

## INFORMATION TECHNOLOGY AND ITS IMPACT ON HUMAN ENGINEERING: A PRACTICAL STUDY ON BABYLON UNIVERSITY

Dhafer Obaid Faraj<sup>1\*</sup>, Mohammed Sadeq Mohammed Ali<sup>2</sup>, Muntadher Kadhim Shamran<sup>3</sup>

<sup>1\*,2,3</sup>Faculty member, College of Tourist Sciences, Karbala University, Karbala, Iraq.

Email: <sup>1\*</sup>daferaubad74@gmail.com, <sup>2</sup>carloshitman1@gmail.com, <sup>3</sup>muntadher771@gmail.com

Article History: Received on 29<sup>th</sup> May 2020, Revised on 15<sup>th</sup> July 2020, Published on 2<sup>nd</sup> September 2020

### Abstract

**Purpose:** This research paper deals with the effect reflected by information technology on ergonomics. The advanced societies have developed only by virtue of their dependence on the thinkers, creative workers, and those who have productive minds. As a result of the fast development of information technology and the accompanying innovations, there has been a great role for ergonomics; in order to achieve a great deal of competitive success. This study also aspires to achieve a number of aims depending on the main hypothesis and its sub hypotheses.

**Methodology:** The human resources are found in a society based on development and knowledge by using modern technology. A questionnaire is used as well, as a means to collect data and information related to the sample of the study. To analyze data, many statistical procedures are used, such as 'Pearson Correlation', 'Simple Regression Coefficient', and 'T' and 'F' test to confirm the significance of the sample using SPSS 20 and EXCEL 2013. The statistical population consisted of all the staff of the Babylon University, which numbered 34 people. The statistical sample size was estimated based on Morgan table 30 people who were selected by random sampling from the statistical population.

**Main Findings:** These statistical procedures show a number of results. The most prominent one is that there is a relationship of statistical significance between information technology and ergonomics.

**Application of Study:** The problem of the study is represented by identifying the role of information technology in ergonomics throughout the tendency of the business organizations and the institutions of higher education to take care of their human resources.

**Novelty/Originality:** This study is the first to examine the role of information technology in ergonomics in the overall desire of commercial organizations and higher education institutions to care for human resources.

**Keywords:** *Information Technology, Human Engineering, Physical Components, Software, Communication Networks.*

### INTRODUCTION

Social, and administrative transformations happening in the world. The latter leads the modern administrative thought to pay attention to the necessity of finding new bases for the organizations that satisfy the inside and the outside environmental needs that clearly appeared in the emergence of organizations, which were the focus of many researchers and specialists to formulate the models, dimensions, and characteristics. Then came the concept of ergonomics and its impact on reducing the risk of work and trying to have key considerations in the main organizations. Universities are but a new version of these organizations aiming at transferring the activities of higher education to global educational and scientific activities. Ergonomics also makes it necessary to have new systems, flexible legislations, and a university environment that differs from the traditional education environment.

There are many viewpoints about information technology. Then, due to its role in the development processes, there are many definitions for this concept that receives attention from many countries of different levels of development. As a result, many investments are dedicated by different countries to enter the domain of technology. Within the domain of technology, there is a great rebound for the communications technology that clearly influences the style of life of people. In order to have a clear idea about information technology, some concepts are listed. Information technology is seen as a group of instruments that help in doing the tasks related to processing information. These instruments include the terms related to the computer and the applications of multimedia that help in seeing, hearing, and reading different topics (Ajam, I. M. H. 2007). It is also defined as being consisting of the persons, devices, equipment, and procedures that are used in collecting, processing, and storing data and information to have a comprehensive view of the activities of the organization (Kotler, P. 2000).

Information technology is important because it supports the individuals, organizations, and society in such a way that helps all to achieve their goals. Since it provides the means, tools, and techniques that help within this domain, it is difficult to administrate organizations by the familiar administration procedures. The organizations found aid in the scientific revolution of technology and communications, in addition to the great development process that accompanied it and the working opportunities throughout forcing the organizations to rethink of their strategic priorities (Al-Nuaimi, J. M. 2009).

The significance of the study lies in the variables it deals with and the relationships between them. The two variables of information technology and ergonomics are relatively modern in the scope of administration. Besides, the methodological presentation of these two variables has not reached to its final form yet. Practically speaking, the

significance of the study can be seen within its general and specific framework. In terms of the general framework, universities, in general, were among the sectors that used and interacted with information technology, which were always supported by knowledge of their human resources within their internal processes. Universities differed from the situation prior to the introduction of technology as an influential factor that helps in reaching the future strategy for information technology and ergonomics.

Due to the wide scope of the work in the economy of the organizations that are contemporary to knowledge revolutions, technologies, and the high development of information systems and communication technology, the organizations should look for a deeper philosophy and more comprehensive vision. The latter depends on choosing areas ensuring excellence in its performance and access to the strategic success of the organization to survive. Thus, information technology and ergonomics have emerged, and have become an urgent need for organizations that operate in highly competitive environments. In the light of what is mentioned, the problem of the study can be summarized as whether information technology is prevalent in terms of thought and production in such a way that goes in line with work at the university, and whether the university depends on ergonomics as far as its work is concerned.

This study deals with two contemporary variables that, to the best of the researcher's knowledge, are not been dealt with in a wide range by the academics in the college and the specialized institutes and even the youth organizations which need to be theoretically enriched in order to make use of their intellectual data. Viewed in this way, the study aims at:

1. Recognizing the view points of the sample of the study concerning information technology and ergonomics.
2. Recognizing the nature of the relationship between information technology and ergonomics.
3. Identifying the effect of information technology and ergonomics.
4. Presenting suggestions to the sample in the light of the results of the study.

## LITERATURE REVIEW

The emergence of the industrial revolution and the data, information, knowledge, and the increased number of organizations that have accompanied it have a great role in motivating these organizations. And finding means that help these organizations to store, distribute, spread, and reuse data and information. In addition, the developments of the engineering sciences and computer sciences have led to the emergence of modern technology which these organizations were looking for as a solution to their problems. Since then, the technology has left its clear touches in all aspects of life and the interest in it has increased. The organizations have embraced technology making it the subject of study. Furthermore, the development has increased in theories and curriculum measuring the mutual effect between them and the information technology to reach the required knowledge development.

The success of the application of modern technologies is directly related to the acceptance and adaptation of these technologies by users. Traditional universities face different challenges to encourage the employees and to adopt methods of teaching that depend on modern technologies in their teaching; so that they can compete with advanced universities based on technology. That is the universities that do not give importance or enthusiasm to the use of technologies in their field of work do not achieve but a few goals despite the efforts exerted to achieve these goals ([Al-Arishi, J. H. 2007](#)).

There are many functions of information technology that can be listed as:

1. Collecting information: This function means providing and collecting data and information to get used of it whether at the level of the individual or the organization ([Post, G. V., & Anderson, D. L. 2000](#)).
2. Producing information: This is carried out by processing information and the latter is either numbers or sounds ([Shabelle, M. H. 2008](#)).
3. Moving information and transferring it: It means sending data and information from one position to another. And the computer system applies the same function of the telephone system when moving the calls from one point to another ([Al-Dulami, E. A. 2006](#)).

There are Advantages of Using Information Technology such as developing sound machines for the economic development, improving decision making, administrating risk, and controlling data ([Al-Nuaimi, J. M. 2009](#)).

The most important components of information technology are Physical components and software. Many researchers have focused on the physical component of the computer, such as the computer itself, the input devices, the output devices, and the communication devices. It also means the concrete parts of the computer such as the screens, the printer, the mouse, and the keyboard. That is, the physical components contain all the electronics, electrical circuits, data input and output technologies of the computer ([Al-Khanak, S. A. A. 2006](#)). It is written instructions in a special language that is understood by the computer and includes two main types of programs that work as two levels between the user and the computer: the operating system needed to run the physical components, and the application programs dealt with by the end-user, i.e. they are the instruction set written in a special language that controls the work of the computer ([Al-Saadi, 2011: 45](#)).

They are the means by which data, information, and software can be sent and received. They consist of a set of stations located in different locations and linked to each other by media making it easy for users to conduct the transmission and reception process through certain means of information technology and within different networks. As such, the organizations should decide the type of networks that suits their work with the need to emphasize the establishment of continuous courses to develop the skills of its employees in information technology constantly ([Al-Obaidi, I. Y. 2010](#)).

The individuals working in organizations are the most important resource of information technology. They can be divided into two categories: the first one forms the majority who are called end-users. They deal with application programs as being ones who make use of these programs without going into details as far as their programming is concerned. The second category is the computer specialists who design computers and develop different programs, whether application programs or system programs ([Faraj, W. A. 2008](#)).

There are many requirements that should be available in order for applying information technology to be successful. IN other words, Technical requirements which are achieved by improving the infrastructure of communication and transportation, introducing effective human resources, and building a locally and regionally linked database are needed. And also economic requirements that are achieved by specifying money to carry out research and development activity and encouraging investment in terms of information technology are required. ([Al-Dulami, E. A. 2006](#)).

Social requirements to create a spirit of cooperation and teamwork among individuals, and creating a culture that fits with the information culture is necessary. Besides, Management requirements that can attract leaders who are able to change managing the development of information technology requirements is needed ([Shabelle, M. H. 2008](#)).

Human engineering has entered the field of modern scientific studies in a clear and significant manner. The researchers deal with their studies in a theoretical and applied manner, which have a great impact on the success of the organizations' performance and excellence, and are considered factors of excellence in the competitive environment. To distinguish themselves in the field of business from other organizations, and in order to know the meaning and the basis and extent of its relationship with information, technology will be clarified in this section.

The researchers address the concept of human engineering in order to create the appropriate thought for this term, how to apply it in the field of equipment design and work systems, and to show the benefits resulting from the application of the principles of this concept, because it represents the working environment and conditions of the individual and the equipment which is used in the sites work, and attempt to adapt the personnel working for these devices and equipment to make them respond to those tools and conditions and designs and all the surrounding work environment, so the current view of human engineering has become necessary therefore it is imposed by technological developments in various fields. ([Amiri, A. A., & Thomas, S. S. 2012](#)). Many researchers have identified that human engineering is the design of jobs, work environments, training methods, equipment, and tools that are used to make them compatible with the capabilities of workers to reduce stress, increase job security and thus achieve the best products. The human engineering is defined as one of the fields of knowledge that is concerned with the relationship of individuals working with the work environment and the equipment, tools, furniture, and materials in order to harness them to meet their abilities and skills and to choose the best employees to use them as a performance of the tasks which are requested through the appropriate design for the environment work taking into account the physical capacities of the working individual. ([Al-Taweel, A., & Ismail, M. N. 2009](#)). In other words, human engineering is concerned with the conformity of the tasks assigned to individuals with their intellectual and cognitive capabilities as well as the human characteristics of the human body.

There are several objectives of human engineering, but its main goal is to find harmony among the workers and their work environment, so that human engineering ensures the safety and comfort of workers and their continued productivity at the highest level. Human engineering can improve working conditions by analyzing the work to its initial movements to exclude unnecessary movements. And also, it is a way of reducing the cost to improve the rate of production and quality and Paying attention to the safety of workers and reducing the stress of various pressures on individuals (<https://www.iasj.net/iasj?func=fulltext&Id=50979>).

The importance of human engineering lies in several aspects. For example, finding ways to work in accordance with the human mind to reduce the burden, intellectual, and muscular stress by designing a working environment for the workers correspond to his work and reduce fatigue. Furthermore, it achieves compatibility with work designs and location as an important part to preserve the minds and protect the bodies and souls of the variables of the work design process. ([Abdel-Rahman, F. Y. 2010](#)).

In addition, human engineering lead to comfort and safety of human resources during the completion of various work to reach the best performance of material resources and all human resources and also evaluation of environmental variables: The study of physical conditions of work, such as, light, sound, temperature, humidity, and industrial safety in order to improve them and thus increase their efficiency ([Mahrous, S. R. 2011](#));

The benefits of human engineering can be summed up three several important things. Firstly, providing adequate physical and mental comfort for the workers and adapting all that surrounds him to his body measurements and abilities and abilities. Secondly, providing the workers with information that is necessary to provide a convenient worksite and

adapt the workplace to suit the workers. And thirdly, reducing costs and increase labor productivity ([Mahmoud, S. F. 2013](#)).

Designing work sites requires consideration. For example, situations and seating which are appropriate for the individual and organization of equipment at work sites according to the physical specifications of the worker ([Al-Taweel, A., & Ismail, M. N. 2009](#)).

1. Space is occupied by individuals, equipment, machinery, and work materials.
2. The nature of the movement of individuals working in the workplace, whether in standing or sitting.
3. The quality of the seats used, the nature of the work, and the length of sitting or standing.

Human engineering is characterized by its extensive applications in the field of harmonization between working individuals and their working environment. Human Engineering for business design means that Where they focus on design work in a way that ensures the right work effort in addition to other characteristics such as diversification of work tasks and achieve self-control aimed at the success of work. Total human engineering focus on the interaction of individuals with the overall organizational design of the work system is to represent the individual use of techniques in the system more effectively in response to the external environment of the organization ([Al-Obeidi, A. H. K. 2010](#)).

Environmental Human Engineering represents the effects of various physical factors such as lighting, heat, humidity, noise, on the performance of individuals, and the application of these data and work on the design of physical data suitable to individuals ([quail, Islam, 2013: 142](#)). Human engineering deals with the research and study of the physical properties and equipment of individuals and the application of these researches and studies to design workplaces, control panels, presentations, and work stations ([Helali, F. 2008](#)).

The work station is the limited space in which the equipment, the different means of production, the necessary work tools used by the working individual, or the group of personnel are available to perform productive or service operations. The design and organization of the work stations depend on factors, ([Al-Samman, T. A., & Islam Y. 2013](#)) and takes into consideration the position of the worker's body during the completion of the work either by taking the position of sitting or standing whether the work is easy or difficult, ([Al-Nuaimi, J. M. 2009](#)). The above factors are designed Workstation with a view to Fair comfort for employees.

The role of the human engineering specialist to develop ways to maintain the safety of workers and workflow and depends on the correct planning and measurements and work equipment and other conditions prevailing on the kind of work and people required for that work, and all this information helps the human engineering to take proper measures to maintain On workers. ([Mahmoud, S. F. 2013](#)) education and training are intended to provide employees with the information and knowledge they need in their work. Education and training help employees to apply management concepts effectively and acquire skills that enable them to contribute to quality improvement, reduce errors, and perform the tasks that are entrusted to them correctly. ([Mahrous, S. R. 2011](#)).

Continuous evaluation is an important component of the success of the human engineering program. This phase represents the continuous improvement in the reduction of injuries and diseases and tracking the effectiveness of applied or specific human engineering solutions in addition to the identification of potential new risks or areas that need more attention and methods that can be used in reducing of workplace hazards ([Al-Obeidi, A. H. K. 2010](#)).

Human engineering has come up with human resources rules to maintain the potential and capabilities to reorganize employees according to international laws and standards, and to provide an organizational environment within an electronic framework that stems from the information technology which will analyze, analyze store such information about those potentials, ([Abdul Rahman, 2010: 97](#)). The human resource is the real capital of the organization and the most important components of IT because it is responsible for the control, management and operation of other components ([Al-Baghdadi, A. H. H. 2006](#)) in the organization of being the most important elements of the productive process where it is necessary to provide good competence capable of outstanding performance, ([Humiri, M. A., & Momani, A. A. M. 2011](#)) and human resources engineering is a sign that intellectual capital is the source of knowledge, information, experience. Knowledge, information, and experience. The third topic measures the relationships between the search variables. The purpose of this study is to measure the effect of the independent variable (IT) in the dependent variable (human engineering) by testing the main hypothesis and its sub-hypotheses, based on the Sample -KS analysis to see if the sample is distributed naturally and the One-Sample Test {And the regression test ANALYSIS to prove the hypotheses and to determine the level of the effect of independent variables on the dependent variable. systems ([Abdel-Rahman, F. Y. 2010](#)).

## METHODOLOGY

The human resources are found in a society based on development and knowledge by using modern technology. A questionnaire is used as well, as a means to collect data and information related to the sample of the study. To analyze data, many statistical procedures are used, such as 'Pearson Correlation', 'Simple Regression Coefficient', and 'T' and 'F' test to confirm the significance of the sample using SPSS 20 and EXCEL 2013. The statistical population consisted of all



the staff of the Babylon University, which numbered 34 people. The statistical sample size was estimated based on Morgan table 30 people who were selected by random sampling from the statistical population.

The study has two main hypotheses. The first main hypothesis:

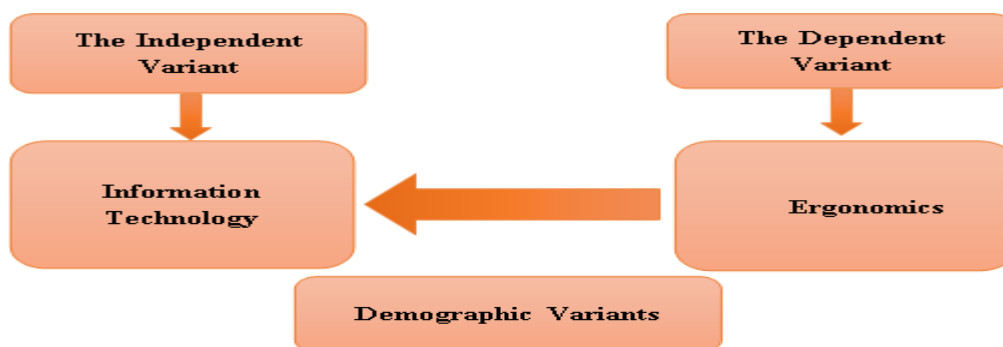
There is no relationship and effect of statistical significance between information technology and ergonomics at a significance level of 0.05. This hypothesis has the following sub hypotheses:

1. There is no relationship of statistical significance between (the physical constituents) and ergonomics in Babylon University.
2. There is no relationship of statistical significance between software and ergonomics in Babylon University.
3. There is no relationship of statistical significance between communication networks and ergonomics in Babylon University.
4. There is no relationship of statistical significance between human resources and ergonomics in Babylon University.

### The second main hypothesis

There are no essential differences of statistical significance in the viewpoints of the sample as far as the effect of information technology in ergonomics according to the demographic variants of the sample (gender, age, scientific qualification, serving time, employment level) in Babylon University and at a significance level of 0.05.

The researcher depends on the model that identifies the logical relationship between the variants of the study that are information technology and ergonomics, as it is illustrated in the following figure:



**Figure 1:** Conceptual model (It designed by the researchers)

## RESULTS AND DISCUSSION

Sample –K-S, One-Sample Test and regression analysis as a model of the study, this chapter is devoted to measuring the impact on information technology and Human engineering to confirm the above –mentioned hypothesis. The questionnaire is distributed to the study population and consisted of (30) respondents. After retrieving the questionnaire, the questionnaire was distributed and analyzed on SPSS.

First: the natural distribution test (Sample-K-S)

Data is normally distributed: H0

Data is abnormally distributed: H1

**Table 1:** Test the distribution of the sample as normal (what does imple mean)

The dimension	Physical components	Software	Telecommunications	HR	Website design work	Control and prevent danger	Education and training	Evaluation Significance level
Sig	0.46	0.47	0.65	0.88	0.34	0.50	0.66	0.00

Source: Formulated by researchers

Second: Testing: ONE SAMPLE TEST

One-Sample Test Table (2)

**Table 2:** One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Information Technology	4.835	29	.000	.69583	.4015	.9902
Human Engineering	4.108	29	.000	.81667	.4101	1.2233

**Source:** Formulated by researchers

**Table 3:** Testing: Regression

R	R <sup>2</sup>	T Tissue	T calculated	Sig	DF	Axis I imple ón I physical components
0.538	0.289	1.69	3.376	0.002	29	Human Engineering

**Source:** Formulated by researchers

**Table 4:** Regression

R	R <sup>2</sup>	T calculated	T Tissue	Sig	DF	Second Dimension First Axis (Software)
0.574	0.329	1.69	3.708	0.001	29	Human Engineering

**Source:** Formulated by researchers

**Table 5:** Regression

R	R <sup>2</sup>	T calculated	T Tissue	Sig	DF	Third Dimension Axis I (Networking Communication)
0.528	0.279	1.69	3.294	0.003	29	Human Engineering

**Source:** Formulated by researchers

**Table 6:** Regression

R	R <sup>2</sup>	T Tissue	T calculated	Sig	DF	Third Dimension (I) Human Resources
0.528	0.279	1.69	3.294	0.003	29	Human Engineering

**Source:** Formulated by researchers

Table 1 contains a test (K-S- Sample) to see if the sample is naturally distributed and illustrated to us:

1. The first axis The first simple ón The physical components The level of significance of sample 0.46 is greater than 0.05 and this is evidence of acceptance of zero hypothesis H<sub>0</sub> and that the sample is distributed naturally.
2. The first axis The second sample ón The software The level of significance of sample 0.47 is greater than 0.05 This is evidence of acceptance of zero hypothesis H<sub>0</sub> and that the sample is distributed naturally.
3. The first axis The third sample ón Communication The level of significance sample 0.650. It is greater than 0.05 and this is evidence of acceptance of zero hypothesis H<sub>0</sub> and that the sample is distributed naturally.
4. The first axis The fourth sample ón Human resources The level of significance of sample 0.880. It is greater than 0.05 and this is evidence of acceptance of null hypothesis H<sub>0</sub> and that the sample is distributed naturally.
5. The second axis The first sample ón The design of the work site The level of significance of sample 0.34 is greater than 0.05 and this is evidence of acceptance of zero hypothesis H<sub>0</sub> and that the sample is distributed naturally.
6. Second axis Second sample ón Control and prevention of risk The level of significance sample 0.46 is greater than 0.05 This is evidence of acceptance of zero hypothesis H<sub>0</sub> and that the sample is distributed naturally.
7. The second axis The third sample ón Control and prevention of risk The level of significance of sample 0.36 is greater than 0.05 This is evidence of acceptance of zero hypothesis H<sub>0</sub> and that the sample is distributed naturally.
8. The second axis The fourth sample ón Control and prevention of danger The level of significance sample 0.00 is smaller than 0.05 This is evidence of rejecting the null hypothesis H<sub>0</sub> and accept the alternative hypothesis and the distribution is abnormal.

Depending on the foregoing table, one can conclude that the calculated T of the independent axis (IT) is 4.835, which is greater than the value of T (tabular) (1.96) at the degree of freedom (29) which indicates the axis of information technology is positive and there is some approval of the sample by And the mean level of sig (0.00) is smaller than (0.05) indicating that the sample members are able to form a clear sample towards this axis. Also, we note that the calculated T of the human axis is 4.108, which is greater than the value of T (tabular) (1.96) at the degree of freedom (29), indicating the axis of human engineering is positive and there is some approval of the sample of expression by individuals (0.00), which is smaller than (0.05) indicating that the sample members are able to form a clear simple towards this axis.

Also, it is noted that the calculated T of the human axis is 4.108, which is greater than the value of T (tabular) (1.96) at the degree of freedom (29), indicating the axis of human engineering is positive and there is some approval of the sample of expression by individuals (0.00), which is smaller than (0.05) indicating that the sample members are able to form a clear sample towards this axis.

One can note from the above table of the regression test for the first sample on of the first axis, the physical components with the human engineering variable. The calculated T result is (3.376) which is greater than 2 at the degree of freedom 29 and at the level of significance (0.002) which is smaller than (0.05) Nullity and accept the alternative hypothesis (ie, there is a significant correlation and effect relationship between (physical components) and human engineering at the University of Babylon) The level of  $R^2$  has reached (0.538) indicating a strong correlation between (physical components) and (human engineering), and the impact of (physical components) ( $R^2$ ) has reached (0.289), or 28.9% of Changes affecting the dependent variable (human engineering).

Note from the table.4 of the regression test for the second sample on of the first axis, the software with the human engineering variable. The calculated T result is (3.708), which is greater than 2 at the degree of freedom 29 and at the level of significance (0.001), which is smaller than (0.05)  $R^2$ , which has a value of (0.574), indicates a strong correlation between software and human engineering., And the amount of impact (software) ( $R^2$ ) has reached (0.329), that is, 32.9% of the changes that affect the Change of the (human engineering).

From the above table of the regression test for the third sample on of the first axis, the networks of communication with the human engineering variable were calculated. The calculated T result is (3.294), which is greater than 2 at the degree of freedom 29 and at the level of significance (0.003), which is smaller than (0.05) Nullity and accept the alternative hypothesis (ie, there is a significant correlation and effect relationship between (communication networks) and human engineering at the University of Babylon) The level of  $R^2$  has reached (0.528) which indicates a strong correlation between (networks) and (human engineering), and the amount of impact (software) ( $R^2$ ) has reached (0.279), or 27.9% of the changes which affect the dependent variable (human engineering).

From the table.6, the regression test for the fourth sample on of the first axis is the human resources with the human engineering variable. The calculated result of T is 5.313, which is greater than 2 at the degree of freedom 29 and at the level of significance (0.000), which is smaller than (0.05) Nullity and accept the alternative hypothesis (ie, there is a significant correlation and effect relationship between (human resources) and human engineering at the University of Babylon) The level of  $R^2$  has reached (0.709) which indicates a strong correlation between (human resources) and (human engineering), and the amount of impact (HR) ( $R^2$ ) has reached (0.502), or 50.2% Changes affecting the dependent variable (human engineering)

## CONCLUSIONS

Based on the results it can be concluded that human engineering, with its wide applications, represents an area for the harmonization of working individuals according to the characteristics of their physical and mental characteristics and their working environment, as they provide an introduction to the design of work systems. It is contributed to a strategic shift in the life of business organizations. It paints the image of creativity as an effective tool in re-maintaining the programming and structure of business through human engineering applications. Besides, information technology has become very important in the organization in question, because it maintains the continuity of the organization and its continuity through the proper procedures to implement the elements of human engineering on its human capital properly.

The statistical results show that the organization in question gives great attention to this variable because it has a big role in the nature of the relationship between the organization and the workers. This was manifested by the following: Also, attention to information technology because it has an impact on the measurement of the investment value that the institution could achieve if the human engineering class. (B) the apparent faith of individuals in the interest of the Organization through the adoption by their Organization of the applications of elements of human engineering.

According to statistical indicators, the level of interest of the management of the sample investigated by the level of raising the efficiency of its employees in the field of information technology through the training courses was very weak. The statistical results in the sample environment show a statistically significant relationship between information technology and human engineering. This is evidence of the compatibility between the equipment used in the work environment and the physical characteristics and mental abilities of individuals.

## RECOMMENDATIONS

In the light of the above conclusions, the theoretical and practical frameworks of the role of information technology in human engineering, and the findings (theoretical and practical), we present a set of recommendations presented to the study sample as well as some general recommendations:

1. Due to the widespread use of modern equipment and computer technology in the work environment of the research sample, it requires the establishment of training programs for human engineering given to the employees, which increases their knowledge in this area.
2. Provide physical variables (chairs, tables) that fit the nature of the work of individuals, and also requires the physical conditions of temperature and lighting.
3. The need to use the job description manual and the continuity of its modernization using modern technologies according to the work design programs and the distribution of tasks based on the skills and capabilities of the occupants of those tasks.
4. Paying attention to the management of personnel in the field of information technology, directing them, and informing them about the rules and programs of human engineering to benefit from the distribution of work tasks in the correct manner.
5. Redesign human resources according to the rules of human engineering set by the international standards of the incumbents to suit the situation of the right person in the right place.
6. Ensuring the inclusion of all personnel working in computer technology training and training programs for their work.

## AUTHORS CONTRIBUTION

The research has been prepared and implemented cooperatively and jointly between the three researchers through the distribution of the nature of the work on three axes: The first researcher was interested in designing the integrative relationships between the research variables and the required hypotheses. As for the second researcher, he was interested in providing the appropriate resources to complete the theoretical side. As for the third researcher, he was interested in designing the questionnaire and interpreting the statistical results, while providing appropriate analysis and developing research proposals.

## REFERENCES

1. Abdel-Rahman, F. Y. (2010). The Impact of Information Technology in Post-Work Design and Human Engineering. *An Exploratory Study in the Presidency of Mustansiriyah University, PhD, Philosophy of Economics, Mustansiriyah University, Iraq, p. 77.*
2. Ajam, I. M. H. (2007). Information Technology and Knowledge Management and their Impact on the Strategic Option: A Comparative Analysis of the Views of a Sample of Iraqi Bank Managers. *PhD Thesis Submitted to Mustansiriyah University, Faculty of Management and Economics, Baghdad, p. 43.*
3. Al-Baghdadi, A. H. H. (2006). The Relationship between Organizational Education and Information Management and its Impact on Achieving Value for the Organization's Work. *A Field Study in Iraqi Private Banks, PhD Thesis Presented to Mustansiriyah University, College of Management and Economics, Baghdad, p.83.*
4. Al-Obeidi, A. H. K. (2010). Information Technology and Strategic Thinking and their Impact on the Strategy of Organizational Creativity. *Applied Study in Mustansiriyah University Colleges, PhD Thesis in Future Studies Philosophy, Mustansiriyah University, Baghdad, p. 52.*
5. Al-Obaidi, I. Y. (2010). Human Engineering and its Impact on the Requirements of Setting the Occupational Health and Safety Management Standard: A Field Study in the Molded Garments Factory in Mosul. *Master's Thesis in the Department of Industrial Management, Faculty of Management and Economics, Mosul University, Iraq, p. 50.*
6. Al-Dulami, E. A. (2006). Analysis of IT and Human Knowledge and its impact on Elements of Virtual System. *Ph.D. in business philosophy, Mustansiriyah University, Baghdad, P.35.*
7. Al-Khanak, S. A. A. (2006). The relationship between knowledge resources, information technology and knowledge engineering and its impact on the elements and requirements of the development of the virtual organization. *Applied study in some scientific departments of a number of Iraqi universities, Ph.D. in business philosophy, Mustansiriyah University, Baghdad, P.26.*
8. Al-Nuaimi, J. M. (2009). *The Study of Work in Production and Processes*. First Edition, Atra'a Press Publishing and Distribution, Jordan, p.34.
9. Al-Arishi, J. H. (2007). The role of information technologies in the development of education in institutions of higher education, private and public sectors. *An applied study on the cities of Riyadh and Jeddah, research presented at the Faculty of Arts, Library Sciences Department, King Saud University, Riyadh.*



10. Al-Samman, T. A., & Islam Y. (2013). Applications of Human Engineering in the Molding Lab in Mosul. *Tikrit Journal of Administrative and Economic Sciences*, 9(28), 142.
11. Al-Taweel, A., & Ismail, M. N. (2009). The Relationship between Elements of Human Engineering and Productivity of Work. *A Survey of Directors' Opinions in Selected Groups of General Industrial Companies*.
12. Amiri, A. A., & Thomas, S. S. (2012). The Effect of Human Engineering in Reducing Costs and Raising Productivity, A Study in the Technical Medical Institute. Al-Mansour. *Journal of Baghdad College of Economic Sciences*, p. 345.
13. Humiri, M. A., & Momani, A. A. M. (2011). *Human Resources Engineering in the Hotel Industry*. Dar Athraa Publishing and Distribution, Amman Jordan, First Edition, 34.
14. Faraj, W. A. (2008). The Relationship of Information Technology to the Re-engineering of Business and Their Impact on Outstanding Performance. *Master of Operations Techniques, Technical College of Management, Baghdad*, p. 30.
15. Helali, F. (2008). Developing an Ergonomics Process for Improving Work System in Organization in an Industrially Developing Country and It's Mate-Reflection. *Doctoral thesis, University of Lulea, Iran*, p. INTERNET: C. <https://www.iasj.net/iasj?func=fulltext&aId=50979>
16. Kotler, P. (2000). *Marketing management: The millennium edition* (Vol. 199). Upper Saddle River, NJ: Prentice Hall.
17. Mahrous, S. R. (2011). The Effect of Using Human Engineering Rules in the Efficiency of Industrial Processes. *Master Thesis, Faculty of Management and Economics, University of Baghdad*, p. 35.
18. Mahmoud, S. F. (2013). The Role of Some Human Engineering Factors in Occupational Enrichment. *A Survey of the Opinions of a Sample of Asiacecell Communications Workers, Master of Business Administration, Sulaymaniyah University, Iraq*.
19. Post, G. V., & Anderson, D. L. (2000). *Management information systems*. Mc Graw Hill.
20. Shabelle, M. H. (2008). The Impact of Information Technology on Organizational Performance. A Survey of the Opinions of a Sample of Directors in the General Authority for Taxation, *A Study of the Degree of Higher Diploma in Information Technology, Technical College, Baghdad*, p.55.