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Requirements for the application of electronic administration in health organizations Digitization of the health sector in Algeria – a model –

متطلبات تطبيق الإدارة الالكترونية في المنظمات الصحية رقمنة القطاع الصحي في الجزائر –انموذجا–

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Abstract:

Our aim through this study is to recognize the extent to which the electronic administration requirements are applied in health organizations, and improve service quality, determine the requirements and objectives thereof associated with their use. More to the point, it alike aims to analyze the actual reality of the extent of using the electronic administration and its requirements in Algerian health hospitals, through conducting a field study of the mixed hospital in the city of Laghouat. For attainment of this purpose, the researchers used the descriptive analytical method to know the viewpoint of the health sector employees, inclusive of doctors, assistants and administrators, from the extent of the application of electronic administration in hospitals to service performance all the way through designing a questionnaire for the entire data. In virtue of which, parameters were developed based on previous studies, according to random sample, 200 questionnaires were distributed, 130 of which were recovered back, with a response rate assessed to 70%. Subsequent to which, and in order to attain the purpose of this study, researchers used several statistical methods, in respect such as Cronbach Alpha to ensure stability, frequencies and percentages to describe the study variables, and to recognize the impact of application of the electronic administration requirements on the performance of health services and improvement of their quality in the hospital, as the requirements of the application of electronic administration significantly affect the performance of the health service and the improvement of its quality. In the light of results deducted from this study, several recommendations were given, the most important of which were: the necessity to adopt the application of the electronic administration requirements in Algerian health hospitals, with a focus on infrastructure, effective leadership and workers in terms of rehabilitating and educating them in this field.

Keywords: Application requirements; Electronic administration; Health organizations; Digitalization; Quality of services.

JEL Classification Codes: H51 ،L86 ،M14

ملخص:

نهدف من خلال هذه الدراسة الى التعرف على مدى تطبيق متطلبات الادارة الالكترونية في المنظمات الصحية ،وتحسين جودة الخدمة ،وتحديد متطلباتها وأهدافها المرتبطة باستخدامها ،كما تهدف الى تحليل الواقع الفعلي لمدى استخدام الادارة الالكترونية ومتطلباتها في المستشفيات الصحية الجزائرية ،وذلك بإجراء دراسة ميدانية لمستشفى المختلط بمدينة الأغواط ولتحقيق ذلك استخدم الباحثان المنهج الوصفي التحليلي لمعرفة وجهة نظر

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موظفي قطاع الصحة ،عن ما مدى تطبيق الادارة الالكترونية في المستشفيات على أداء الخدمة من خلال تصميم استبانة لجميع البيانات ،وتم تطوير المقاييس بالاعتماد على الدراسات السابقة ،اعتمادا على العينة العشوائية تم توزيع 200 استبانة ،استرجع منها 130 استبانة ،بنسبة استجابة بلغت 70% ،ولتحقيق هدف الدراسة فقد قام الباحثان باستخدام عدة اساليب احصائية منها كرونباخ ألفا للتأكد من الثبات ،والتكرارات والنسب المئوية لوصف متغيرات الدراسة ،وللتعرف على أثر تطبيق متطلبات الادارة الالكترونية على اداء الخدمات الصحية وتحسين جودتها بالمستشفى ،حيث ان متطلبات تطبيق الادارة الالكترونية تؤثر معنويا على اداء الخدمة الصحية وتحسين جودتها ،وبناء على نتائج الدراسة تم التقدم بالعديد من التوصيات التي كان أهمها :ضرورة تبنى تطبيق متطلبات الادارة الالكترونية في المستشفيات الصحية الجزائرية مع التركيز على البنية التحتية والقيادة الفاعلة والعاملين من حيث تأهيلهم وتثقيفهم في هذا المجال .

كلمات مفتاحية: متطلبات التطبيق ،الادارة الالكترونية ،المنظمات الصحية، الرقمنة، جودة الخدمة.

تصنيفات JEL : M14 ،L86 ،H51

Introduction:

Nowadays, in our word which is characterized by speed, sweep of digitalization, and attainment of high levels of progress and development by technology, which are all resulted from the electronic administration, as it was considered one of the modern achievements in the current era. In virtue of which, this has led to the innovation of advanced technologies, and compelled countries and governments to take advantage of the gains of the technical revolution though using computers and internet networks in facilitating business and speeding up the completion thereof, along with providing services by electronic means. More to the point, Corona-virus is one of the motives requiring countries to enter the battlefield of technology and digitalization, as it made digitization the inevitable option for the purpose of avoiding infection and obtaining solutions in a short time. Likewise, electronic administration has significantly contributed to eliminating problems and finding solutions thereof in satisfactorily effective ways, mainly: Overcrowding and queues in government departments and institutions, alongside avoiding everydayness and other factors that stand in the way of providing services and improving the quality thereof for citizens, in addition to the fact that electronic administration helps in speeding up realisation, saving time and efforts, and maintaining information confidentiality.

In fact, health organizations represent hospitals, clinics and private health centres that are considered a means of linking in the provision of health services; as a result of which, they have shown to be the major requirement for patients who seek treatment and recovery, and healthy people who seek to prevent diseases. Moreover, with the increasing pressure on such institutions, in particular with the current conditions, in addition to the availability of some characteristics that have not previously been available, to fulfil the citizens' requirements and needs, along with striving to improve the provided health services. Nonetheless, all these have compelled managers of health organizations to find ways and solutions to accede this demand, which has then led to the necessity of application of the electronic administration requirements in health institutions. Subsequent to which, the problem of this study appears to be centred on the following essential question: What is the impact of application of the electronic administration requirements in the health institution subject to our study?

Indeed, the problem can be expressed through the following questions:

- To which extent are the electronic administration requirements applied in health institutions?
- To which extent does the correlative relationship exist between the awareness of employees with regards to the electronic administration and the application degree in health institutions?
- What is the effect of the study variables (gender, educational qualification, years of experience, job title) in the application of the electronic administration requirements in health institutions?

Study hypotheses:

In light of the presentation above for explanation purpose of the study problem, and trying to answer the previously raised questions and testing their accuracy, that can be summarized as follows:

- There are no statistically significant differences at the significance level ($\propto \leq 0.05$) with regards to the awareness of employees of electronic administration and the application degree in health institutions;
- There are no statistically significant differences at the significance level ($\propto \leq 0.05$) with regards to the application of the electronic administration requirements in improving the provision of health organizations attributed to gender;
- There are no statistically significant differences at the significance level ($\propto \leq 0.05$) with regards to the application of the electronic administration requirements in improving the provision of health organizations attributed to educational qualification;
- There are no statistically significant differences at the significance level ($\propto \leq 0.05$) with regards to the application of the electronic administration requirements in improving the provision of health organizations attributed to years of experience;
- There are no statistically significant differences at the significance level ($\propto \leq 0.05$) with regards to the application of the electronic administration requirements in improving the provision of health organizations attributed to job title;

Importance of the study:

The importance of the study stems from the real fact that it sheds light on the requirements of the electronic administration application and its role in the improvement of services quality in health institutions, for the purpose of keeping pace with global practices and technical developments occurring in the field of medicine, the fact of which requires strengthening its position amongst the remaining health institutions all the way through proving its importance and the effective role thereof in the achievement of the health services' quality.

Objectives of the study:

The foremost objectives of the study can be summarized as follows:

- Shedding light on different concepts related to electronic administration;
- Drawing attention to the requirements for the electronic administration application;
- Measuring the awareness level of employees and the application degree of electronic administration in health institutions.

Previous studies:

With regards to the previous studies having dealt with this subject, even partially, we underline:

- **The first study**: The study conducted by Tarek ben Kasmiya (2017) entitled as: "The role of electronic administration in the improvement of the services quality in public hospital institutions", which study has aimed to identify the extent to which the electronic administration contributed in the improvement of the services quality in hospital institutions, along with determination of the resulting impacts on the use thereof. More to the point, this study aims to analyze the actual reality of the extent of using the electronic administration tools in Algerian hospitals. In virtue of which, it was concluded through this study that a strong correlative relationship exist among the electronic administration, the quality of health services and the improvement of the performance of hospital employees.
- **The second study**: The study conducted by KHALLASSI Abdelilah, NASRI Manal (2020) entitled as: "The electronic administration as a strategic option for the improvement of health services in Algeria", which study has aimed to identify the extent to which the electronic administration contributed in the improvement of the performance of health service in public hospitals. In virtue of which, it was concluded through this study that the application of electronic administration in health institutions has shown to be necessary in order to comply with the requirements of the new electronic society.
- **The third study**: The study conducted by Ilham YASSI (2021) entitled as: "The extent to which electronic administration management applies human resources in hospital institutions", which represents a case study of Al-Farabi Clinic – Annaba; the study of which aimed to identify the extent to which the electronic administration of human resources is applied in hospital institutions. In virtue of which, it was concluded through this study that the clinic adopts the electronic administration of human resources in order to attain the traded objectives.

Terminological framework of the study:

Definition of the electronic administration:

Firstly: Definition of the electronic administration

The term of electronic administration is one of the most important and latest scientific terms that have been developed in the field of modern sciences. Besides, it appeared for the first time in the United States of America as a result of the development of information and communication networks (Abusef & Tarofder, 2021). In addition, some thinkers and those intellectuals interested in this field consider that the electronic administration is part of the electronic government "e-government" (Onuigbo & Eme, 2015), and it represents one of its main components responsible for the simplification of administrative processes (Sabo, 2020). More to the point, the electronic administration represents one of the forms of the overall sector that represent the e-government, whose role lies in managing internal affairs in the government instead of users (Dawood & KHafaji, 2016), and the corporate audiences like external members. In addition, some of them consider the opposite that electronic administration represents the big umbrella for other electronic business models (Hassan, 2014), whilst third party calls for neglecting this dispute and dealing with technology and applications thereof on the ground as a reality rather than describing the same as an opposites,

and without distinguishing between the use of one or both of the two terms (Al-Wafi, 2019). In general, the concept of electronic administration refers to: The use of information and communication technologies, all the way through the interaction of individuals and companies with the government so as to contribute to the decision-making process, finding ways to access information, increasing transparency, and strengthening the civil society (Ridha & Abdulrahman, 2018). Likewise, it alike be defined as an "integrated electronic system based on information and communication technology, for transformation purpose of all traditional administrative works into electronic works based on technology (Alsakarneh & Hong, 2015), and modern digital ones. As for electronic administration in the public sector, it can be stated that it represents "a new vision for the concept of public administration in the information era, endeavouring to enable all institutions, ministries and public authorities to conduct all their works and contracts, and provide the best services to the public along with the best use of modern means being available for technology and communication, throughout employing what is available, either moral, material or human, in the modern electronic field, to make the best use of time, efforts and money so as to attain the public interest (AL-Manaseer, 2021).

Subsequent to which, electronic administration can be defined as the use of information and communication technology and modern technologies for the purpose of executing the administrative works and providing electronic services at any place and time; the fact of which will lead to increased quality of performance, speed of execution, reduction of costs, accuracy and speed in providing services, developing administrative organization, simplifying procedures and providing accurate information, in addition to the speed of making decisions based on accurate and direct information.

Definition of health institutions:

It is meant by health institution any institution that provides health care directly, in respect such as hospitals, health centres, clinics and specialized centres; or indirectly, such as laboratories and health administrations with support servicesc (Abdelaziz, 2005), and medical maintenance.

Health Services:

Definitely, medical care means the therapeutic, hospital, or diagnostic service or services provided by one of the medical team members to one or more members of the community, in respect such as the treatment by a doctor of a sick person, whether in his private clinic or in the outpatient clinics of a government hospital, or also the nursing or medical care provided by the nurse for the benefit of a patient, in addition to the diagnostic analyzes provided in the laboratory to a person or to several people. Nonetheless, care may provide preventive health care, as the doctor who treats a person can provide him with explanations and information with regards to a specific disease, ways of its spread and preventive methods therefrom (Abdul Majeed , 2000), so as to avoid to be caught sick with the same in the future. Subsequently, the doctor plays alike the role of health care in addition to medical care. More to the point, the health service can be defined as the activity to be provided to the beneficiaries, which aims to satisfy needs and desires; in this respect, the health service represents nothing but an integrated mixture of elements (Qawzi, 1998) for the final consumer, as it is not related to selling goods or providing services whatever (Abdul

Mahdi, 2004), either tangible and intangible, which attain its contentment and a certain satisfaction of the beneficiary.

Requirements of the electronic administration application:

The electronic administration project needs, like any other projects or programs, to institute an appropriate and conducive environment for the nature of its work, so as to be a position to put into practice any required issues therefrom; hence attaining success and excellence, failing which, it will be doomed to failure, the fact of which will cause a loss of time, money and efforts; thus, we will return back to the zero point. Above and beyond, the administration is the daughter of its own environment, as it can affect and be affected by the entire elements of the surrounding environment; moreover, it interacts with all the political, economic, social, cultural and technological elements. As a consequence, the electronic administration project must take into account several requirements, in respect such as:

- **First**: Infrastructure; Seeing that electronic administration requires an appropriate, if not high, level of infrastructure that incorporates a modern network for communications and data, along with an advanced infrastructure for telecommunications that is capable of providing transfer of communication and information amongst the administrative institutions themselves, on the one hand, and in the midst of institutions and the citizen, on the other hand.
- **Second**: Availability of the necessary electronic means to benefit from the services provided by the electronic administration, through which we can communicate with the same, inclusive of personal computers, laptops, network phones and other devices that enable us to connect to the global or internal network in the country, at reasonable prices that allow most people having access thereto.
- **Third**: The availability of a good number of internet service providers, and we lay stress on the fact that the prices are as reasonable as possible so as open the way for the largest possible number of citizens to interact with the electronic administration in the least efforts, the shortest time and the lowest possible costs ever.
- **Fourth**: Training and building capacities, as it comprises training of all employees on how to use computers, manage networks, databases, data and the whole information necessary to work on managing and directing “electronic administration” in the most appropriate manner ever, preferably by institutes or training centres specialized and affiliated with the government. More to the point, the culture of using “electronic administration” and the ways and means of using the same for citizens must alike be spread in the same way as before.
- **Fifth**: Availability of an appropriate level of funding, thus the funding enables the government to conduct periodic maintenance and training for executives and employees, maintain a high level of service provision and keep pace with any development that may take place within the scope of technology and “electronic administration” worldwide.
- **Sixth**: Availability of political will, in such a way that there shall be an official or a specific committee that will put into operation this project and endeavour to create the necessary and appropriate environment for work, and will supervise the application and evaluate the levels it has reached in implementation.

- **Seventh**: The existence of legislation and legal texts facilitating the work of the electronic administration, and providing the same with legitimacy and credibility alongside the entire legal consequences arising therefrom.
- **Eighth**: Provision of high level of electronic security and electronic confidentiality so as to protect national and personal information, to preserve the electronic archive from any abuse and to focus on this point due to the importance and danger thereof to the national and personal security, either for the State or for individuals equally.
- **Ninth**: A comprehensive advertising marketing plan for the purpose of promoting the use of electronic administration, and draw attention to its advantages alongside the need for all citizens to participate in and interact with. However, all national media, inclusive of radio, television and newspapers, will participate in this campaign, paying attention to advertising aspect, holding seminars and conferences, hosting officials, ministers and employees in discussion sessions with regards to the issue of creating a popular atmosphere capable of dealing with the concept of electronic administration.

In addition to such elements set out above, some artistic and technical elements must be provided, which that help simplifying and facilitating the use of electronic administration in proportion to the culture of all citizens, inclusive of: Unifying the forms of government and administrative websites, unifying the ways of using them, and creating a comprehensive website accessible as a guide to the addresses of the whole government administrative centres in entire country.

Conclusion:

In order for us to find out the extent to which the electronic administration requirements are applied in health organizations, this study has been conducted at a 224-bed hospital in the province of Laghouat, through distributing a questionnaire to all health sector employees. Besides, the questionnaire in question comprised a set of statements pertaining to two topics of measuring the awareness of employees with regards to the electronic administration, and the application degree of electronic administration in health institutions. In virtue of which, and through testing the hypotheses, we could be able to conclude the results listed below:-

- Health institutions seek to implement the electronic administration requirements;
- The institution subject to our study has qualified individuals who are at all times striving to discover the newest information in their field;
- The application of electronic administration, from the perspective of employees, to a first-rate degree;
- There exists a statistically significant effect on the application of the electronic administration requirements in health organizations.

More to the point, the results have alike shown that the impact of the application of the electronic administration requirements varies. In addition, the electronic interaction has an important and effective role within the application of electronic administration.

More and more, for activation purpose of the application of the electronic administration requirements in health organizations, the study provides the recommendations hereinafter listed, as follows:

- A political will must be instituted to activate and circulate the application of the electronic management requirements;

- The awareness must be raised, along with spreading the culture of electronic transactions amongst all groups and removing fears in this respect;
- The intensity of using internet has to be expanded and increased, along with providing its flow at high degrees;
- The need to protect and secure information;
- Government must enact laws regulating the electronic administration and the transactions thereof.

Field study:

1. **Study tool:**

There is a questionnaire that had been used for collection purpose of data from the study sample, whereat the questionnaire was divided into two main parts, as follows:

- **Part one**: It includes personal and job information (gender, age, occupation, service duration in the institution);
- **Part Two**: Our main aim through this part is to measure the awareness of employees with regards to electronic administration and the application degree of electronic administration in health institutions. Hence, this part is divided into two main topics, as follows:
  - ↘ **The first topic**: Measuring the awareness of employees with regards to E-administration; the topic of which includes 12 phrases;
  - ↘ **The second topic**: Measuring the application degree of electronic administration in health institutions; this topic includes 13 phrases.

2. **Population and sample of the study:**

Given that the subject of this study is shedding light on the requirements for the application of electronic administration in health organizations – digitization of the health sector in Algeria as a model –; this study was limited to a specific sample containing 130 individuals from the study community consisting of 200 individuals.

3. **Initial tests of the measurement tool:**

For the purpose of ascertaining whether or not the questionnaire is accurate, the researchers conducted a set of tests thereon, by resorting to the arbitrators in addition to the necessary statistical tests.

a. The questionnaire accuracy:

In order to ensure the accuracy of the questionnaire along with the appropriateness of its items, we exposed the questionnaire to a group of experienced arbitrators, who in fact issued their judgments on the questions' appropriateness degree, the integrity and exactness of the verbal and scientific formulation of the phrases contained in the questionnaire, and the extent to which the questionnaire included the problem of the study and the attainment of the objectives thereof. Hence, notes have been taken, and in the light of which we made the modifications underlined by the arbitrators, until the final form of the questionnaire was reached.

b. Stability of the questionnaire tool:

We used the stability coefficient Cronbach Alpha in our study for the purpose of measuring the stability of the questionnaire, in such a manner that the Cronbach Alpha value would be acceptable in case its value exceeded 0.60. in virtue of which, the results indicated that the stability value was high, as per tabulated hereunder:

Table (1): **Cronbach Alpha coefficient to measure the questionnaire stability**

Questionnaire topics	Cronbach Alpha coefficient		
	Correlation coefficient	Stability	Number of phrases
Questionnaire as a whole	0.905	0.951	25

Source: Prepared based on the results of the Spss Program.

In the light of the results set out in the Table above, it has shown clear that the Alpha coefficient was high with regards to the questionnaire as a whole, whereat its value was assessed to 0.905; the same applies for the stability value, as it was high, reaching 0.951. Therefore, all this increase recorded in the Cronbach Alpha value, and the value of its stability, indicates the stability of its items. As a consequence, we conclude that the tool we prepared to deal with the raised problem is honest and stable in all its items, and it is ready to be applied to the study sample.

c. Normal distribution test:

The Smirnov-Kolmogorov (S-K) test was used for the purpose of testing whether or not the data follow a normal distribution; thus, the results have shown to be as per tabulated hereunder:

Table (2): **Shows the results of the normal distribution test**

Questionnaire topics	Test value	Sig
First topic	0.135	0.000
Second topic	0.147	0.000
Questionnaire as a whole	0.096	0.000

Source: Prepared based on the results of the Spss Program.

The above table illustrates that the probability value (Sig) for the entire fields of study is less than the significance level 0.05; thus, the distribution of data for the entire fields does not follow the normal distribution. As a consequence, nonparametric tests will be used to provide answers for the study hypotheses.

d. Accuracy of the study tool structural consistency:

The accuracy of the structural consistency is considered one of the measures of the study tool accuracy, since it measures the extent to which the objectives that the tool seeks to reach have been attained; in addition, the accuracy of the structural consistency shows the extent to which each of the study tool topics is related to the total degree of the questionnaire items as a whole. In virtue of which, further explanations are illustrated in the table hereunder.

Table (3): **Shows the results of the normal distribution test**

Questionnaire topics	Test value	Sig	Result
Measuring the awareness of employees with regards to the E-administration	**0.782	0.000	Significant
The application degree of electronic administration in health institutions	**0.805	0.000	Significant

Source: Prepared based on the results of the Spss Program.

In the light of the Table (3) above, we realize that the correlation coefficients between each topic and the total average of the questionnaire items have shown to statistically significant. As a consequence, the topics are considered accurate and consistent with the measure they were set to create.

4. Data analysis tools:

For the purpose of accurately analyzing the data obtained from the survey process, both frequency and percentage tables will be used, in addition to parameter tables in order to be acquainted with the relationship between the variables, not to mention the use of nonparametric tests to accuracy test of the study hypotheses.

5. Presentation of the study results:

In this part, we will address and analyze the results of the questionnaire, all the way through presenting and analyzing the results of the interviewee's personal card, alongside presenting and analyzing the results of the questions.

a. Description of the study sample:

Upon collection of the necessary data from a sample of (130), which was coded, reserved and processed based on the Spss program, the results illustrated in the table hereunder have been obtained:

Table (4): **Distribution of the sample members according to personal information variables**

Personal results	Options	Frequency	Rates %
Gender	Male	70	53.8 %
	Female	60	46.2 %
Age	Less than 26 years	24	18.5 %
	From 27 years to 35 years	48	36.9 %
	From 36 years to 45 years	33	25.4 %
	From 46 years to 55 years	18	18.3 %
	Over 56 years	7	5.4 %
Occupation	Retired	0	0 %
	Employee	112	86.2 %
	Trainee	18	13.8 %
	Other	0	0 %
Service duration in the institution	Less than 05 years	28	21.5 %
	From 06 years to 10 years	55	42.3 %
	From 11 years to 15 years	32	24.6 %
	Over 16 years	15	11.5 %

Source: Prepared based on the results of the Spss Program.

b. Analysis of the first topic of the questionnaire:

For the purpose of analyzing the topics of the questionnaire, we used the Sign Test, in order to test the hypothesis that came as follows: The agreement degree of the surveyed individuals about the extent of their awareness of the electronic administration has shown to be equal to the degree of neutrality 03, throughout using the statistical hypothesis hereinafter:

- **Null hypothesis**: The parameter answer score is equal to the neutrality degree 03;
- **Alternative Hypothesis**: The parameter answer score is not equal to the neutrality degree 03.

Hence, in the event that the value of the real significance level would be greater than the nominal significance level (assessed to 0.01), we will then accept the null hypothesis, and parameter of the sample members' opinions about the degree of their awareness of electronic administration does not differ, in this case, from the degree of neutrality; nonetheless, should it be opposite, the null hypothesis will be rejected and the alternative hypothesis be subject to acceptance. In this case, the degree of response can be determined all the way through comparing the parameter response with the degree of neutrality.

Table (5): **Result of the Sign Test for the Phrases of employee awareness measurement with regards to the E-administration**

Measurement of the employees' awareness with regards to the E-administration	Z value	Sig	Real parameter	Sample trend
You use the Internet in your daily life	–2.034	0.000	2	Agree
You use e-mail to communicate with others	–5.570	0.000	2	Agree
Electronic devices, are they in line with the developments?	–7.899	0.000	2	Agree
Do you have sufficient experience in making E-transactions?	–7.876	0.000	2	Agree
You visit the hospital's website	–7.778	0.000	2	Agree
Do you make a reservation via the website?	–7.589	0.000	2	Agree
Do you contact the hospital administration by phone	–3.289	0.000	2	Agree
You communicate with your patients via email	–7.805	0.000	2	Agree
Electronic administration will reduce bureaucracy in Algerian hospitals	–7.874	0.000	2	Agree
Do you consider that the electronic administration is an effective way to reduce hospital overcrowding and managing operations?	–7.884	0.000	2	Agree
Are you sufficiently convinced that Algerian hospitals can be developed through E-administration?	–5.410	0.000	2	Agree
Providing the hospital with suggestions may improve services	–6.729	0.000	2	Agree
Measuring the employee's awareness about the electronic administration as a whole	**–5.410**	**0.000**	**2.2500**	Agree

Source: Prepared based on the results of the Spss Program.

In the light of the Table above, it has shown clear that the trend of most of the study sample members with regards to their awareness of the electronic administration was "Agree", the fact of which is reflected by the value of the statistically non-significant Sign Test, because the real significance level (0.000) is smaller than the nominal significance level (0.01). As a consequence, there is no difference between the parameter of the surveyed employees' opinions and the degree of agreement (3).

c. Analysis of the second topic of the questionnaire:

We will proceed, through this part, to the analysis of the remaining results of the questions that represent the component of the application degree of electronic administration in health institutions.

Table (6): **Agreement degrees of the statements of the application degree of electronic administration in health institutions.**

Application degree of electronic administration in health institutions	Z value	Sig	Real parameter	Sample trend
Speed in providing services through the use of computers	–7.779	0.000	2	Agree
Bring information to date and update them on the website	–5.573	0.000	2	Agree
Facilitate downloading documents from the website	–7.580	0.000	2	Agree
Communicate via e-mail	–3.203	0.001	2	Agree
Ease of access to the website	–4.001	0.000	2	Agree
Ease of obtaining the soonest appointment for necessity and making appointments	–2.783	0.000	2	Agree
Communication between the doctor and the patient at any time	–4.111	0.000	2	Agree
Communicate with departments as necessary and needed via e-mail or phone	–5.910	0.000	2	Agree
Communicate with the patient via e-mail and know all developments	–4.047	0.000	2	Agree
Each patient has an electronic file	–6.839	0.000	2	Agree
Keep track of the new in E-administration	–2.866	0.000	2	Agree
Your knowledge of modern uses in E-transactions	–4.506	0.000	2	Agree
The traditional way adopted by hospitals in serving the citizen makes you	–5.410	0.000	2	Agree
Application degree of electronic administration in health institutions as a whole	**–6.906**	**0.000**	**2.500**	Agree

Source: Prepared based on the results of the Spss Program.

In the light of the Table above, it has shown clear that the trend of the majority of the study sample members with regards to the application of electronic administration in health institutions was "Agree", the fact of which is reflected by the value of the statistically non-significant Sign Test, because the real significance level (0.000) is smaller than the nominal significance level (0.01). As a consequence, there is no difference between the parameter of the surveyed employees' opinions and the degree of agreement (3).

6. Testing the study hypotheses:

We will proceed, through this part, to the examination of the hypotheses related to the field study, and verification whether or not they are accurate, all the way through examination of the analysis results for each hypothesis.

a. Testing the first major hypothesis:

- **H0:** There is no difference in the answers provided by the study sample members with regards to the attribution of the content of each of the study dimensions to gender;
- **H1:** There is a difference in the answers provided by the study sample members with regards to the attribution of the content of each of the study dimensions to gender.

For the purpose of testing this hypothesis, we conducted the Mann-Whitney Test, whose results are hereinafter tabulated, as follows:

Table (7): **The results of the Mann-Whitney Test on the existence of statistically significant differences attributed to gender**

Questionnaire topics	Average ranks		Statistical test Z	Sig
	First sample	Second sample		
Measuring the awareness of employees with regards to E-administration	57.59	74.73	–2.593	0.010
The application degree of electronic administration in health institutions	74.62	54.86	–3.002	0.003
Questionnaire as a whole	65.04	66.03	–0.150	0.881

Source: Prepared based on the results of the Spss Program.

In the light of the results of this test, we note that the real significance level for the entire dimensions is greater than the nominal significance level; therefore, the average answers provided by the surveyed individuals of the first sample (males) is equal to the average of the answers provided by the surveyed individuals of the second sample (females). As a consequence, there are no statistically significant differences with regards to the awareness of employees of electronic administration and the application degree of electronic administration in health institutions, from the trend of the employees attributed to the gender variable.

b. Testing the second major hypothesis:

- **H0:** There is no difference in the answers provided by the study sample members with regards to the attribution of the content of each of the study dimensions to age;
- **H1:** There is a difference in the answers provided by the study sample members with regards to the attribution of the content of each of the study dimensions to age.

For the purpose of testing this hypothesis, we conducted the Kruskal-Wallis Test, whose results are hereinafter tabulated, as follows:

Table (8): **The results of the Kruskal-Wallis Test on the existence of statistically significant differences in the marketing of services and the development of new products due to age**

Questionnaire topics	Averages					Statistical test	Sig
	Less than 26 years	From 27 years to 35 years	From 36 years to 45 years	From 46 years to 55 years	Over 56 years		
Measuring the awareness of employees with regards to E-administration	84.40	67.97	60.92	60.14	19.14	17.774	0.001
The application degree of electronic administration in health institutions	71.50	60.75	62.67	74.25	68.36	2.580	0.630
Questionnaire as a whole	83.38	60.88	64.02	66.58	40.14	9.382	0.052

Source: Prepared based on the results of the Spss Program.

In the light of the results of this test, we note that the real significance level is greater than the nominal significance level; as a consequence, there are no statistically significant differences with regards to the awareness of employees of electronic administration and the application degree of electronic administration in health institutions, from the trend of the employees attributed to the age variable.

c. Testing the third major hypothesis:

- **H0:** There is no difference in the answers provided by the study sample members with regards to the attribution of the content of each of the study dimensions to occupation;
- **H1:** There is a difference in the answers provided by the study sample members with regards to the attribution of the content of each of the study dimensions to occupation.

For the purpose of testing this hypothesis, we conducted the Kruskal-Wallis Test, whose results are hereinafter tabulated, as follows:

Table (9): **The results of the Kruskal-Wallis Test on the existence of statistically significant differences attributed to occupation**

Questionnaire topics	Average ranks				Statistical test Z	Sig
	Retired	Employee	Trainee	Other		
Measuring the awareness of employees with regards to E-administration	0	64.29	73.00	0	0.832	0.362
The application degree of electronic administration in health institutions	0	64.38	72.50	0	0.724	0.395
Questionnaire as a whole	0	64.41	72.31	0	0.683	0.409

Source: Prepared based on the results of the Spss Program.

In the light of the demonstrated results of this test, we note that the real significance level is greater than the nominal significance level; as a consequence, there are no statistically significant differences with regards to the awareness of employees of electronic administration and the application degree of electronic administration in health institutions, from the trend of the employees attributed to the occupation variable.

d. Testing the fourth major hypothesis:

- **H0**: There is no difference in the answers provided by the study sample members with regards to the attribution of the content of each of the study dimensions to service duration in the institution;
- **H1**: There is a difference in the answers provided by the study sample members with regards to the attribution of the content of each of the study dimensions to service duration in the institution.

For the purpose of testing this hypothesis, we conducted the Kruskal-Wallis Test, whose results are hereinafter tabulated, as follows:-

Table (10): **The results of the Kruskal-Wallis Test on the existence of statistically significant differences attributed to service duration in the institution**

Questionnaire topics	Averages				Statistical test	Sig
	Less than 05 years	From 06 years to 10 years	From 11 years to 15 years	Over 16 years		
Measuring the awareness of employees with regards to E-administration	47.34	73.65	34.41	71.87	9.576	0.023
The application degree of electronic administration in health institutions	67.57	70.19	61.91	52.10	3.138	0.371
Questionnaire as a whole	56.27	72.97	62.56	61.60	4.209	0.240

Source: Prepared based on the results of the Spss Program.

In the light of the demonstrated results of this test, we note that the real significance level is greater than the nominal significance level; as a consequence, there are no statistically significant differences with regards to the awareness of employees of electronic administration and the application degree of electronic administration in health institutions, from the trend of the employees attributed to the variable of service duration in the institution.

Conclusion:

Results: Amongst the most important obtained results are:-

- The trend of the majority of the answers provided by the study sample members with regards to their awareness of electronic administration was “Agree”, the fact of which is reflected by the value of the statistically non-significant Sign Test, because the real significance level (0.000) is smaller than the nominal significance level (0.01). As a consequence, there is no difference between the parameter of the surveyed employees’ opinions and the degree of agreement (3);
- The trend of the majority of the study sample members with regards to the application of electronic administration in health institutions was “Agree”, the fact of which is reflected by the value of the statistically non-significant Sign Test, because the real significance level

(0.000) is smaller than the nominal significance level (0.01). As a consequence, there is no difference between the parameter of the surveyed employees' opinions and the degree of agreement (3);

- In closing, a set of main hypotheses have been subject to testing with each of (gender, age, occupation, duration of service in the institution), and it has shown clear, in the light of this test, that there are no statistically significant differences with regards to the awareness of employees of electronic administration and the application degree of electronic administration in health institutions, from the trend of the employees attributed to these personal variables, as Mann-Whitney Test and Kruskal-Wallis Test have been adopted therein.

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