

## DIGITAL PUBLIC RELATIONS IMPORTANCE IN ENHANCING LEARNING OUTCOMES AT KING KHAID UNIVERSITY (AN APPLIED STUDY ON A SAMPLE OF UNIVERSITY COLLEGES – 2022)

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### **1- Abstract:**

The study investigated the importance of Digital Public Relations in enhancing learning outcomes at King Khalid University. The problem of the study was represented in the role of the Digital Public Relations in enhancing, developing and improving learning outcomes at King Khalid University and achieving Aseer Strategy. The study significance rises from that Digital Public Relations play a great role in improving the mental image among community's institutions and people towards the learning outcomes at the university. The study aimed to identify the role of the Digital Public Relations in enhancing the vision and mission of King Khalid University through improving the learning outcomes for 2030. The descriptive analytical approach was adopted in order to measure the relationship between Digital Public Relations and enhancing learning outcomes at King Khalid University, through collecting primary and secondary data from the previous literature (previous research and studies. The study was carried out on the population of King Khalid University. A sample was randomly selected of (58) from the teaching staff of the university. A questionnaire was designed and distributed to the study sample. The study verified the following hypotheses: There is no a statistically significant relationship between learning outcomes and promoting cognitive skills of King Khalid University students. There is no a statistically significant relationship between the significance of learning outcomes and fulfilling and promoting academic and life skills of King Khalid University students. There is no a statistically significant relationship between learning outcomes and raising the efficiency of King Khalid University students. The study concluded the following findings: There is a statistically significant relationship between learning outcomes and enhancement of cognitive skills of King Khalid University students. There is no a statistically significant relationship between learning outcomes and enhancement of scientific skills of King Khalid University students. The researchers recommended the following: King Khalid University students' cognitive and scientific skills should be enhanced and their learning efficiency should be increased.

**Keywords: Digital public relations, enhanment, learning outcomes**

### **2- Introduction:**

The current world orientation in the field of education, particularly university education, tends towards the learner-centred education, also known as output-centred education, instead of the

traditional teacher-centred method. Output is the statements that describe the final educational results expected from the educational process. Those results including knowledge, understanding and ability to perform that expected to appear on the learner the program plans to achieve through determined activities, strategies and assessment methods to assess to what extent those results are achieved. (Department of Research and Studies, Ministry of Education, 1443 AH). At King Khalid University, there are number of colleges. As the university has particular objectives and visions, each college has its own objectives departments programs and academic paths as well. Therefore, the general objectives of the university change into specifically determined objectives that integrate altogether to achieve the objectives and output of program. In this respect, in 2007, Dicklan Kenedy published his book "Writing and Unising Learning Outcomes: A Practical Guide", which then translated into several languages. This encouraged organizations and institutions, particularly, higher education institutions to adopt transitional strategies to move from the traditional education to learning outcomes based education. Accordingly, the educational institutions utilized the developments in communication technology to spread the culture of using learning outcomes strategy in education. Digital public relations is one of those methods, means and jobs that appear thanks to the developments in communication technology. Technology became one of the most important factors affecting the reconstruction of communication structure for this vital (crucial) and significant job encouraging those who are interested in this field to conduct many research.

Many international scientific forums and conferences with great interest discussed the new conceptions of so called today "Digital Public Relations" that aimed at promoting mental image among the institution, company or university customers. This issue was being a matter of discussion for approximately five years. The discussion focused on the definition of the concept Digital Public Relations, its roles and tasks, and identifying their reality in Arab communities in general and Saudi community in particular. Nodoubt, education sector especially higher education sector i.e. universities is not so far from the developments happended in this significant sector Digital Public Relations (Digital PR) for its estential role on improving mental image of universities shareholders through formulating and managing content and forecasting its academic and professional future, and its effect through the relationship with media and electronic applications.

Academically and professionally, only few universities included the concepts of the "Digital Public Relations" into their external and internal visions. The Public Relations Association and British Institute of Public Relations defined 'Digital Public Relations "the employment and utilization of modern communication technology and digital media channels to execute activities in order to achieve the institution objectives towards audience or community. The internet applications artificial intelligence and Machine Learning in Communication were also added to the concept that contribute to helping teams not only in measuring media compaigns performance but they also played signiifact role in managing communication strategies of customer media crises.

) <https://www.al-jazirah.com/2020/20200317/rj6.htm>(

The British Institute defined them as "the planned efforts exerted to establish and maintain the understanding between an organization and its audience." (Cutlip, et al, 2000; Alsalihi, 2021: 75).

Some researchers define digital public relations as "communication management between organization and its audience through using Internet applications including websites, games, text messages, graphic and video. The Digital Public Relations Forum held at College of Media, Imam Mohamed bin Saud, in its ten-itemed document called media and communication colleges and departments to modernize their academic programs continuously to keep pace with the consecutive developments in communication in general and digital public relations in particular. They also called for addressing methodological challenges via balanced scientific paths that investigates digital public relations and its correlation with new media means and utilize them in the right way that considers achieving the academically and professionally known public relations job. The document called for effective and professional changing public relations classic job into a job appropriate to the digital means. The document also recommended to spread awareness through all communication forces about the new developments in digital public relations activities.

<https://units.imamu.edu.sa/colleges/cmc/news/Pages>

Digital public relations concept correlated with terms such as the Internet, new media and social media. Digital public relations are classified into two categories that show the field of utilization:

1. Public relations using application (PR-1): Here digital public relations utilize website and e-mail.
2. Public relations using application (Web02) called (PR-2): Here digital public relations utilize applications that support interactive communication and dialogue between organization and audience such as blogs, Twitter, Facebook, YouTube and mobile phones known as social media (Huang et al, 2007).

Digital public relations at university aim to achieve the following objectives:

1. Highlight the scientific role and knowledge contribution of university.
2. Promote the significance of research.
3. Manage crises facing university by preparing campaigns.
4. Use digital media in public relations job.

Using modern digital means helped public relations officers to build great base of audience; websites are considered significant tool to reach audience at minimum cost and control information flow. State universities established websites to introduce the university to audience and highlight its activities and contribution to serving community. Public relations officers use e-mail to answer inquiries and exchange messages and use social media to provide information, interact with others, analyze opinions and direct missions to customers (Albakri, 2014:66).

Recently, a relationship appears between transformational leadership and digital public relations performance; transformational leadership was characterized by interactive communication through openness to opinions and listening to subordinates (Men, 2014: 262). This represents the essence of digital public relations job; connection becomes bilateral based on values and objectives of

organization, sustainable relations are built and leadership is aware of the importance of the development of communication activities and financial and technical support in public relations.

There are challenges face digital public relations including:

1. Problems related to organization development and senior management; the unwillingness to utilize new technology in favour of organization and audience.
2. Problems related to technology systems and communication management hinder information exchange between organization and its audience.
3. Problems related to digital content of public relations may expose it to criticism, plagiarism or theft.

### **3- Problem of the Study**

The problem of the study focused on identifying the role of the digital public relations on achieving the mission and objectives of educational programs at King Khalid University, and on achieving Aseer Strategy and Saudi Arabia Kingdom Vision to 2030, through promoting learning outputs. In order to achieve the objectives of this study, the problem has centred on the following main question:

To what extent digital public relations is significant in promoting, developing and improving learning outputs at King Khalid University and in achieving Aseer Strategy?

The sub-questions are represented in:

- 1- Do learning outcomes contribute to acquiring graduates learning skills required for King Khalid University students?
- 2- Do learning outcomes contribute to acquiring graduates cognitive, motor and psychological skills required for King Khalid University students?
- 3- Do learning outcomes contribute to raising the efficiency of King Khalid University students in general?

### **4- Significance of the Study**

Digital public relations play a great role on improving mental image among community individuals and civil society institutions about the importance of learning outcomes at the university. They also contribute to the development of learning outcomes which in turn lead to the fulfillment of labor market needs and to the achievement of Aseer Strategy and Vision to 2030. Digital public relations also may contribute to the establishment of quality standards for learning outcomes and the explanation of visions paths to the improvement and development of educational programs. Digital public relations participate in organizing cooperating and competitive comparisons that are compatible with local, regional and international standards, in addition to their role on evaluating and assessing education system performance.

### **5- Objectives of the Study**

- 1- The study attempts to identify the role of Digital Public Relations on promoting the vision and mission of King Khalid University through improving the quality of learning outcomes 2030.
- 2- Determine the learning output at King Khalid University.

3- Conclude recommendations to improve and promote the learning outcomes at King Khalid University.

### **6- Hypotheses of the Study**

Hypothesis one: There is no a statistically significant relationship between learning outcomes and promoting cognitive skills of King Khalid University students.

Hypothesis two: There is no a statistically significant relationship between the significance of learning outcomes and fulfilling and promoting academic and life skills of King Khalid University students.

Hypothesis three: There is no a statistically significant relationship between learning outcomes and raising the efficiency of King Khalid University students.

### **7- Methodology of the Study**

#### **1. Method and Tools of the Study**

The descriptive analytical approach was used to measure the relationship between Digital Public Relations and promoting learning outcomes at King Khalid University. Primary and secondary data were collected from previous literature (previous research and studies). The tool of the study was prepared; a questionnaire was designed on (website) an electronic link, directed to a random sample of the teaching staff at colleges of King Khalid University. The (website) electronic link was distributed to a pilot (an experimental) sample from the teaching staff and specialized experts in order to benefit from their opinions and suggestions. The questionnaire validity and reliability were measured using Cronbach Scale.

#### **2. Population and Sample of the Study**

##### **a. Population of the Study**

The population of the study consisted of the teaching staff working at a number of King Khalid University colleges located in Abha city south western of the Kingdom of Saudi Arabia established in 1419 AH during the visit of the Custodian of the Two Holy Mosques King Abdallah bin Abdalaziz when he was the Crown Prince on Tuesday 09/01/1419 AH. During the visit a decision was made according to which two branches of Imam Mohamed bin Saud Islamic University and King Saud University located in Aseer area were incorporated under the name University of King.

##### **b. Sample of the Study**

The sample of the study was (58), the questionnaire was distributed to a the selected sample of the teaching staff members. ( ) of the distributed copies of the questionnaire were answered equaling (%) of the study population consisted of ( ) individuals.

##### **c. Information Resources of the Study**

Primrary studies: include the field study – the questionnaire.

Secondary studies: include the previous studies – books – journals – websites – the Internet.

Research procedures: Public relations – digital – promotion – learning output.

### **8- Limitation of the study**

Spacial limits: King Khalid University.

Time limits: 2022/2023.

## 9- Previous Studies

### Study one

Alutaybi (2007) conducted a study entitled: (Analyzing Higher Education Outcomes Appropriateness to Saudi Labour Market Needs). The study aimed to describe and analyze the inappropriateness/incompatibility of Saudi higher education outcomes and labour market, and to identify the business sector requirements from higher education institutions. The descriptive approach was used in data collection and analysis. Previous research relevant to the topic were reviewed and recruitment managers were interviewed. The study concluded that; there was private sector orientation towards higher education graduates. There was need for scientific specializations and English language and computer and there was weakness in scientific specializations compared to theoretical ones.

### Study two

Osama et al (2018) conducted a study entitled: (Quality of Learning Outcomes at Saudi Universities and their Role on Fulfilling Saudi Labor Market Requirements According to Vision 2030). The study aimed to contribute to achieving Vision 2030, to match the learning outcomes quality at Saudi universities with their role on fulfilling Saudi labor market requirements according to Vision 2030 and to identify the university and community viewpoint and to what extent they are satisfied with outcomes quality. The study adopted the descriptive approach. A sample was selected from universities which have institutional accreditation to 01/01/2018, teaching staff and business owners. The study showed that the overall satisfaction was very good with mean (3.59). The study recommended universities to consider the requirements of KSA Vision 2030.

### Study three:

Younus (2011) conducted a study entitled: (Saudi Universities Abilities to Fulfilling Labor Market Needs). The study aimed to identify to what extent Saudi universities able to fulfill KSA Vision 2030 requirements for labor market needs. The study adopted the descriptive approach. A questionnaire was used as data collection tool and distributed to a sample of (74) from recruitment managers at some of companies and corporations of private sector, (72) from teaching staff members at King Saud University and (105) students. The study showed the following: The university graduates were not matching labor market needs because students were not distributed to university specializations, university academic programs were not appropriate to labor market needs, labor sectors officers did not participate in making university admission policy, university did not coordinate with workforce planning bodies. University graduates were not employed because they are not competent in English language, computer science and professional skills.

### Study four:

Atfa (2015) conducted a study entitled: (Digital Public Relation in Egyptian Universities). The study aimed to highlight the importance of training the digital public relations practitioners on the electronic pushing programs, as well as designing and managing electronic sites. Beside, about 92% of the practitioners in Menoufia University indicated that public relations in Governmental

universities needs to activate the remote usage of the Internet in conferences and workshops via direct program.

The Researcher recommend the necessity of accessing and referring to foreign universities experiments using the Internet within public relations activities to clarify the reality of using “E-PR” in Egyptian universities and planning to improve its usage.

## 10- Data Analysis and Results

### A- Analysis of the Sample Demographic Information

**Table (1): Gender**

	Frequency	Percent
Female	32	55.2%
Male	26	44.8%
<b>total</b>	<b>58</b>	<b>100.0</b>

The table (1) above shows the gender distribution of the study sample; there were 32 with 55.2% females and 26 with 44.8% males. This indicates that most of the study sample were females.

**Table (2): Age**

	Frequency	Percent
From 20 years to less than 31 years	14	24.1%
From 31 years to less than 41 years	4	6.9%
From 41 years to less than 50 years	40	69.0%
<b>total</b>	<b>58</b>	<b>100.0</b>

The table (2) above shows the age distribution of the study sample; there were 14 with 24.1% their age between (20 - 30), 4 with 6.9% their age between (31 - 40) and 40 with 69.0% their age between (41 - 50). This indicates that most of study sample their age between (41 - 50).

**Table (3): Scientific Degree**

	Frequency	Percent
Professor	4	6.9%
Assistant Professor	36	62.1%
Associate Professor	4	6.9%
Lecturer	8	13.8%
Teaching Assistant	6	10.3%
<b>total</b>	<b>58</b>	<b>100.0</b>

The table (3) above shows the scientific degree distribution of the study sample; there were 4 with 6.9% their scientific degree professor, 36 with 62.1% assistant professor, 4 with 6.9% associate professor, 8 with 13.8% lecturer and 6 with 10.3% their scientific degree was teaching assistant. This indicates that most of study sample their scientific degree assistant professor.

**Table (4): Number of years in service**

	Frequency	Percent
(3 years and less)	6	10.3%
(More than 10 years)	26	44.8%
(From 4 to 6 years)	6	10.3%
(From 7 to 10 years)	20	34.5%
<b>total</b>	<b>58</b>	<b>100.0</b>

The table (4) above shows the distribution of the study sample number of years in service; there were 6 with 10.3% their number of years in service (3 years and less), 26 with 44.8% (more than 10 years), 6 with 10.3% (from 4 to 6 years) and 20 with 34.5% (from 7 to 10 years). This indicates that most of study sample their number of years in service (more than 10 years).

**Table (5): Nationality**

	Frequency	Percent
Saudi	8	13.8%
Non-Saudi	50	86.2%
<b>total</b>	<b>58</b>	<b>100.0</b>

The table (5) above shows the distribution of the study sample nationality; there were 8 with 13.8% Saudi, 50 with 86.2% non-Saudi. This indicates that most of the study sample were non-Saudi.

**B- Reliability and validity coefficients for the questionnaire list:**

**Table (6): Reliability and validity of the questionnaire**

Dimensions	Reliability	Validity	Number of Statements
First Aspect	0.859	0.927	4
Second Aspect	0.906	0.952	11
Third Aspect	0.957	0.978	7
<b>Total questionnaire statements as a whole</b>	<b>0.963</b>	<b>0.981</b>	<b>22</b>

**Scale reliability:** From the table (6) above, it was found that the reliability coefficient for each dimension and aspect of the study was higher than (0.50), and that the stability coefficients for the questionnaire list as a whole were (0.963). Thus, the questionnaire list is characterized by a high degree of stability.

**Scale validity:** From the table (6) above, it was found that the degree of validity coefficient for each dimension and aspect of the study was higher than (0.60) and that the validity coefficients for the questionnaire list as a whole was (0.981).

**C- Descriptive Statistics of the Field Study Results**

**1. Analysis of the Statements of Learning Outcomes and Enhancement of Cognitive Skills**

**Table (7): The mean, standard deviation, and relative significance of the statements for learning outcomes and enhancement of cognitive skills**

No.	Statement	Mean	SD	Relative Sig.	Ranking
1	DPR at the university attempts to make local community institutions and people more aware of university's role in achieving the development in the area.	3.86	0.945	77.24%	4
2	DPR builds strong relation with various publishing and advertisement media to show the university role in achieving vision 2030.	3.90	1.103	77.93%	2
3	DPR spreads the spirit of creativeness and communication among university staff to achieve the objectives of university.	3.93	0.876	78.62%	1
4	DPR provides university staff with information about the university and its objectives.	3.90	1.003	77.93%	2
<b>Mean of dimension</b>		3.90	0.826	78.28%	

The table (7) above shows the total responses of the sample individuals to the statements related to learning outcomes dimension and enhancement of cognitive skills was high, with mean of (3.90) and standard deviation of (0.826).

The highest response of the sample individuals was given to the statement: "Digital public relations spread the spirit of creativity and communication among university's staff to achieve the objectives of the university."

The least response of the sample individuals was given to the statement: "Digital public relations at the university attempts to make local community institutions and people more aware of the university's role in achieving the development in the area."

## 2. Analysis of the Statements of Learning Outcomes and Enhancement of Scientific Skills

**Table (8): The mean, standard deviation, and relative significance of the statements for learning outcomes and enhancement of scientific skills**

No.	Statement	Mean	SD	Relative Sig.	Ranking
1	DPR adopts a strategy to make positive image of the university among community and market sectors.	3.86	0.868	77.24%	7

2	DPR contributes to managing crises facing the university and preparing campaigns to overcome them.	3.93	0.876	78.62%	4
3	DPR always communicates with members and audience of the external environment to identify their needs.	3.62	1.04	72.41%	11
4	DPR uses technological programs to make university's staff aware of public relations importance and role in spreading the culture of hardworking, perseverance and distinction.	3.79	1.166	75.86%	8
5	DPR uses social media to spread the culture of spirit of competition among university's staff.	3.66	0.928	73.10%	10
6	DPR uses digital media in its job.	3.93	0.835	78.62%	4
7	Learning outcomes contributes to increasing students' awareness of the importance of acquiring knowledge and theoretical concepts of their specializations.	4.07	0.835	81.38%	1
8	Learning outcomes determines the types of students' communication skills.	3.93	0.876	78.62%	4
9	Clear learning outcomes makes local community institutions and people more aware of that the graduates are able to fulfill the labor market requirements.	4.00	0.879	80.00%	3
10	Learning outcomes includes students' understanding skills.	4.03	0.858	80.69%	2
11	Learning outcomes clarifies psychological and motor abilities and skills of the university's students.	3.79	0.932	75.86%	8
<b>Mean of dimension</b>		<b>3.87</b>	<b>0.662</b>	<b>77.49%</b>	

The table (8) above shows the total responses of the sample individuals to the statements related to learning outcomes dimension and enhancement of scientific skills was high, with mean of (3.87) and standard deviation of (0.662).

The highest response of the sample individuals was given to the statement: "Learning outcomes contribute to increasing students' awareness of the importance of acquiring knowledge and theoretical concepts of their specializations."

The least response of the sample individuals was given to the statement: "DPR always communicates with members and audience of the external environment to identify their requirements."

### 3. Analysis of the Statements of Learning Outcomes and Increasing Students' Efficiency

**Table (9): The mean, standard deviation, and relative significance of the statements for learning outcomes and increasing students' efficiency**

No.	Statement	Mean	SD	Significance	Ranking
1	Learning outcomes determine the means of increasing the spirit of creativity among students.	3.86	0.945	77.24%	4
2	Learning outcomes clarify the methods of enhancing students' ability to carry responsibility.	3.93	0.835	78.62%	2
3	Learning outcomes explain how to analyze and solve problems.	3.83	0.881	76.55%	5
4	Learning outcomes determine the methods of making right decisions.	3.76	0.942	75.17%	7
5	Learning outcomes clarify the methods of teaching students the analysis and prediction of behavioral problems.	3.83	1.028	76.55%	5
6	Learning outcomes determine the means of self-learning.	4.14	0.826	82.76%	1
7	Learning outcomes contribute to explaining the methods of teaching students critical thinking.	3.93	0.876	78.62%	2
<b>Mean of dimension</b>		<b>3.89</b>	<b>0.809</b>	<b>77.93%</b>	

The table (9) above shows the total responses of the sample individuals to the statements related to learning outcomes dimension and increasing students' efficiency was high with mean of (3.89) and standard deviation of (0.809).

The highest response of the sample individuals was given to the statement: "Learning outcomes determine the means of self-learning."

The least response of the sample individuals was given to the statement: "Learning outcomes determine the methods of making right decisions."

#### D- Verification of the Study Hypotheses:

##### 1. Hypothesis one:

**There is no a statistically significant relationship between learning outcomes and enhancement of cognitive skills.**

In order to verify this hypothesis, the researchers conducted the following tests:

##### A- Coefficient of correlation:

The table below shows the correlation coefficient between learning outcomes as an independent variable and cognitive skills as a dependent variable.

**Table (10): Coefficient of correlation for hypothesis one**

Variable	Test	Cognitive skills
Learning outcomes	Correlation coefficient	0.897
	Significance	0.000

The table (10) above shows that there is a statistically significant correlation by 89.7% at significance level 0.05 between learning outcomes and cognitive skills.

##### B- Coefficient of determination:

**Table (11): Coefficient of determination for hypothesis one**

Independent variable	Coefficient of determination	Modified coefficient of determination	S.E
Learning outcomes	0.805	.0802	0.34891

The table (11) above shows that the coefficient of determination  $0.805 = R^2$  which means that learning outcomes interprets the change in cognitive skills by 80.5%, while the rest of percent are interpreted by the other variables that were not included into the regression relation, in addition to random errors resulted from the sampling method, measurement accuracy and others.

##### C- ANOVA Test:

**Table (12): ANOVA Test for hypothesis one**

Statement	Sum of squares	DF	Mean of squares	F	Significance
Regression	28.225	1	28.225	231.848	.0000
Residuals	6.817	56	0.122		
<b>Total</b>	35.042	57			

The table (12) above shows that there is a significant direct correlation between learning outcomes and cognitive skills; that is shown by the value of (F) which is statistically significant at the level 0.05 and it confirms the correctness and essentialness of the correlation between the two variables, and the frame results can be depended on without errors.

#### D- Regression Analysis:

**Table (13): Regression analysis results for hypothesis one**

Model	Non-standard transactions		standard transactions	Tests	Significance
	Beta	S.E	Beta		
1	Constant	0.479	0.223	2.149	0.036
	Learning outcomes	0.852	0.056	0.897	15.227

The table (13) above shows that the T-test values of learning outcomes variable are significant at the level 0.05 and this confirms the strong regression relation between learning outcomes and cognitive skills.

Accordingly, the alternative hypothesis can be accepted which is:

There is a statistically significant relationship between learning outcomes and enhancement of cognitive skills.

#### 2. Hypothesis two:

**There is no a statistically significant relationship between learning outcomes and enhancement of scientific skills.**

In order to verify this hypothesis, the researchers conducted the following tests:

##### A- Coefficient of correlation:

The table below shows the correlation coefficient between learning outcomes as an independent variable and scientific skills as a dependent variable.

**Table (14): Coefficient of correlation for hypothesis two**

Variable	Test	Scientific skills
Learning outcomes	Correlation coefficient	0.636
	Significance	0.000

The table (14) above shows that there is a statistically significant correlation by 63.6% at significance level 0.05 between learning outcomes and scientific skills.

##### B- Coefficient of determination:

**Table (15): Coefficient of determination for hypothesis two**

Independent variable	Determination coefficient	Modified determination coefficient	S.E
Learning outcomes	0.404	0.393	0.55677

The table (15) above shows that the determination coefficient  $0.292 = R^2$  which means that learning outcomes interprets the change in scientific skills by 29.2%, while the rest of percent are interpreted by the other variables that were not included into the regression relation, in addition to random errors resulted from the sampling method, measurement accuracy and others.

**C- ANOVA Test:**

**Table (16): ANOVA Test for hypothesis two**

Statement	Sum of squares	DF	Mean of squares	F	Significance
Regression	11.771	1	11.771	37.973	.0000
Residuals	17.36	56	0.310		
<b>Total</b>	29.131	57			

The table (16) above shows that there is a significant direct correlation between learning outcomes and scientific skills; that is shown clearly by the value of (F) which is statistically significant at the level 0.05, and it confirms the correctness and essentialness of the correlation between the two variables, and the frame results can be depended on without errors.

**D- Regression Analysis:**

**Table (17): Regression analysis results for hypothesis two**

Model		Non-standard transactions		Standard transactions	Tests	Significance
		Beta	S.E	Beta		
1	<b>Constant</b>	1.821	0.356	0.636	5.123	0.000
	<b>Learning outcomes</b>	0.55	0.089		6.162	.0000

The table (17) above shows that the T-test values for all statements of learning outcomes variable are significant at the level 0.05 and this confirms the strong regression relation between learning outcomes and scientific skills.

Accordingly, the alternative hypothesis can be accepted which is:

There is a statistically significant relationship between learning outcomes and enhancement of scientific skills.

**3. Hypothesis three:**

**There is no a statistically significant relationship between learning outcomes and increasing students' efficiency.**

In order to verify this hypothesis, the researchers conducted the following tests:

**A- Coefficient of correlation:**

The table below shows the correlation coefficient between learning outcomes as an independent variable and students' efficiency as a dependent variable.

**Table (18): Coefficient of correlation for hypothesis three**

Variable	Test	Cognitive skills
Learning outcomes	Correlation coefficient	0.715
	Significance	0.000

The table (18) above shows that there is a statistically significant correlation by 71.5% at significance level 0.05 between learning outcomes and students' efficiency.

**B- Coefficient of determination:**

**Table (19): Coefficient of determination for hypothesis three**

Independent variable	Determination coefficient	Modified determination coefficient	S.E
Learning outcomes	0.512	0.503	0.57036

The table (19) above shows that the determination coefficient  $0.512 = R^2$  which means that learning outcomes interprets the change in students' efficiency by 51.2%, while the rest of percent is interpreted by other variables that were not included into the regression relation, in addition to random errors resulted from the sampling method, measurement accuracy and others.

**C- ANOVA Test:**

**Table (20): ANOVA Test for hypothesis three**

Statement	Sun of squares	DF	Mean of squares	F	Significance
Regression	19.08	1	19.08	58.652	.0000
Residuals	18.217	56	0.325		
<b>Total</b>	37.298	57			

The table (20) above shows that there is a significant direct correlation between learning outcomes and students' efficiency; that is shown by the value of (F) which is statistically significant at the level 0.05 and it confirms the correctness and essentialness of the correlation between the two variables, and the frame results can be depended on without errors

**D- Regression Analysis:**

**Table (21): Regression analysis results for hypothesis three**

Model	Non-standard transactions		Standard transactions	Tests	Significance	
	Beta	S.E	Beta			
1	Constant	1.167	0.364	0.715	3.204	0.002
	Learning outcomes	0.701	0.091		7.658	0.000

The table (21) above shows that the T-test values of learning outcomes variable are significant at the level 0.05 and this confirms the strong regression relation between learning outcomes and students' efficiency.

Accordingly, the alternative hypothesis can be accepted which is:

There is a statistically significant relationship between learning outcomes and increasing of students' efficiency.

## 11-Findings and Recommendations

### A-Findings

The researchers came up with the following findings:

1. There is a statistically significant relationship between learning outcomes and enhancement of cognitive skills.
2. There is no a statistically significant relationship between learning outcomes and enhancement of scientific skills.
3. There is a statistically significant relationship between learning outcomes and increasing students' efficiency.

### B- Recommendations

The researchers recommend the following:

1. To enhance students' cognitive skills and increase their learning efficiency.
2. To enhance students' scientific skills.
3. To clarify methods of teaching students critical thinking.

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### 12- References:

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