

The Impact of E-government Implementation on Performance of Public Employees in Saudi Arabia

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Abstract: Governments all over the world have shifted their focus to e-governments because they offer substantial opportunities to improve services. The performance of a government reflects the performance of its employees. Therefore, the need to measure the impact appears. This research aims to clearly find the impact of e-government in the Kingdom of Saudi Arabia on the performance of government employees from the employee perspective. To achieve this aim, apply the analytical and descriptive approach due to its relevance to the nature of the research. The research was quantitative in nature; therefore, the research relied on a survey to collect data as a primary resource of data, as well as relying on secondary resources. The data was collected from a sample of 52,464 participants. Research findings showed that, from the employee's perspective, there was a positive correlation between e-government implementation on the performance of public employees. Moreover, research findings confirmed what was already revealed by previous studies.

Keywords: Electronic government (e-government), Information and Communication Technology (ICT), public employee, performance, human resource (HR), human errors, self-efficacy, creativity and flexibility

1. Introduction

The revolution of information and communication technology (ICT) removed the limitation of time and space. Competition in adopting new technologies isn't only for individuals and companies anymore. Governments are racing to improve by implementing technology in the most useful way to achieve their goals and their people's best interest. The addition of the prefix 'E-' to a word (e.g., e-business, e-mail, e-learning, and e-class) refers to the shift from the traditional sense of the word to the application of ICT. In government, shifting to ICT creates e-government. The interaction between technology and human resources is the focus of this research. Since the performance of the government reflects the performance of its employees, employees who believe e-government to be the best solution to develop their performance are the key to the successful application of the e-government concept. The value of the research appears in four areas: First, agencies that work for the government can use this research to implement it on their employees to understand their attitude. Second, employees can use this research to know how their colleagues think about e-government so they can improve themselves. Third, researchers and students in the same field can use this research for review of the literature. Finally, since Yesser is the official program in Saudi Arabia that is responsible for transforming government services into e-government services, it can use this research to discover the trends between public employees.

2. Justification of the Study

Research has been done on the area that joins between e-government and HR, are not enough especially in Saudi Arabia. The findings of this study will benefit government agencies to understand what their employees think about the concept of e-government implementation.

- Khan and L.Vijayashree (2015) studied the impact of e-governance on employees' performance. Their study objective was to find the relationship between creativity, personal efficacy, and effectiveness. They also studied their influence on employee performance and the overall impact of e-governance on performance of Karnataka government employees. The methodology created by the researchers showed data collected from 125 government officers who work in an e-governance scenario. The survey concluded that creativity, personal efficacy and effectiveness lead to efficient delivery of services by employees in an e-governance scenario.
- Alsalloum (2011) studied the impact of applying e-government to improve the performance of the Ministry of Education in Saudi Arabia. The purpose was to find attitudes in the Ministry regarding the adoption of e-government. He also studied the effect of e-government applications on functional performance and explored detecting problems that could impede the implementation and availability of the necessary requirements processes needed to carry out e-government to administration of the Ministry of Education. For the methodology, the researcher applied the analytical and descriptive approach for its relevance to the nature of the research. The most important results of this study were that the use of e-government helps achieve a greater number of tasks during work hours, and leads to speed the completion of work and reduce human errors.
- El-Sofany et al focused their research on e-government in Saudi Arabia. The main purpose of their study was to explain some international development experiences to understand the benefits of e-government. Their research methodology includes two hundred online participators filled in the survey. The study introduced the factors that figure e-government performance, as well as effective suggestions to help improve e-government performance in Saudi Arabia.

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- Kumar Research purpose is studying the link between key processes flexibility and e-government performance which was analyzed based on six agriculture projects in India. The analysis brought out effects for researchers, practitioners and society. In this study, the researcher relied on new constructs proposed in the methodology. The researcher found that the flexibility operations, an indicator for e-government performance and analysis also need to restore traditional process engineering by merging the "mechanisms of change" in the processes to improve e-government performance.
- Al-Busaidy and Weerakkody (2009) conducted a research focused on e-government in Oman. The purpose of their study was to classify the factors influencing the development and diffusion of e-government in Oman by government employees involved in e-government service delivery. For their methodology, they used a survey. Their questionnaire consisted of ten independent variables were: accessibility of services, "use of email to communicate with citizens", security, operational efficiency, cultural obstacles, privacy, legislation, user confidence, IT workforce capability, private sector partnerships, trust, e-services availability, and information exchange between government agencies. Research found that improved accessibility, efficiency and availability of public services may lead to high stages of confidence between citizens in relation to e-government implementation in Oman. The study also found that information technology workforce capability has a secondary impact on citizens' trust and confidence in using e-services.
- Sarayreh and Al-Laham (2012) measured employee satisfaction in the Jordanian e-government. The purpose of their research was to try and estimate user satisfaction by assessing user satisfaction factors in both systems' related and works' related attributes in e-government in Jordan. The study population consisted of the users for the "E-Diwan" system; which are those who use the system in order to get information or to achieve different services. A purposeful sampling methodology was adapted to be representative and reflect the study objectives. The data and information was gathered from two resources: The primary resources consisted of the user satisfaction survey which was designed to get the primary resources. The secondary resources consisted of books and scientific references regarding the study subject. The results showed that the phases of user satisfaction from complex systems in the degree of training test highlight dissatisfaction to the time spent on training hours. Overall, there was a general satisfaction of the system depending on training. Also, the understanding of the system test confirmed that the degree of understanding was that of general satisfaction. Moreover, the top management involvement test showed that the degree of top management involvement was less satisfactory. Also, the feeling of control test indicated that the degree of feeling of control was satisfactory that refers to less sufficient training and understanding the system. The job effect test indicated that the degree of job effect was satisfactory
- Khakbaz-Poor and Zaranadi (2015) Study the effect e-government on employee corruption. The purpose of their study was to evaluate the effect of the establishment of an

e-government on a dimension of administrative corruption in a state university from a students' perspective. The researchers used structural equation modeling to analyze the data collected. Their methodology relied on a survey. The results showed that the establishment of an e-government in the state university had a significant negative impact on dimensions of inappropriate business behavior, violations of relevant laws and regulations, erroneous caused by negligence. Also, the significant effect of the establishment of an e-government on the development of customer's dissatisfaction, discrimination and abuse were rejected

The aim of this study is to clearly find the impact of e-government in the Kingdom of Saudi Arabia the main research question is: Is there a positive correlation between e-government implementation and public employee performance?

3. Study Hypotheses

In this study, there is a main hypothesis and four sub-hypotheses. The main hypothesis is:

H₁: There is no positive correlation between the implementation of e-government and public employee performance.

The sub- hypotheses are:

- 3.1 There is a positive correlation between the implementation of e-government and human errors that occur by a public employee.
- 3.2 There is a positive correlation between the implementation of e-government and public employee personal efficacy.
- 3.3 There is a positive correlation between the implementation of e-government and public employee creativity.
- 3.4 There is a positive correlation between the implementation of e-government and the flexibility of processes.

4. Methodology

- 4.1 Research methodology: the goal of the research is to clearly find the impact of e-government in the kingdom of Saudi Arabia on the performance of government employees from the employee perspective. The research was conducted using quantitative methods. The survey questionnaire was chosen for this research to test the correlation between the implementation of e-government and public employee performance. The research community includes all government employees in Saudi Arabia.
- 4.2 Participants: the study used a random sample approach since the research community is very large. The total number of participators in the survey was 90,627. The answers of 52,464 participants were the answers that could be analyzed. The sample characteristics were: 65% male, 53% were in their thirties, none of the participants in the survey were 51 to 60 years old, 77% had a

bachelor degree, and 37% have 0 to 5 years of experience. The participants were geographically distributed as follows: 37% from the center of Saudi Arabia, 28.3 % from the west, 17.2 % from the east, 11.1% from the south, and 6.2% from the north of Saudi Arabia.

- 4.3 Sampling Design and Procedures: This research epitomizes a study of the E-government application most common factors that influence performance of public employees in Saudi Arabia. As part of the study, a 21-question survey was published for three weeks on the Internet.
- 4.4 Material: The main instrument used to collect data in this study was a questionnaire (Appendix 1). It was prepared by the researcher based on the study model. The questionnaire was written in English and translated to Arabic. It contains two parts. The first part was used to collect the participant's demographic information, and it consisted of five questions, and included: name (optional), gender, age, years of experience, region, and highest level of education. The second part was about human errors, personal efficacy, creativity, and flexibility. This part contained twenty two questions. The questions were organized as follows:
- 4.5 Organizing of the questions.

Table 1: Organizing of the questions

Factor	Questions
human errors	9 questions
personal efficacy	5 questions
creativity	4 questions
flexibility	3 questions

This questionnaire used the Likert Scale, ranging from “strongly agree” to “strongly disagree”. Where: strongly agree=1, agree=2, neutral=3, disagree=3 or strongly disagree=4.

5. Research Model

Based on the research problem, the dependent factor is the performance of the employees, and the independent factor is the e-government. As confirmed by the review of previous studies, the performance of employees is influenced by macro factors, either from within the employee (e.g., creativity, personal efficacy) or from the environment (e.g., flexibility of operations, human error). These factors constitute the micro factors. Identifying the macro and micro factors will help formulate the study model. The following three macro variables (and their micro variables) will be discussed in detail: human errors, creativity, flexibility of processes, and personal efficacy:

- 1) Human Errors (Macro Variable): This macro variable consists of three micro variables: human reliability analysis, human error classifications, and responding to human error.
- Human reliability analysis: Failure to perform an action, failure to perform an action within the safe operating limits (e.g., time, accuracy), or performance of an extraneous act which degrades system performance. it used in the assessment to analyze the purpose of human errors to see how reliable the human

factor could be in work, and measure how humans are affected by various internal and external factors, personal characteristic and abilities, or the work environment.

- Human error classifications: Focuses on categorizing human errors in groups according to similarity; like mistakes due to negligence or mistakes due to ignorance. It also means classifying human errors consistently at all administrative levels
 - Responding to human error: This requires defining the best way or mechanism to solve problems that occur in the work due to human errors and to avoid their occurrence in the future
- 2) Creativity (Macro Variable): This macro variable consists of four micro variables: fluency, flexibility, elaboration, and originality.
- Fluency In intellectual creativity, fluency means abundance and diversity in the production of many ideas or solutions.
 - Flexibility In intellectual creativity, flexibility refers to the production of flexible ideas that can be used in many aspects in a variety of possibilities. It involves the ability to see things from different perspectives.
 - Elaboration In intellectual creativity, elaboration is the process of promoting ideas.
 - Originality In intellectual creativity, originality includes the production of uncommon excellent modern ideas.
- 3) Flexibility of Processes (Macro Variable): This macro variable consists of three micro variables: options, change mechanisms, and adaptability to situation.
- Options It means that work processes can be accomplished in more than one way, and there is a variety of possibilities to carry out processes.
 - Change mechanisms The change mechanisms in processes are one of the variables that affect the flexibility of processes. Changing mechanisms is important if the processes are rigid and there are no alternatives. In this case, changing the machine can alter this stalemate.
 - Adaptability to situation The processes ability to adapt to new changes in the work environment and its mechanisms or techniques. It has a positive relationship with flexibility of processes
- 4) Personal Efficacy (Macro Variable): This macro variable consists of four micro variables: motivation, self-awareness, proactivity, and action orientation.
- Motivation It means that a person can be stimulated well. Employees respond differently to stimulation depending on their needs.
 - Self-awareness It refers to the employee's knowledge of advantages and disadvantages in his personality and skills at work, and recognizes it
 - Proactivity It refers to a sense of initiative. It is intended that the employee be characterized as an actor and presenter of ideas and actions even when he is not asked
 - Action orientation it refers to a person's tendency to get involved in a current or future action

After this detailed explanation of the factors, a study model can be built based on the consideration that e-government is the independent factor and that the performance of employees is the dependent factor. It consists of a factor of 4 basic factors, each of which contains a number of factors. Figure 2 illustrates the study model.

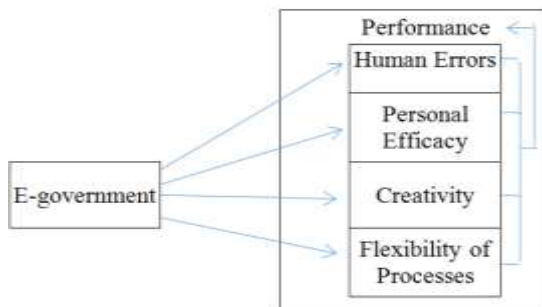


Figure 1: The model of the study

6. Results

6.1 Data Analysis and Result

6.1.1 Validity and Reliability of the Questionnaire:
 Reliability refers to the property of a measurement instrument that causes it to give similar results for similar inputs. Validity encompasses the entire experimental concept and establishes whether the results obtained meet all the requirements of the scientific research method.

Table 2: Validity and Reliability of the Questionnaire

Dimensions	No. of Items	Reliability	Validity
Reducing Error	9	0.627	0.792
Personal Efficacy	5	0.754	0.868
Creativity	4	0.890	0.943
Flexibility	3	0.890	0.943
Overall	21	0.864	0.929

Reliability:

The value of Cronbach's Alpha for each dimension is high (the higher value led to more reliability). Moreover, the overall value of Cronbach's Alpha is equal to .864 (close to 1).

Validity:

The value for validity is high for all dimensions.

6.1.2 Characteristics of the Sample

The general information variables included: gender, age, level of education, years of experience, and region.

Table 3: Characteristics of the Sample (Age Divided by Gender)

		Count	Age			Total
			18 – 28	29 -39	40-50	
Gender	Male	Count	2927	16592	10312	29831
		% Within Gender	10%	56%	35%	100%
		% Within Age	55%	59%	54%	57%
	Female	% of Total	6%	32%	20%	57%
		Count	2421	11580	8632	22633
		% Within Gender	11%	51%	38%	100%
	Total	% Within Age	45%	41%	46%	43%
		% of Total	5%	22%	16%	43%
		Count	5348	28172	18944	52464
Total	% Within Gender	10%	54%	36%	100%	
	% Within Age	100%	100%	100%	100%	
	% of Total	10%	54%	36%	100%	

6.1.3 Level of Education

Table 3: Level of Education

	Frequency	Percent	Cumulative Percent
Primary	97	.2	.2
Intermediate	454	.9	1.1
High School	6565	12.5	13.6
University "Bachelor"	40811	77.8	91.4
Master	2031	3.9	95.2
PhD	2505	4.8	100.0
Total	52463	100.0	

6.1.4 Years of Experience

Table 4: Years of Experience

Years	Frequency	Percent	Cumulative Percent
0 – 5	19886	37.9	37.9
6-11	15660	29.8	67.8
12-17	12775	24.4	92.1
18-23	4143	7.9	100.0
Total	52464	100.0	

6.1.5 Region

Table 5: Distribution of the Study Sample by Geographic Region

Region	Frequency	Percent	Cumulative Percent
Central	19518	37.2	37.2
West	14830	28.3	65.5
East	9029	17.2	82.7
South	5809	11.1	93.8
North	3278	6.2	100.0
Total	52464	100.0	

6.1.6 Result of Survey

Table 6: Result of Survey

	No.	Minimum	Maximum	Mean	Std. Deviation	Result
Do you think work time affect Your performance	52464	1	5	3.8304	1.01615	agree
Distractions, noise and any external events can affect your Performance	52464	1	5	4.478	0.71769	totally agree
Some task demand special Knowledge than other tasks which maybe affect your performance	52464	1	5	4.1494	0.84678	agree
Some task demand more time than other tasks which maybe affect your performance	52464	1	5	4.1305	0.86547	agree
Working when you are sick lead to make more mistake than usual	52464	1	5	4.3666	0.79087	totally agree
Some human behaviors like omission or commission can affect your performance	52464	1	5	4.3953	0.74766	totally agree
Do you think work environmental context can affect Your performance	52464	1	5	4.3265	0.76647	totally agree
In Your organization, all the error takes the same definition on all the managerial levels?	52464	1	5	2.9888	1.10703	neutral
Do you think changing on system design Can reclude the human error	52464	1	5	4.0767	0.82201	agree
Average for first Dimension	52464	1	5	4.0825	0.43195	agree
Do you Think that e-government can motivate you to improve your perform.	52464	1	5	4.1514	0.85295	agree
Do you think Implements of e-government can increase your awareness of your Own strength and weakness	52464	1	5	4.0597	0.87445	agree
Do you think Implements of e-government increasing the chance to be proactive in your work	52464	1	5	4.0034	0.87949	agree
E-government can affect your now action, and planning in your work.	52464	1	5	3.639	1.06685	agree
E-government can affect your preparing for the future in your work.	52464	1	5	3.6236	1.06955	agree
Average for second Dimension	52464	1	5	3.8954	0.67697	agree
Do you think Implements of e-government helps you to produce more ideas	52464	1	5	3.9212	0.91071	agree
Do you think Implements of e-government can make the ideas more flexible "shows a variety of possibilities"	52464	1	5	3.8677	0.8974	agree
Do you think Implements of e-government can enhancing ideas by providing more detail and clarity	52464	1	5	3.9559	0.84185	agree
Do you think Implements of e-government can provide new and original ideas	52464	1	5	3.915	0.88332	agree
Average for third Dimension	52464	1	5	3.9149	0.76616	agree
Do you think Implements of e-government increase the work options of work process	52464	1	5	3.8636	0.93391	agree
E-government can transform a rigid process and make it more flexible	52464	1	5	4.0022	0.92334	agree
E-government can help to adapt the changing situations in the work	52464	1	5	3.9736	0.86839	agree
Average for fourth Dimension	52464	1	5	3.9465	0.77847	agree
general average				3.9823	0.85344	agree

6.2 General Research Findings

The result of the questionnaire confirmed the following:

First, it confirmed the relationship between the implementation of e-government and human errors that occur by public employees. Second, it confirmed the relationship between the implementation of e-government and public employee personal efficacy. Third, it confirmed the relationship between the implementation of e-government and public employee creativity. Fourth, it confirmed the relationship between the implementation of e-government and flexibility of processes. Also some Specific findings connected to each variable. This research develops a new framework grounded on previous studies for exploring the implementation of e-government and public employee performance by identifying the critical factors for evaluation. The first dimension consisted of testing the relationship between e-government and human errors that occur by public

employees. The result of the statistical analysis proved the inverse relation between implementing e-government and human errors. When e-government implemented more, errors caused by the human factor decrease. The result of the statistical analysis also showed a positive relation for the other three dimensions: personal efficacy, creativity, and flexibility of processes. When e-government implemented more personal efficacy, creativity, and flexibility of processes increase.

7. Conclusion

Findings from the analysis were used to obtain the employees' perceptions of the impact of e-government implementation on performance of public employees in Saudi Arabia. This research aimed to clearly show the impact of e-government in the Kingdom of Saudi Arabia on the performance of government employees from the employee perspective. To fulfill the aim of the research, a main

research question was formulated as follows: Is there a positive correlation between the implementation of e-government and public employee performance? To answer the primary research question, four secondary research questions were developed, including: (1) is there a positive

Is there a positive correlation between the implementation of e-government and human errors that occur by public employees? (2) Is there a positive correlation between the implementation of e-government and public employee personal efficacy? (3) Is there a positive correlation between the implementation of e-government and public employee creativity? (4) Is there a positive correlation between the implementation of e-government and the flexibility of processes? To answer the research questions, a model was developed, based on the review of related literature, and clarified the researches main terms.

The model hypothesises the critical factors for evaluating the e-government impact on the performance of government employees which are the macro and micro variables. Each macro variable contains micro variables. The statistical results were generated by comparing the mean using independent samples (t-test) and ANOVA.

8. Suggestions for Future Work

- 1) Expand the social, economic and political studies regarding e-government.
- 2) Apply this study to specific government agencies.
- 3) Study the impact of training on the acceptance of government employees to e-government.

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