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Enhancing the e-Government Functionality using Knowledge Management

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Abstract**—**The primary aim of the e-government applications is the fast citizen service and the accomplishment of governmental functions. This paper discusses the knowledge management for e-government development in the needs and role. The paper focused on analyzing the advantages of using knowledge management by using the existing IT technologies to maximize the government functions efficiency. The proposed new approach of providing government services is based on using Knowledge management as a part of e-government system.

Keywords**—**E-government, knowledge management, e-service, e-tools, governmental functions.

I. Introduction

IN recent years, Jordanian e-government construction has got successful development, and above the county level in most government departments have set up their own portal. However, from an overall point of view, Jordanian current e-government construction and development is not satisfactory, which focused on construction and training, and ignore the role of knowledge management. This way of development can not lead to effective administrative information sharing needs. Particularly administrative information sharing needs of the community, social efficiency is low. How to manage all government information resources effectively in the e-government, how to make users to facilitate the retrieval of information through e-government system, analysis and sharing better government services, how to enhance the image of the government, it is urgent need for the e-government construction and development of knowledge management.[1]

II. E-GOVERNMENT DEFINITION AND STRUCTURE

E-government is a generic term for web-based services from agencies of local, state and federal governments. In e-government, the government uses information technology and particularly the Internet to support government operations, engage citizens, and provide government services. The interaction may be in the form of obtaining information, filings, or making payments and a host of other activities via the World Wide Web [2,3].

The waves of e-government are rising through public organizations and public administration across the world. More and more governments are using information and communication technologies especially Internet or web-based applications, to provide services among governmental agencies and citizens, businesses, employees and other non governmental organizations [1, 2]. As e-learning [3], e-health and e-commerce [4], e-government represents the introduction of a great wave of technological innovation as well as government reinvention. E-government uses the most innovative information and communication technologies, particularly web-based applications, to provide citizens and businesses access to governmental information and services, to improve the quality of the services and to develop and provide greater opportunities for citizens to participate in democratic institutions and processes [5, 6]. This includes transactions between government and business (G2C, G2G, G2B) government and citizen, government and employee, and among different units and levels of government like justice, taxation, welfare, social security, procurement, intra-governmental services etc as seen in table1. All these require technical policies and specifications for achieving interoperability, security and information systems coherence across the public sector [7, 8, 9]. The above context constitutes a basic body of knowledge for the design and development of e-government applications.

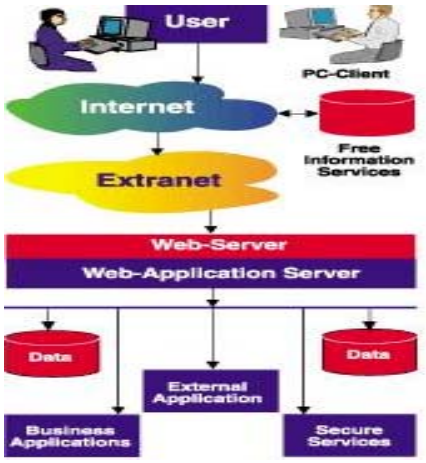

Fig.1 E-government technologies

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TABLE I OVERVIEW OF E-GOVERNMENT SOLUTIONS

External: G2C		**External: G2B**	**Internal : G2G**
Phase ⏲ : Information	Local/Departmental / National Information (mission statements and organizational structure Addresses, opening hours, employees, telephone numbers Laws, rules and regulations Petitions Government glossary News	Business information Addresses, opening hours, employees, telephone numbers Laws, rules and regulations	Knowledge base (static intranet) Knowledge management (LAN)
Phase ⏲ : Interaction	Downloading forms on websites Submitting forms, Online help with filling in forms (permits, birth / death certificates) Intake processes for permits etc. E-mail, Newsletters, Discussing groups (e-demoracy), Polls and questionnaires Personalised web pages Notification	Downloading forms onwebsites Submitting forms Online help with filling in forms (permits) Intake processes for permits etc. E-mail Notification	E-mail Interactive knowledge databases Complaint handling tools
Phase ⏲ : Transformation	Personalised website with integrated personal account for all services	Personalised website with integrated business account for all services	Database integration

Source: (Backus, M. (2001) E-Governance and Developing Countries, Introduction and examples, Research Report, No. 3, April 2001)

III. THE NEED FOR KNOWLEDGE MANAGEMENT

The government knowledge can be defined as the collection of information, data and procedures that used by government for providing services to customers, managing its internal systems and external relations.

Usually , the knowledge exist as knowledge assets such documents, references and other type of information resources, or exist as tacit knowledge in employee's and managers minds as experiences and wisdoms which got during their work in government organizations.

The government should arm itself by all tools and facilities that dealing with the huge amount of knowledge which used to provide customers and citizens with services and adjusting its positions in market and reaching the effective and efficient integration with external environment.

The government enforces many difficulties in saving and investing its knowledge assets, most of these difficulties related to knowledge transferring from employees into government systems to be a part of its knowledge assets. So, it is necessary for any electronic business frame or electronic government system enforce the knowledge issues, by determining methodology , tools and how to create knowledge, transferring and distributing knowledge between different entities and establishments connected to government. Knowledge management must have a place in e-government environment and so in e- services, since the service can be described in knowledge term:

- Knowing why: information about the substance, usefulness and goal of service.
- Knowing who: who will provide the service and who will use it.
- Knowing when: the time and date of service provision and the response time.
- Knowing where: the place of service provision and results.
- Knowing what: the required fees and documents for service
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If we taking into consideration the huge number of government services, the description of these services in term of knowledge become very important for distribution these services and using them. Here the role of knowledge management can take a place to solve all problem facing the information and knowledge use.

IV. THEORETICAL ASPECT OF KNOWLEDGE MANAGEMENT

There are six theoretical aspects that will be discussed in this paper and they are framework, technology, process, development, life cycle, and people.

A. Knowledge Management Framework

The term knowledge management is often problematic as there is little consensus regarding its definition. Many authors avoid the term completely, rather preferring to focus on specific aspects of the topic such as knowledge, innovation or learning. Furthermore others argue that knowledge management is closely related to concepts such as organizational learning, organizational memory, information sharing, and collaborative work.

Knowledge management is managing the corporation's knowledge by means of systematic and organizational specified process for acquiring, organizing, sustaining, applying, sharing and renewing both tacit and explicit knowledge by employees to enhance the organizational performance and create value. It is seen as the systematic means of managing individual, group and organizational knowledge using the appropriate means and technology. Many researchers and industrialists postulate that knowledge management centers on the creation or generation of knowledge. Others believe that knowledge management should focus less on knowledge creation and more its capture and integration. However, most agree that knowledge management encompasses all of these activities, that is, the creation or generation, codification, storage, dissemination and implementation of knowledge in the organization. A

significant implication of this view of knowledge is that for individuals to arrive at the same understanding of data or information, they must share a history or context. us systems designed to support knowledge in organizations may not appear radically different from other forms of information systems, but will be geared toward enabling users to assign meaning to information and to capture some of their knowledge in information and or in data. Knowledge management in a support entity can be defined as any process or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to enhance learning and performance in organizations.

Knowledge management is the use of technology to make information relevant and accessible wherever that information may reside. To do this effectively requires the appropriate application of the appropriate technology for the appropriate situation. Knowledge management incorporates systematic processes of finding, selecting, organizing, and presenting information in a way that improves an employee's comprehension and use of business assets. Others counter such views arguing knowledge is also concerned with the establishment of an environment and culture in which knowledge can evolve [16].

B. Knowledge Management Technology

KMS is also defined as the collection of technologies that can collect, sort, store, and share the knowledge throughout the organization. Based on that definition, the technologies that can be used in the development of KMS are:

• *Intranets* – secure internal networks, to provide an ideal environment for sharing information accessed using a standard browser.

• *Information Retrieval Engines* – search engines are an absolute necessity and are the integral part of KMS.

• *Groupware* – to facilitate information sharing via email, online discussions, databases and related tools. Its collaborative features can result in the creation of stores of untapped knowledge.

• *Database Management Systems* – computer databases are common repositories of information. KMS can be constructed to incorporate the information that is stored in the organization and accessible by all.

• *Data Warehousing and Data Mining* – data warehouses are centralized repositories of information. Data mining refers to specialized tools that allow the organization to convert increasingly complex sets of data into useful information.

• *Document Management System* – a collection of tools that facilitate electronic document management, including storage, cataloging, search, analysis and routing.

• *Push Technologies* – delivering of appropriate knowledge to individual based on specific criteria.

• *Collaboration* – expert modeling and decision make analysis that lead to more collaboration, information expertise and insight sharing among knowledge workers.

• *Visualization and Navigation System*- relationship between knowledge elements and holders of knowledge.

C. Knowledge Management Process

Knowledge management (KM) processes comprise of knowledge creation, knowledge storage, knowledge distribution and knowledge application. The act of creating knowledge coincides with the act of working through the learning spiral of conceiving, acting and reflecting. Reflection is key to knowledge creation. Companies must develop the infrastructure to capture, store and disseminate the knowledge created from experience. KM allows organizations to leverage lessons learned to be more effective in the future. In addition, a KM system must help users to get their work done easier and more efficiently.

D. Knowledge Management Development

KM development involves four steps [10].

• Determine the organization's knowledge needs. The aim of this step is to determine the core competencies or focused knowledge needs of the organization [11]. The knowledge needs, are driven by the nature of the business the organization is in and desires to be in.

• Determine the current state of organizational knowledge base or memory. The aim of this step is to determine where and how the organization's current knowledge is assimilated and disseminated. Using the previously identify knowledge needs, the existing sources of knowledge or organizational memory are identified and evaluated for the ease of use and ability to provide accurate, relevant, and timely knowledge.

• Determine the gaps in knowledge and barriers to organizational learning. The aim of this step is to determine\] why the organization is not creating and applying knowledge that is accurate, timely and relevant. The output of this step is a list of improvement opportunities for the organization learning process.

• Develop, implement and improve proactive "KM strategies" to support organizational learning. The aim of this step is to develop proactive strategies to support the creation, assimilation, dissemination, and application of the organization's knowledge.

E. Knowledge Management Life Cycle

Knowledge evolution cycle consists of five phases [12].

• Originate/create knowledge - members of an organization develop knowledge through learning, problem solving, innovation, creativity, and importation from outside sources.

• Capture/acquire knowledge - members acquire and capture information about knowledge in the explicit forms.

• Transform/organize knowledge — in written material and knowledge bases.

• Deploy/access knowledge – organizations distribute through education, training program, and automated knowledge base system or expert networks.

• Apply knowledge - KM aims to make knowledge available whenever it is needed. Based on the literature reviewed on KM [12, 13, 14, 15, 16], the consolidation of the research has derived a KM lifecycle as shown in Figure 3. This knowledge life cycle is depicted in the simplified way, as it suggests a strict sequence of identifying, creating, transferring, storing, (re)-using, and unlearning language.9

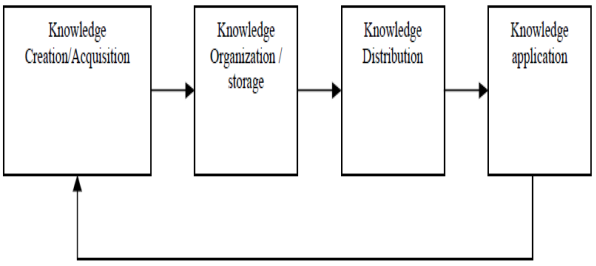

Fig. 3 The Knowledge Management Life Cycle

IV. The New Model For E-Government

The knowledge management can be used as internal part of e-government system. As seen in figure 3. So, government have to use the appropriate technologies which mentioned above to perform the various stages of maintaining and using knowledge to facilitate its functions , taking on consideration the specialty of government work comparing with other organizations functions.

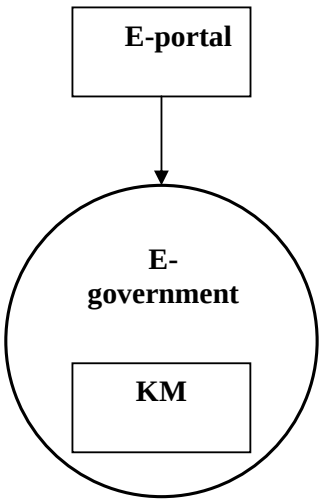

Fig. 3.Conceptual model of e-government

- *Knowledge management portals* are another knowledge management tools "to extract analyze and categorize both structured and unstructured information, and reveals the relationship between content, people, topics and user activities in the organization. They can provide users with many interactive facilities such as e-mail, chat rooms, personalized news, search engines, RSS feedbacks, and external links. In India, Brazil, Hong Kong and Thailand different Government departments and ministries have individual knowledge portals to exchange and disseminate information among government and citizens [17]. There are three types of portals that can be used in e- government , the first is a user portal through which the user communicates with e- government environment, the second is inter departmental portal which facilitate sharing and distributing knowledge and decisions between departments of government, the third is worker portal uses to interconnected the workers with resources in government.
- The knowledge management process in this case can be divided into two levels:
  - content management:
  In this level , the responsible managers are concern with all aspects of knowledge management process, starting from creating the plan of knowledge management policy, creation , storing, sharing , classification, sharing and ending with knowledge maintenance.
  - the second level in this stage concern with knowledge harvesting , which concern with extracting and pulling out the tacit knowledge that stored in workers minds, by creating learning teams and using expert tools. The communication with users can play another important role in creating new knowledge, by using the knowledge of users and their experience.

V. Conclusion

Maintaining the knowledge management as a part of e-government model provides the government system with facilities to conduct the knowledge in its environment, and improving the efficiency of government function. Knowledge management running in e-government environment, is an electronic workflow to be controlled, stressed the cooperation between different departments and staff's awareness of cooperation. Maximizing the priority and awareness about knowledge gain the government with global advantages.

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