Challenges in Developing Citizen-Centric E-Governance in Libya

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Abstract*: Improving governance and public administration has become a priority for sustainable socio–economic development. The Internet has altered the way business is transacted the world over, and is now changing the way government interacts with citizens and businesses Information and communication technology (ICT) and especially the Internet is a immense tool to make governments more open and transparent. It empowers citizens. The Internet can be used by citizens to watch their governments, rather than by governments to watch their citizens. ICT can make governments more relevant to citizens by increasing participation and involvement in decision making. It can help to restore ownership: the government is of the people. E-Governance is a step ahead in this direction. It has changed the ways of information and service delivery of government to various sections of society. Successful implementation of E-Governance solutions is built on efficient, accountable and transparent Government to Government (G2G) and Government to Society (G2S) transactions. Libya is passing through a phase, where tremendous changes are taking place in the corporate sector. The changes are far reaching and the citizen is deeply impacted. New horizons of economic growth and prosperity are opening up and tremendous opportunities are unfolding from which business world as well as governments can benefit. Along with these opportunities, new sets of challenges have arisen. It is time for the decision makers in Libya to start preparing to meet these challenges.*

1. Introduction

Sustainable socio–economic development has become top priority for governments across the world. The advent of new technology and the mindset across the world to adopt fast changes, the modes of services delivery of government, its various stakeholders has been shifted from traditional government to electronic government (E-Government). Basically E-Government is composed of information technology, people, and governments (Waisanen, 2002) [8]. E-government is the application of electronic means to improve the interaction between government and citizens; and to increase the administrative effectiveness and efficiency in the internal government operations. Further, it is the application of information technology to the government processes to bring Simple, Moral, Accountable, Responsive, and Transparent (SMART) governance [2, 3]. Prefixing the word Government with "E" broadly implies the use of Information and Communications Technologies (ICT) such as the internet, WAN or mobile computing to exercise their functions in an effective and efficient manner in

transforming its relations with citizens, business and other government entities. It is used for a variety of public, personal and productive purpose. Effective ICT deployment result can multiple effects such as creation of earning opportunities and jobs; improve in the delivery and access to basic services like health and education. It can increase the transparency, accountability and effectiveness of institutions, thus improving the enabling environment for development and service delivery of government. It means E-Government is government of people by people and for people in itself. Figure1, below shows the archetypical diagram of e-Government.

Different countries have different resources and capabilities. It is possible to imagine 24x7 electronic interactions with the government in developed countries but it is difficult to achieve the same level of efficiency and flexibility in developing countries (Rahman 2007). This is because different countries have different infrastructures, GDP levels, education rates and competitiveness rates. All these are believed to be important ingredients to build and maintain effective e-Government initiatives. Developed
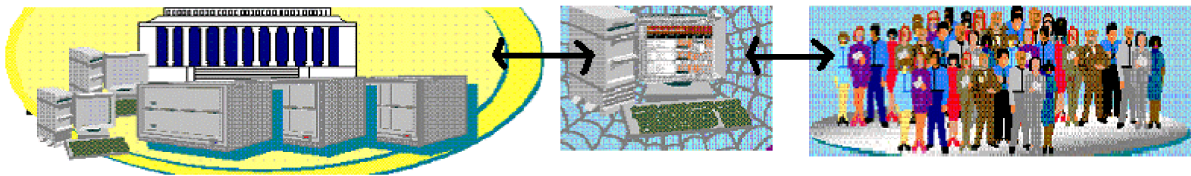
Figure 1. Archetypical of E-Government.

countries are expected to have more advantages in these aspects than developing countries. The growth of e-Government is not uniform throughout the globe. USA and most of the European countries are at much advance stage and many Asian and African countries are still toiling hard to achieve level same to them.

Today information plays a pivotal role in our lives and technology has become a standard mode for storage, processing and sharing information and knowledge. Libya is in the throes of major changes which results from economic reforms and a stable progressive government. However, despite vast hydrocarbons resources, the country faces great challenges in achieving 24x7 governments. The government needs to curb these challenges through qualities of its policies [7]. The necessary transactions to accomplish well acquainted E-Government can be synchronized by balancing three mound proprietor of socio–economic development viz: government (G), business (B) and society (S) as shown in figure 2 below.
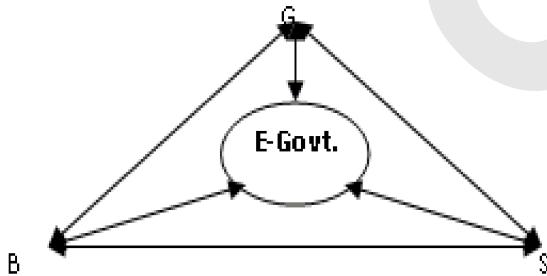

Figure 2. E – Government Transactions.

It has become a trend that the developed countries merge on a line to adopt the global leader as role model while designing their E-Government policies. Hence idols are generally developed countries with vast resources having different ground than developing countries. The policies and models of E–Government validated in developed Europe and USA, when applied to developing countries results in failure. This happens due to reality closure gap between E–Government project and its implementations in developing world.

Here in this paper we have tried to deal this concept in Libyan context. Libya is fast developing economy and it needs not any one's charity to achieve excellence in E-Government. It has already started E-Government programme and need just a pull of experience to its initiatives. The government intentness, available necessary budget and technological infrastructure may make everything necessary to have a leap and bound exponential

increase in E-Government practices in Great Jamahiriya.

1.1. Literature Review

In recent past a lot of work has been done on E-Government and its related topics. World Bank (2008), Rahman (2007), Kovacic (2005), UNDESA (2003) and Brown (2002) define E- Government. Besides definitions, several research papers have elaborated the advantages and disadvantages of E-Government along with opportunities and challenges that it raises. For example, competitiveness and knowledge advancements can be realized through e-government (Signore et al, 2005); however, digital divide and human capital development are two key issues that need to be addressed (Dugdale et al, 2005). Stapenhurst et. al. (1997) [9] gives utility of e – public administration to reduce corruption in government departments. Wanamet (2000) studied about technological management and its utility in democratic process. Siragura et. al.(2007) [10] has developed an quality E–Government environment for higher education institutions in India based on possible challenges faced by ICT in higher education. Albert (2009) [1] has made important suggestions to overcome the challenges in the implementation of E-Government projects in Africa. The possible challenges on some stages have been studied and only those which match to socioeconomic realities of Great Jamahiriya have been identified. These can be used to design appropriate E-Government environment in Libya [4].

The rest of this paper organize as follow: section 2 gives present position of E-Government in Libya. Possible challenges and SWOT analysis are presented in the subsections. It discusses chronicle development of E– Government in Libya and compares its position with other northern African countries. Section 3, work out design requirements for E–Government environment. Section 4, present the quality E–Government environment for Libya and section 5 finally concludes the paper.

2. E-Government in Libya

This section presents comparison of Libya in ICT usage and E-Government with its neighboring countries. The possible challenges to Libyan E-Government initiatives and SWOT analysis in context to various contemporary issues are discussed.

2.1. Present Scenario

In African countries but it is still laggard in E-Government approaches. In 2005 it has incorporated its ICT policies but these policies are mostly consciousness oriented instead of a fully-fledged result oriented. Libya's policy focuses on:

- Supporting the government's initiatives on the Interim Poverty Reduction Strategy Program (IPRSP) using ICT Standards, operational systems and administrative procedures.
- Setting the framework to develop and implement ICT programmes in the shabdiyats and local communities.
- Broadening the national academic curriculum to create careers in the ICT sector and raise overall awareness.

The policies are in their early stages with high orientation towards improving the quality of education through ICT by adopting modern techniques and methods in education, encouraging the scientific community to engage in research with moderate focus on encouraging the private sector to get involved in funding higher education and developing open/distance learning. Figure 3, shows comparision of various parts of ICT usage. Libya has largest share in mobile usage in northern Africa even greater than continetal average but still a slow in internet penetration and usage. In 2008, Libya becomes the first African country to reach 100% mobile telephone penetration. It has been reached to 135% in 2009. Internet penetration rate in 2009 was 5.5 %. But a large number of users still rely on dialup connections to access the internet and there are only about 51,000 broadband subscriptions in the country. Internet use is expected to grow with the introduction of the first commercial wireless network (WiMax) by the state-owned ISP in January 2009 [2].
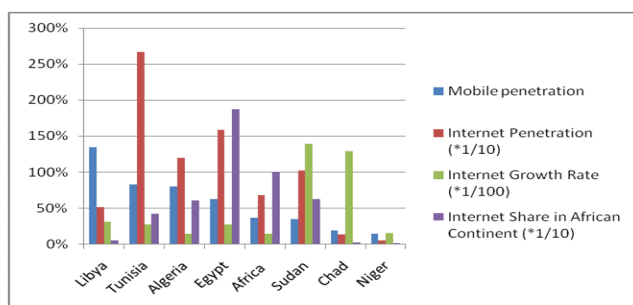

Figure 3. Comparison of ICT Usage in Libya & Neighbouring Countries with Africa Continent (March 2009).

Figure 4. Shows comparision of PC penetration and E–Government readiness of Libya in comparision to selected neighbouring contries. UN online services survey shows that Libya has surged second to Tunisia in Northen Africa in raising online services since 2008 to 2010 with order Tunisia (+58%), Libya (+6%),
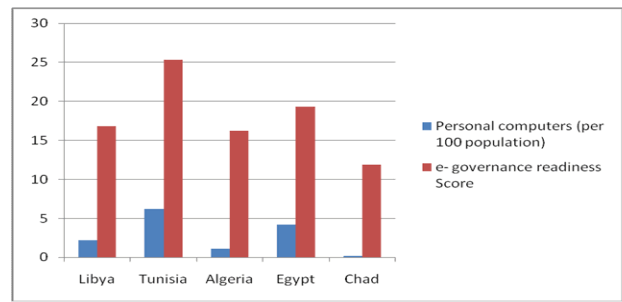

Figure 4. Position of Libya in PC Usage and e-Governance Readiness among Selected Neighboring Countries (March 2009).

Egypt (-7%), Niger (-2%). Egypt which has larger PC and internet penetration than Libya, is still showing negative growth in online services, that is must for E-Government. Table 1 and 2 below shows the weight against the E-Government development index along with index for its constituent factors and E-Participation index respectively with their worldwide ranking for Africa and Northern African countries. This contrast clearly reveals that Tunisia and Egypt are on top of in ranking to Libya [6, 8, 9, 10, 11, 12].

Table1. E-participation index (Source: UN e-Participation Report, 2010).

Country / Region	Rank	Index value
Tunisia	39	0.3000
Egypt	42	0.2857
Libya	68	0.1714
Morocco	86	0.1286
Niger	102	0.1000
Sudan	102	0.1000
Chad	127	0.0571
Algeria	157	0.0143
Nigeria	157	0.0143
Africa	---	0.0845

2.2. Challenges to E- Government Practices in Libya

In the country like Libya the expectations of public from the government are very high. Delivery of services has to be highly efficient to meet these expectations and the use of technology for delivery is inevitable. Traditional methods of delivery of services are no longer sufficed. Investment decision for roping in technology has to be made on the basis of resultant efficiency of services. Shifting of focal point from traditional government to E-Government involves a real transfer of power from the government officials to masses. For successful E-Governance projects and superior service delivery, it is imperative that the government agency focuses on whole citizen experience. It is essential for long term success that government agency needs to integrate information from all points of citizen interaction. The overall architecture for E-Government needs to ensure that the architecture components are extensible and scalable to adapt to the changing environment. The E-Government applications that are emerging as islands of successes

Table2. e- Government Development Index (Source: UN e- Government Development Report, 2010).

Country / Region	Rank	Index value	Constituent factors		
			Online service component	Telecommunication infrastructure component	Human capital component
Tunisia	66	0.4826	0.1641	0.2544	0.0641
Egypt	86	0.4518	0.1803	0.2301	0.0414
Libya	114	0.3799	0.0464	0.2963	0.0371
Morocco	126	0.3287	0.0810	0.1894	0.0584
Algeria	131	0.3181	0.0335	0.2435	0.0412
Nigeria	150	0.2687	0.0324	0.2167	0.0196
Sudan	154	0.2542	0.0529	0.1778	0.0235
Chad	182	0.1235	0.0065	0.1110	0.0060
Niger	183	0.1098	0.0130	0.0930	0.0038
Africa	---	0.2733	0.0489	0.0221	0.2039

have to be interoperable (Misra, 2006) [7]. The major challenges to Libyan E-Government initiatives are:

- Literacy: In Libya Literacy rate for male is about 92.4% and female is 72%. A nation cannot expect its superiority without putting 50 % of its population on equal footing. Ensuring equal participation of women is still a challenge in Libya.
- Legislation: In 2005 General's Peoples Committee on Telecommunication has framed ICT laws, which only ensures its academic use. Various other issues like validity of digital signature, acceptance of information obtained from internet by government official and cyber security are major challenges and deserve government immediate attention.
- Localization: The worldwide ICT solutions are mostly developed with English Language interface. However, in Libya vast majorities (85%) of the citizens are not fluent in English and use the local language. So access to vast literature and tools available worldwide is a challenge to Libyan information society.
- Infrastructure: E-Government projects have primarily focused on internal process automation and generally are hardware and infrastructure driven with little focus on citizen services. Successful E-Government initiatives can never be taken in swift, particularly, for the emerging economy like Libya. In other words, there is requirement of having web presence of each department and its sub departments. Infrastructure is one of the major obstacles that plague the implementation of information technology into daily lives.
- Leveraging Private Capital: Involvement of private sector provides an opportunity to develop it leap and bound by gaining experience from business policies of company involved as well as it diminishes load on government functionaries.
- SOFA: SOFA (Standard, Objective, Focus and Attitude) is a multidimensional challenge to E-Government in Libya. Use of ICT tools is not uniform through all departments. Departmental approach and absence of a national framework for

common standards has resulted in adoption of different technical standards and varied architectures. This has significant implications for designing effective integrated applications and also entails long-term costs and sub-optimal results. Here objectives setting are purely in ICT terms, while government business process outcomes are either not defined or defined in vague terms that do not lend them to measure post implementation is major drawback of Libyan E – Government status.

The implementation of E-Government should focus on society rather than technology. Technology is one of the tools to accompany the change. The paradigm that ICT can change life of common man is still having a little implementation. However, the common man now-a-days is fully ready to adapt to fast changing technologies and the excuses "citizen is not ready for change" is no longer relevant. Capacity building initiatives will be required for the necessary change in attitude as well as to manage changes. It will be important for the governments to adopt aspects related to E-Government according to people, level of their education, employment, income, digital divide, rural versus urban area, rich versus poor, literacy, IT skills and arrange scientific means for evaluation of such measures.

2.3. SWOT ANALYSIS

Libyan E–Government environment is full of challenges and opportunities. Here we will present a strength, weakness, opportunity and threats (SWOT) analysis of social, political, economical and technical aspects to E–Government in Great Jamahiriya [5,6].

- Social aspects related to E-Government include social level, gender educational gap, cultural and language factors, provisions for socially backward and disabled peoples and IT awareness.
- Political aspects related to E-Government includes strategies and policies, laws and legislation, leadership, decision making processes, funding issues, international affairs, and political stability.

- Economic aspects related to E-Government are funding, cost savings, Business models, e-commerce and spin-offs of E–Government.
- Technological aspects involve software, hardware, infrastructure, telecom, IT skilled people, and maintenance, safety and security issues.

Table 3(a), (b), (c) and (d) below respectively presents them.

Table 3. (SWOT) analysis of social, political, economical and technical aspects to E–Government in Great Jamahiriya.

(a). SWOT analysis of Social aspects of E–Government in Libya.

Social Aspects	
Strengths	*Weakness*
• People eager to learn IT skills • Skilled people possible • Export product	• Basic education poor • Gender influenced literacy and IT literacy • English language and cultural gap • Skill shortage: Low competition • Lack of identified IT skill and enablers/disablers for physically challenged and socially backward
Opportunity	*Threats*
• Employment increases • Education system improve • People get job out of hydrocarbon sector and Promotion of Internet	• Brain drain IT skilled people after training • Resistance of people • Digital divide • Privacy

(b). SWOT analysis of Political aspects of E–Government in Libya.

Political Aspects	
Strengths	*Weakness*
• Stable Government • Democratization reforms • Government willingness to e-Governance • Transparency • Willingness	• Lack of cyber laws • Hierarchical structures • Validity of digital signature in government processes • Budget • Lack of Motivation, Slow working process
Opportunity	*Threats*
• Raise public sector funding • Show competitive edge • Transparency causes natural change of processes • Reinvent government	• Bureaucracy • Piracy, misuse • Corruption • Maintaining disorder

(c). SWOT analysis of Economical aspects of E–Government in Libya.

Economical Aspects	
Strengths	*Weakness*
• E-governance argument for external funding • Transparency for businesses procurement	• Investors • Budget control
Opportunity	*Threats*
• Higher cost efficiency and New business	• Corruption

(d). SWOT analysis of Technological aspects of E–Government in Libya.

Technological Aspects	
Strengths	*Weakness*
• Everything is new: no negative legacy • Leapfrogging possible	• Shortage IT hardware • High cost of internet • Heterogeneous data / Absence of national data base server • Lack of IT standards and software licenses
Opportunity	*Threats*
• Reusable 2nd hand hardware available • Speed up transactions and Employment	• Dependency of technology

3. Design Requirement for E-Government in Libya

From above discussion it is clear that there is an intense need of E–Government in Libya to transform government concept in reality. The design of E-Government environment in a country is affected by various factors like stability of government, GDP, social condition, literacy rates etc. Following are the points which can form a durable E-Government environment in Libya:

- Clarity in objective Setting: The first stage of E-Government overhauling process is to clearly define aim, objectives and target to be achieved. Only precise objectives can lead the project on right path.
- Identifying ICT outcomes: While implementing its ICT policies country should set its priority for ICT usage. Various ICT outcomes are presented below in figure 5. Libya should identify priorities in two or three field like ICT for ICT itself, women empowerment and future planning in first phase and subsequently covers the rest in two or three more phases.
- Peer Learning: Libya should learn from nations on equal footing like Tunisia, Egypt, India, China and Malaysia etc. instead to the America and other European countries which rally on different demographical and technological infrastructure.
- Re – engineering Project Implementation: The present practices to implement project in Libya is too much slow to yield any observable inference. Government need to identify department on priority basis and it should take E- Government as Mission Mode Project (MMP).Flagship programs will develop a national spirit and attract attention of every stakeholder.
- Strengthening Infrastructure: Advance development of technological infrastructure is main strength of the E–Government status. Figure 4 shows that PC use per 100 people is still very low in Libya. We must focus on updating our infrastructure.
- Identifying E–Government Presence: The Table 4, given below shows Libyan scenario of E–Government presence. We are still on stage – II of E–Government while developed and some of the developing countries have achieved stage – IV. We need to avail transactional presence and network presence to ensure E–Participation in order to complete transactions online and provide integrated platform for network and virtual services for citizens [6].
- Private Public Partnership: Industrializing the ICT sector and utilizing its resources for E–Government movement of country is recent trend in ICT enabled countries. Libya needs to establish and encourage soft skill industry. Corporate Social Responsibility (CSR) should be decided for industrial houses. Government should frame rules, regulations and tax laws in such a way that a responsibility can be imposed on industry and E- Government operations go forward with minimum capital investment. Share ideas, cooperate projects, ensure public private partnership (PPP) with friend states and encourage English language along with Arabic can further help in this direction. It will reduce burden on government, attract extra capital and gain from international experiences of companies.
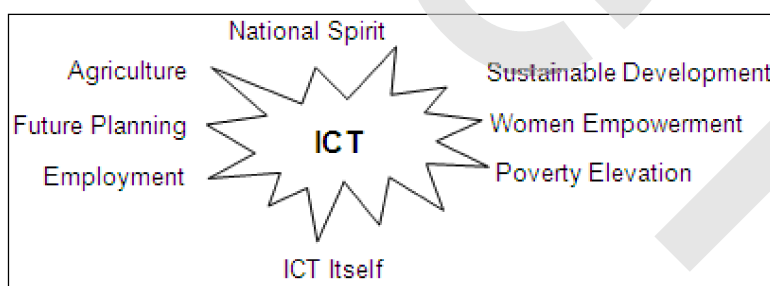

Figure 5. Socio – Economic Goals of ICT.

Table 4. Stages of e- Governance implementation and their presence in Libya.

Stage	Presence	Characteristics	Libyan Scenario
Stage – I	Web Presence	Information: Presence	Web sites of Libyan government, departments & Universities available.
Stage – II	Interactive Presence	Interaction Intake processes	Online processes, form filling, tenders, tax deposition are rare.
Stage – III	Transactional Presence	Transaction: Complete transactions	Completion of online processes is totally absent
Stage – IV	Networked Presence and E-Participation	Transformation: Integration& change	Integrated platform for government services and virtual agencies for this are not available

- Budget Allocation: Allocating more planned budget, develop separate General's People Committee for planning and implementation of ICT & E–Government. Economic soaps & motivation should be provided to NGO's, Government/Private sector departments and nonprofit making companies for luring them to engage in E- Government activities. It will attract more people to field and motivate them. Setting Benchmarks: Between various functions of the government and private sector placing benchmarking national index and standard raise the spirit of competition. The international indices are sometime not giving exact evaluation to Libya specific conditions. For example country can set indices like human development index, e – Readiness index, e-Participation index to compare E–Government and ICT usage between various shabdiyats. It will help in identify the backward and lead areas in country and framing policies for them.
- Legislative Framework: Legal provisions should be made to ensure digital/cyber security, safe communication and internet dealings and allows digital signature and promote internet, mobile banking and ATM's. It will make citizens familiar with ICT tools.
- Encouraging Research: More research grant should be provided, Universities should establish separate chairs for E-Government research, conferences and workshops need to be conducted and national journals needs to be published. Instead of granting for foreign degree spend more on institutes of higher education in Libya. Technical Open Universities to be released and explosion of foreign universities should be allowed.
- Encouraging Pervasive Communication: Next generation will be the mobile. So instead of traditional internet mobile broadband should be encouraged. It will reduce cost with ensure remote access of network.
- Ensuring People Participation: The people participation more should be ensured. People should be given awareness about benefits of digital information and its transparency. As the people participation increases the barrier will be reduced.
- Computer Literacy: Computer literacy should be increased. It should be made compulsory subject to every stream and faculty. It will help in harness Libyan Potential to be Knowledge Hub in Africa.

4. E–Government Environment for Libya

E-Government is about transformation of the government structure and organization into a streamlined framework by deploying the tools and mediums of the Internet, thereby helping citizens and businesses keep pace with new opportunities in today's knowledge economy. E-Government is a tool to achieve a set of well-defined objectives that collectively work towards betterment of society as a whole [6, 7, 12]. These are:

- Meeting the need of citizens by facilitating quick procedures, ease of interaction and instant access to information. Such G2C (Government to Citizen) interactions foster the adoption of citizen-centered model.
- Improved services for businesses efficiently enabling and regulating a range of activities from international trade and commerce to agency's procurement of goods and services. This G2B (Government to Business) interaction forms the crucial foundation for e-Commerce initiatives.
- Transparency in the government's administration, which reflects positively on anti-corruption.
- Achieving a seamless flow of information and data across the different levels of government. This is achieved through G2E (Government to Employee) interaction, where agencies provide data to employees via intranets, email and enterprise resource planning software for online management, accounting and decision-making. With similar lines is the concept of G2G interaction, with electronic interaction between national, local and foreign governments.

To transform these objectives in its G2G and G2C transactions as per need of Libya.3, the government of Libya should views E-Governance as a vehicle to initiate and sustain reforms by focusing on general administration, management and public services delivery. The result of electronic treatment to these broad areas summarizes below:

- E - Administration

1. Transparency, People's participation
2. Promotion of a information society

- E - Management

1. Simplicity, efficiency and accountability
2. Managing information and data effectively
3. Information services Swift and secure communication

- E - Public Services

1. Efficient, cost-effective service delivery
2. Responsive government,
3. Convenient services to society
4. Full citizen access to public information
5. Accountability in service delivery

To achieve success in above areas while combating challenges we have identified three broad remedies by which we can efficiently achieve target. These are FRIENDS, PRISM and Building Infrastructure. Figure 6 below envisage this fact.
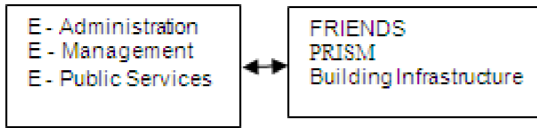
Figure 6. Success Factors of e – Government.

- FRIENDS: The first requirement for effective e – service is availability of an efficient network which can be accessed anywhere and anytime throughout the nation. The pervasiveness of information can only ensure timely information delivery. Delayed information is same as denying the information. FRIENDS can be expressed as below:
- F:-Fast, R:-Reliable, I:-Instant, E:-Efficient, N:-Network for the, D:-Disbursement of, S:-Services
- In Libya the strength of telephone network in urban areas is good and quality deteriorates in far flung. To ensure proper electronic administration, management and services providing a quality network is mandatory. Figure 3 show that we have much more mobile access than neighboring countries. The quick and easy way to curb the problem of network is by allowing more and more mobile and mobile broadband operators in fray.
- PRISM: It is implementation strategy for efficient e –services to Libya. It covers various factors for policymakers and industry engaged in this sector like planning of services, government process re – engineering, proper implementation, steering the services and project monitoring. The planning stage is much important. From table 2 it is clear that Tunisia and Egypt are ahead of us. But in some of indices we are at par or ahead to them. We have much strong telecommunication infrastructure (Libya – 0.2963, Tunisia – 0.2544 and Egypt – 0.2301). We have to fix a target and set the priorities - what we have to achieve first? We should focus more on components like online services, human capital e–participation and simultaneously keeping updates for what we have.
- Building Infrastructure: It involves availing everything that needed and required as recourses for

implementation of E-Government project. It covers physical infrastructure, country data base, technological infrastructure, human resource infrastructure and an adaptive approach from womb to realization of E-Government. Figure 7 envisage the necessary infrastructure needed to develop the model.

5. Conclusion

This paper is presented SWOT analysis of E-Government in Libya. An analysis of current status of social, political, economical and technical aspects and a model based on this has been presented. The real challenges which nation faces while implementing E–Government have been discussed in details. Based on SWOT analysis and possible challenges a set of suggestions have been proposed. A collective implementation of these can provide an ideal environment for electronic government in Libya. Here inference can be drawn that Libya has everything possible to lead African Continent as well as stand by to developed nation. We have identified three broad areas which need to be electronic to transform government intentions in to reality. These are administration, management and public services. Further FRIENDS, PRISM and infrastructure building can be best strategies to enhance best practices in e – Government in Libya. This paper has presented a theoretical concept. For further research a practical implementation of concepts presented here can be done. It will help in refining the E–Government model for Libya to higher degree.
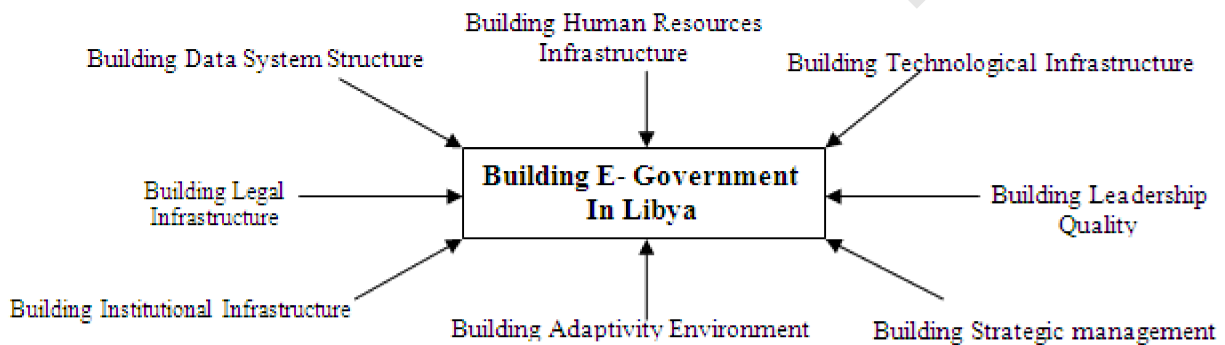
Figure 7. Building Infrastructure for Quality E–Government in Libya.

References

[1] Albert I.O., "Whose e-governance? A critique of online citizen engagement in Africa" *African Journal of Political Science and International Relations* Vol. 3 (4), pp. 133-141, 2009.

[2] Amr H., "Survey of ICT and Education in Africa: Libya Country Report", June 2007.

[3] Arinaitwe R, "Towards Good Governance of Financial and Economic Institutions in African Countries: The Critical Role of Governments" *High Level Pan African Conference Tangier, Morocco*, 1-3 December 2008.

[4] Department of Economic and Social Affairs (DESA), United Nations "Survey of ICT and Education in Africa – 2007: Great Socialist People's Libyan Arab Jamahiriya Public Administration Country Profile", 2007.

[5] Department of Economic and Social Affairs Division for Public Administration and Development Management , "UN E–Government Survey 2008: From E– Government to connected government", 2008.

[6] Libya Profile http://opennet.net/research/ profiles/Libya, 2010.

[7] Misra, D.C., "Ten Emerging E-government Challenges Today: The Future May be Sober and not Hype, *4th International Conference on E-governance*, December 15-17, 2006.

[8] Stapenhurst, F. & Langseth, P. "The Role of the Public Administration in Fighting Corruption". *International Journal of Public Sector Management*, 10, (5), pp. 311-330, 1997.

[9] Siragusa, L. Dixon, KC. and Dixon, R, "Designing quality e-learning environments in higher education", *Proceedings ASCILITE Singapore*, pp: 923 – 935, 2007.

[10] Thapliyal M.P., *"Delivering E-government"*, GIFT Publishing New Delhi, 2006.

[11] United Nation e-Government development report 2010/03/25. http:/www2unpan.org/egovkb/ datacenter/Countryview.aspx, 2010.

[12] Waisanen, B. "The future of E-Government: Technology-fueled management Tools". *Public Management, Washington*, 84(5), pp. 6-9, 2002.

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