3, No. 2, pp. 319-323
- Tino, S. (2009) "E-Government in developing countries: experiences from Sub-Saharan

- Africa", *Government Information Quarterly*, Vol. 26, pp. 118–127
- UN Report (2008), UN E-Government Survey 2008: From E-Government to Connected Governance, *United Nation*, New York
- United Nations (2011), ICT Policy Review-Egypt, United Nations Conference on Trade and development, (UNCTAD). Retrieved January, 2011, from <http://www.mcit.gov.eg/Upcont/Documents>
- UNPA and ASPA (2001), "Benchmarking E-Government: A Global Perspective". Available online at: <http://unpan1.un.org/intradoc/groups/public/documents/UN/ UNP AN021547.pdf>
- Welch, E. and Hinant, C. (2003), "Internet Use, Transparency, and Interactivity Effects on Trust in Government", *36th Annual Hawaii International Conference on System Science, Hawaii*