



Strategic Planning of Information Systems by the application of electronic readiness evaluation (Case Study: An Iranian Pharmaceutical Company)

Planificación Estratégica de Sistemas de Información mediante la aplicación de la evaluación electrónica de la preparación (estudio de caso: An Iranian Pharmaceutical Company)

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ABSTRACT

The current review considers the assessment of electronic status as one stage of the essential arranging procedure of data frameworks. By concentrating on the current circumstance of the association regarding electronic preparation and distinguishing its qualities and shortcomings, or computerized partition, the essential arrangement of the association's data frameworks can be offered with the goal that the undertakings of data frameworks lead to both the improvement of the advanced gap and acknowledgment of association's systems. Having the data on electronic availability forestalls characterizing those undertakings in the essential arrangement of data frameworks whose requirements are not yet prepared in the association. It assists with building up a solid arrangement for creating Information Technology (IT) depending on the abilities and capacities of the association in various parts of IT.

Keywords: Strategic Planning of Information Systems (SPIS), Electronic availability, Computerized partition

RESUMEN

La revisión actual considera la evaluación del estado electrónico como una etapa del procedimiento de organización esencial de los marcos de datos. Al concentrarse en la circunstancia actual de la asociación en cuanto a la preparación electrónica y distinguir sus cualidades y deficiencias, o partición computarizada, se puede ofrecer la disposición esencial de los marcos de datos de la asociación con el objetivo de que los compromisos de los marcos de datos conduzcan tanto a la mejora de la brecha avanzada y reconocimiento de los sistemas asociativos. Tener los datos sobre disponibilidad electrónica impide caracterizar a aquellas empresas en la disposición esencial de marcos de datos cuyos requisitos aún no están preparados en la asociación. Ayuda a construir un arreglo sólido para la creación de tecnología de la información (TI) en función de las habilidades y capacidades de la asociación en varias partes de la TI.

Palabras clave: Planificación Estratégica de Sistemas de Información (PESI), Disponibilidad electrónica, Partición computarizada.

1. INTRODUCTION

Information Technology (IT) which, as an integral asset, influences the worldwide economy and trade has as of late been the subject of many discussions by scientists. Specialists of key administration will show the effect of Information and Communication Technology (ICT) on execution. As Powell and Gouge Micallef (1997) contend, research on the ICT has been restricted to the conceptualization and applicable observational proof is inadequate around here. In spite of the fact that efficiency and interest in IT are vital, the functional outcomes are yet flighty and support for dispatching the essential arrangement of data frameworks is missing in the plans of ranking directors (Powell and Scratch Micallef, 1997). Associations need to proceed with its improvement, in any case, as Yen and Chou (2002) bring up, will confront the drawn out impacts and unwanted serious circumstance. The current review endeavors to incorporate the assessment steps of electronic preparation in the essential arranging strategy of information systems. Additionally, by carrying out this changed procedure for the situation concentrate on association, it attempts to show that ISs extricated from this technique, depending upon the data of electronic availability assessment, have a lower level of hazard contrasted with the time this progression isn't executed, and are bound to be acknowledged since they are recognized based on association's qualities.

2. REVIEW OF THE LITERATURE

These days, most associations in the business, trade, and administrative area rely on data frameworks. IT is constantly incorporated with business (Rockart, 1998). By the rise of online business, the utilization of innovation has been acknowledged as a technique for directing business. Consequently, associations look to utilize innovation later on which upholds business tasks as well as sets out new open doors prompting upper hand (Ward and Peppard, 2002). SPIS is a significant variable in the respectability of IT in an association for expanding the upper hand of the association (Bai and Lee, 2003). As indicated by studies led on the administration of ISs, key arranging is one of the ten significant issues going up against organization chiefs and specialists of ISs (Neiderman et al, 1991).

The course of SPIS includes long haul arranging viewpoints for capital, human administrations, specialized skill, and equipment and programming necessities for utilizing the chances gave (Heats, 1995). Lederer and Sethi (1992) bring up that broken SPIS can prompt disappointment of forecasts concerning advantages of IT and ISs speculations and deficient tasks which eventually, lead to the development of unbendable, rehashed, and inadequate ISs (Lederer and Sethi, 1992). SPIS is an imperative administrative obligation that makes associations use IT successfully and fittingly (Basu et al., 2002).

As per the procedure proposed by Ward and Peppard (2002), SPIS has three fundamental stages:

1. Determining the viewpoint of ISs
2. Specifying crucial components of accomplishment
3. Specifying the requirements of ISs (Ward and Peppard, 2002).

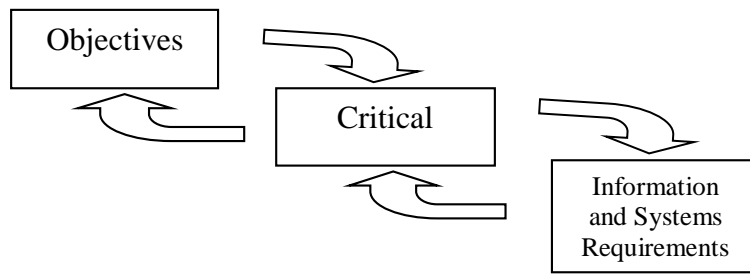


Fig. 1. SPIS General steps (Ward and Pepperd, 2002)

By auditing the examinations led on SPIS in Table 1, it is discovered that in this large number of studies the emphasis is on intricacy, adaptability, and accomplishment of this technique in the association regarding changes coming about because of organization world and the improvement of IT. Likewise, there is concentrate on utilizing data got from assessment of the current circumstance of ISs and IT in SPIS.

3. RESEARCH METHODOLOGY

As indicated by arrangement dependent on research discoveries, the current exploration is viewed as applied examination. The objective of applied investigations is to foster applied information in a given region. The current review, as for the course of study, is subjective. As for the rationale of study, it is logical inductive. As far as objective, it is spellbinding, and as for the hour of the review, is cross-sectional. During the time spent SPIS, because of the intricacy and assortment of factors influencing the choice, specialists' perspectives are used. The current review is additionally a cases study. A contextual investigation is a typical strategy in sociologies. This strategy is the top to bottom examination of a particular peculiarity, a gathering, or an occasion (Yin, 2009). At the end of the day, the proposed system of SPIS is carried out for a situation study to research its chance and legitimacy. The subject under study is an example from a gathering of peculiarities. The proposed scientific system which is the utilization of e-preparation assessment in SPIS is executed and the outcomes are accounted for. The measurable populace of the current review is a Pharmaceutical Company. In this review, a 5-point Likert scale was used.

4. RESULTS

4.1.E-readiness

E-readiness is a relatively new concept which is developed as a result of rapid expansion of internet in the world and significant progress of the use of IT in business and industry (Mutula & Van Brakel, 2006). It was developed in late 1990s to provide an integrated framework for evaluating the breadth and depth of digital divide between developed and developing countries. A glance at each model shows the degree of readiness of economy and society for using information society and e-commerce. In a closer look, it is understood that models have very different definitions of e-readiness, use various method for evaluation, and their evaluations vary in terms of goals, solutions, and results (Hanafizadeh et al., 2009).

Table 1. A summary of the major criteria of micro-level e-readiness evaluation models

Model	Major criteria
Parasuraman (2000)	Electronic infrastructure ICT awareness, use of ICT
Jutla et al., (2002)	Technical, commercial, and social knowledge and innovation, infrastructure of and access to ICT, financial infrastructure, regulations and trust, network distribution skills, e-government leadership, access to content
Heeks (2002)	Legal infrastructure, administrative system infrastructure, institutional infrastructure, human infrastructure, technical infrastructure, leadership and strategic thinking
Anderson (2002)	Content readiness, capacity readiness, cultural readiness, learners' readiness, financial readiness
Haney (2002)	Technical infrastructure, content, management system, learners, financial resources, human resources, sellers and producers
Broadbent (2002)	Readiness of financial resources and knowledge, organization readiness, human resources readiness
Rogres (2003)	innovation, human resources, self-development
Grandon & Pearson, (2004)	Organizational readiness, external pressures, ease of use, usefulness
Workknowledge (2004)	Readiness of culture, personnel, management, economy, environment and technology
Ramayeh (2004)	Readiness of e-commerce, IT readiness, e-business readiness
Rizk (2004)	Access to ICT, knowledge of ICT, use of IC
Wickramasinghe et al., (2005)	Organizational readiness, general readiness, specialist readiness
Jennett et al., (2005)	Intra-organizational readiness, readiness for adoption, structural readiness, concern about lack of readiness
Molla & Licker (2005)	Limited access to computer, lack of internal trust, lack of expansive investment on information sharing, intolerance of failure, inability to give quick response to changes
Khoja & Ramzan (2006)0	Intra-organizational readiness, technical readiness, social readiness, political readiness, learning readiness
Luyt (2006)	Use of ICT, knowledge of ICT, ICT environment
Mutula & Brakel (2006)	Organizational readiness, ICT readiness, readiness of external environment, information readiness, human resources readiness
Ruikar et al., (2006)	Management readiness, processes readiness, personnel readiness, technological readiness

Aminali (2007)	Infrastructure and access, human resources, enablers of networked world, uses of IT, use of ICT
Koh et al., (2008)	Informational uses, interactional uses, operational uses
Fathian et al., (2008)	Infrastructure and access, legal and safe environment, use of ICT, organizational structure
Hanafizadeh, M.R et al., (2009)	Infrastructure and access, human resources, enablers of networked world, uses of IT, use of ICT, readiness of external environment, barriers of using ICT
Toufani et al., (2010)	Technical infrastructure, management, financial and economic issues, legal readiness, social readiness, human resources
Haghighi et al., (2010)	e-readiness of organization, e-readiness of industry, e-readiness of macro environment
Lai & Ong (2010)	Advantages of ICT, security, cooperation, trust
Salhieh et al., (2011)	Perception of bankers from e-banking, customers' adoption, IT infrastructure
Tran et al., (2011)	Organizational readiness, technical readiness, government readiness
Darab & Montazer (2011)	Network readiness, equipment readiness, security readiness, culture readiness, human resources readiness, financial readiness, legal readiness, content readiness, standards readiness, management readiness, politics readiness
Hanafizadeh, et al.(2010)	Management, ICT-based policies and strategies, ICT access and infrastructure, human resources, use of ICT
Movahedi, et al. (2009)	e-leadership, culture and ethics in electronic environments, uses of ICT networked programs and services, ICT security, human resources, enablers of networked world, electronic infrastructure, policy and strategy

4.2. Assigning weights to dimensions and indices

In order to measure the effect of each index on each dimension and each dimension on evaluation of e-readiness, the weights of indices and dimensions are calculated as following:

1. Calculation of indices weights: in this section, the weights of indices are selected as 1. This weighing method is common in different models (DIT, 2004).
2. Calculation of dimension weight based on the number of indices in each dimension: in this section, the relative weight of a dimension is obtained by dividing the number of its indices by the total number of indices (Hanafizadeh, et al., 2007).

At the end, in order to show e-readiness or digital divide of the company radar graph is used. Radar graph is a tool by which one can draw the area of interaction between several indices.

As it can be seen, e-readiness of a pharmaceutical company was calculated as following:

Table 2. Indices of e-readiness evaluation

Dimensions	Total score of the company	Infrastructure and access	Human resources	Enablers of networked world	Uses of IT	Use of ICT	Readiness of external environment	Barriers of using ICT
Pharmaceutical Co	2.90	3.61	3.40	3.200	1.80	2.37	3.00	2.93
Ideal	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00

The radar graph drawn by analysis of data related to e-readiness of a pharmaceutical company is as following:

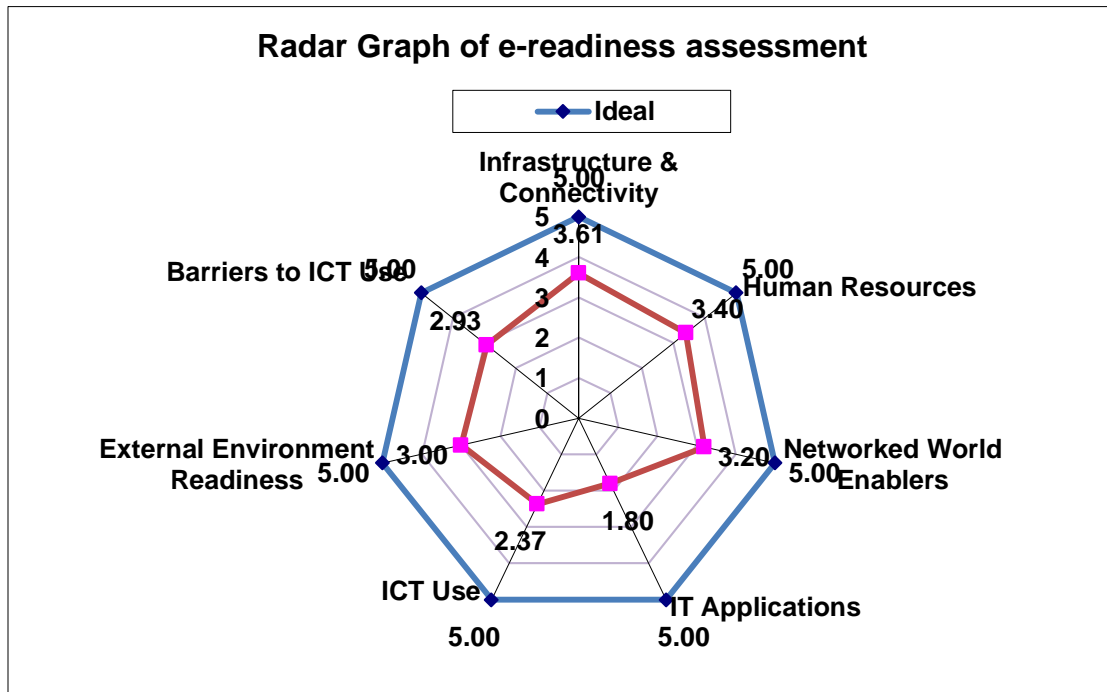


Fig 2. Radar graph of e-readiness assessment

Table 3. Statistical data of e-readiness evaluation

Dimensions of e-readiness	Code	Index	Initial weight	Initial value	State score	Normalized weight in each class	Weighed score	Final score
General dimension	A	Infrastructure & Connectivity	0.25	–	3.606	0.253	0.912	2.897
	B	Human Resources	0.06	–	3.400	0.060	0.205	
	C	Networked World Enablers	0.06	–	3.200	0.060	0.193	
	D	IT Applications	0.16	–	1.796	0.157	0.281	
	E	ICT Use	0.14	–	2.367	0.145	0.342	
	F	External Environment Readiness	0.16	–	3.000	0.157	0.470	
	G	Barriers to ICT Use	0.17	–	2.929	0.169	0.494	
A Infrastructure & Connectivity	1-A	The amount of investment in IT and ICT infrastructure relative to company's annual income	1	0.16%	1	0.048	0.048	3.606
	2-A	How often is the information of organization website updated?	1	2	2	0.048	0.095	
	3-A	Is the current information and ICT infrastructure enough for supporting applications of ISs?	1	5	5	0.048	0.238	
	4-A	Flexibility of organization network to be used in ISs	1	5	5	0.048	0.238	
	5-A	The impact of ICT on promotion of a pharmaceutical co's GMP	1	3	3	0.048	0.143	
	6-A	The role of CSV in promotion of the quality of a pharmaceutical Co's productions	1	3	3	0.048	0.143	
	7-A	Access to phone	1	60%	3	0.048	0.162	
	8-A	Access to Fax	1	100%	5	0.048	0.238	
	9-A	Access to computer	1	90%	5	0.048	0.219	
	10-A	Access to Internet	1	70%	4	0.048	0.181	
	11-A	Access to Intranet	1	90%	5	0.048	0.219	
	12-A	Access to Extranet	1	0%	1	0.048	0.048	
	13-A	Access to E-mail	1	70%	4	0.048	0.181	
	14-A	Access to EDI	1	90%	5	0.048	0.219	
	15-A	Access to Web site	1	23%	2	0.048	0.091	
	16-A	Access to Wireless Communication	1	80%	4	0.048	0.200	
	17-A	Access to Remote Acces(1	90%	5	0.048	0.219	
	18-A	Access to LAN	1	90%	5	0.048	0.219	
	19-A	Access to WAN	1	90%	5	0.048	0.219	
	20-A	Access to organizational portal	1	0%	1	0.048	0.048	

	21-A	Bandwidth used in pharmaceutical company - Mbps1- Mbps 2- for 100 people	1	5	5	0.048	0.238	
B Human Resources	1-B	Managers' familiarity with concepts, uses, and advantages of IT	1	3	3	0.200	0.600	3.400
	2-B	Personnel's familiarity with concepts, uses, and advantages of IT	1	3	3	0.200	0.600	
	3-B	The relevance of IT personnel's field of study to their job	1	5	5	0.200	1.000	
	4-B	ICT Educational qualification and past experiences of director	1	4	4	0.200	0.800	
	5-B	Number of IT education hours in the year	1	2	2	0.200	0.400	
C Networked World Enablers	1-C	The level of development and implementation of strategy, policy, and practical programs of ICT in a pharmaceutical Co.	1	2	2	0.200	0.400	3.200
	2-C	IT security	1	4	4	0.200	0.800	
	3-C	Potentials for integrative strategies of information management	1	3	3	0.200	0.600	
	4-C	Senior manager's commitment to improvement and implementation of IS strategies of organization	1	4	4	0.200	0.800	
	5-C	Organizational culture for adoption and use of ISs in the company	1	3	3	0.200	0.600	
D IT Applications	1-D	State of using IT-based systems – Supply chain management (SCM)	1	4%	1	0.077	0.088	1.796
	2-D	State of using IT-based systems – Customer relation management (CRM)	1	11%	1	0.077	0.112	
	3-D	State of using IT-based systems – Knowledge management (KM)	1	8%	1	0.077	0.100	
	4-D	State of using IT-based systems – Enterprise resource planning (ERP)	1	6%	1	0.077	0.096	
	5-D	State of using IT-based systems – E-Marketing	1	8%	1	0.077	0.100	
	6-D	State of using IT-based systems – Computer-assisted design (CAD), Computer-assisted manufacturing (CAM)	1	55%	3	0.077	0.246	
	7-D	State of using IT-based systems –Management system for website maintenance	1	9%	1	0.077	0.104	
	8-D	State of using IT-based systems – Education system	1	9%	1	0.077	0.104	
	9-D	Level of using standard mechanisms and formats for organizing, collecting, storing, and retrieving information	1	3	3	0.077	0.231	
	10-D	Is there a mechanism for analysis, design, and implementation of	1	1	1	0.077	0.077	

		ISs?						
	11-D	Variety of ICTs (hardware and software) and ease of using them	1	3	3	0.077	0.231	
	12-D	Level of using new web-based ISs in business	1	2	2	0.077	0.154	
	13-D	Level of using ISs instead of manual systems in business	1	2	2	0.077	0.154	
E	1-E	Level of information exchange through ICT in a pharmaceutical Co.	1	2	2	0.083	0.167	2.367
ICT Use	2-E	What percentage of company's sales can be classified in e-commerce category?	1	1	1	0.083	0.083	
	3-E	Percentage of outsourcing IT services – IS design	1	88%	5	0.083	0.375	
	4-E	Percentage of outsourcing IT services – use of software and its maintenance	1	35%	2	0.083	0.200	
	5-E	Percentage of outsourcing IT services – maintenance of software and ISs	1	58%	3	0.083	0.275	
	6-E	Percentage of outsourcing IT services – data processing	1	13%	2	0.083	0.125	
	7-E	Percentage of outsourcing IT services – website development	1	65%	4	0.083	0.300	
	8-E	Percentage of outsourcing IT services – services offered by ASPs	1	53%	3	0.083	0.258	
	9-E	In your opinion, what is the role of present situation of IT in Pharmaceutical Co. in its customers' loyalty?	1	1	1	0.083	0.083	
	10-E	In your opinion, what is the role of present situation of IT in Pharmaceutical Co. in its customers' satisfaction?	1	1	1	0.083	0.083	
	11-E	In your opinion, what is the role of present situation of IT in Pharmaceutical Co. in its production process?	1	2	2	0.083	0.167	
	12-E	In your opinion, what is the role of present situation of IT in Pharmaceutical Co. in its costs control process?	1	3	3	0.083	0.250	
F	1-F	The expenses of network connection in Pharmaceutical Co.	1	4	4	0.077	0.308	3.000
External Environment Readiness	2-F	How much can use of IT in practical areas meet the needs of users?	1	4	4	0.077	0.308	
	3-F	How much can the use of IT in practical areas meet the needs of users?	1	4	4	0.077	0.308	
	4-F	Level of access to ICT services	1	3	3	0.077	0.231	
	5-F	The ability to pay for ICT projects in due time	1	4	4	0.077	0.308	
	6-F	The ability to implement legal frameworks	1	2	2	0.077	0.154	
	7-F	Reliability of national power grid	1	4	4	0.077	0.308	
	8-F	Government support of using ICT	1	2	2	0.077	0.154	

	9-F	Holding financial supports for R&D	1	3	3	0.077	0.231	
	10-F	Security of national ICT network for business transactions	1	3	3	0.077	0.231	
	11-F	Company policy for competition in ICT areas	1	2	2	0.077	0.154	
	12-F	Your communication with micro environment through ICT	1	2	2	0.077	0.154	
	13-F	Your communication with macro environment through ICT	1	2	2	0.077	0.154	
G	1-G	Lack of business expertise in IT in the company	1	4	2	0.071	0.143	2.929
Barriers to	2-G	Adaptation and integration expenses of current business with IT	1	4	2	0.071	0.143	
ICT Use	3-G	Expenses of launching a dual system (including a paper and an electronic business systems)	1	4	2	0.071	0.143	
	4-G	Financial limitations	1	2	4	0.071	0.286	
	5-G	High expense of consultation services in Pharmaceutical Co.	1	2	4	0.071	0.286	
	6-G	Lack of IT-educated and expert personnel in the whole company	1	4	2	0.071	0.143	
	7-G	Reluctance of personnel for using IT in Pharmaceutical Co.	1	4	2	0.071	0.143	
	8-G	Lack of ICT standards in Pharmaceutical Co.	1	4	2	0.071	0.143	
	9-G	High costs of maintenance and updating computers in Pharmaceutical Co.	1	3	3	0.071	0.214	
	10-G	Lack of sufficient e-commerce infrastructures	1	3	3	0.071	0.214	
	11-G	High cost of connecting to internet in Pharmaceutical Co.	1	2	4	0.071	0.286	
	12-G	Incomplete legislation framework in Pharmaceutical Co.	1	3	3	0.071	0.214	
	13-G	Intermittent failure of connection to internet in Pharmaceutical Co.	1	2	4	0.071	0.286	
	14-G	Imposing high taxes by the government	1	2	4	0.071	0.286	

Table 4. The identify the strengths and weaknesses relevant to each dimension

Code	Index	Initial weight	Initial value	State score	Normalized weight in each class	Weighed score	Final score
A-12	Access to Extranet	1	0%	1	0.048	0.048	3.606
A-20	Access to organizational portal	1	0%	1	0.048	0.048	
A-1	The amount of investment in IT and ICT infrastructure relative to company's annual income	1	0.16%	1	0.048	0.048	
A-15	Access to Website	1	23%	2	0.048	0.091	
A-2	How often is the information of organization website updated?	1	2	2	0.048	0.095	
A-6	The role of CSV in promotion of the quality of Pharmaceutical Co's productions	1	3	3	0.048	0.143	
A-5	The impact of ICT on promotion of Pharmaceutical co's GMP	1	3	3	0.048	0.143	
A-7	Access to phone	1	60%	3	0.048	0.162	
A-10	Access to Internet	1	70%	4	0.048	0.181	
A-13	Access to E-mail	1	70%	4	0.048	0.181	
A-16	Access to Wireless Communication	1	80%	4	0.048	0.200	
A-14	Access to EDI	1	90%	5	0.048	0.219	
A-17	Access to Remote Access	1	90%	5	0.048	0.219	
A-18	Access to LAN	1	90%	5	0.048	0.219	
A-19	Access to WAN	1	90%	5	0.048	0.219	
A-9	Access to computer	1	90%	5	0.048	0.219	
A-11	Access to Intranet	1	90%	5	0.048	0.219	
A-21	Bandwidth used in Pharmaceutical - Mbps1- Mbps 2- for 100 people	1	5	5	0.048	0.238	
A-3	Is the current information and ICT infrastructure enough for supporting applications of ISs?	1	5	5	0.048	0.238	
A-4	Flexibility of organization network to be used in ISs	1	5	5	0.048	0.238	
A-8	Access to Fax	1	100%	5	0.048	0.238	

According to this table and analysis of this information, the strengths and weaknesses of the company with respect to its different dimensions were identified. In the following, the identified strengths and weaknesses of each dimension are described in detail.

4.3. Infrastructure and access

Company's score in this dimension is 3.6 out of 5. Based on this score, it can be concluded that the company is stronger in this dimension compared to other dimensions. To identify the strengths and weaknesses relevant to the indices of each dimension, indices with scores less than the average are considered as weaknesses of the company. According to table 5, the gaps and weaknesses in this area involve indices A-1, A-2, A-12, A-15, and A-20.

The radar graph of analysis of e-readiness evaluation data in the dimension of infrastructure and access in Pharmaceutical Co. is as following:

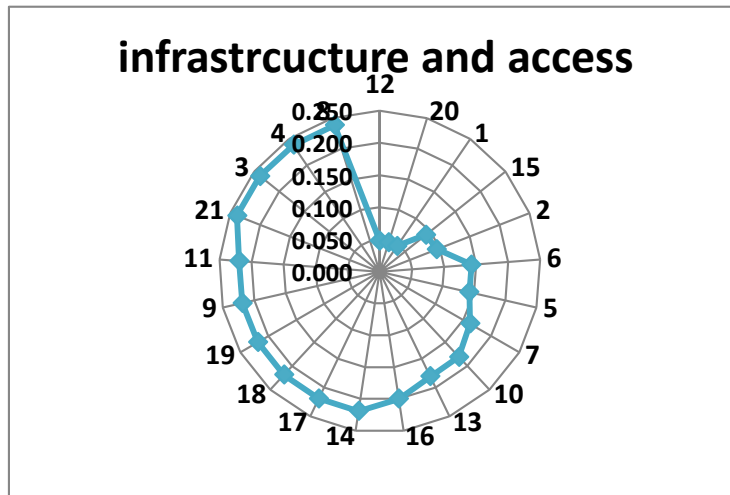


Fig 3. E-readiness evaluation graph – infrastructure and access dimension

Considering the weaknesses identified in this dimension and by studying different papers (Edwards & Dawson, 2009; Maswera, Qian & Jinghua, 2008; Stambro & Svartbo, 2003; Turban et al., 2006; and Wilkinson, 2005), as well as regarding the present situation of Pharmaceutical Co. in the following table, recommendations are offered for reducing existing digital divide in this aspect:

Table 5. Improvement projects – infrastructure and access dimension

Code	Dimension	Index	General title of project	References
A-12	Infrastructure and access	Access to extranet	Establishing external extranet network	(Wilkinson, 2005), (Stambro & Svartbo, 2003)
A-20	Infrastructure and access	Access to organizational portal	Launching organizational portal	(A.S. Al-Mudimigh et al., 2011), (Urbach, Smolnik & Riempp, 2010)
A-1	Infrastructure and access	Investment in IT and ICT infrastructure	Using evaluation methods and guiding Investment in IT	(Turban et al., 2006)
A-15	Infrastructure and access	Website update	Accessibility of website content, trying to promote organization website	(Maswera, Edwards & Dawson, 2009), (Qian & Jinghua, 2008)
A-2	Infrastructure and access	Access to website		

4.4. Human resources

The company's score in the dimension of human resources is 3.4 out of 5. Hence, the company is in the second rank with respect to this dimension compared to other dimensions. According to table 4-4, the weaknesses and gaps of this dimension involve code B-5.

The radar graph of analysis of e-readiness evaluation data in the dimension of human resources in Pharmaceutical Co. is as following:

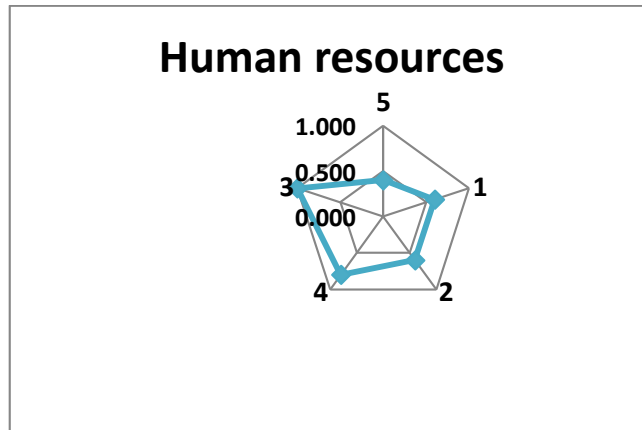


Fig. 4. Human resources

4.5. Enablers of the networked world

The company's score in the dimension of enablers of the networked world is 3.2 out of 5. Therefore, the company has the third rank in terms of this dimension compared to other dimensions. According to table 4-4, the weaknesses and gaps of this dimension involve code C-1.

Table 6. The weaknesses and gaps of this dimension

	Code	Index	Initial weight	Initial value	State score	Normalized weight in each class	Weighted score	Final score
C Enablers of networked world	C-1	The level of development and implementation of strategy, policy, and practical programs of ICT in Pharmaceutical Co.	1	2	2	0.200	0.400	3.200
	C-3	Potentials for integrative strategies of information management	1	3	3	0.200	0.600	
	C-5	Organizational culture for adoption and use of ISs in the company	1	3	3	0.200	0.600	
	C-2	IT security	1	4	4	0.200	0.800	
	C-4	Senior manager's commitment to improvement and implementation of IS strategies of organization	1	4	4	0.200	0.800	

The radar graph of analysis of e-readiness evaluation data in the dimension of enablers of networked world in Pharmaceutical Co. is as following:

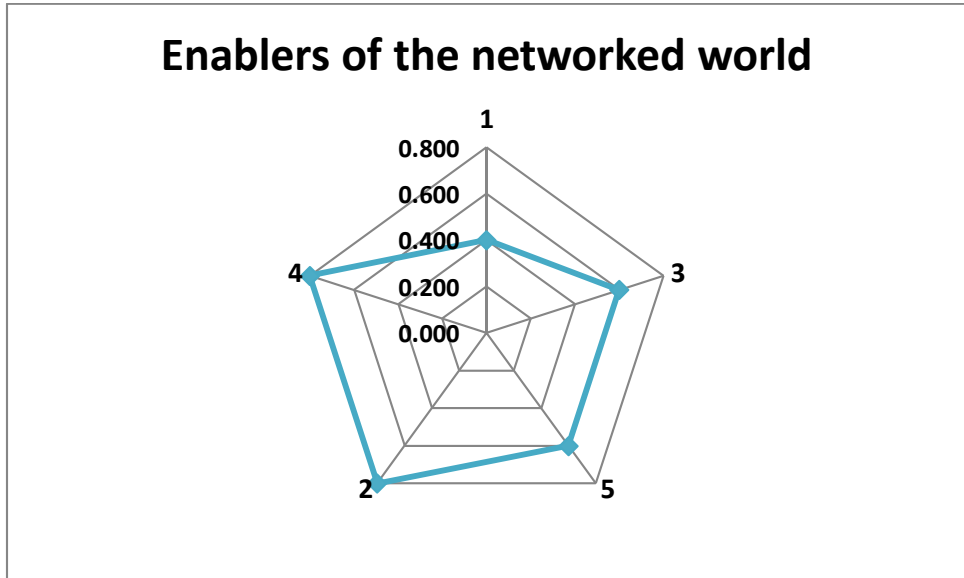


Fig. 5. E-readiness evaluation graph – enablers of networked world dimension

With respect to the weaknesses identified in this dimension and the present situation of Pharmaceutical Co., recommendations are offered for reducing existing digital divide in this aspect by studying different papers (El Dorado Irrigation District, 2009; Hanafizadeh.M.R, et al., 2009; Oakland County Department of Information Technology, 2010; Ward & Peppard, 2002). These recommendations are presented in the following table:

Table 7. Improvement projects – enablers of networked world dimension

Code	Dimension	Index	General title of project	References
C-1	Enablers of networked world	Strategy, policy, and practical program of ICT	Developing IT master plan	(El Dorado Irrigation District, 2009), (Oakland County Department of Information Technology, 2010)
			Developing SPIS	(Ward & Peppard ,2002)
			Evaluating e-readiness of the organization	(Hanafizadeh, et al., 2009)

4.6. Uses of IT

The score of the company in this dimension is 1.7 out of 5. It can be argued that the company is weak in this dimension compared to other dimensions. According to table 4-4, the gaps and weaknesses of this dimension are related to indices D-1, D-2, D-3, D-4, D-5, D-7, D-8, D-10, D-12, and D-13. The radar graph of analysis of e-readiness evaluation data in the dimension of uses of IT in Pharmaceutical Co. is as following:

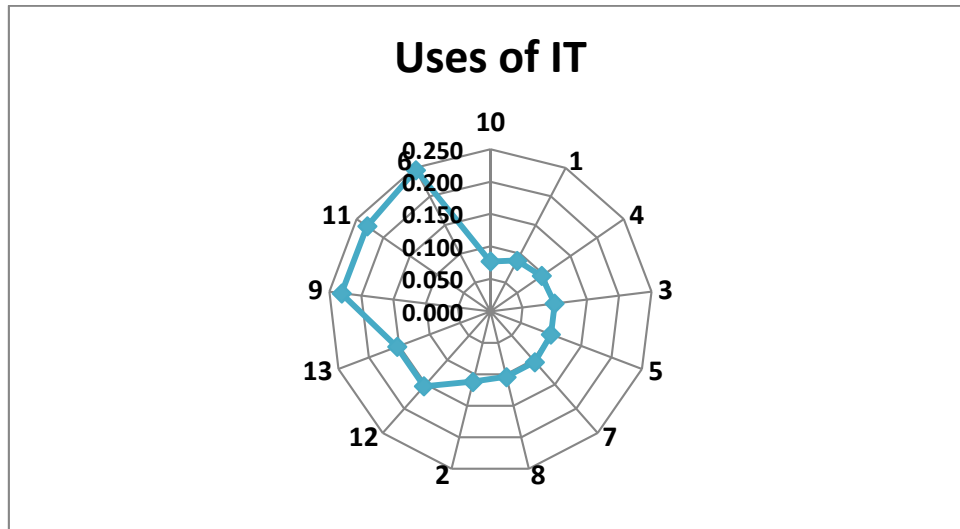


Fig. 6. E-readiness evaluation graph – uses of IT dimension

According to this classification, the common projects are the priority of SPIS. Considering the importance of strategies and their critical role in the organization, projects which help realize those strategies in the organization are in the second rank of priority. Access to and use of ICT in the organization is improved by reduction of digital divide helping organization reach its strategic goals. In this respect, projects which contribute to improvement of digital divide are in this third rank of priority. The ranking of projects are as following:

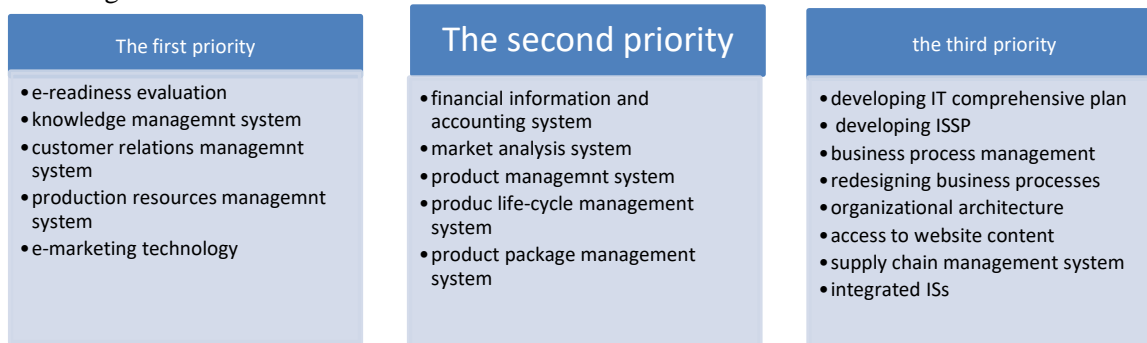


Fig 7. Ranking improvement projects

As the findings indicate, the weaknesses and strengths of the organization are identified by considering its present situation and evaluating its e-readiness and use of ICT. The knowledge gained in this stage is used for SPIS for more accurate definition of information needs and ISs which are in line with the strategies of the organization. Therefore, the output of this program involves package of ISs which both improves digital divide and realizes organizational strategies. Without evaluating e-readiness of the organization and identifying its digital divide projects, organization develops its SPIS simple based on traditional methodology and based on information needs resulting from strategies. Hence, the projects are defined based on organization’s strengths and weaknesses without regard to prerequisites leading to waste of resources and energy and failure of IS projects. This first priority projects like knowledge system management system, customer relations management system, production resource management system, and e-marketing technology which are of major and critical projects of the organization, point to the fact that company should invest on these projects as they are both in line with the strategies and lead to improvement of digital divide. It must be mentioned that if organization used traditional methodology of SPIS for ranking its plans and programs, first-rank projects would never be identified in the organization resulting in the waste of resources and failure of projects in some cases.

5. CONCLUSIONS

The aim of this study was to use e-readiness evaluation analysis in SPIS methodology. According to the findings, by adding e-readiness evaluation stage to the stages of SPIS methodology, the IS package involves projects which are in line with the strategies of the organization and lead to improvement of digital divide. Indeed, the output of SPIS using e-readiness evaluation projects is ISs projects which identify digital divide in various aspects of the organization and lead to realization of strategies. In fact, the questions raised at the introduction section of the study can be answered. The information obtained from e-readiness evaluation indicate the strengths and weaknesses of the organization and access to and use of ICT as well as its digital divide. This information helps organization define ISs projects in its SPIS which not only improves the digital divide, but realizes strategies, as well. For instance, Pharmaceutical Co. has the highest score in the dimension of infrastructure and access which refers to the fact that infrastructures of this company can be used for using ICT.

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