Research Journal of Economics

Research Article

A SCITECHNOL JOURNAL

Knowledge Management Challenges in Public Sectors

Siami-Namini S*

Department of Agricultural and Applied Economics, Texas Tech University, USA

***Corresponding author:** Sima Siami-Namini, PhD Student and Graduate Research Assistant, Department of Agricultural and Applied Economics, Texas Tech University, USA, E-mail: sima.siami-namini@ttu.edu

Rec date: Feb 16, 2018 **Acc date:** Apr 16, 2018 **Pub date:** Apr 23, 2018

Abstract

The emerging trend in economy offers great opportunities, but at the same time it creates some concerns and challenges for private and public sectors. To overcome the issues and take advantage of the opportunities, governments need to consider the innovations and invest on some initiatives and adapt new management methods in private sectors. Knowledge Management (KM) is a way that needs to be explored for taking the opportunities and their implicit benefits in future. Therefore, it is also necessary to address the key issues and opportunities in public sectors.

The aim of this article is to advance the understanding of KM concepts at the organization and the enterprise levels in the public and private sectors in knowledge economy and to develop a framework identifying good practices of KM. People, processes, and technologies are main elements to be considered for the public-sector KM framework.

Keywords: New economy; Knowledge Management (KM); Public sector; Private sector

Introduction

In a highly competitive global market, only organizations and enterprises that replace labor and natural resources with knowledge are survived. Knowledge plays the key source of sustainable growth and development. Most organizations are faced with major challenges in gaining competitive advantages. Large companies in private sectors have been taking initiatives to adapt new management models so they can gain the competitive advantages in order to survive and competence against discontinuous environmental change. Governments are also following suit and are using Information and Communications Technology (ICT) applications to raise productivity, increase accountability, improve transparency and facilitate the public-sector reform. Governments are recognizing that KM plays an important role in their policy-making process and providing the services to the public.

KM has been at the core of governments' tasks, which is inseparable from strategy, planning, consultation and implementation [1,2]. KM is central to achieving process and product improvement, executive decision-making and organizational adaptation and renewal [3]. The basic assumption of KM is that the organizations and the enterprises that can manage their knowledge better confront the challenges associated with the new business environment more successfully and effectively. The performance reports of application of KM in organizations show that these organizations act ineffectively. As matter of fact, evidence drawn from the existing literature suggests that the public sector is falling behind in these practices.

The aim of this article is to provide a discussion of the theoretical perspectives guided and constrained by the empirical research. In this regard, the KM concepts are presented and then the related issues and challenges are investigated. A comparative statistical analysis of KM index in terms of global e-Government and human capital indicators is also presented.

KM definitions

KM is a discipline enabling individuals, teams, organizations, and communities to collectively and systematically capture, store, share and apply their knowledge.

KM is the awareness of current knowledge within organizations and companies, creation and evolution, allocation, knowledge sharing and utilization of accessible knowledge and skills, and a way of gaining new knowledge and innovations and accumulating and storing knowledge. In a number of studies, KM is presented as an emerging discipline [4-6]. Broadbent [7] and Streatfield et al. [8] claimed that the firms and some information professionals have been focusing on the special activities that are related to KM over the years. In the KM literature, the concept of knowledge is over-simplified and seriously questioned the attempt to manage what people have in their minds [8]. Nevertheless, A large number of recent studies and publications have been related to the KM topic since 1995 [9].

Types of knowledge

The OECD defines the knowledge economy as: "*information-driven technologies appear to be the defining element of the current phase of economies development and the key factors of the so-called Knowledge-Based Economy*" [10]. According to the literature, knowledge creates competitive privileges for organizations and provides the ability to the organizations in order to resolve problems and thus gain new opportunities. Knowledge is often classified into two types of organizations as below:

-Explicit(codified) knowledge: It is a kind of knowledge that can be captured and written down in documents or databases. It is official and systematic documentation that can be easily communicated stored and shared [11]. It is highly easy to understand because it can be codified and carried out through formal and methodological languages in the books, archives, databases, and libraries [12]. Patents, instruction manuals, written procedures, best practices, and lessons learned, and research findings are some samples of explicit knowledge.

-Tacit (implicit) knowledge: It is a typical knowledge that people have in their minds. Therefore, it is much less 'concrete' than explicit knowledge. Tacit knowledge is much more valuable because it provides context for people, places, ideas, and experiences. It usually requires extensive personal contact and trust to share effectively. It is highly personal, hard to formalize, and therefore, difficult to communicate or transfer to the others by the means of writing it down or verbalizing it [12].

Grant [13] and Nonaka et al. [14] claimed that knowledge is the main source of sustainable and competitive advantages. Knowledge

can be defined as relevant information, which is applied and is partially based on experience [15].

Nevertheless, knowledge is embedded in individuals and to be a source of competitive advantage that must be transformed into organizational knowledge [16,17]. This is the essence of KM and in order to achieve this goal, organizations must provide a context of shared identity that favors this process [18].

Objectives and benefits of KM

Riege et al. [19] specifically determine the following objectives for the KM objectives:

Providing a good service in order to maximize efficiency in all public services and connect the silos of additional information into deferent levels of government and across borders.

Developing new systems or consolidating outdated systems in order to increase the performance, extend capitalize, and thus be highly integrated and easy to access the knowledge.

Improving accountability and reducing risk by knowledge-based decision making (KBDM) and finding the best solutions for removing the current issues which all are supported by access to integrated, transparent information across organizational boundaries.

Delivering resources more efficiently and effectively and more cost-effective constitute services.

All these objectives facilitate the access to the knowledge and built expertise in a new field. The most important benefit of KM is to maximize productivity and efficiency in the public sector while speed up the public service delivery. In an organizational setting, KM has the benefits at two individual and organizational levels. At the individual level, KM provides opportunities for employees to increase their skills and experience by working together and sharing the knowledge in a teamwork environment. At the organizational level, KM improves the organization's performance by increasing efficiency, productivity, quality, and innovation. Indeed, knowledge management causes that organizations have a higher rate of productivity, and lower cost of operations which in turn improve the customer service. Access to knowledge is a founding principle for organizations to make good decisions, simplification and streamline processes, decrease re-work, increase innovation, have higher data integrity and greater collaboration [20]. Also, KM increases the financial value of the organizations by treating people's knowledge as an asset similar to the traditional ones like inventory and capital facilities [21]. While the knowledge transfer is confirmed as a source of value creation, organizations identify the KM initiatives as strategic facilitators of competitive advantage.

KM processes

Nonaka et al. [22] propose a theory to explain the phenomenon of organizational knowledge creation. They describe four specific knowledge conversion processes including 1) Socialization (from tacit to tacit knowledge); 2) Externalization (from tacit to explicit knowledge); 3) Combination (from explicit to explicit knowledge); and 4) Internalization (from explicit to tacit knowledge). Each process involves converting one type of knowledge to another. Nonaka et al. [22] explain how individual knowledge is reinforced into and throughout the organization through four specific processes grouped into five conditions include 1) Intention, 2) Autonomy, 3) Fluctuation and Creative Chaos, 4) Redundancy, and 5) Requisite Variety. These five conditions promote organization knowledge creation. The processes and conditions focus on the important issue of how knowledge may be created through organizational sharing and is useful for identifying and evaluating certain key activities in the knowledge management.

Oluic-Vukovic [23] outlines five steps in the knowledge processing chain including Gathering; Organizing; Refining; Representing; and Disseminating. The model covers the complete range of activities involved in the organizational knowledge flow. Figure 1 shows six steps in the KM processing chain include Discovery, Acquisition, Creation, Storage, Sharing and Using. As shown in this figure, discovery, acquisition, and creation have replaced the gathering step and sharing applied instead of knowledge dissemination.

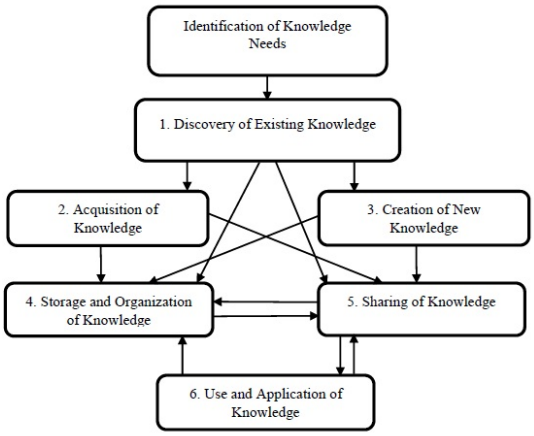

Figure 1: Knowledge Management Processes.

The discovery step involves locating internal knowledge within an organization. The acquisition step involves bringing knowledge into an organization from external sources. The creation of new knowledge step may be accomplished in several ways. First, internal knowledge may be combined with other internal knowledge to create new knowledge. Secondly, information may be analyzed to create new knowledge. This adds some values to information so that it can produce actions.

Knowledge must be stored and shared after gathering step. Knowledge sharing or knowledge distribution involves the transfer of knowledge from one person to another. Knowledge sharing is often a major preoccupation with KM, which is frequently addressed in the literature. Most organizations abandon this idea that all knowledge should be documented, and at the same time, they are ready to implement different methods for knowledge sharing [24].

Indeed, KM focuses on both the dissemination of knowledge and knowledge sharing. Although knowledge can be acquired at the individual level, it must be shared by a community, which is described as a community of practice, in order to be useful. The management of information does not focus on information sharing and is in fact oriented towards the control, preservation, and retention of information. It is argued that the usefulness and the meaningfulness of knowledge do not depend on knowledge collective consumption or knowledge sharing. Knowledge individual consumption behavior can

be effective from an organizational perspective. On the other hand, Knowledge sharing is critical for economic development. It is an important next step that goes beyond the dissemination of information [25].

Swift [26] divides KM process into four stages as below:

-Knowledge Discovery: Customer behavior is analyzed to identify the specific market opportunities and investment strategies.

-Market Planning: The organization uses the specific customer offers and distribution channels for customer interaction and channels, treatment plans, and products and services.

-Customer Interaction: The customer related information and offers are managed by using a variety of channels and front office applications such as customer care and sales applications.

-Analysis and Refinement: The organization learns about customer dialogs collected through capturing and analyzing data from customer interactions and refining messages, communications, prices, volumes, locations, approaches, and timings, and understanding specific responses to customer stimulus.

The knowledge management cycle

Jashapara [27] classifies KM in the form of a four-looped process include creation, organizing, sharing and applying knowledge. This definition is an effective learning process and leads to the upgrading of organizational intellectual capitals and improvement of efficiency.

-Knowledge Creating: This is an endless process that includes creating novel ideas, grasping new paradigms, and combining isolated principles for establishing new processes.

-Knowledge Organizing: It refers to storing, recording, and preserving knowledge in the formats and frames that let other employees regains it. It is prerequisite to knowledge sharing.

-Knowledge Sharing: This is a mutual knowledge flowing and scattering between people and mechanical and non-mechanical bases for knowledge [28]. The effectiveness of the KM cycle depends on the abilities of people for knowledge sharing. Regarding knowledge sharing, the culture has a significant role in a fruitful sharing of knowledge [29]. "*The establishment of culture "sharing knowledge is power instead of knowledge is power", has a great influence on the success of knowledge sharing in knowledge management cycle*" [15].

-Knowledge Applying: It refers to the appliance of knowledge shared, without any bias or prejudice against one who is the source of it. It also refers to the blend of knowledge with action and its emergence in company's goods or services [30].

As a case study, regarding the correlation between loops of the KM cycle at the institute of management research and education in Iran, the results have revealed that the success of the KM cycle depends highly on its unified loops. Knowledge that already has been created should be organized for sharing. Table 1 presents the average frequency of answers to questions of each four loop. As shown in Table 1, the appliance of knowledge depends on knowledge sharing by 32%.

KM challenges

As shown in Figure 2, the top three challenges of KM initiatives are 1) providing awareness for KM (25%), 2) understanding and applying KM (24%), and 3) providing strong management support (23%).

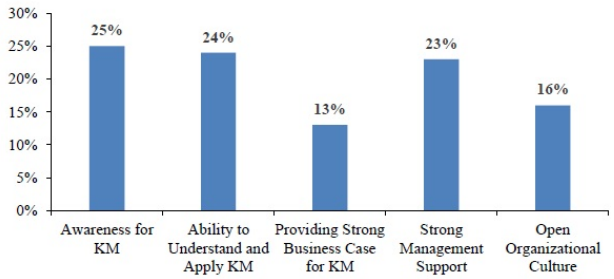

Figure 2: Challenges of KM Initiatives.

KM is one of the initiatives of the e-Government program, therefore, the issues and challenges for a successful implementation of e-Government program would be similar to the Ndou [31] describes the main common challenges of adopting KM in governments as below:

-Role of Leaders and Strategy Definition: The KM initiatives are confirmed by the senior management and funded by the IT services. In this regard, there are several challenges including setting up the programs to promote awareness and prioritizing the various initiatives inside the government. There are many cases of formal e-Government plans, which set up by a lot of assistance of the developmental agencies in private sectors, but the specifications of the government-wide KM initiatives need more work in the developing countries.

-Change Management: Change management and its related issues should be addressed as the new practices. As a result, the new way of processing and performing the task must be introduced. The programs of change management such as the ones for encouraging adoption of changes from e-Government projects should be introduced.

-Development of Human Capital and Lifelong Learning: The institutional capacity and trained human resources have usually influenced the efficiency of KM. Programs for educating the civil servants are also required in order to use KM effectively and incorporate its usage into existing government functions.

-Provision of ICT Infrastructure: The ability and readiness to spend in implementing the required IT infrastructure for the KM projects are a major challenge for the developing countries. One approach is to find easy solutions for knowledge sharing and information delivery.

-Partnership and Collaboration: Collaboration and cooperation at all levels, as well as between the public and private organizations are important to build trust in government. The Public-Private Partnerships (PPP) is often used for the projects which need to combine the knowledge acquired from the public and the private sectors.

-Policies and Legislation: There are several requirements for the international policies to protect the privacy and recognize digital signatures.

One solution to address the above challenges is to take the proactive attitude towards KM practices prevalent in the private sector and adapt them to the public setting. KM has the potential to strengthen government effectiveness and competitiveness in the changing environment. The public sector should face all these challenges and use the opportunities offered by globalization, the knowledge-based

economy, and the new development of ICT. Otherwise, it may mean missing out on opportunities that KM offers.

Elements for the public-sector KM framework

While most of the literature on KM has been addressing issues, challenges and the opportunities for the private sector, not too many studies have been discussed for public sectors. Programs offer that public sectors and public organizations should import managerial process from the private sector, emulating their successful methods and techniques. However, the differences between the public and private sectors are so great that business practices cannot be easily transferred between them. The most significant differences between the two sectors are still in human resources management policies and practices, the management of ethical issues and decision processes. However, there is no established body of knowledge on successful management strategies in the private sector that can be drawn upon by public agency either [32].

In the knowledge economy, the competitive advantage of the firms will be highly more by using knowledge in the process of delivering new products to the market. Firms and organizations are therefore increasingly focusing on knowledge management.

Loop Name	Knowledge Creating	Knowledge Organizing	Knowledge Sharing	Knowledge Applying
Frequency Percent of 'Much' and 'Very Much' Alternatives	41%	42%	32%	40%

Table 1: The Average Frequency of Answers to Questions of Each Four Loop.

The public sector produces some of the intangible goods and services that we value most highly such as public health, safe streets, educated children, and a clean environment. The public sector faces two related challenges - the first one has to do with the promotion and regulation of the knowledge-based economy and the second one is the management of its activities in a competitive way. The management of knowledge is of increasing importance for governments in dealing with the challenges created by the knowledge economy. These challenges are addressed in the following aspects [33]:

Knowledge has become a critical determinant of competitiveness for the public sector. Service delivery and policy-making are the main tasks for the government. In a knowledge economy, governments are increasingly facing competition in these areas at both the international and national levels [34]. In the public sector, goods and capital are not as important as in the private sector, but knowledge is an important element of competition. Effective functioning of government rests on effective acquisition and dissemination of knowledge.

Private firms produce goods and services that are increasingly intensive in intangible capital, directly competing with the public sector for the delivery of goods and services such as education, science, security and knowledge [2]. As customers demand and receive more customization from knowledge-oriented private firms, they would also expect the same benefits from the public sector.

The retirement of civil servants and frequent transfer of knowledge workers into the government departments create new challenges for the retention of knowledge and preservation of institutional memory and the training of new staff.

The public organizations need to tweak their KM initiatives to start retaining the knowledge currently in the heads of these employees. Until then, services to the public will suffer. Thus, capturing tacit knowledge and then training the staff is important so that it can be passed on to new staff.

In fact, people, processes, and technology are the three key elements of the environment. KM focuses on people and organizational culture to stimulate and nurture the sharing and use of knowledge; on processes or methods to locate, create, capture and share knowledge; and on technology to store and make knowledge accessible and to allow people to work together without being together. People are the most important component because managing knowledge depends upon people's willingness to share and reuse knowledge [20].

A Statistical Analysis of KM Indicators

Global e-Government indicators

The UN global e-Government presents a comparative ranking of countries in the world according to the following primary indicators [35]:

-The e-Government Readiness Index: it is a composite index comprising: Web Measure Index; Telecommunication Infrastructure Index, and Human Capital Index.

-Thee-Participation Index: It is a proxy to measure the willingness and ability of a state not only to provide relevant information and quality services, but also to engage citizens in a dialogue in the process of service delivery and, most importantly, in the public policy-making using the Internet.

The United Nations e-Government Survey 2010 shows that the people who are taking benefit from the advanced e-Service delivery, have 1) better access to information, 2) more efficient government management, and 3) improved interactions with governments, mainly because of increasing use by the public sector of ICT [35]. Most countries have published a lot of information online, many going beyond basic websites to provide national portals that serve as a major starting point for users to connect to the government services. Simultaneously, many developing countries need to allocate extra resources to the transactional services as well as the electronic means of the people's participation in the public meeting and decision-making [35].

As in previous years, the high-income countries enjoy the top rankings in the e-Government development index in 2010. The top five countries in the 2016 United Nations e-Government Survey include the United Kingdom with the highest score (0.9193) as a first country, followed by Australia (0.9143), the Republic of Korea (0.8915), Singapore (0.8828) and Finland (0.8817) [36].

Table 2 presents the global e-Government Development rankings for selected countries among the UN Member States. Most of the high-income developed economies rank the highest and considerably higher than the global average of 0.4922. Though the majority is the industrialized countries, a few middle-income countries with developing economies or economies in transition are in the group, indicating a fast "catch up". One of the primary factors contributing to a high level of e-Government Development is past investment in

telecommunication and human resources. In 2016, Iran score was 0.4649, lower than the global average. But e-Government Development Index ranking has increased from 108 in 2008 to 102 in 2010, and then decreased to 106 in 2016.

Country Name	E-Government 2016	Rank 2016	Rank 2010	Rank 2008
Norway	0.8117	18	6	3
Australia	0.9143	2	8	8
Canada	0.8285	14	3	7
Netherlands	0.8659	7	5	5
Sweden	0.8704	6	12	1
France	0.8456	10	10	9
Switzerland	0.7525	28	18	12
Japan	0.8440	11	17	11
United States	0.8420	12	2	4
United Kingdom	0.9193	1	4	10
Germany	0.8210	15	15	22
China	0.6071	63	…	…
Korea (Republic of)	0.8915	3	1	6
Kuwait	0.7080	40	50	57
United Arab Emirates	0.7515	29	49	32
Saudi Arabia	0.6822	44	58	70
Indonesia	0.4478	116	109	106
Egypt	0.4594	108	86	79
Morocco	0.5186	85	126	140
Iran	0.4649	106	102	108
World Average	0.4922			

Table 2: The E-Government Development Index. Source: UN E-Government Development Database [36].

Table 3 presents the components of the e-Government Development Index in 2016. The First position in online services is held by the United Kingdom (1.0000), followed by Australia (0.9783), and then the Republic of Korea (0.9420). The score for Iran is 0.3333, which shows that this country is lagging far behind the world trend towards more and better e-Government development. The strength of a country in the online service provision is measured against the four following benchmarks question:

Does the government provide any online information services?

Does the government use multimedia technology and promote two-way exchanges?

Does the government use the Internet to present the public services?

Does the government connect the public service functions and regularly consult with people?

Table 3 also presents telecommunication infrastructure and human capital index. In addition, Table 3 shows the e-Participation Index by total and three stages. It assesses the quality and usefulness of information and services provided by a country for the people participating in the public policy-making using e-government programs. As such, it is indicative of both the capacity and the willingness of the State in encouraging the citizens in promoting deliberative, participatory decision-making in the public policy and of the reach of its own socially inclusive governance program.

Country	E-Development	Web Measure	Telecom Infrastructure	Human Capital	E-Participation				
					Total	Total%	Stage 1	Stage 2	Stage 3
Norway	0.8117	0.8043	0.7276	0.9031	0.7627	76.7%	88.2%	73.7%	28.6%
Australia	0.9143	0.9783	0.7646	1.0000	0.9831	98.3%	100.0%	100.0%	85.7%
Canada	0.8285	0.9565	0.6717	0.8572	0.9153	91.7%	97.1%	84.2%	85.7%
Netherlands	0.8659	0.9275	0.7517	0.9183	0.9492	95.0%	97.1%	94.7%	85.7%
Sweden	0.8704	0.8768	0.8134	0.9210	0.7627	76.7%	97.1%	68.4%	0.0%
France	0.8456	0.9420	0.7502	0.8445	0.8983	90.0%	100.0%	84.2%	57.1%
Switzerland	0.7525	0.6014	0.7980	0.8579	0.2542	26.7%	35.3%	21.1%	0.0%

Japan	0.8440	0.8768	0.8277	0.8274	0.9831	98.3%	100.0%	94.7%	100.0%
United States	0.8420	0.9275	0.7170	0.8815	0.8983	90.0%	97.1%	100.0%	28.6%
United Kingdom	0.9193	1.0000	0.8177	0.9402	1.0000	100.0%	100.0%	100.0%	100.0%
Germany	0.8210	0.8406	0.7342	0.8882	0.7627	76.7%	91.2%	78.9%	0.0%
China	0.6071	0.7681	0.3673	0.6860	0.8136	81.7%	94.1%	84.2%	14.3%
Korea	0.8915	0.9420	0.8530	0.8795	0.9661	96.7%	97.1%	100.0%	85.7%
Kuwait	0.7080	0.6522	0.7430	0.7287	0.6441	65.0%	82.4%	57.9%	0.0%
Saudi Arabia	0.7515	0.8913	0.6881	0.6752	0.7458	75.0%	91.2%	73.7%	0.0%
Indonesia	0.6822	0.6739	0.5733	0.7995	0.7119	71.7%	79.4%	73.7%	28.6%
Egypt	0.4478	0.3623	0.3016	0.6796	0.3729	41.2%	47.4%	0.0%	0.0%
Morocco	0.4594	0.4710	0.3025	0.6048	0.4068	41.7%	55.9%	31.6%	0.0%
Iran	0.5186	0.7391	0.3429	0.4737	0.8305	83.3%	85.3%	100.0%	28.6%
	0.4649	0.3333	0.3514	0.7101	0.2034	21.7%	29.4%	15.8%	0.0%
Global Average	0.4922	0.4623	0.3711	0.6433	0.4625	47.1%	56.4%	43.1%	12.9%

Table 3: The Components of the e-Government Development Index and the Participation Index. Source: United Nations E-Government Development Database [36].

The 2010 Survey included a comprehensive review of: 1) how governments are including their citizens in their decision-making process, 2) how governments are providing information and knowledge, and 3) how governments are consulting citizens to obtain feedback and opinions. As shown in Table 3, the United Kingdom leads the e-Participation index, followed by Australia and Japan, the Republic of Korea and Netherlands. The score of the e-Participation index for Iran is 0.2034. A country's strength in e-Participation is measured against three benchmarks:

Does the government publish information on items under consideration?

Are there any ways for the public to engage in consultations with policy-makers and government officials?

Can people influence decisions by voting online or using a mobile telephone or another way?

Human capital indicator

The human capital formation has a permanent impact on output growth with a higher level of skills and knowledge facilities and adoption of new technologies and/or the process of innovation, leading to an acceleration of technical progress, and is usually assessed in terms of educational attainment [37].

The Human Development Index (HDI) is a composite index measuring average achievement in three basic dimensions of the human development; a long and healthy life; access to knowledge and a decent standard of living. Table 4 presents HDI trends for selected countries between 1980 and 2015 [38]. The HDI for Iran has increased from 0.561 in 1980 to 0.774 in 2015.

Country	1980	1985	1990	1995	2000	2005	2010	2015
Norway	0.9	0.912	0.849	0.883	0.917	0.931	0.939	0.949
Australia	0.871	0.883	0.866	0.885	0.899	0.915	0.927	0.939
Canada	0.89	0.913	0.849	0.86	0.867	0.891	0.903	0.92
Netherlands	0.889	0.903	0.83	0.863	0.878	0.893	0.911	0.924
Sweden	0.885	0.895	0.815	0.856	0.877	0.892	0.901	0.913
France	0.876	0.888	0.779	0.825	0.849	0.87	0.882	0.897
Switzerland	0.899	0.906	0.548	0.543	0.506	0.502	0.526	0.541
Japan	0.887	0.902	0.814	0.838	0.856	0.873	0.884	0.903
United States	0.894	0.909	0.86	0.877	0.884	0.898	0.91	0.92
United Kingdom	0.861	0.87	0.775	0.839	0.866	0.89	0.902	0.91
Germany	0.869	0.877	0.801	0.834	0.86	0.892	0.912	0.926
Hong Kong, China (SAR)	…	…	0.781	0.808	0.825	0.87	0.898	0.917
Korea (Republic of)	0.722	0.76	0.731	0.781	0.82	0.86	0.884	0.901
Kuwait	0.812	0.826	0.713	0.747	0.786	0.787	0.792	0.8
United Arab Emirates	0.743	0.806	0.726	0.764	0.798	0.823	0.824	0.84

Saudi Arabia	…	…	0.698	0.722	0.742	0.767	0.804	0.847
Indonesia	0.522	0.562	0.528	0.564	0.604	0.632	0.662	0.689
Egypt	0.496	0.522	0.547	0.577	0.612	0.636	0.671	0.691
Morocco	0.473	0.499	0.458	0.489	0.53	0.575	0.612	0.647
Iran	0.561	0.62	0.572	0.634	0.666	0.692	0.745	0.774

Table 4: Human Development Index Trends, 1980-2015. Source: Human Development Report [38].

Table 5 shows the government expenditure on education (as a percentage of Gross Domestic Product (GDP)), and average annual HDI growth between 1990 and 2015. The government expenditure on education (as a percentage of GDP) equals 3.0 in Iran which is lower than global average (5.0). Furthermore, the average annual HDI growth in Iran between 1990 and 2015 equals 1.22 which is higher than global average (0.74). Table 5 shows the average income inequality for the period of 2010 to 2015, and HDI rank for 2016. The HDI rank for Iran equals 69.

Country	**Government Expenditure on Education (% of GDP) 2010-2014**	**Average Annual HDI Growth (%)**				**Income Inequality 2010-2015**	**HDI Rank 2016**
		1990-2000	2000-2010	2010-2015	1990-2015		
Norway	7.4	0.77	0.24	0.21	0.45	25.9	1
Australia	5.3	0.38	0.31	0.24	0.32	34.9	2
Canada	5.3	0.21	0.41	0.38	0.32	33.7	10
Netherlands	5.6	0.56	0.37	0.29	0.43	28.0	7
Sweden	7.7	0.73	0.28	0.25	0.45	27.3	14
France	5.5	0.86	0.39	0.34	0.57	33.1	21
Switzerland	5.1	0.67	0.49	0.16	0.49	31.6	2
Japan	3.8	0.51	0.32	0.44	0.42	32.1	17
United States	5.2	0.28	0.29	0.20	0.27	41.1	10
United Kingdom	5.7	1.13	0.41	0.16	0.64	32.6	16
Germany	4.9	0.71	0.59	0.30	0.58	30.1	4
Hong Kong, China (SAR)	3.6	0.55	0.85	0.42	0.64	…	12
Korea	4.6	1.15	0.76	0.37	0.84	…	18
Kuwait	…	0.98	0.07	0.21	0.46	…	51
United Arab Emirates	…	0.94	0.32	0.38	0.58	…	42
Saudi Arabia	…	0.61	0.80	1.05	0.77	…	38
Indonesia	3.3	1.36	0.92	0.78	1.07	39.5	113
Egypt	…	1.12	0.93	0.60	0.94	…	111
Morocco	…	1.46	1.47	1.12	1.39	40.7	123
Iran	3.0	1.53	1.12	0.78	1.22	37.4	69
Global Average	5.0	0.71	0.82	0.61	0.74		

Table 5: Human Development Index Trends, 1990-2015.. Source: Human Development Report [38].

Conclusion

The aim of this article is to discuss the key issues and challenges of the new economy and propose the initial stages for developing a conceptual KM framework in the public sector. The material presented in this article is an attempt to solve the challenges that will be interesting for the researchers, academics, and practitioners of KM, and especially for the public sector.

In analyzing the issues of the KM implementation in this article and based on the best performances of the public-sector KM initiatives, the following recommendation is offered:

Sharing the knowledge of the KM implementation projects.

Introducing the incentives programs for changing the management such as encouraging adoption of changes from e-Government projects.

The programs for KM learning.

Invest in online connectivity to embrace as much of the citizenry as possible online.

Invest in technology to build infrastructure.

Provision of the IT infrastructure and inexpensive solutions and strategies for delivering knowledge and information technology.

Introducing the new models for collaboration with the public and the private organizations.

Introducing the necessary legislation and policies for the protection of privacy and identification of the digital signatures.

Build program to stimulate innovation and creativity.

Focus the public and the private investments, as well as international assistance, in the most productive areas.

Improving productivity and innovation in the private and the public-sector organizations with encouraging knowledge transfer.

References

1. Theocharis SA, Tsihrintzis GA (2016) Knowledge management systems in the public sector: Critical issues. Lecture Notes on Software Engineering 4: 59.
2. OECD (2001) Knowledge Management: Learning-by-Comparing Experiences from Private Firms and Public Organizations, Summary Record of the High-Level Forum held in Copenhagen, Denmark.
3. Earl M (2001) Knowledge management strategies: Toward a taxonomy. J manag inform sys 18: 215-233.
4. Bures V (2005) Methodology of knowledge management implementation. Research Developments in Learning Technologies, University of Hradec Kralove, Czech Republic.
5. Gourlay S (2000) Frameworks for Knowledge: A Contribution towards Conceptual Clarity for Knowledge Management, Knowledge Management: Concepts and Controversies Conference, Warwick University, England.
6. Beckman TJ (1999) The Current State of Knowledge Management, USA.
7. Broadbent M (1998) The phenomenon of knowledge management: what does it mean to the information profession?. Information outlook 2: 23-37.
8. Streatfield D, Wilson TD (1999) Deconstructing Knowledge Management. Aslib Proceedings 51: 3.
9. Mahdjoubi D, Harmon G (2001) Knowledge Management: A Conceptual Platform for the Sharing of Ideas. InProceedings of the ASIST Annual Meeting 38: 290-304.
10. OECD (1996) Employment and Growth in the Knowledge-Based Economy, OECD Documents, Paris.
11. Nonaka I (1991) The Knowledge-Creating Company, Harvard Bus Rev, USA.
12. Lahti RK, Beyerlein MM (2000) Knowledge Transfer an Management Consulting: A Look at" The Firm". Business Horizons 43: 65.
13. Grant RM (1996) Toward a knowledge-based theory of the firm. Strat manage J 17: 109-122.
14. Nonaka I, Toyama R, Konno N (2000) SECI, Ba and leadership: a unified model of dynamic knowledge creation. Long range planning 33: 5-34.
15. Leonard DA, Sensiper S (1998) The Role of Tacit Knowledge in Group Innovation, California Management Review 40: 112-132.
16. Grant RM (1996) Prospering in Dynamically-Competitive Environments: Organizational Capability as Knowledge Integration. Organization Science 7: 4.
17. Nonaka I, Konne N (1998) The Concept of Ba: Building a Foundation for Knowledge Creation. California Management Review 40: 3.
18. Von Krogh G (1998) Care in Knowledge Creation. California Management Review 40: 3.
19. Riege A, Lindsay N (2006) Knowledge Management in the Public Sector: Stakeholder Partnerships in the Public Policy Development. J Know Manag 10: 3.
20. CIO Council (2001) Managing Knowledge @ Work, An Overview of Knowledge Management, Knowledge Management Working Group of the Federal Chief Information Officers Council.
21. US Department of the Navy (2001) Metrics Guide for KM Initiatives.
22. Nonaka I, Takeuchi H (1995) The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation, New York, USA.
23. Oluić-Vuković V (2001) From information to knowledge: Some reflections on the origin of the current shifting towards knowledge processing and further perspective. J Assoc Inf Sci Tech 52: 54-61.
24. Snowden D (1998) A Framework for Creating a Sustainable Knowledge Management Programme.
25. MacMorrow N (2001) Knowledge Management: An Introduction. Annual Rev Inf Sci Tech.
26. Swift R (2001) Accelerating Customer Relationship.
27. Jashapara A (2004) Knowledge Management: An Integrated Approach, FT Prentice Hall, Essex, England.
28. Conner KR, Prahalad CK (1996) A Resource-Based Theory of the Firm: Knowledge vs. Opportunism. Organization Science 7: 477-501.
29. Grant RM (1997) The Knowledge-based View of the Firm: Implications for Management Practice. Long Range Planning 30: 450-454.
30. Kwakman K (2004) The Knowledge-Productive Corporate University, New Zealand.
31. Ndou VD (2004) E–Government for developing countries: opportunities and challenges. The electronic journal of information systems in developing countries 18: 1-24.
32. Boyne GA (2002) Public and Private Management: What's the Difference? J Manag Studies 39: 1.
33. OECD (2003) Knowledge Management Practices in Ministries/Departments/Agencies of Central Government, Denmark.
34. OECD (2003) Conclusions from the Results of the Survey of Knowledge Management Practices for Ministries/Departments/Agencies of Central Government in OECD Member Countries, Denmark.
35. United Nations (2010) E-Government Survey 2010, Leveraging E-government at a Time of Financial and Economic Crisis.
36. United Nations (2016) E-Government Survey 2016, E-Government in Support of the Sustainable Development.
37. Siami-Namini S (2004) E-Governance: A Perspective for Islamic Republic of Iran, Building e-Governance: Challenges and

Opportunities for Democracy, Administration and Law, International Institute of Administration Sciences, Belgium, National Computerization Agency, Korea.

38. Human Development Report (2009) United Nations Development Programme.