The impact of application of electronic management on the exchange students between the public universities of the Kurdistan region of Iraq

Dr. Bakhtiar A. Sharif

Technical Administration Department, Technical College of Administration, Sulaimani Polytechnic University, Sulaimani, Kurdistan Region, Iraq

Abstract—**The current study seeks to clarify and determine the extent of the impact of the application of electronic management on the exchange students between universities and the satisfaction of university registrars on this application. The importance of electronic management in many aspects of the university's administrative activity, but these benefits may have some negatives that can be overcome when using information and communication technologies in an effective manner. To achieve the required advantages for universities when applying electronic management, while measuring the usefulness of those advantages compared to the costs that the universities must bear. The researcher used the descriptive analytical method in his current study, so used the partial least squares structural equation modeling (PLS-SEM) in his current study. To achieve the objectives of study and answer the previous questions, the researcher adopted a hypothetical model that reflects through the nature of the correlation and influence between the study variables. The study population represents almost exclusively (540) registrars and students in four public universities in KRG of Iraq. The quantity method was used as the primary tool for collecting study data and information. The survey questionnaire was randomly distributed to (540) respondents of the public universities, only (300) questionnaires were returned for analysis. Based on the results, the study concluded that is an impact of the application of electronic management on exchange students, as well as the existence of a reciprocal relationship between the two variables.**

*Keywords_* **Electronic Management, Exchange Students Programs, Management Information Technology.**

1. INTRODUCTION

The The circumstances of the digital age with its changes in which we live necessitate great efforts in completing business to keep pace with the rapid and successive changes in all fields, and perhaps the positive interaction with these variables, especially in the field of management information technology, will lead to innovation and creativity in business, including an improvement in administrative performance and the ability to speed up achievement. The experiences of countries that have taken the lead in benefiting from the development of management information technology, however, responding to the variables of the digital age and benefiting from management information technology and its applications, led to the emergence of modern methods and advanced standards for management that differ from those traditional methods used, and perhaps this is what led the developed and developing countries alike, to work with large investments in establishing the necessary infrastructure to facilitate the use of management information technology, and to shift towards electronic management. Its ability to meet the new challenges posed by the information revolution, which leads to a real increase in the efficiency and effectiveness of society's institutions (Thabit, Thabit H., Raewf, Manaf B., Abdulrahman, Omar T., and Younis, Saif K., 2016).

Since the end of twentieth century and with the start of the 21st century, there has a huge leap in the technological field at the global level, which resulted in the need for all institutions to use modern administrative patterns that keep pace with this technological development, and among these patterns emerged what became known as electronic management that enabled many institutions, including Universities from processing their documents and administrative operations in an electronic way, which led to the decline of paper transactions, and the abandonment of traditional management methods to be replaced by electronic management. Thus, the need for comprehensive transformations in the methods, structures and legislation underlying the traditional administration increased,

to provide opportunities for the application of electronic management (Hadj Aissa, Sid Ahmed, Thabit, Thabit Hassan, and Hanniche hadj, 2018).

In order for educational institutions to keep pace with modern developments and benefit from the data of the times, it is necessary to modernize university administration, to benefit from information technology and to adopt modern administrative methods that are accurate and flexible at the same time at all administrative levels, through the mechanization of university administration and linking administrative tasks with computer networks. Local and international, in pursuit of speedy achievement and at the same time, high-quality administrative performance (Sharif, B. A. ., Kaka Mala, H. M. and Ali, N. A. , (2021).

The program works to link faculties, institutes and departments within the university together within one network system within the portal of the Directorate of General Registration. This feature is concerned with entering and modifying students' information and deporting students to their stages in other competing universities, as well as dealing with the situation of students that may occur during the academic year (Raewf, Manaf Basil, and Thabit, Thabit Hassan, 2018).

1.1 Research Problem

Electronic management is an important element in the administrative activity in educational institutions, so that its impact has covered most areas of life, and its importance in terms of application is that it keeps pace with rapid digital developments in the application of management information systems. Because this civilized project may be encountered by a number of obstacles, at various levels: administrative, human, financial, technical, legislative, organizational and security. These obstacles limit the opportunities for implementation, or project failure, weak cultural awareness of information technology at the social and organizational level at the universities, lack of training programs in the field of modern technology at the universities, fear of some employees, especially the old ones, of the failure of their experience in dealing with everything new, lack of resources The financial allocated for the infrastructure necessary for the application of electronic management, especially the establishment of networks, linking sites, developing hardware and software, not supporting the project of applying electronic management financially (not providing the necessary hardware and equipment for this). Accordingly, the research problem focuses on answering the following question:

- What is impact of application of electronic management on university registrar satisfaction in student exchange programs?

1.2 Research Significance

There are many justifications that push universities to seek electronic management applications, as a number of developments worldwide - especially in the field of electronic management in light of the rapid developments that keep pace with the continuous developments in the world and the outbreak of the Corona virus, have led to the importance of applying electronic management in many Among the areas, including its application in student exchange programs between universities, these factors intensified in providing a number of justifications that called for a shift from traditional management to electronic management in most university institutions according to the changes and challenges of the era. The importance of the research is highlighted in the following points:

1- The shift towards the application of electronic management, and the emergence of the so-called smart applications that require the computerization of all operations within these universities, including the administrative aspects.
2- Universities are subjected to constant pressure from students and their families in general in order to meet the increasing demands on student exchange services, due to the increase in the number of students, the acceleration of the completion of administrative services related to university institutions, and the elimination of red tape and bureaucracy.
3- Orientation towards employing and using technological development and relying on information technology in making administrative decisions.
4- The increase in number of students in universities and the shortage of internal housing for these students, which calls for an electronic system that facilitates dealing with them to transfer their university studies to their place of residence.

1.3 Research Objectives

1- The impact of electronic administration and its role in developing the administrative process.
2- Measuring the impact of applying electronic management systems on exchange students between Kurdistan Region universities.
3- Measuring the satisfaction of university registrars on the application of electronic management of exchange student between universities.
4- Determining the obstacles to the effective application of electronic management systems in the exchange students between the universities of the Kurdistan Region.
5- Determining the effectiveness of electronic management systems in the exchange students between the universities of the Kurdistan Region.

2   Literature Review

- The study (Silcock, R., 2001) Entitled: "At the Dawn of E Government: The Citizen as Customer"

The study included 250 government institutions in five countries, the USA, Australia, Canada, New Zealand and United Kingdom, to study the visions of the administrations. The highest level in the institutions that are under research about e-government and their aspirations. Their expectations and plans to confront the radical shifts in the concepts of governments. Contemporary and futuristic. The study reached several results, the most important of which are:

- Governments that have introduced the concept of e-government into their working methods. In serving consumers, it has succeeded in achieving many benefits, the most important of which is saving. Easier services, higher productivity, better information, and reduced numbers employee complaints and improve the overall image of the institution.
- The study revealed the focus of governments in the use of technology on sharing information that is an essential component of orientation towards E. government.
- Two-way information and communication exchange.
- Adopting multi-purpose electronic portals so that services can be provided.
- Business exchange between different devices from a single source.
- Allocating portals to serve individuals according to their desires.

- The study (Seresht and others, 2008) Entitled: "E-management: Barriers and Challenges In Iran"

This study aimed to present and analyze the most important obstacles facing the administration electronics in Iran. The study used the descriptive survey method, and it included the sample of the study was 45 bodies that included public and private bodies, and questionnaires were distributed over 200 experts, scientists and managers. The study found the obstacles facing electronic administration in Iran is as follows:

- Administrative obstacles, the most important of which is the managers' lack of technological awareness and motivation and support, and the insufficient commitment of senior management to the application of information technology.
- Human obstacles, most notably employees' resistance to change, and employees' lack of interest and motivation to apply modern technology. Cultural and social obstacles, the most important of which is the undeveloped culture to apply information technology, and the ignorance of users and citizens in general about technology the information.
- Structural organizational obstacles, the most important of which is the weakness of communication channels in organizations.
- The lack of financial resources to supply software and hardware, and financial capacity insufficient units for IT application.
- Technological obstacles represented in weak programs and communication networks.
- Environmental obstacles represented in the lack of integrated networks in Iran, and the lack of to the necessary rules and regulations in the country, the lack of clarity in policy making in information technology, and the lack of cooperation and synergy between different units and departments in organizations.

The study also showed that one of the most important obstacles that prevents the implementation of management electronic are the cultural and organizational factors, while human and technical factors are the least important factor.

- A study (Haines and Lafleur, 2008) entitled: " Information Technology Usage and Human Resource Roles and Effectiveness"

The study aimed to explore the potential impact of information technology (IT) on functions and effectiveness of human resources, and to identify the uses of technology information through nine broad fields (reviews, surveys, and employee benefits, compensation and rewards, health and safety, and performance management, career planning and development, recruitment, training and development, employee relations), and the extent to which human resources are involved in jobs the strategy and its effectiveness, and this study is the first actual attempt to measure this impact, a survey was conducted on a sample of 556,1 senior managers HR executives at leading Canadian companies. The study found the following results:

- The expansion of the use of information technology (IT) applications (to support the functions of human resources are linked to their involvement in strategic functions and their consideration a strategic partner and a pivotal factor in the change process.
- The study demonstrated a strong positive relationship between the use of technology Information, technical and strategic effectiveness in resource functions humanity.

- A study (Rahman and Hussain, 2011) entitled: "The Impact of Information Technology on Performance Evaluation in Developing Countries: An Empirical Study"

The study aimed to explore the effect of information technology on jobs managers, and to evaluate performance using financial and non-financial measures, applied these Study on the banking services sector in developing countries, particularly in Bangladesh, Kingdom of Saudi Arabia, United Arab Emirates and Oman. The study used the experimental method, and the study sample included three groups out of 106 managers from all countries, ranked based on their perception of their influence applying information technology to their jobs (high, medium, low).

The study reached several results, the most important of

which are:

- There is a positive impact of the application of information technology on the performance of managers for their jobs.
- The impact of the application of information technology was to different degrees, as it affected the measures that evaluate performance that are related to profitability and productivity more than cost.
- The sample members' different perceptions of the effect of information technology on performance as a result of difference in their skills in using them, the more skilled they imagined high impact and vice versa.

- A study (Al-Adwan and Almashaqba, 2012) entitled: "Evaluation the Role of Information Technology in Business Value Performance (BVP) "

The study aimed to study the importance of information technology in business performance. Evaluate the benefits of using it in Jordanian business organizations, and develop a model that clarifies the amount of value gained by business organizations as a result of its application, and an assessment of the extent of demand. Managers apply it in their organizations. The study used the descriptive approach analytical and questionnaire tool on a sample of 128 managers of different levels administrative (high, middle, and operational management) in the two industrial cities of Al-Hassan and Al-Dhalil in Jordan. The study reached several results, the most important of which are:

- The importance of using information technology in business organizations for what is check out the benefits and efficiency in performance. Availability of the infrastructure for the application of information technology in the research community. This explains the increasing dependence on modern technologies in all fields work fields. There is an impact of the organizational system on employees, especially in the areas of training development and communications.
- There are statistically significant differences regarding the nature of the relationship between technology information and employee performance as a result of the change in job classification.

The researcher reviewed (6 previous studies, related to electronic management), these studies have been applied to different societies. These studies presented by the researcher were prepared between (2001-

2012), and presented in chronological order from the most recent to the most recent. These studies dealt with different aspects of the subject of the study. The most prominent of which is the applied reality of electronic management in different societies, and the positive effects and challenges of its application. Some studies on the concept of electronic management as a modern concept and its characteristics

requirements and justifications for its transformation, and the obstacles that prevent its implementation. Previous studies used different research methods, some of which agree with the current study, some of which are experimental,

Some of them are theoretical and analytical method. All studies agreed that there are positive effects of the application of electronic management information and communication technology, especially in the field of

performance and administrative work. The current study is an extension of the previous studies, as it agrees with other studies which dealt with the subject of electronic management, but was characterized by the impact of the application of electronic management on the exchange students between universities in a new field that studies did not address. The former is the field of student registration offices in universities.

Previous research and studies have been used to enrich the knowledge framework for the current study, in building the study tool, and commenting on the results revealed about the current study.

2.1 Electronic Management

The definitions provided by thinkers and researchers varied in their definition of the term electronic management, where they dealt with this concept and explained it from the sides and angles various (Hamadi, Khlif & Ziadi, Jameleddine, 2020).

In the light of the proposal presented to researchers and scholars' trends in defining electronic management, its most important features can be summarized in the following points:

- Develop and improve organizational structures and administrative work procedures as appropriate with the objectives of electronic management.
- Employing modern technologies in the field of information and communications in accomplishing tasks the administrative apparatus and its functions.
- Automating all administrative activities, constantly updating them and simplifying their implementation, including: Ensures increased efficiency and effectiveness.
- The development of intellectual capital, which is embodied in the ability to be sustainable knowledge growth and its use in order to use resources efficiently and achieve objectives.

Accordingly, electronic management can be defined as "the employment of modern technologies". In the field of information and communications in accomplishing the tasks and functions of the administrative body, in order to realize integration between departments of organization to achieve its goals and invest its resources and improve its performance (P. K. Paul, P. S. Aithal, 2019).

2.2   Electronic Management Goals

(Alqudah, Mohammad & Muradkhanli, Leyla, 2021) mentioned a number of goals for electronic management,

The most important ones:

1. Integration and unification of the parts of the organization as an interconnected system through technology the information.
2. Develop management processes and enhance their effectiveness in serving institutional goals.
3. Providing effective and supportive mechanisms for decision-making.
4. Ensuring the flow of information accurately and adequately, in an appropriate timing and continuous readiness.
5. Reducing operating costs and continuously improving productivity rates.
6. Creating the appropriate organizational environment and climate for comprehensive administrative research and development and continuous.

(Al-Taiti, M. A., Al-Zeer, L. Y., & Abu Khayran, A. M., 2021) added the following goals:

7. Raising the level of performance, and optimizing the use of human energies.
8. Reducing administrative procedures, as information becomes available in its digital form paperwork and data filling manually.
9. Increasing the accuracy, reliability and validity of data, and reducing the percentage of human errors.

2.3 Advantages of Electronic Management

The application of the electronic management method achieves many benefits on the one hand administrative, political, economic and social, and in the following proposition the study focuses on the most prominent administrative advantages offered by electronic management as a topic search:

1. Facilitating the planning process through the systems provided by the electronic administration information, and communication networks for all departments (Masanja, Ibrahim & Lwoga, Edda, 2020).
2. Flexibility of the organizational structure under electronic management, which makes it more efficient on the integration and coordination between the different departments (Kaupadien L, Ramanauskait S, Enys A., 2019).
3. Facilitate the process of oversight and follow-up of various operations and the progress of decisions and their implementation determining the sources of errors.
4. Facilitate the process of managing human resources in all its functions, such as identifying human needs, development and training, and determining a career path and others (Aseri, Abdulah, 2018).

3 Research Hypotheses

There is an impact of the application electronic management on the exchange students.
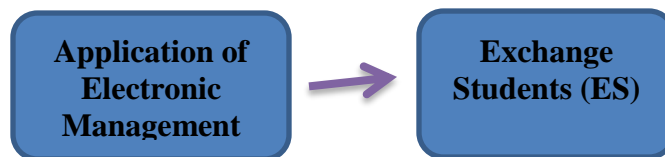

Figure (1): Research Model (Prepared by the researcher)

 Impact

4 Methodology

The study relied on the partial least squares structural equation modeling (PLS-SEM), which is considered the most popular method in line with nature and objectives of the present study; the approach is based on a study. The theory of constructing the knowledge framework by making use of the sources in its other part, the study relied on the field study by using the questionnaire method to obtain the required initial data. This was subjected to a set of statistical tests through (SmartPLS 4).

The population of study was (540) registrars and students of the studied universities. The size of sample for population found to be (300). The survey questionnaire was randomly distributed to (540) respondents of the studied universities, only (300) questionnaires were returned.

5 Results and Data Analysis

5.1 Descriptive Statistics

In order to obtain a summary of the data, descriptive statistics are used to provide an overview of the study variables, as shown in Table (1).

The questionnaire was measured and checked using a five-point Likert, with 1 (strongly disagree) and 5 (strongly agree).

Table (1). Descriptive Statistics

	Mean	S.D	Minimum	Maximum
Application of Electronic Management (AEM)	3.7421	0.66339	1	5
Exchange Students (ES)	3.971	0.5259	1	5

5.2 The Measurement Modeling (Outer Model)

There are two sub models in a structural equation model, namely the outer and inner model. The outer model, also known as the measurement model, aims to specifies the relationships between the latent variables and its observed indicators (Wong, 2014). In addition, this research used reflective measurement model which assumes that the indicator variables are highly correlated and interchangeable, therefore the reflective measurement model is based on the reliability and validity of the indicator variables. The convergent validity and discriminant validity of the measurements were estimated in order to evaluate the measurement model. As shown in Figure 1, all indicators showed loadings over the cutoff of 0.70 proposed by Hair et al. (2011) in terms of convergent validity as seen in figure 1 and table 2. All of the constructs' average variance extracted (AVE) values were higher than 0.50, demonstrating convergent validity at acceptable levels. As indicated in table 2, the composite dependability ratings varied between 0.944 and 0.967; the minimum allowed criterion is 0.70
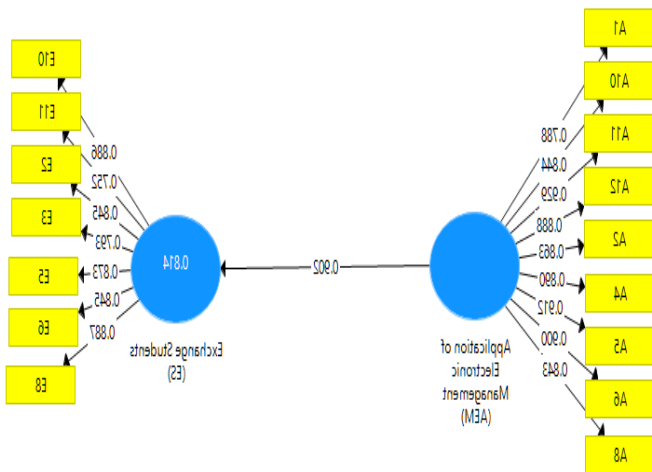

Figure 1. Measurement model

Table (2). Convergent validity analysis

	Application of Electronic Management (AEM)	Exchange Students (ES)	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
A1	0.788		0.961	0.962	0.967	0.764
A10	0.844					
A11	0.929					
A12	0.888					
A2	0.863					

A4	0.89				
A5	0.912				
A6	0.9				
A8	0.843				
E10		0.886	0.931	0.934	0.944	0.708
E11		0.752				
E2		0.845				
E3		0.793				
E5		0.873				
E6		0.845				
E8		0.887				

5.3 Structural model assessment

The second stage involved judging the structural model after the measurement model's suitability had been established. Original Sample (O), Sample Mean (M), Standard Deviation (STDEV), T Statistics (|O/STDEV|), P Values and R^2 are metrics used by PLS-SEM to determine how well the model fits the data.

Table (3). Discriminant validity and correlations

	Discriminant value	
Variables	Application of Electronic Management (AEM)	Exchange Students (ES)
Application of Electronic Management (AEM)	0.874	
Exchange Students (ES)	0.841	0.902

Table (4). second-order constructions are established

Variables	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Application of Electronic Management (AEM) -> Exchange Students (ES)	0.902	0.903	0.013	70.191	0.0000

Variables	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
A1 <- Application of Electronic Management (AEM)	0.119	0.118	0.005	25.949	0.000

A10 <- Application of Electronic Management (AEM)	0.127	0.126	0.005	23.438	0.000
A11 <- Application of Electronic Management (AEM)	0.127	0.127	0.004	29.661	0.000
A12 <- Application of Electronic Management (AEM)	0.132	0.132	0.004	33.092	0.000
A2 <- Application of Electronic Management (AEM)	0.13	0.13	0.005	28.368	0.000
A4 <- Application of Electronic Management (AEM)	0.126	0.126	0.004	28.858	0.000
A5 <- Application of Electronic Management (AEM)	0.131	0.131	0.004	35.511	0.000
A6 <- Application of Electronic Management (AEM)	0.123	0.123	0.004	29.734	0.000
A8 <- Application of Electronic Management (AEM)	0.131	0.131	0.005	26.418	0.000
E10 <- Exchange Students (ES)	0.19	0.19	0.008	24.087	0.000
E11 <- Exchange Students (ES)	0.167	0.168	0.007	22.626	0.000
E2 <- Exchange Students (ES)	0.165	0.165	0.007	24.787	0.000
E3 <- Exchange Students (ES)	0.154	0.154	0.009	17.969	0.000
E5 <- Exchange Students (ES)	0.172	0.172	0.008	20.936	0.000
E6 <- Exchange Students (ES)	0.159	0.159	0.008	20.554	0.000
E8 <- Exchange Students (ES)	0.182	0.182	0.008	21.671	0.000

Predictability and demonstrates how each exogenous variable contributes to understanding the variance in the endogenous variable. R^2 runs from 0 to 1 (Hair et al., 2014; Sarstedt et al., 2014).

Table (5). Relevance of the PLS path model for prediction

Total Effect		

	Application of Electronic Management (AEM)	Exchange Students (ES)
Application of Electronic Management (AEM)		0.902
Exchange Students (ES)		

	R^2	R^2 Adjusted
Exchange Students (ES)	0.814	0.813

Tables above shows the result of path coefficients with its probability value. Based on tables above, application of electronic management (AEM) significantly affect exchange students (ES) because the results of the p-value was less than 0.05.
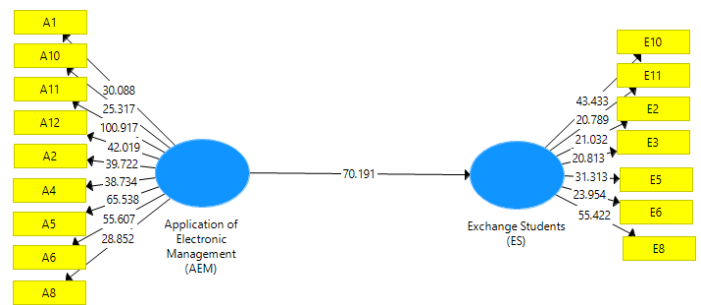

Figure 2. Structural model

The findings show that the application of electronic management (AEM) significantly affect exchange students (ES).

6　Discussions

Electronic management is an integrated system of technical and informational components financial, legislative, human and other intervening parties, and their application it necessitates studying its requirements and taking them into account before undertaking the experiment, in order for it to achieve the desired effect, and the most important requirements can be summarized to apply the electronic management method in the following:

1. Formation of a department supported by senior management to undertake strategic planning of the project, defining the timetable for implementation, its mechanism, and the financial capabilities and human, goals and standards of achievement.
2. Seeking the assistance of research and advisory bodies with experience in planning and implementation.
3. Determining a unified portal for electronic management of all beneficiaries in an appropriate

manner their needs.

4. Providing adequate and continuous funding for all e-management requirements.

5. Providing infrastructure and technical elements (computer hardware, software, and networks).

6. In order for the electronic administration to ensure that the target group welcomes it, it must be prepared human resources by spreading awareness and technical culture among them, and giving them insight its benefits and services, and holding training courses and workshops to teach them electronic management and its mechanisms of action and dealing with it.

7. Acknowledging the legality of electronic documents, and relying on them in business administrative, such as electronic identification and electronic signature. (possible add them in recommendations).

8. Allocating a security team affiliated with the administration to follow up and develop its security requirements to counter new piracy scams to ensure the privacy of information.

9. Use of strong systems to encrypt information, to monitor the network and to discover hotspots security vulnerabilities, and to protect against viruses and spyware, and constantly updated.

7   Conclusions

This study was conducted to investigate the effect of the application of electronic management on exchange students between the universities of the Kurdistan Region. This study was conducted on the higher education sector, especially in several universities in different governorates in the Kurdistan Region / Iraq. Intellectual proposals emphasized that application of electronic management is very important in the life of institutions, as it is a major important factor in explaining how institutions perform their work in light of rapid technological developments, and a driver in improving and accelerating work, strengthening teamwork and maintaining advanced management. There are multiple mechanisms for obtaining the students exchange between universities through the application of electronic management and determining the factors that help in achieving this and how to employ them in order to achieve the desired goals. Hence, universities' owning of electronic management resources makes them more alert and able to understand environmental data and use it to build a way to manage and respond to their business quickly.

The current study expects that the power of universities to realize a high level of electronic management can depend upon the capabilities of universities that represent the implementation of the exchange student's method between universities electronically.

The results demonstrated the impact of the application of electronic management on exchange students between the universities of Kurdistan Region and the satisfaction of registrars of those universities on this program. In addition, previous studies support the importance of applying electronic management in universities. According to the respondents, there are significant differences between the dependent variable and the independent variable. It was found that is a statistically significant impact of the e-management application variable on the exchange students variable.

Finally, there is direct relationship between the applications of electronic management to exchange student in the universities studied.

8   Recommendations

Through this study, we reached a set of recommendations:

1. Supporting the higher management of the institution: University officials should have full conviction and a clear vision to convert all paper transactions to electronic in order to provide full support and the necessary capabilities for the transition to electronic management.

2. Training and qualifying employees: The employee is the main component of the transition to electronic management. Therefore, it is necessary to train and qualify employees to complete work through the available electronic means, and this requires holding training courses for employees.

3. Begin documenting old paper transactions electronically: Old paper transactions that are saved in paper files should be saved electronically by scanners and categorized for easy reference.

4. Providing infrastructure: As electronic management requires an appropriate level of infrastructure of computers, and linking fast computer networks and accompanying devices with them.

5. Availability of an appropriate level of financial funding for training and maintenance: The presence of an official or a specific committee to implement this project, and the existence of laws and legislations that facilitate the work of this administration, and provide electronic security, confidentiality and information protection.

6. Reorganizing the structures: processes and procedures of departments and departments in universities that are decided to be managed electronically.

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