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# Enhancing the Impact of Research Centers: Leveraging Social Networking Sites for Effective Scientific Product Marketing and Sustainable Human Development

Alaa. N. Al-Heali**,** Afnan. M. Shaban, Wisal A. Husain

Market Research & Consumer Protection Center, University of Baghdad, Baghdad, Iraq

*alaanabeelal@mracpc.uobaghdad.edu.iq, dr.afnan@mracpc.uobaghdad.edu.iq, wesalab@mracpc.uobaghdad.edu.iq*

**Abstract.** The research aims to examine the efficiency of research centers in promoting and marketing their scientific products through their affiliated social networking sites, specifically Facebook and YouTube. This research represents a valuable addition to the existing knowledge by emphasizing the relative importance of social media platforms affiliated with research centers in effectively marketing their scientific products to the public. The study focuses on three research centers belonging to the University of Baghdad, namely the Market Research and Consumer Protection Center, Women's Studies Center, and Psychological Research Center. Data were collected and responses were analyzed using the SPSS statistical program. The research findings highlight several important insights. Firstly, Facebook emerges as the most viewed and followed social networking site among the research sample. However, there is a notable weakness in utilizing it effectively to showcase scientific products. Additionally, there is a clear absence of efficient utilization of the YouTube platform for displaying the scientific products of research centers. Therefore, there is a pressing need to develop a roadmap for leveraging social networking sites, in all their forms, affiliated with scientific research centers to become beacons for spreading ideas and educating society in the pursuit of sustainable human development indicators. In conclusion, this research underscores the importance of research centers harnessing the potential of social networking sites to market their scientific products effectively. By capitalizing on platforms such as Facebook and YouTube, research centers can play a pivotal role in raising awareness and educating the public, thereby contributing to sustainable human development.' However, you need to further check and shorten it by yourself.

**Keywords**: Efficiency, Research centers, Scientific outputs, Social communication, Sustainable human development.

# 1. Introduction

Social communication via the Internet is among the important elements for achieving interaction between individuals, to provide various services to society(Tippakoom & Jiang 2022), and the wide spread of computers and mobile devices and the diversity of their uses has contributed to providing an opportunity for individuals to communicate with universities, institutes and research centers around the world to exchange ideas and knowledge experiences and publish scientific results in all disciplines to reduce gap knowledge (Murad & Mahasneh, 2016, Christina Tay, 2020). In addition to achieving many social, technical, and economic benefits and gains, including the implementation of research projects that have priority in terms of their importance and the community's need for their results, the university obtained an advanced ranking in the classifications globalization and providing additional income for the university, and increase in the percentage of global publication of scientific research in peer-reviewed journals, an increase in registered patents, in addition to an increase in the percentage of research contracts with various community institutions (Al-Qahtani, 2014). The Arab and international studies and research centers evaluation report (2018-2019) discussed research centers' standards of communication with society through social media platforms and touched on a study of ten research centers in the Middle East (Hassan, 2008). The reality of research and thought in centers in the Arab region, needs, more effectiveness, and impact. This is because of the lack of channels that link people's problems and the decision-maker, including the shortcomings of civil society organizations and their inability to present the outputs of those centers (Hajjal,2021)

Efficiency means the extent to which goals are achieved, and it is measured by the relationship between the results achieved and the goals which is the skill in performing a specific work or the ability of the person to perform this work and requires the person to possess the information, skills and ability necessary to achieve an acceptable level of performance (Al-Asadi. 2014). Scientific outputs are all that have been written on a specific subject, regardless of the support it bears. It is a reflection of the degree of progress and stability in existing concepts. Marketing scientific outputs and linking them to society gives positive results that lead to the advancement and development of society. (Narayan, 2011).

The marketing of scientific outputs is a transformation of scientific research into commercial products within clear policies and priorities with the existence of appropriate resources and facilities that help implement the research and lay the foundations for marketing it (Narayan, 2011). It is a form of community partnership between universities and the public and private sectors on which the success of scientific research depends. The strength of the partnership between universities and production and service institutions in coordination between the two parts and identifying the needs of different institutions to improve the quality of production and contribute to the development and development of society (Al-Khalifa, 2014). Therefore, there is a necessity to market and disseminate scientific products to reach their benefit to the beneficiaries, and as a result of the tremendous technical and technological development in modern means of communication, there has been the possibility and ease of access to them through platforms and social media pages (Al-Youzbaky & Hanna 2022). Modern technology and development in communication techniques have provided a new form of communication, communication, and interaction between people, allowing participation in conversations, sending responses and comments, exchanging knowledge between two or more people, and the possibility of self-expression and opinion and choosing the means of communication with others (Shaaban, 2020) It can be said that social networking sites are a platform on which the member works and develops and seeks the participation of all friends in this development, and it is based on interaction and sharing between members, as it is distinguished in many applications that prompt the member to use it and invite friends to do so, and the member needs high skill and knowledge of programming languages to use it, Rather, needs the simplest knowledge of using computers and the Internet to benefit from their services (Mujahid, 2010: 11).

Social networks are distinguished as a means of communication between people and a tool for obtaining information, and they include Facebook, Instagram, Telegram, Twitter, and others, due to

their ease of use and their flexibility, speed, asynchrony, and spread beyond the limits of time and space, and are available to all (shaban, 2021). It is about the system for building a virtual community on the Internet, allowing its subscribers to build or establish their websites, with friendship or follow-up relationships with other subscribers who share common hobbies, knowledge, or aspirations (Al-Droubi, 2018). Social media is referred to as interactive, as its audience is characterized as active and interactive in the communication process, with different motives, and has the freedom to choose, communicate with others, and achieve the desired gratifications (Bailey, 2009). It also allows individuals to interact with each other and participate, which makes it the most effective means of marketing and sending messages through it, which facilitates the speed of dissemination of the material, and it contains a huge amount of information about products, which makes it easy to access (Neti, 2011).

Based on this, the scientific outputs varied in interest, standards, and goals of sustainable human development, as they discuss and address various issues in this aspect, given that sustainable development flows into all developmental and human fields. The concept of sustainable development depends on preserving and preserving the rights of generations with the technical and technological development and the growth of industries, which caused damage to the environment, and required attention to achieve sustainability (Al-Heali. et al., 2022). Sustainable development is characterized as viable and focuses on the relationship between man and the environment in which he lives from environmental resources and his economic and social development. Societies depend on development programs to advance their level and reach prosperity as one of the goals of human development (Shaban, 2020).

According to the United Nations Millennium Report, the goals of sustainable human development are as follows: firstly, ending poverty in all its forms and everywhere ending hunger, achieving security, improving nutrition, and promoting sustainable development. Secondly, Ensure decent education and lifelong learning opportunities for all. Thirdly, promoting inclusive and sustainable economic growth, productive employment, and decent work for all. Finally reducing inequality within countries. Sustainable development was not limited to a specific field, but rather in the economic, cultural, educational, and social fields, to raise the standards of societies and eliminate the suffering of poverty, destitution, famine, economic deterioration, and low levels of education, and the countries of the world are working to support local and international efforts in development and positive development (Husain & Ayesh. 2020).

# 2. Research Methodology

## 2.1. Research problem

How efficient are research centers in marketing their scientific products through social networking sites and their role in achieving sustainable human development?

## 2.2. Research aims

A- Knowing the efficiency of the research centers in marketing their scientific products through social networking sites and their role in achieving sustainable human development in an attempt to compare the research centers at the University of Baghdad, the research sample.

B- Knowing the interest of research centers in communicating with the general public through social networking sites such as Twitter, Facebook, YouTube, etc., and the public's interest in interacting with research centers through these means.

C- Determining the relationship between the efficiency of research centers in marketing their scientific products through social networking sites and sustainable human development.

D- Determining the level of response of the researched sample to the variables of marketing scientific products and their role in achieving sustainable human development.

## 2.3. Research Importance

The available information in marketing scientific products using social networks is limited, plus it has not been found study at the University of Baghdad level, that covers this part of the research. Therefore, there is a vital need to understand and identify the efficiency of the research centers in marketing their scientific products, through social networking sites. In addition to their role in achieving sustainable human development. In an attempt to compare the research centers at the University of Baghdad, the research sample.

## 2.4. Search limits

This research was applied to a sample of research centers at the University of Baghdad, consisting of three centers (the Center for Market Research and Consumer Protection, the Center for Women's Studies, and the Center for Strategic and International Studies) as spatial boundaries, while the temporal boundaries of the study were for the period from 1/1/2022 to 31 /12/2022.

## 2.5. Research assumes

A. There is a significant correlation between the efficiency of research centers in marketing their scientific products through social networking sites and the achievement of sustainable human development.

B. There is a significant effect of the efficiency of research centers in marketing their scientific products through social networking sites in achieving sustainable human development.

## 2.6. Research form

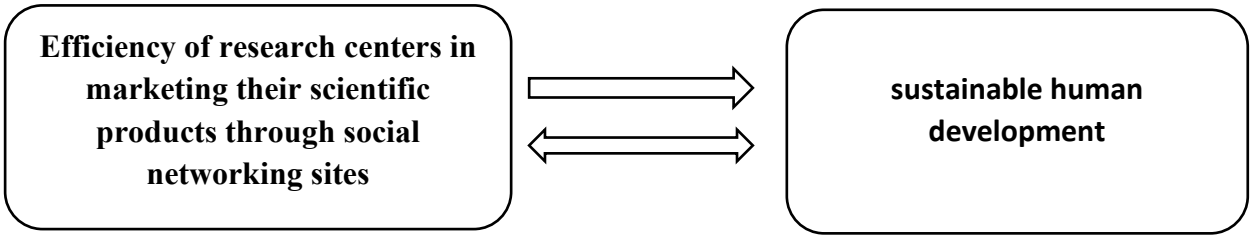


Fig.1: research form

## 2.7. Research methods and tools used

The use of the descriptive analytical approach to understand the aspects of the subject, understand its components, and analyze its dimensions, where many studies, research, and books were used, in the analytical aspect, the two questionnaires were relied upon after being judged by the arbitrators and to ensure the validity of the questionnaire using the stability coefficient Alpha Cronbag, Its value was (0.83), and this result is a positive indicator of the stability of the questionnaire. where it was distributed electronically to a sample From (3) research centers at the University of Baghdad out of seven research centers, to find out their opinions on the subject, and the statistical program Statistical Analysis System -SAS (2012) was used to analyze the data to study the required relationships according to the research objectives of the independent factors and the paragraphs within the axes included in the questionnaire (The efficiency of research centers in marketing their scientific products through social networking sites and their role in achieving sustainable human development), and the arithmetic mean and standard deviation were calculated for each question according to the sum of multiplying the numbers for each answer by the degree of the answer that was determined according to the importance Strongly Agree = 5, Agree = 4, neutral = 3, disagree = 2, strongly disagree = 1, and then divide by (320), which represents

the total samples. In addition to calculating the arithmetic mean and standard deviation.

## 2.8. The practical framework

First: Description of the research community:

This topic describes the research community to which it was applied through:Description of the research sample of followers of social networking sites for research centers

The research was applied to three research centers at the University of Baghdad, and the following table shows the characteristics of the research sample of the followers of the social networking sites of the research centers:

Table 1. Distribution of the research sample according to the demographic data of the followers of social networking sites

| Features | Details | Frequency | % |
|---|---|---|---|
| gender | male | 104 | 32.5 |
| | female | 216 | 67.5 |
| age | 25-35 year | 76 | 23.75 |
| | 36-45 year | 132 | 41.25 |
| | 46-55 year | 64 | 20 |
| | 56-65 year | 44 | 13.75 |
| | 66 and older | 4 | 1.25 |
| education | Diploma | 16 | 5 |
| | B.S. c. | 108 | 33.75 |
| | higher diploma | 40 | 12.5 |
| | M.Sc./PhD | 156 | 48.75 |
| Job | Student | 44 | 13.75 |
| | Employee | 252 | 78.75 |
| | Not working | 24 | 7.5 |
| Social networking sites in terms of the most significant impact on the marketing of scientific outputs | Facebook | 232 | 72.5 |
| | YouTube | 88 | 27.5 |

From the data in Table 1, we note the following:

A. The percentage of females was about 67.5% of the research sample, which is the highest, while males constituted about 32.5%.

B. The age group 45-36 formed the most significant part of the sample, at 41.25%, while the age group 66 years and over was the least, at about 1.25%.

C. The percentage of holders of master's and doctoral degrees was about 48.75%, which is the largest percentage of the sample, followed by the percentage of holders of a bachelor's degree, which amounted to about 33.75%. sample members.

D. About the profession, employees constituted the most significant percentage of the sample, at about 78.75%, while the percentage of those who did not work was the lowest among the sample, as they constituted about 7.5%.

E. According to the sample, the most influential social media in the marketing of scientific products was Facebook, which constituted about 72.5%, which is the highest compared to YouTube, which constituted (27.5%).

As for the reasons for following the research sample to the social networking sites of the research

centers that have been selected, we find that 55% of the followers are workers in those centers, while the percentage of those who follow them to identify scientific outputs was about (43.8%), followed by participation in conferences, seminars and workshops by about (41.3%), while work in the field of writing research and studies came at a rate of (35%), while curiosity occupied the lowest percentage (22.5%).

Second: Describe the response of the research sample to the variables of marketing scientific products and their role in achieving sustainable human development. To find out the opinions of the sample of followers of the social networking sites of the research centers (Market Research and Consumer Protection Center, Psychological Research Center, Center for Women's Studies) and their scientific products presented through the social networking sites of each center and the extent of success in marketing them to achieve sustainable human development, we show in Table 2 the details of that as follows:

# 3. Discuss the results of the research

In this section, we highlight the results of the research and their analysis of the sample's answers to the questions we asked them regarding the subject of the marketing mix, as follows:

## 3.1. Scientific product

The results in Table 2 shows the arithmetic means and standard deviations of the sample's answers regarding the questions that were asked to them related to the publication of scientific findings on social networking sites, as we note the lack of interest of the three research centers in presenting their scientific products on those sites, according to the sample's point of view, as the total arithmetic mean was 1.53 (Located between -1 and 2.33), which represents a low level, of course. This has negative repercussions on society in terms of depriving it of the benefits that can be obtained if those results were presented, in terms of raising the level of health and environmental awareness and accumulating knowledge on the subject of achieving indicators of Sustainable human development, as shown by the arithmetic averages of the sample's opinions on the questions of the axis of scientific productions in Table 2, especially about displaying them on YouTube, which allows recording details of the productions from courses, workshops, seminars, and conferences to display them within that channel, which serves as a tool for promoting them.

## 3.2. The price

Notice from Table 2 the total arithmetic mean and standard deviation of the sample's answers regarding the questions related to the prices of scientific products that are displayed on social networking sites, as it reached 1.99, which represents a low score. And marketing it by obtaining prices from followers to obtain these products. Research centers did not benefit from electronic payment services to market and sell their scientific products by pricing them at certain prices, so that followers of social communication would buy them, or even if they were offered for free for followers to benefit from these products, by On the other hand, we note that the question related to the prices of participation in the training courses that the center holds and announces on its social networking sites, got an arithmetic mean of about 4.62 with a standard deviation of 1.43, and this is, of course, a high level or degree, and this is one of the strengths that can be recorded about announcing the prices of training courses held by the research center and encouraging followers to participate in these courses.

## 3.3. Distribution:

The data of Table 2 shows the questions related to the element of distributing the scientific outputs of research centers through social networking sites to promote and market them to achieve human development indicators. We note from the answers of the sample of the followers of those sites that the total arithmetic mean has achieved 1.03, which represents a low percentage, which confirms that the center's Research is not interested in this aspect, either for lack of clarity of vision of its importance in

achieving sustainable human development indicators or for the lack of adequate infrastructure of human and material resources that can work towards the development of those sites to benefit society from the scientific outputs that they produce. This indicates the need for research centers to be interested in taking into account the link of their scientific activities that they publish with the original sites published in them so that the browser of those sites can obtain those products published within their original sites, with ease.

## 3.4. Promotion

The results of Table 2 indicate that about the variables of the promotion element as one of the elements of the marketing mix of scientific products, the total arithmetic mean is low by 1.15 with a standard deviation of 0.23, which is a low degree, which confirms, according to the point of view of the research sample of followers of those research centers, that there is a lack of means to promote the products Scientific research centers (research sample), therefore, a road map must be developed to activate those paragraphs, which will naturally contribute to educating society in terms of health and environment to achieve indicators of sustainable human development.

Table -2- The arithmetic mean, standard deviation, and level of the elements of the marketing mix for scientific products in research centers and indicators of sustainable human development

| **First: the elements of the marketing mix** | **Arithmetic mean** | **Standard deviation** | **The level** |
|---|---|---|---|
| **A. scientific products** | | | |
| 1. The Center continuously publishes the titles of its scientific productions through the social networking sites belonging to the Center before their completion. | 1.33 | 0.44 | low |
| 2. The center seeks to announce the titles of the training courses it holds through the center's social networking sites. | 2.32 | 0.59 | Low |
| 3. The center seeks to announce the titles of conferences, seminars, and workshops through the center's social networking sites. | 1.27 | 0.50 | Low |
| 4. The center publishes the details of its scientific outputs participating in conferences, seminars, workshops, and training courses through the center's social networking sites. | 1.21 | 0.44 | Low |
| **Arithmetic mean, standard deviation, and level for the scientific products component.** | **1.53** | **0.49** | **Low** |
| **B. the price** | | | |
| 5. I can get the details of the center's scientific productions completely free of charge, published on the center's YouTube channel. | 1.12 | 0.13 | low |
| 6. I can obtain the center's scientific products completely free of charge on the center's Facebook site. | 1.12 | 0.13 | Low |
| 7. The prices of participation in the training courses held by the center and announced on social media are appropriate. | 4,62 | 1.43 | High |
| 8. The center continuously develops its social media to obtain its followers for free. | 1.10 | 0.09 | Low |
| The mean, standard deviation, and level of the price component. | **1.99** | **0.44** | Low |
| **c. distribution** | | | |
| 9. There are digital facilities (electronic links) available within the research center's social networking sites through which I can obtain published scientific results. | 1.03 | 0.05 | low |
| 10. I can get the scientific output through the downloading technique) | 1.02 | 0.03 | Low |
| 11. The center's website is linked to other sites as distribution branches for scientific products | 1.03 | 0.05 | low |
| 12. Ease of communication with those in charge of the center's social networking sites | 1.04 | 0.07 | low |
| **Mean, standard deviation, and level of the distribution** | **1.03** | **0.05** | low |
| **D. promotion** | | | |

| | | | |
|---|---|---|---|
| 13. I receive a quick response to my inquiries that I direct on social media. | 1.00 | 0.02 | low |
| 14. Social networking sites contribute to the exchange of experiences and information between research centers and universities. | 1.55 | 0.73 | Low |
| 15. Social media has effective and attractive means of promoting research contracts with investors. | 1.01 | 0.1 | Low |
| 16. Social networking sites contribute to knowing the opinions of the beneficiaries regarding the research services provided to them. | 1.06 | 0.09 | Low |
| The arithmetic mean, standard deviation, and level for the promotion item | **1.15** | **0.23** | Low |
| **Second: sustainable human development...**<br>**The scientific results published on the social networking sites of research centers reinforced the...** | | | |
| 19. My understanding and awareness of the concepts of sustainable human development (I have achieved an addition to this concept). | 1.23 | 0.89 | low |
| 20. Expanding my capabilities and options of opportunities available to me (empowerment). | 1.02 | 0.44 | Low |
| 21. Promoting health awareness towards epidemics and diseases and alleviating them. | 1.16 | 0.31 | Low |
| 22 . Enhancing attention to economic resources by not wasting them to achieve the benefit of current and future generations and increase the benefits from them. | 1.12 | 0.45 | Low |
| 23. Promote awareness of sustainable consumption and its importance by meeting the needs of the present and future generations. | 1.08 | 0.47 | Low |
| 24. Achieving an accumulation of knowledge of human rights concepts | 1.01 | 0.46 | Low |
| 25. Spreading awareness about the problems of environmental pollution | 1.01 | 0.46 | low |
| **The arithmetic mean, standard deviation, and level of the sustainable human development variable** | **1.09** | **0.49** | low |

## 3.5. Characterization of the sample response to sustainable human development

It has been noticed from the data of Table 2 that the value of the total arithmetic mean of the sustainable human development variable has reached 1.09, which means that there is agreement among the members of the research sample (followers of social networking sites for research centers) with the low level of their efficiency in achieving indicators of sustainable human development with a standard deviation of 0.49, as evidenced by the dimensions that have been selected (knowledge addition, empowerment, health, and environmental awareness promotion, interest in maintaining and preserving economic resources to achieve sustainability, accumulation of human rights knowledge) were all of a low degree, indicating inefficiency in marketing scientific outputs and the need to correct reality by developing or devising new efficient mechanisms for dissemination scientific results, and not limited to publishing news of visits that do not achieve any benefit for consumers. Also, it has been noticed from the data of Table 3 that the prices got the first place, while the scientific products got the second place, then the promotion element came in third place, followed by the distribution element in fourth place, and this naturally had an impact on the indicators of sustainable human development with the agreement of the research sample on Marketing scientific results on social networking sites had no significant impact on these indicators.

Table 3. The arithmetic mean and the order of the research variables

| Variants | Dimensions | The general arithmetic mean | Level |
|---|---|---|---|
| Marketing mix elements | Scientific Product | 1.53 | **Low/second** |
| | The price | 1.99 | **Low/first** |
| | Distribution | 1.03 | **Low / four** |
| | Promotion | 1.15 | **Low / three** |
| Indicators of sustainable human development | 1.09 | 0.49 | **Low** |

## 3.6. Analysis of the study model and its hypotheses

To study the correlation and influence relationships between the study variables and depend on its hypotheses, some statistical tools and methods were applied to identify the validity of the study model and its hypotheses as follows:

1- Analyzing the correlations between the study variables

The correlations between the independent variable (the efficiency of research centers in marketing their scientific products through social networking sites) and the dependent variable (sustainable human development) are shown in Table (4).

Table 4. Correlation coefficient between the efficiency of research centers in marketing their scientific products through social networking sites and the achievement of sustainable human development.

| correlation between the two variables | Pearson correlation coefficient | Moral value | Significance value | link |
|---|---|---|---|---|
| | 0.121 | 0.05 | 0.035 | moral |

The results of Table 4 show that the value of the Pearson correlation coefficient is equal to (0.121) for the relationship of the correlation variables, and the value of significance is equal to (0.35) at the level of significance (0.05), which indicates the existence of a significant correlation and function between the efficiency of research centers in marketing their scientific products through social networking sites). And between the dependent variable (sustainable human development).

2- Analyze the effect relationships between the variables of the study

The influence relationships between the independent variable (the efficiency of research centers in marketing their scientific products through social networking sites) and the dependent variable (sustainable human development) are illustrated in Table (5).

Table 5. Significant effect of the efficiency of research centers in marketing their scientific products through social networking sites in achieving sustainable human development.

| T-test | $R^2$ | regression coefficient | F | Model quality testing F-test | B1 | B0 | dependent variable / independent variable |
|---|---|---|---|---|---|---|---|
| 15.397 | 0.063 | 0.764 | 1.192 | 0.227 | 0.050 | 2.158 | The efficiency of research centers in marketing their scientific products through social networking sites |
| No of mean =0.764 , Total of sample = 193.394 .<br>Degree of freedom: Variables =1 , Error = 0.140 , Total =194.15 . | | | | | | | |

The results of Table 5 indicate that the value of (B0) is equal to 2.158, the value of (B1) is equal to 0.050, the value of (F) is equal to (1.192), the regression coefficient is equal to 0.764, the value of the coefficient of determination R2 is equal to 0.063, and the value of the T-test is equal to 15.397 at the level of significance (0.05). This indicates that there is a significant effect on the efficiency of research centers in marketing their scientific products through social networking sites in achieving sustainable human development.

# 4. Conclusions

1- The Facebook platform is the most watched and followed by the research sample by a large percentage, as it is one of the most popular applications and is used by people, and most of them own a page within that platform.
2- There is a weakness in the research centers' investment in their social networking sites in marketing their scientific products.
3- There is strong agreement by the research sample that the level of marketing of scientific products within social networking sites is low, which confirms the lack of interest of research centers in those sites by adopting them as one of the important mechanisms to increase consumer awareness.
4- The research sample agreed on a weakness (low level) in all elements of the marketing mix for the scientific outputs of research centers (the research sample), which means a weakness in the level of their marketing on social networking sites.
5- The lack of interest of research centers in the mechanisms of marketing scientific products through their social networking sites.
6- The research centers (the research sample) advertise training courses, seminars, workshops, and awareness posters within their social networking sites.
7- There is no interest from those working on social media to upload the scientific outputs of the center daily.
8- There is no continuous communication between the majority of the workers on these sites and the followers because they sometimes answer the inquiries received from the followers, which indicates their slow response.
9- Emphasis is placed on the news of the visits and posts of the center's employees that have nothing to do with the scientific results on social networking sites.

# 5. Recommendations

1- Draw a road map to improve the mechanisms of scientific publishing on social networking sites, by focusing on publishing scientific results.
2- Training those in charge of those sites to pay attention to finding the best ways to help followers by answering their questions, which has a positive impact on benefiting from publishing the scientific results of research centers through social networking sites.
3- Increasing interest on the part of the senior management in providing all the technological and information capabilities for the managers of social networking sites to facilitate their mission to publish the scientific results of the center.
4- The need to manage social networking sites by a media specialist because of their positive impact in marketing the scientific outputs of research centers through social networking sites, which in turn contributes to achieving sustainable human development.
5- The necessity of working the social networking sites of research centers to provide scientific products for free by establishing electronic links to scientific products.

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