
**Arab American University**

**Faculty of Graduate Studies**

# The Impact of Research Competencies on Research Quality of Academic Staff at Palestinian Universities: The Mediating Role of Research Productivity and Moderating Role of Scientific Strategies.

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# Thesis Approval

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This thesis was defended successfully on **23/12/2020** and approved by:

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# Declaration

This work was not previously sent or submitted to any institution or university for any academic degree.

I am hereby declaring that this thesis is my original work and it has been written by me in its entirety. I have duly acknowledged all the sources of information which have been used in the thesis.

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**Signature:**

**Date:**

## Dedication

## الإهداء

بعد الحمد والشكر لله على كرمه وعطائه الذي منّ على بالعلم والصحة والعائلة

أُهدي هذه العمل المتواضع وكافة انجازاتي مهما كانت إلى أحب الناس إلى قلبي... إلى أمي "ماجدة"... الداعم الأول... الصديق... الحنون... القدوة... كل شيء جميل في حياتي... إلى والدي "حسين"... حبي الأول... السند... الداعم... المعطاء... اللذين بدونهما لم أكُن ما أنا عليه...

إلى رفيق دربي وصديقي وحبيبي زوجي "نديم"...

إلى سكر الحياة وسندي... إخوتي "غسان" و "يزن" و "محمد".

إلى عائلتي الثانية خليف... إلى الفهد ...

إلى عائلتي وأصدقائي وزملائي...

إلى ابنتي "لور"...

إلى روح جدّتي التي لم ولن تفارقني "وجدان"

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# Abstract

This research aimed to study the impact of research competencies of the academic staff in the Palestinians universities and the quality and quantity of research with examine the universities strategies for scientific research. To achieve the goals of the study, the researcher reviewed previous studies and existing literature, then used descriptive and analytical approach to build a questionnaire to collect data. The questionnaire had five dimensions; demographic information, universities strategies, competencies, research productivity, and research quality. The sample was (176) randomly selected from faculty members in three different universities in the West Bank - Palestine.

The results of this study showed the following main results. First, competencies of academics affect their productivity and quality of scientific research ($R=0.399$, $R^2=0.159$; $R=0.65$, $R^2=0.425$ respectively). Second, it also showed that the universities strategies do not affect the productivity and quality of research. Moreover, research productivity partially mediates the relationship between scientific competency and research quality, where the indirect effect of scientific competency on research quality is 0.087. the direct effect is 0.637. Therefore, the total effect of scientific competency on research quality is 0.724.

The study had also found that there are statistically significant differences due to gender, age, academic rank, and educational level factors on research quality.

The study had recommended to prepare trainings and programs to improve research quality and academics competencies that will lead to improve the productivity of research in the Palestinian universities. It also recommended to increase research budget in Palestine. It also suggested that

universities should work on their scientific research strategies. It also addresses other researcher to elaborate on this topic from different perspective due to the lack of studies in Palestine.

**Key words:** Scientific Research, Strategies, Quality, Productivity, Academics, Competency.

# Contents

## List of Tables

## Table of Figures

# Chapter One: Research Overview

## 1.1 Introduction:

The knowledge which we have today is built on different questions and thoughts that we have searched in many ways in order to find answers for them. Nowadays, the cumulative knowledge which we have from different researches, are based on scientific methods which make the research more accurate with the best results. These researches that are based on scientific methods and facts are called Scientific Research.

What is Scientific Research?

According to the Cambridge dictionary, the definition of research is "a detailed study of a subject, especially, in order to discover (new) information or reach a (new) understanding". (Cambridge Dictionary, 2019) Business dictionary defines Scientific Research term as, "The application of the scientific method to investigate any relationships amongst natural phenomena or to solve a technical or medical problem." (Business Dictionary, 2019)

Scientific Research (SR) value lies in discovering, explaining and evaluating new knowledge, ideas, and technologies that help to improve and to develop the future of the world. The opportunity of making something different can be found through scientific research. The research impact will affect local, regional, national and international levels. That's why the importance of SR is considered as a top priority by many organizations and institutions all over the world, and they are allocating huge budgets for research and development (R&D).

One of the main organizations that produces SR is universities. Universities have a major role in presenting new knowledge for society. Most of the universities have planned goals to be achieved such as to provide quality education for the students. In order to achieve its goals, the universities

usually provide suitable tools and methods, and SR is considered as the most critical one for both students and faculty members. Therefore, most universities all over the world have a special department and strategies for SR which emphasizes the importance of SR and its role in development. The pressure of producing SR among universities and specialized research institutions is increasing by time. Faculty members are a major producer of SR; therefore, universities invest and have strategies to encourage the process of producing SR among their academics.

This research will benefit many parties. Universities can locate problems associated with scientific research and obstacles that prevent faculties from producing scientific research. Moreover, they can decide which strategies are best supporting scientific research. Faculties may come to know the competencies required for scientific research and what they should do to develop these competencies. Ministry of higher education may set policies and procedures to develop the scientific research on the national level.

The purpose of this study is to find the impact of SR strategies in the Palestinian universities on the productivity of SR among the faculty members.

### 1.2 Research Problem & Question

UNESCO Science Report 2015 **"UNESCO Science Report: towards 2030"** in research and innovation has mapped technology, science and innovation around the world from 2010 – 2015 in 140 countries. More than 60 experts participated in writing this report, each one of them has covered their country and region. Every 5 years, this report is published to show domestic and international results for Science Technology and Innovation (STI) around the world.

*"It monitors initiatives taken at the regional and domestic levels since 2010 to create an enabling policy environment for STI and coherent policy frameworks, combining expert analysis with a variety of indicators of socio-economic trends, trends in higher education and in research and development (R&D) and innovation. The trends and developments in science, technology and innovation policy and governance between 2009 and mid-2015 described here provide essential baseline information on the concerns and priorities of countries that should orient the implementation and drive the assessment of the 2030 Agenda for Sustainable Development in the years to come."* (UNESCO, 2015)

According to the report the percentage of shares of global researchers (%) for all Arab countries[1] is 1.9%, while in Europe it is 31.0% and in the United States of America 18.5%. The world share of publications (%), the Arabs share was 2.4%, Europe 39.3% and in the United States of America 28.6%. Another factor to focus on is the number of world shares of expenditure on R&D. All Arab countries gross domestic expenditure on R&D (GERD) (in $ billions) 15.4, which present 1.0% of the world share of GERD (%), while in Europe 335.7 billion with a percentage of 22.7%, and 427.0 billion with a percentage of 28.9% for the United States of America [2]. (UNESCO, 2015)

Based on the previously mentioned statistics, which indicate that there is a lack of SR published by Arab countries and the big gap between these countries and the other mentioned countries. Due to these indicators, this study will select Palestinian universities as a sample to examine the used strategies and their impact on the productivity of SR.

[1] The Arab States: Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Syria, Sudan, Tunisia, United Arab Emirates, Yemen. *Members of the League of Arab States, Djibouti and Somalia are profiled in East and Central Africa.

Therefore, the main **research question is: what is the impact of research competencies of the academic staff in the Palestinians universities on the quality and quantity of research with examine the universities strategies for scientific research.**

Based on the main question there are sub questions to be answered by the research:

- What are the competencies of the SR that should be possessed by universities faculties?
- What are the adapted SR strategies by the Palestinian universities?
- Do academic staffs have an appropriate level of SR productivity?
- Do these strategies affect the quality, quantity and productivity of research?

### 1.3 Objective of the Study:

The main objective of this study is to find out the impact of research competencies of the academic staff in the Palestinians universities on the quality and quantity of research.

Based on this objective, some sub objectives have emerged;

- Identify the best strategies that positively affect the SR productivity.
- Identify competencies acquired by the academics and areas that need development.
- Identify research quality.

### 1.4 Research Hypotheses

Hypothesis 1: There is no statistically significant impact at level ($p \leq 0.05$) of scientific research competencies (SC) on quality of research productivity (RQ) for the faculty members in the Palestinian universities.

Hypothesis 2: Universities' scientific research strategies (SS) moderate the relationship between SC and SP.

Hypothesis 3: Universities' scientific research strategies moderate the relationship between SC and RQ.

Hypothesis 4: Scientific research productivity (SP) mediate the relationship between scientific research competencies (SC) and scientific research quality (RQ).

Hypothesis 5.0: At level ($p \leq 0.05$), there is no statistically significant difference in RQ of the faculty members in Palestinian universities with respect to demographic characteristics.

Ho5.1: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members experience

Ho5.2: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' age.

Ho5.3: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' gender.

Ho5.4: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' academic rank.

Ho5.5: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' education level.

Ho5.6: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' faculty type (humanities or science).

# Chapter Two: Literature Review

This chapter will present the previous literature in the fields of scientific research, strategies, productivity and obstacles that faced research. Then briefly it will discuss how the literature have led to the research question and hypotheses.

***Faculty Motivation to do Research: Across Disciplines in Research-Extensive Universities*** (Hardré, Beesley, Miller, & Pace, 2011)

The authors have worked on examining a number of factors that might influence academics research productivity in different fields. The factors they used were personal, contextual, and motivational ones. The number of academics who participated in this study were 781 from 28 different universities in the USA. The result of this study stated that there is a relationship between motivation and productivity of academics in research.

***Research Productivity Among Faculty Members at Medical and Health Schools in Saudi Arabia*** (Alghanim & Alhamali, 2011)

The researchers examined the prevalence, obstacles, and associated factors that medical and health faculty members are facing when it comes to producing research. They have conducted a questionnaire that was distributed randomly to 500 faculty members from 10 different health and medical institutions.

The results of this study showed that, only 150 members (38.6%) out of the study sample did publish scientific research within the last two years (2011). Also, young male members are more likely to produce SR than older members. Faculty members who work in administrative positions are less likely to publish research. While faculty members who teach the postgraduate student or have received training on research methods are more likely to publish research.

The respondents said that the obstacles behind the lack of research productivity are; they do not have time, they do not have a research assistant, the teaching load, and the lack of funds for research. The researchers recommended understanding the obstacles and factors that prevent the faculty members form producing research and to work on solving them.

***Overcoming Barriers to Improve Research Productivity in Saudi Arabia*** (Alzahrani, 2011)

The author in this study highlights the subject of limitations that research publishing faces in Saudi Arabia. He focused on the academic journals, their numbers, purpose, the limitations that academic staff face when they want to publish in those journals. He used a questionnaire to collect data from 335 academic staff (the sample of the study). The study results can be summarized as; there is a lack of motivation for academics to publish and write research, there is a lack of financial support for doing research and lack of research infrastructure. He also concluded that the culture of volunteering for doing work that does not have a finical benefit does not exist.

The author recommended several points to improve research publishing in Saudi Arabia. He recommends to computerize research publishing activities, eliminate unnecessary meetings and procedures, have an updated database, ensure that all academic staff publish at least two papers annually, provide resources and required information to conduct a paper for free, encourage international publication for academic staff, give financial rewards for researchers who publish more than five papers in a year.

***Factors Related to Low Research Productivity at Higher Education Level*** (Iqbal & Mahmood, 2011)

This study aimed to investigate the reasons behind the low productivity of research in universities. The authors have taken a 232-faculty member as their sample from International Islamic

University, Islamabad, Pakistan. They have used quantitative and statistical methods to collect and analyze data.

The results of this study showed that teaching load, the negative attitude of faculty members to research, having administrative duties along with academic duties, lack of research fund and budget, absence of research skills, limited and lack of access to books and articles, and not having professional journals are the reasons behind the low productivity of the faculty members.

The authors recommended to reduce the teaching load, to not give faculty members any administrative duties, develop the faculty skills in research and statistics. They also encourage universities administration to organize research training programs for faculty and to provide the required fund for research.

***Research Capability of the Faculty Members of DMMMSU Mid La Union Campus*** (Salom, 2013)

This study wanted to find out if the faculty members of DMMMSU Mid La Union Campus are able to do research and if their capability was affected by teaching load, academic rank, and highest educational attainment.

The researcher has found that the sample has skills in the research process, but they need to improve their analysis and interpreting skills. Also, the researcher found that there is an affect for teaching load, academic rank, and highest educational attainment on research capability for faculty members.

***Level of Research Competencies and Satisfaction of The Faculty Members from the College of Criminology*** (GOMEZ & PANALIGAN, 2013)

This study aimed to find out research competencies level and to measure research satisfaction for faculty members in the College of Criminology. On the level of competency; the authors used technical aspects and major parts of the research paper to determine the level of competency in writing papers. As for research satisfaction, they investigated what resources does the organization provides to improve research capability.

The authors have conducted a survey that had covered all the faculty staff in the university (100% population). The results of this questionnaire were; the respondents are capable of research format but need to improve their communication skills. They also need competency in building questionnaires, develop research design and statistical tools. The results for the satisfaction of the provided resources from the organization was that the staff needed more materials, books, journals.

In the end, the authors recommend that the Research and Statistics Center in the college could provide more training and workshops on the format of research, research methodology, research design, statistical treatment and to increase the number of subscriptions of scientific journals.

***Building a Culture of Research: Recommended Practices*** (HanoverResearch, 2014)

This report included three sections; the first one talked about how to have certain characteristics and a culture of research that will lead to a productive research environment. The second section is about how to implement a culture of research. The third section displayed examples of research departments from three different schools. This report concludes that having a culture of research will improve the productivity of research and motivate faculty, and it will also create a collaborative environment.

***Factors that Motivate Academic Staff to Conduct Research and Influence Research Productivity in Chinese Project 211 Universities*** (ZHANG, 2014)

Zhang studied the factors of motivation for academic staff in the Project 211 universities in China to understand how these factors influence research productivity. He used a questionnaire and focus group interviews with academics to know what motivates them to do scientific research. Also, he examined what strategies are being used to motivate the productivity of scientific research.

The researcher recommended decision - makers in his sample to develop a long-term motivation strategy, recognize the differences between the staff (backgrounds and circumstances) and use different motivations that will work with the differences.

***Strategies for Academic and Research Excellence for a Young University: Perspectives from Singapore*** (Lim & Boey, 2014)

The authors emphasized the idea of competition between universities due to world ranking. This competition made the universities to improve the way they work. They have taken Singapore universities as a sample for their study. To follow up on the world competition the Singapore universities transformed their universities to become research- intensive. Then they have chosen Nanyang Technological University (NTU) to examine their strategies for research. These strategies included the "implementation of a new academic structure, reform of the faculty appointment, promotion and tenure system, infusion of faculty talent, the introduction of research quality drivers in the budget process, implementation of strategic research directions, and strengthening of the research innovation nexus" (Lim & Boey, 2014)

***Obstacles to Scientific Research in Light of a Number of Variables*** (Algadheeb & Almeqren, 2014)

The authors define the study problem that there are several problems and difficulties in the Arab region regarding research. They aimed by this study to determine the obstacles of scientific

research that faculty members are facing in the College of Education at Princess Nora bint Abdul Rahman University. They have conducted a questionnaire that contains; personal obstacles, social factors, technical skills, organizational obstacles. The sample of the study was 69 faculty members.

According to the study results, organizational and professional obstacles have recorded the highest average, followed by societal obstacles, personal and family obstacles and skills related obstacles. After having these results, the author recommended the following; allocate budget for scientific research, spending time and money on real investments that help the humanity, provide grants and awards for the researchers, the universities should encourage their faculty members to create a scientific environment and communities, and to have a specialized administration for scientific publishing in universities in order to facilitate this process on researchers.

***Barriers to Research from the Perspective of Faculty Members of Knowledge and Information Science: A Case Study of Public Universities in Tehran*** (Safavi, 2014)

The authors goal in this study was to know the barriers to research from the point of view of faculty members in public universities in Tehran. The author chose 65 faculty members of Knowledge and Information Science as her sample. She used a questionnaire to collect data and t-test to analyze them.

The main result of the study was that the major barriers that affect research productivity are external – organizational ones. Such as low income, no research publication, delay in publications, and many more barriers. Due to this result, the author recommends universities to expand their relations and communication with external sources such as universities and journals that will improve the level of research and support researchers.

***Faculty Research Productivity in Six Arab Countries*** (Abouchedid & Abdelnour, 2015)

The authors of this article wanted to study research productivity in Arab countries in the Middle East and North Africa. They have conducted a questionnaire to be distributed to 310 higher education institutions in Lebanon, Qatar, the United Arab Emirates (UAE), Morocco, Saudi Arabia, and Jordan. After analyzing the collected data, the researchers concluded that faculty research publishing is very low, which emphasizes the idea of the lag of knowledge in Arab countries. They claim that there are other factors that caused such results other than financial budget which must be considered. Examples of these factors are, satisfaction levels of academic staff, research climate of the institutions, and universities mission and goals towards research productivity. The authors aim to encourage other researchers to use the data they have collected to have more research on this topic.

***The Crisis of Research and Global Recognition in Arab Universities*** (Almansour, 2016)

AL Mansour in her article shed the light on the problems that Arab universities face in the scientific research field. The researcher tried to know the reasons behind this problem or crisis as she described it by conducting interviews with presidents or vice presidents from different Arab universities. 7 out of 15 presidents agreed to participate in her study. She has found that the social, economic, and political factors affect the developing of scientific research in Arab universities. She concluded her article by showing how these factors have a major impact on research and on the world ranking of Arab universities. Also, she recommended doing more studies on this topic related to political and socioeconomic factors.

***The Reality of Scientific Research in Developing Countries Compared to Developed Countries in the Localization of Technology (Malaysia, China and, Japan as model)*** (Abdullah, 2016)

This study explained the situation of scientific research in developing countries including Arab countries comparing them to a selected sample of developed ones. The author focused on the amount of expenditure on scientific research in Arab countries that affected scientific production in these countries. He also explained that; not having enough funds, the lack of support and attention to researchers, the political system and the absence of clear scientific strategies for research are all factors that caused this issue. At the conclusion, the author provided a list of suggestions based on the models he has studied to improve the scientific research situation in the developed countries.

***Faculty Production of Research Papers: Challenges and Recommendations*** (Fawzi & Al-Hattami, 2017)

In their paper, Fawzi and Al-Hattami studied the challenges that affect the productivity of research for faculty members in the University of Bahrain. They have used a questionnaire with a sample of 28(16 males, 12 female) faculty members in different academic ranks. The sample teaching experience range from 1- 30 years and they are aged between 45 – 54.

In their paper, they show that different factors affect the productivity of research. First, the individual factors, such as lack of time, marital status and cultural barriers. Second, the institutional factors, such as research culture in the institution, lack of institutional research support, teaching load, colleague collaboration on research, and faculty preferences.

The results showed that the major reasons for not producing research among faculty members at the University of Bahrain are because of workload pressure and lack of time.

***Research Performance of Higher Education Institutions: A Review on the Measurements and Affecting Factors of Research Performance*** (Aydın, 2017)

Aydın talked about how higher education institutions are competing with each other using many factors such as increasing the number of students, hiring qualified faculty members and improve research performance. The researcher has chosen research performance as a factor to study, she has relied on using literature review only. Based on that, she has listed the measurements for research performance, such as the number of articles published in professional journals, participation in research projects, the number of papers presented in meetings or conferences, etc. Aydın concluded that there are two major factors that affect research productivity and performance. The first factor was external factors, such as institutional attributes, structure and the opportunities they offer. The second factor was internal factors, such as individual attributes and demographic variables. The auother believes that these factors can help higher education institutions and their staff to understand more how to improve their research performance and productivity.

***Modeling Research Competency of Faculty Member: A Preliminary Data*** (Sondari, Tjakraatmadja, & Yuni, 2016)

The researchers of this study want to know the reasons behind the lack of research productivity in the higher education institutions in Indonesia in comparison to countries in the same region such as Malaysia, Singapore, and Thailand. They specify research competency in their study and took two faculty members of Economics and Business to be their sample.

The authors used the qualitative study method, they have conducted interviews with the selected population, and by building their own model they have compared the interviews to conclude that; there is a relation between research competency and the productivity of research. The researchers recommend doing this study on a bigger population since they couldn’t generalize the results of this paper.

**Comments on Literature Review**

The subject of scientific research and its importance has been and will stay an important topic to researchers. The impact of having these researches on the world kept it on high demand subject. From the presented literature above it is notable that Arab countries are still behind in this matter. Therefore, this current study meets the lack/gap of research in this field especially in Palestine.

# Chapter 3: Theoretical Frame Work

Prior to analyzing the collected data from the faculty members in the Palestinian universities, this section will outline the definitions of the independent and dependent variables. It will also review what are the used strategies that have an impact on producing SR.

## 3.1 Productivity

### 3.1.1 What is Productivity

Organizations and institutions measure their employee's performance from their productivity at work. The more a person produce the more he is considered to be efficient. Productivity has many wide definitions, the simplest of them can be defined as, the relation between the outcome/ production and the resources that were used to produce this outcome. This relation can be expressed by a ratio of the output to the inputs. (Marwah & Yadav, 2015).

It also can be defined as "a measure of the efficiency of a person, machine, factory, system, etc., in converting inputs into useful outputs. Productivity is computed by dividing the average output per period by the total costs incurred or resources (capital, energy, material, personnel) consumed in that period. Productivity is a critical determinant of cost efficiency." (Business Dictionary, 2019)

As for research productivity, some might measure it by the number of publications for each researcher.

## 3.2 Types of Scientific Research

Research (generally) is classified into two categories: basic and applied research. Both of these researches can be quantitative, qualitative or mixed (quantitative & qualitative).

1- Basic Research (or fundamental or theoretical research): this type is usually used to answer a question or a phenomenon, it analyzes and investigates the problem in order to report and to explain it. The main purpose of this research is to increase human knowledge. (INNSPUB, 2019)
2- Applied research: is based on an experiment or a study case on a certain issue in order to solve it. It focuses on improving and changing the problem of the study. (INNSPUB, 2019)

### 3.3 Scientific Research Publication Types

There are many types and ways to publish a scientific research, such as books. Each type differs in size, way of writing, used method, place of publishing, requirements, and so on, but all of these types share that they are a source of information and knowledge.

- Books
- Journals
- Academic journals
- Articles (newspaper, journal, online)
- Ph.D. and MA Theses/ Dissertations
- Conference proceedings/ papers
- Pamphlets
- Scientific magazines/ periodicals

### 3.4 How to Measure Research Productivity

Research productivity aims to produce new knowledge that will benefit humanity. There are many methods to measure the productivity of research. The number of publications for each researcher is a way to measure productivity. There are two methods to measure total factor productivity, parametric method, and non-parametric method. The parametric method built on the definition of

the function that represents the relationship between input and output in most effectively. While, the non-parametric method compares measured performances of production units, in order to define an “efficient” production border. (Abramo & D’Angelo, 2014)

### 3.5 Factors that Affect Research Productivity

There are several challenges that face faculty members which leads them to not produce research as expected. These challenges might be internal (individual) or external (institutional) ones.

McGrail, Richard & Jones in their paper *Publish or Perish: Impediments to Research Output and Publication,* have aimed to study and investigate in the factors that influence research productivity and publication in institutions of higher education in South Africa. The authors have found that the lack of interest, lack of funding, weak research skills and lack of time due to high teaching load are some of the obstacles that the institutions of higher education in South Africa face. (McGrail, Rickard, & Jones, 2006)

The internal / individual factors that might affect the facility members are related to their personal and social life. Such as age, marital status, gender, cultural barriers, experience, lack of confidence, academic rank, lack of time, lack of interest in doing research, lack of research skills and scholarly academic skills. The external / institutional factors have to do with reasons in their environment that affect research productivity. F or example, work culture, research support, teaching load, administrative work, lack of resources, institution collaboration on research productivity, lack of funds (Fawzi & Al-Hattami, 2017).

In a specific study on Arab countries, a number of obstacles and challenges that face scientific research were listed. They are; the narrow scope of scientific research, lack of clear strategies in the field of scientific research, the rely on government funding for research, weak research skills

of researchers, lack of motivation to do research, lack of specialized scientific academies in scientific research, Lack of cooperation between research centers and productive sectors, poor academic level of Arab universities compared to international universities and lack of databases for research and development. (Ouda & Aljawareen, 2016)

### 3.6 Universities Strategies

Universities usually establish and publish a guideline or a framework regarding their strategies to any matter they have. The same thing applies for their strategies in the matter of scientific research. They usually have strategies explain their goals, expectations, rules, quality, competencies and rewards for conducting scientific research by their staff and students.

The following point explain in more details some of those strategies.

#### 3.6.1 Rewards Strategies

Organizations use rewards strategies to develop and achieve their needs and requirements by satisfying their employees, these rewards could be financial and non-financial. The financial rewards involve money, such as bonuses, pay raises, pensions, commissions, etc. while the non-financial rewards do not have money involved, they can be tangible or intangible such as recognition, responsibility, flexible work schedules, feedback, etc. Both methods are considered a motivation tool for employees. (Gaffoor & Rakshana, 2014)

##### 3.6.1.1 Financial Rewards

Extrinsic reward is another naming for finical rewards. These rewards include payments, bonuses, health or life insurance, allowances, job security, incentives, promotions, paid vacations, transportations fees, pension, and fringe benefits. (Yousaf, Latif, Aslam, & Saddiqui, 2014)

Financial rewards (usually money or promotions) could be considered one of the most effective ways that organizations use to reward and motivate their staff. These rewards affect the productivity of the employees, when it is applied on faculty staff and their productivity of research it is found that when staff members are rewarded, they become more productive and more motivated to do their best. In different countries around the world, they have a specific financial award system. These universities write their research policies to encourage and motivate their faculty staff to conduct research. (ZHANG, 2014)

#### 3.6.1.2 Non- Financial Rewards

The non-financial rewards or intrinsic rewards are rewards that do not have to deal with money. They become a motivation after the finical rewards exceed a certain level, non-financial rewards include appreciation, recognition, meeting the new challenges, caring attitude from the employer. (Yousaf, Latif, Aslam, & Saddiqui, 2014)

A number of researchers have argued that not all academics do research for financial rewards, they believe that these academics enjoy doing research and provide knowledge to their societies. Also, the feeling of receiving satisfaction, appreciation, and respect form others is a major factor to motivate their productivity of research. (ZHANG, 2014)

### 3.7 Teaching Load

Many researchers have found that there is a relation between productivity and how much a researcher has time to do research. Wodarski (2001) specified that for academics, teaching load is one of the reasons to affect the productivity of research. The more the faculty members have teaching load the less time they have to do research. He also indicated that if faculty members have more responsibilities than teaching such as administrative work, they will also have less time to produce research.

### 3.8 Research Competency

Competence has several and various definitions that differ from one person to another or for the use of it, but it can be defined in general as the ability to perform or deliver a job, work, task in a successful way or efficient. Each organization has different standards for their employees to consider them competence in their work. These standards are mainly related to professional and personal skills, abilities, attributes, knowledge, etc. (Hager & Gonczi, 2009)

Due to having several definitions for competences Prokhorchuk (2014) has tried to define research competence. Research skills, methods of monitoring and evaluation, motivation, informative skills, and planning are some of the competences the researcher should have to be "research competence." Prokhorchuk at the end defined Research competence as "*a complex, stable, multi-formation in the psyche of the individual, which is acquired during a specially crafted learning process, which allows her to know objective reality through scientific instruments, and have more or less reliable information about it".*

IGI Global, which is an international academic publisher defined "Research Competency" the "*Control and use of disciplinary, methodologic, circumstantial knowledge applied on solving social and educational problems that have as a necessary condition the production of knowledge"* (Global, n.d.)

#### 3.8.1 Research Competencies Framework

Faculty of General Dental Practice in the UK has published a Research Competencies Framework for its employees. The purpose of this document was to describe and list the competencies that are required in the aspects of research. They have grouped the competencies into five categories; practical skills, problem-solving (thinking and communication skills), personal attitudes and professional skills, dissemination, and roles and functions.

#### 3.8.1.1 Practical Skills

Under the “practical skills” field they have listed another five fields. The first one is “find and use resources”. The researchers should be able to set a plan for the research, to determine the investigation methods, able to identify terms, synonyms, keywords for the used information. Also, they should be able to select and identify related to subject sources of information.

The second field is “use library and information technology effectively”. The base of research is the used literature review, that’s why it is a requirement that the researcher should be able to know how to access, understand, and choose the valid databases.

The third field is to “recognize and know when to use primary and secondary resources”. Due to having both primary and secondary resources to acquire data, the researchers should be able to differentiate and classify between the two sources.

The fourth field is to “Observe and record behavior”. The researchers should know the different types that are used to collect data related to behavior. They also need to be aware and understand the descriptive, inferential, and evaluative observations. As well as having the skills and techniques to observe and report behaviors.

The fifth field is to “demonstrate basic computer competency”. In order to have an efficient research the researcher should be able to use a computer through use the different programs on it (word, excel, etc.) and access to the web.

#### 3.8.1.2 Problem-Solving, Thinking, and Communication Skills

This section deals with five fields/competencies related to the ability to communicate, critique and identifying the gaps in the existing information. The first competency is “Understand the difference between subjective and objective information”. The researcher should be able to

distinguish between the two types and know that objective information is to have balanced, complete and not biased data. Where the subjective information is to have a biased or a partial point of view or opinion.

The second competency is to " Recognise when the information provided is sufficient". In order to understand if the information/ data is sufficient, the researchers should be able to understand the result and their interpretation. Also, they need to be able to read the basic statistical results and analysis.

The third competency is to "Evaluate when the basis for conclusions is laid out completely and clearly". Here the researchers should be able to understand the problem in order to classify if the drawn conclusion is correct, valid, or rationale.

The fourth competency is to "Generate questions by recognizing gaps in knowledge". After doing the previous steps, the researcher should be able to locate the gaps in the existed knowledge.

The fifth competency is to "Use oral and written communication to express ideas effectively". The researchers should be able to; produce, listen, write, edit effectively. they should know how to do a presentation to an audience while expressing their research ideas, results and components clearly.

**3. 8.1.3 Personal Attitudes and Professional Ethics**

The researchers should be able to make professional judgments when conducting a research that its results have an effect on a certain subject. Also, the researcher should be aware of and familiar with the ethics and standards of research. They should know that there is a responsibility towards the society and themselves. As well as following the ethics of privacy, plagiarism, intellectual property, copyright, confidentiality, etc.

#### 3.8.1.4 Dissemination of Research Findings

Researchers should have the basic skills for publication research. They should be able to define the components of scientific publication. They should have the ability to organize and structure the elements of research to become a clear and understandable document. They also should know the different formats that are published in journals.

#### 3.8.1.5 Roles and Functions

The researchers should be aware of their roles in development and contribute to a significant issue by searching for a gap in knowledge that need to be researched. They also must know how to write and submit proposals to major journals.

### 3.9 Research Quality

There are many theories and methods to identify the research quality. Scholars and researchers have agreed on main points that measures research quality. Some will evaluate the quality of a research based on the journal, website, magazine, etc. they were published in. Others will evaluate it based on the content of the research, or will use both measurements to decide the research quality.

(Ozgur & Brown, 2018) in their article Assessment of Research Quality have discussed several methods to evaluate a research quality. One of the ways to evaluate an article is by the journal, is it famous, certified, etc. Also, they evaluate them by number of mentions of the article. Others decide base on the number of the author output of books, articles, researches, etc.

In this study, the author will focus on evaluating the research by the journal quality as a standard to the research quality.

Journal Publishing Practices and Standards (JPPS) had published a guide framework for journals standards (INASP & AJOL, 2017). Their framework has collected international standards that are used to assess a journal. The Standards can be concluded to the following:

1. The journal publishes original research
2. The journal has a clear aim and scope.
3. The journal mastheads.
4. The journal has a clear and understandable instructions for authors who wants to publish a research.
5. The journal provides clear display of information in their front page.
6. The published researches are related to the scope of the journal.

   A journal is considered a good one when they clearly state what particular topics there are interested to publish. (Eder & Frings, 2018)
7. The published researches have a cited and complete references bibliographic.
8. The journal publishes issues on a regular basis (date and time).
9. The journal has a peer-review policy.

   One of the basic requirements of a good journal is that they have a peer-review policy. The journal editors ask a number of experts related to the field of the study to evaluate the research. This process has the major impact on the quality of journal. (Eder & Frings, 2018)
10. The journal has their own website or available on recognized research websites.
11. The journal provides its front page in multiple languages.

### 3.10 Overview on the Palestinian Higher Education & Universities

The Ministry of Education and Higher Education (MOEHE) has a higher education council since the late 70s. This council is responsible for supervision and coordination between universities. In

1996 a separate "Ministry of Higher Education and Scientific Research (MOHE)" was established. According to MOHE website, they believe that having scientific research will help in the development of the Palestinian economy using the knowledge and innovation from SR. Also, they believe that facility members who do SR will contribute to improving the quality and quantity of higher education. MOHE has allocated 20 million shekels from the budget of the MOEHE to support the scientific research council.[3]

The number of higher educational institutions in Palestine is 49, distributed as; one open education institution, 19 University Colleges, 18 Community Colleges, and 14 traditional universities. There are three types of universities in Palestine: governmental (3), public (8), and private (3). [4]

The number of employees in universities (2016/2017) was 15,571 distributed as: 7,050 educational academic, 653 administrative academics, 20 academic research, 1,010 administrative employees, 2,409 offices employees, 1,109 research and teaching assistants, 793 professional professionals, 638 technicians and craftsmen, 1,889 workers.[5]

Based on the provided information above, it is notable that the SR in Palestine is still under construction. The amount of money provided by MOHE is considered very low in comparison to the budget that other countries allocate. In addition to that, the number of academic researchers is 20 out of 15,571.

[3] http://www.moehe.gov.ps/Councils-and-Commissions/Scientific-Research-Council
[4] https://www.mohe.pna.ps/moehe/factsandfigures
[5] Same reference as #4

# Chapter 4: Methodology

## 4.1 Methodology

This study aimed to propose a model for the relationship between research competency, research quality, research productivity and research strategies in Palestinians universities. Therefore, the researcher will use a descriptive and analytical approach. These two approaches will help to provide the required data to achieve the research objective. These approaches were carried out through the following stages:

First, the researcher collected and outlined previous studies to build the literature review. Second, the researcher concluded from the literature review the main variables that are necessary to build the model. Third, the selection of the sample community (as explained below). Finally, the researcher conducted a questionnaire that will be distributed to the research sample. Then, the researcher will analyze the collected data by using the SPSS and AMOS programs.

## 4.2 Study Limits and Scope

**Subject (Academic) & Human limitations:** The research will be limited in its subject by studying the strategies of scientific research, competency, productivity and quality in the Palestinian universities among faculty members only.

**Place & Institutional Limitations**: The study will be conducted through (3) Palestinian universities in the West bank.

**Time limitation:** Research and preliminary data collection will be conducted during 2019 -2020.

## 4.3 Research Population and Sample

The research population will be the faculty members who works in the Palestinian universities in West Bank.

The sample of this research will be selected using convenience sample, then the questionnaire will be randomly selected from the following universities academic staff:

- Arab American University.
- Al-Quds Open University.
- An-Najah National University.

The Reasons to select this sample were due to the high number of universities in Palestine and for the difficulty of reaching them all for the researcher. Choosing only west bank universities because of the difficulty of reaching Gaza's university.

**4.4 Questionnaire**

Based on the information that was conducted from the literature review and in order to achieve the research objectives, the researcher had designed a questionnaire that have 4 major section with (54) questions. The sections of the questionnaire were; The first section: Demographic Information, the second section: University Strategies for Scientific Research, the third section: Competencies, and the fourth and final section: Quality of Scientific Research. (appendix 1)

The questionnaire was distributed on the sample using google- forms tool due to Covid-19 virus that led to the closure of universities. After collecting the data, it was transformed to SPSS program to analyze it.

The response to the paragraphs of the questionnaire was according to Likert's five-points scale.

| Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**The Validity of the Questionnaire**

The questionnaire was given as a draft to number of faculty members experts in the study subject in Arab American University and Birzeit University to check its content validity. The experts were asked to give their opinion on what should be added, deleted or adjusted. They have suggested a number of adjustments that led to the final form of the questionnaire. (appendix 1)

To verify the questionnaire validity, the researcher used Pearson Product Moment Correlation test.

*Table 1: Person Correlation Test for Scientific Strategies*

| No. | The Fields | Coefficient of correlation | Level of significance |
|---|---|---|---|
| **1.** | The university I work for provides a research assistant | .611** | .000 |
| **2.** | The university has a clear policy for scientific research | .778** | .000 |
| **3.** | The university has a clear plan for scientific research | .770** | .000 |
| **4.** | The university offers financial rewards for publishing scientific research | .502** | .000 |
| **5.** | The university reduces the teaching load when doing scientific research | .516** | .000 |
| **6.** | The university requires faculty members to conduct a number of researches during a specified period | .555** | .000 |
| **7.** | The university provides global and local resources and references (databases) to conduct scientific research | .679** | .000 |
| **8.** | The university assists in the process of publishing scientific research | .722** | .000 |
| **9.** | The university financially supports the conduct of scientific research | .591** | .000 |
| **10.** | The university supports and promotes the culture of scientific research among faculty members | .807** | .000 |
| **11.** | The university supports participation in local and international seminars and conferences | .770** | .000 |
| **12.** | The university determines the forms and priorities of scientific research | .797** | .000 |
| **13.** | The university provides facilities that support scientific research (libraries, laboratories, centers, etc.) | .728** | .000 |
| **14.** | The university provides training on how to conduct scientific research | .777** | .000 |
| **15.** | The university provides international cooperation with universities specialized in scientific research | .770** | .000 |

The values in table (1) shows the correlation and significance of each item in the scientific research strategies with the total score of scientific strategies dimensions. The item is said to be valid if the significance less than .05. therefore, we can conclude that all items measuring the scientific strategies are valid.

*Table 2: Person Correlation Test for Research Competencies*

| No. | The Fields | Coefficient of correlation | Level of significance |
|---|---|---|---|
| **1.** | I can search for scientific resources for scientific research and use them | .505** | .000 |
| **2.** | I have the ability to use libraries effectively. | .574** | .000 |
| **3.** | I can determine when to use primary and secondary sources. | .627** | .000 |
| **4.** | I have basic computer skills. | .673** | .000 |
| **5.** | I have the ability to formulate scientific hypotheses. | .750** | .000 |
| **6.** | I have the necessary knowledge of how to use statistical tests to analyze data and examine hypotheses. | .770** | .000 |
| **7.** | I have the ability to use the necessary statistical tests to analyze data and examine hypotheses. | .778** | .000 |
| **8.** | I have the ability to use various data collection tools | .830** | .000 |
| **9.** | I have the ability to use quantitative research methods to process data | .851** | .000 |
| **10.** | I have the ability to interpret the results of quantitative research | .836** | .000 |
| **11.** | I have the ability to use qualitative research methods to process data | .743** | .000 |
| **12.** | I have the ability to interpret qualitative research results | .720** | .000 |
| **13.** | I understand the limitations of methods for analyzing results. | .795** | .000 |

The values in table (2) shows the correlation and significance of each item in the research competencies with the total score of research competencies dimensions. The item is said to be valid if the significance is less than .05. therefore, we can conclude that all items measuring the scientific strategies are valid.

*Table 3: Person Correlation Test for Quality of Research.*

| No. | The Fields | Coefficient of correlation | Level of significance |
|---|---|---|---|
| **1.** | The journals which I publish my research in are distinguished by the fact that their content is completely available online | .751** | .000 |
| **2.** | The journals which I publish my research in have the distinction of being issued on time without delay | .862** | .000 |
| **3.** | The journals which I publish my research in have the distinction of being issued without interruption | .898** | .000 |
| **4.** | The journals which I publish my research in have the distinction of providing a home page in English | .829** | .000 |
| **5.** | The journals which I publish my research in have the distinction of evaluating research before publication through (peer review) | .881** | .000 |
| **6.** | The journals which I publish my research in have the distinction of requiring that the research have a contribution to the field of study in order for the research to be published | .782** | .000 |
| **7.** | The journals that I publish my research in have clear goals | .859** | .000 |
| **8.** | The journals which I publish my research in have the distinction of being specialized in a specific scientific field | .829** | .000 |
| **9.** | The journals that I publish my research in have an impact factor | .849** | .000 |
| **10.** | The journals which I publish my research in have the distinction of being listed in well-known databases such as (Scopus). | .763** | .000 |

The values in table (3) shows the correlation and significance of each item in the research quality with the total score of research quality dimensions. The item is said to be valid if the significance is less than .05. therefore, we can conclude that all items measuring the scientific strategies are valid.

**Reliability of the Questionnaire**

Cronbach Alpha Coefficient test was used to check the reliability of the questionnaire fields; the results are shown in the below table:

| No. | The Fields | No. of Questions | Coefficient |
|---|---|---|---|
| 1. | University strategies in scientific research | 15 | .919 |
| 2. | Competencies | 13 | .924 |
| 3. | The quality of scientific research | 10 | .950 |

**The used methods to interpret the results were:**

The researcher has used the following methods to analyze the collected data on SPSS program.

- Descriptive analysis.
- Cronbach's Alpha (α) and Split-Half method.
- One Way ANOVA & T-test
- Simple Linear Regression.
- Pearson Product Moment Correlation test
- SPSS Process plugin V3.3 model 8 analysis

### 4.5 Research Variables

The research independent variable: Scientific competencies

The dependent variable: Research Quality

Mediator Variable: Scientific productivity

Moderator Variable: Scientific Strategies

### 4.5 Research Model

After studying and analyzing the previous studies and by relating the concepts of them to this study, the researcher had built the following models that from her point of view will reflect the relationship between the variables.

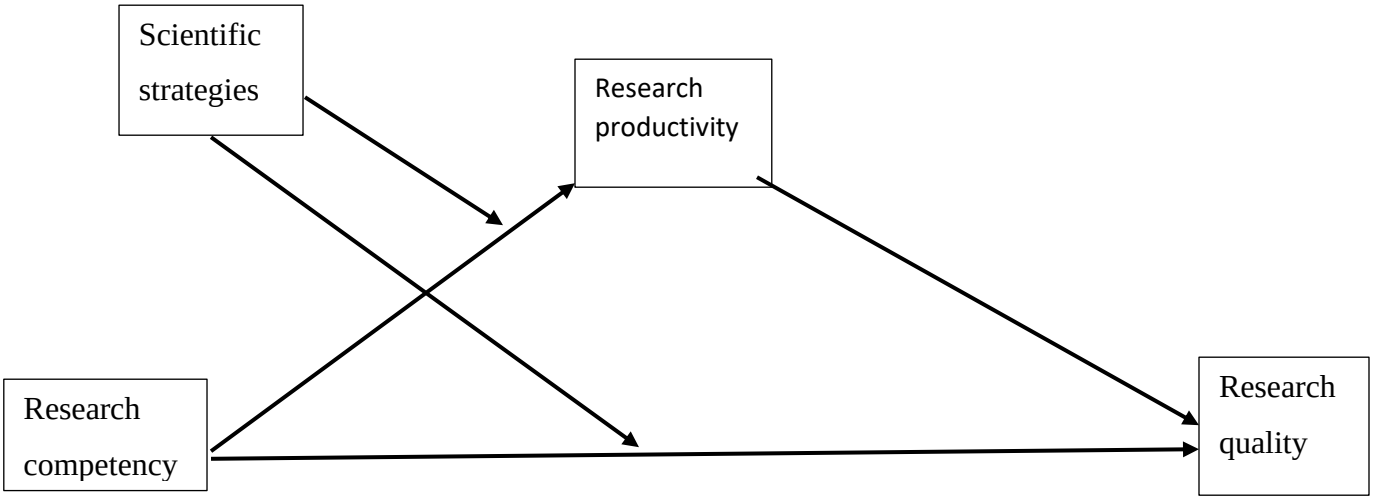


*Figure 1: Theses Conceptual Model*

*Source: Author Work*

Figure (1) shows the assumed model for the study. In words, we have assumed the following:

- Research competency will affect research quality (direct path).
- Research competency will affect research quality (indirect path)
- Research productivity mediate the relation between research competency and research quality.
- Scientific strategies moderate the relation between research competency and research quality.
- Scientific strategies moderate the relation between research competency and research productivity.

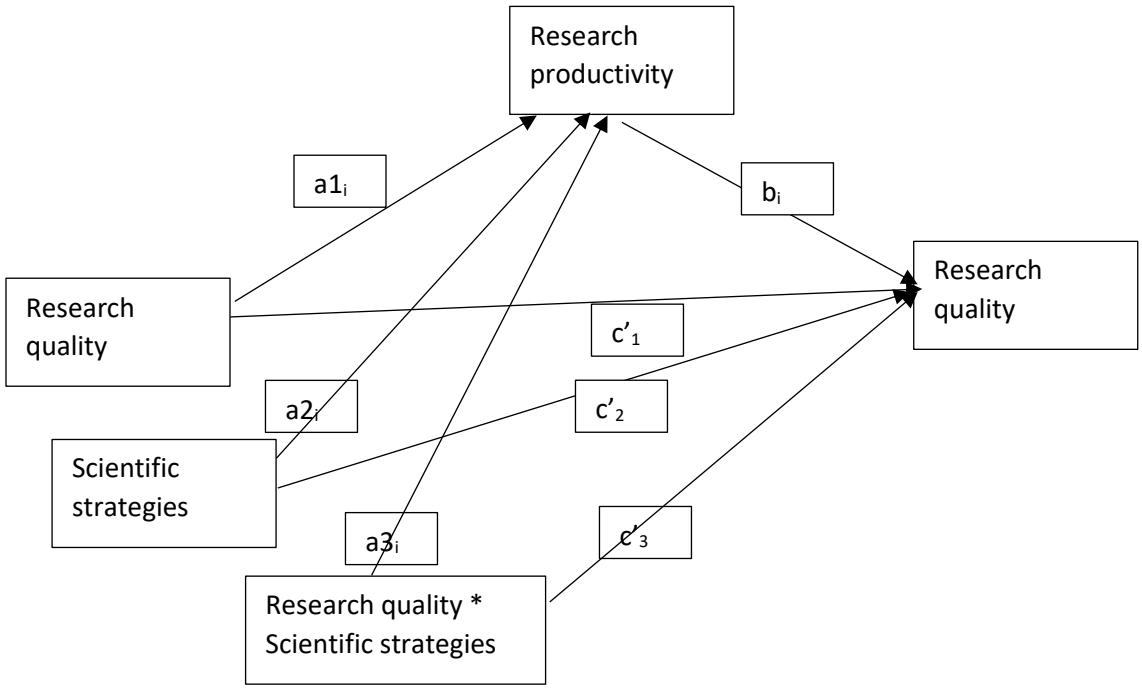


*Figure 2: Research Statistical Model*

*Source: Author Work*

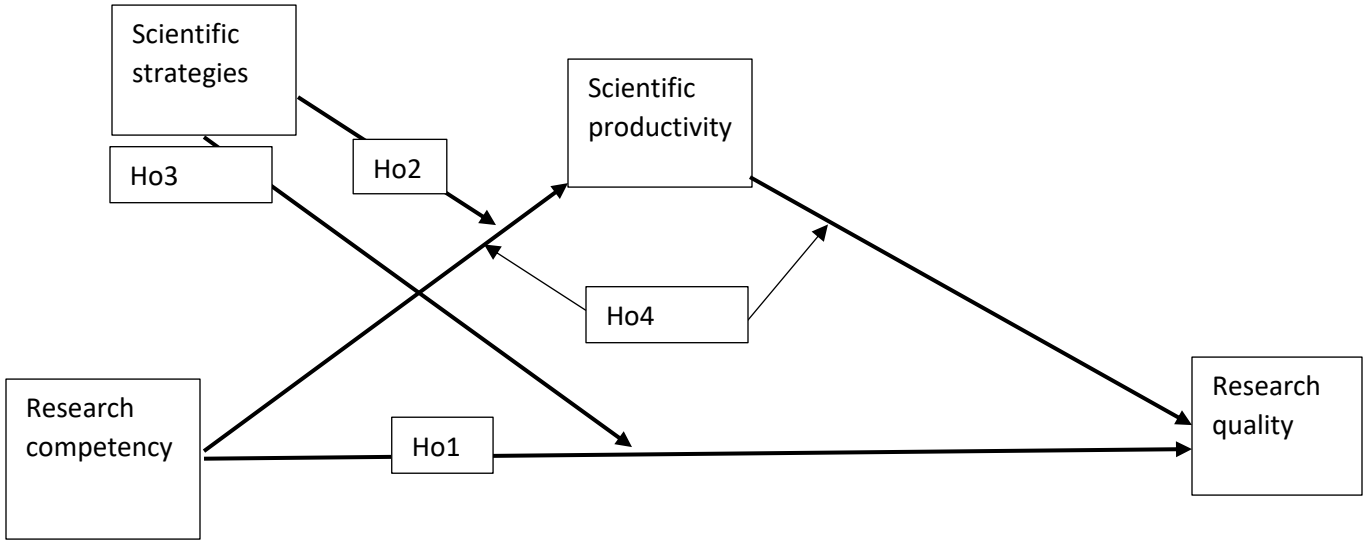


*Figure 3: Research Hypotheses Model*

*Source: author work*

# Chapter 5: Research Findings and Analysis

## 5.1 Introduction

In this chapter we will present the results of the collected data for the questionnaire. The questionnaire was distributed to faculty members. The number of responses were 174.

## 5.2 Section 1: Characteristics and General Information of Study Sample Responders

The first part of the questionnaire asked about the demographic information for the responders, the results came as the following:

*Table 4 Frequency Distribution of Respondents' "Gender"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | male | 136 | 78.2 | 78.2 | 78.2 |
| | female | 38 | 21.8 | 21.8 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (4) above shows that 78.2% of the sample are males while 21.8% of the sample are females. This may refer to the fact that teaching in universities require post graduate studies which was not available in the Palestinian universities until recently. Taking into consideration that Palestinians had difficulties to travel outside Palestine which make it additional obstacles along with the cultural obstacle in the face of the female to go for post graduate studies. Therefore, we find such discrepancy between male and female academic staff in the Palestinian universities.

*Table 5 Frequency Distribution of Respondents' "Age"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 25-29 | 12 | 6.9 | 6.9 | 6.9 |
| | 30-39 | 29 | 16.7 | 16.7 | 23.6 |
| | 40-49 | 55 | 31.6 | 31.6 | 55.2 |
| | 50 or above | 78 | 44.8 | 44.8 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (5) shows that 44.8% of the sample are aged 50 or more which represent the highest group. While the responders aged between 25-29 had the lowest percentage of 6.9% as the minority in this study. We could interpret these results by the fact that a person will be above 25 when s/he acquires their post graduate degree, adding the years of experience that universities require when hiring that will make the results reasonable to be categorized in the group age of 50 years or more.

*Table 6 Frequency Distribution of Respondents' "Martial Status"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Single | 14 | 8.0 | 8.0 | 8.0 |
| | Married | 160 | 92.0 | 92.0 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (6) shows that the majority of the sample are Married with a 92.0% in compare to 8.0% percent of single responders.

*Table 7 Frequency Distribution of Respondents' "Qualifications"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | MA | 49 | 28.2 | 28.2 | 28.2 |
| | PhD | 125 | 71.8 | 71.8 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (7) demonstrate that 71.8% of the responders have PhD degree, and 28.2% have a master degree. These numbers can be explained by the fact that universities requirements on hiring their academic staff that their minimum qualification must be Master degree, but they prefer PhD holders.

*Table 8 Frequency Distribution of Respondents' "Academic Rank"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Teacher | 12 | 6.9 | 6.9 | 6.9 |
| | Lecturer | 42 | 24.1 | 24.1 | 31.0 |
| | Assistant Professor | 24 | 13.8 | 13.8 | 44.8 |
| | Associate Professor | 80 | 46.0 | 46.0 | 90.8 |
| | Professor | 16 | 9.2 | 9.2 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

As it is displayed in table (8) 46% of the sample occupied the position of "Associate Professor" which represent the majority, while responders in the position of "Teacher" are the minority with 6.9% of the sample.

*Table 9 Frequency Distribution of Respondents' "Collage Type"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Human sciences | 133 | 76.4 | 76.4 | 76.4 |
| | Natural Science | 41 | 23.6 | 23.6 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (9) shows that 76.4% responders are teaching in human science faculties, while 23.6% are in natural science.

*Table 10 Frequency Distribution of Respondents' "Contract Type"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Temporary contract | 55 | 31.6 | 31.6 | 31.6 |
| | Permanent contract | 119 | 68.4 | 68.4 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (10) represent the nature of the contract for the responders, 68.4% have a permanent contract.

*Table 11 Frequency Distribution of Respondents' "Years' of Experience"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less than 5 years | 34 | 19.5 | 19.5 | 19.5 |
| | 5-10 years | 27 | 15.5 | 15.5 | 35.1 |
| | More than 10 | 113 | 64.9 | 64.9 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (11) displays the years of experience for the responders. The majority of the sample have more than 10 years' experience in education with a percentage of 64.9%.

*Table 12 Frequency Distribution of Respondents' "Years of Experience in Current Academic Rank"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less than 5 years | 72 | 41.4 | 41.4 | 41.4 |
| | 5-10 years | 57 | 32.8 | 32.8 | 74.1 |
| | More than 10 | 45 | 25.9 | 25.9 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (12) shows that 41.4% have less than 5 years' experience in their current academic ranks, and 25.9% are in their rank for 10 years or more.

*Table 13 Frequency Distribution of Respondents' "Job Nature"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Academic | 149 | 85.6 | 85.6 | 85.6 |
| | Administrative academic | 25 | 14.4 | 14.4 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

In table (13) the majority of the sample are academics with 85.6%, while only 14.4% have administrative tasks along to their academic ones.

*Table 14 Frequency Distribution of Respondents' "Number of Research Published in Scientific Journals"*

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less than 5 Papers | 91 | 52.3 | 52.3 | 52.3 |
| | 5-10 Papers | 36 | 20.7 | 20.7 | 73.0 |
| | More than 10 Papers | 47 | 27.0 | 27.0 | 100.0 |
| | Total | 174 | 100.0 | 100.0 | |

Table (14) reflects the number of researches the sample have published until the time of the questionnaire. More than the half 52.3% have published less than 5 papers. 20.7% have published between 5 to 10, and 27.0% have published more than 10 papers.

*Table 15 Frequency Distribution of Respondents' "Number of Publications"*

| No. | | Mean | Std. Deviation |
|---|---|---|---|
| 12. | The number of scientific books published (alone or joint with other authors) | .82 | 1.776 |
| 13. | The number of translated scientific books (alone or joint with other authors) | .13 | .451 |
| 14. | The number of times one of your researches, book, etc. has been referenced or citation | 66.93 | 329.196 |
| 15. | The number of obtained rewards | .64 | 1.423 |

Table (15) shows several questions related to publication of SR. The results for question number 13 “The number of scientific books published (alone or joint with other authors)” the responders’ answers were around 0 -1 publications with a mean of 0.82 and a Std. deviation of 1.776.

As for question number 14 “The number of translated scientific books (alone or joint with other authors)” the answers were between 0 and 1 with a mean of 0.13 and a Std. deviation of 0.451.

Question number 15 was “The number of times one of your researches, book, etc. has been referenced or citation” the mean was 66.93 with Std. deviation of 329.196.

Question number 16 “The number of obtained rewards” results for the majority of the responders was between 0-1 with a 0.64 mean and a 1.423 for the Std. deviation.

## 5.3 Section 2: The Universities Strategies

The second section in the questionnaire were about University strategies for scientific research, the results are shown in table (16) below;

*Table 16: Means and Standard Deviations Related to the Field of "University Strategies"*

| No. | Question | Mean | Std. Deviation |
|---|---|---|---|
| 17. | The university I work for provides a research assistant | 2.51 | 1.355 |
| 18. | The university has a clear policy for scientific research | 3.59 | 1.217 |
| 19. | The university has a clear plan for scientific research | 3.48 | 1.167 |
| 20. | The university offers financial rewards for publishing scientific research | 2.77 | 1.374 |
| 21. | The university reduces the teaching load when doing scientific research | 2.18 | 1.177 |
| 22. | The university requires faculty members to conduct a number of researches during a specified period | 3.26 | 1.294 |
| 23. | The university provides global and local resources and references (databases) to conduct scientific research | 3.68 | 1.147 |

| | | | |
|---|---|---|---|
| 24. | The university assists in the process of publishing scientific research | 3.28 | 1.243 |
| 25. | The university financially supports the conduct of scientific research | 2.69 | 1.275 |
| 26. | The university supports and promotes the culture of scientific research among faculty members | 3.51 | 1.177 |
| 27. | The university supports participation in local and international seminars and conferences | 3.59 | 1.143 |
| 28. | The university determines the forms and priorities of scientific research | 3.24 | 1.100 |
| 29. | The university provides facilities that support scientific research (libraries, laboratories, centers, etc.) | 3.52 | 1.041 |
| 30. | The university provides training on how to conduct scientific research | 3.03 | 1.160 |
| 31. | The university provides international cooperation with universities specialized in scientific research | 3.39 | 1.126 |
| | Total Sum of Squares | 3.1805 | .82327 |

The second dimension of the questionnaire was about universities strategies for scientific research. table (16) shows that the mean for this section was 3.1805 with a standard deviation of .82327, that means that the answers were around 3 which represent in Likert scale neutral. In other words, the sample of the study finds that the universities that they work on have neutral strategies regarding SR.

Question number 7 “The university provides global and local resources and references (databases) to conduct scientific research” had the highest mean 3.68 with 1.147 as Std. deviation. This means that the majority of the sample tends to agree that the universities provide databases that helps in conducting scientific research.

Question number 5 “The university reduces the teaching load when doing scientific research” had the lowest mean of 2.18 and Std. deviation of 1.177. this means that the responders answers for

this question that they do not agree that the universities they work in reduce their teaching load when they have a SR.

### 5.4 Section 3: Competencies of the Responders

The third dimension of the questionnaire was about the competencies of academics, table (17) below review the results of this dimension;

*Table 17: Means and Standard Deviations for Responses Related to the Field of "Competencies"*

| No. | Question | Mean | Std. Deviation |
|---|---|---|---|
| 32. | I can search for scientific resources for scientific research and use them | 4.08 | .902 |
| 33. | I have the ability to use libraries effectively. | 4.26 | .765 |
| 34. | I can determine when to use primary and secondary sources. | 4.11 | .886 |
| 35. | I have basic computer skills. | 4.39 | .678 |
| 36. | I have the ability to formulate scientific hypotheses. | 4.39 | .694 |
| 37. | I have the necessary knowledge of how to use statistical tests to analyze data and examine hypotheses. | 3.67 | 1.119 |
| 38. | I have the ability to use the necessary statistical tests to analyze data and examine hypotheses. | 3.59 | 1.128 |
| 39. | I have the ability to use various data collection tools | 4.10 | .867 |
| 40. | I have the ability to use quantitative research methods to process data | 3.94 | .972 |
| 41. | I have the ability to interpret the results of quantitative research | 4.13 | .873 |
| 42. | I have the ability to use qualitative research methods to process data | 3.88 | .945 |
| 43. | I have the ability to interpret qualitative research results | 4.03 | .870 |
| 44. | I understand the limitations of methods for analyzing results. | 4.06 | .795 |
| | Total Sum of Squares | 4.0491 | .64645 |

As shown above the total mean of this section is 4.0491 with a std. deviation .64645. this means that the responders find themselves have competency in regards of conducting scientific research.

Question number 35 “I have basic computer skills” had the highest mean which was 4.39 with .678 for the std. deviation. This result can be interpreted that the majority of the sample agreed that they have the basic skills for using a computer. Also question number 36 “I have the ability to formulate scientific hypotheses” had acquired the same mean of 4.39 and .694 for std. deviation. This means that the responders also find in themselves the ability of formulate scientific hypotheses.

Question 38 “I have the ability to use the necessary statistical tests to analyze data and examine hypotheses.” Had the lowest mean of 3.59 with std. deviation of 1.128, which means that the least competency the sample had was the ability of using statistical tools to analyze the data in their scientific researches.

### 5.5. Section 4: Research Quality

The fourth and final dimension was about the research quality in reference to the journals quality; table (18) shows the results of the analysis:

*Table 18: Means and Standard Deviations Related to the Field of "Research Quality"*

| No. | Question | Mean | Std. Deviation |
|---|---|---|---|
| 45. | The journals which I publish my research in are distinguished by the fact that their content is completely available online | 3.85 | .953 |
| 46. | The journals which I publish my research in have the distinction of being issued on time without delay | 3.88 | .975 |
| 47. | The journals which I publish my research in have the distinction of being issued without interruption | 3.98 | .918 |
| 48. | The journals which I publish my research in have the distinction of providing a home page in English | 3.79 | .919 |

| | | | |
|---|---|---|---|
| 49. | The journals which I publish my research in have the distinction of evaluating research before publication through (peer review) | 4.03 | .939 |
| 50. | The journals which I publish my research in have the distinction of requiring that the research have a contribution to the field of study in order for the research to be published | 3.82 | .887 |
| 51. | The journals that I publish my research in have clear goals | 4.07 | .897 |
| 52. | The journals which I publish my research in have the distinction of being specialized in a specific scientific field | 4.01 | .934 |
| 53. | The journals that I publish my research in have an impact factor | 3.93 | .953 |
| 54. | The journals which I publish my research in have the distinction of being listed in well-known databases such as (Scopus). | 3.80 | .997 |
| | Total Sum of Squares | 3.9167 | .77736 |

The final dimension of the questionnaire was about research quality. Table (18) shows that the total mean for this section is 3.9167 with .77736 as std. deviation. This means that the responders stated that they are mostly neutral to agree that they have good research quality.

Question 51 “The journals that I publish my research in have clear goals” had the highest mean of 4.07 and std. deviation of .897, which means that the majority had answered that they publish their research in journals that have clear goals.

Question 48” The journals which I publish my research in have the distinction of providing a home page in English” had the lowest mean in this field 3.79 and std. deviation of .919, this means that the sample feels that if the journal has their home page in English or not do not have an effect on their decision to publish a research in it.

**Hypotheses Analysis Results:**

**Hypothesis 1**: There is no statistically significant impact at level ($p \leq 0.05$) of scientific research competencies (SC) on quality of research productivity (RQ) for the faculty members in the Palestinian universities.

To test hypothesis $H_o1$, the researcher used simple regression. Table 1 and table 2 show the results of the regression analysis.

*Table 19: Linear Regression Results between Scientific Research Competencies (SC) and Research Quality (RQ)*

**Hypotheses**

| | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| **Hypotheses** | .652[a] | .425 | .422 | .59097 |

**Hypotheses**

*Table 20: ANOVA of Scientific Research Competencies (SC) and Research Quality*

| **ANOVA** | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | | Sum of Squares | df | Mean Square | F | Sig. |
| **1** | Regression | 44.473 | 1 | 44.473 | 127.339 | .000[b] |
| | Residual | 60.070 | 172 | .349 | | |
| | Total | 104.543 | 173 | | | |

Table (19) shows that scientific competency has relatively high positive relationship with research quality (RQ) (R=.652, p<.001). moreover, scientific competency has a positive significant effect on research quality ($R^2$=.425, p<.001) which means that 42.5% of the variance in research quality (RQ) explained by scientific competency. Therefore, we reject Ho1 and accept the alternative hypothesis which indicate that there is a significant impact of RC on RQ.

To test hypotheses 2,3, & 4, in figure 3, the researcher used Statistical package for social sciences (SPSS V23.0) with special plugins PROCESS version 3.5 Written by Andrew F. Hayes. The conceptual model of this theses is consistent with model 8 in the PROCESS version 3.5. according to model 8 in the PROCESS the following parameters is used accordingly to complete the analysis

| Symbol | Description | Study variable | Abbreviation |
|---|---|---|---|
| X | independent variable (IV) | Scientific competencies | SC |
| Y | Dependent Variable (DV) | Research Quality | RQ |
| M | Mediator Variable | Scientific productivity | SP |
| W | Moderator Variable | Scientific Strategies | SS |

Hypothesis Ho2: Scientific research productivity (SP) mediate the relationship between scientific research competencies (SC) and scientific research quality (RQ).

**Hypothesis 2:** Universities' scientific research strategies (SS) moderate the relationship between SC and SP.

*Table 21: Model Summary for Scientific Productivity (SP).*

| R | R-sq | MSE | F(HC4) | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .399 | .159 | .627 | 10.700 | 3.000 | 170.000 | .000 |

Table (21) shows that overall model is significant, where F (3,170) =10.7, p<001, and $R^2$ =.159. which means that 15.9% of the variance in scientific productivity is explained by Scientific competency, scientific strategies and their interaction (scientific competency * scientific strategies).

*Table 22: Model Output for Scientific Productivity*

| | coeff | se(HC4) | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| constant | 1.747 | .063 | 27.865 | .000 | 1.623 | 1.871 |
| SC | .482 | .108 | 4.476 | .000 | .269 | .694 |
| SS | -.147 | .100 | -1.467 | .144 | -.345 | .051 |
| Int_1* | -.035 | .238 | -.146 | .884 | -.504 | .434 |

*Product terms key: Int_1: SC x SS

Table (22) shows the different values of 'b' regarding different predictors when predicting scientific productivity. Regarding scientific competency, b=.482, t (170) = 4.476, p<.001, which indicate a significant relationship. This means that for every 1-unit increase in scientific competency there is 0.482-unit increase in scientific productivity. Regarding scientific strategy, b= -.147, t (170) = -1.467, p= .144, which indicate an insignificant relationship. This means scientific strategy dos not predict scientific productivity. Regarding the interaction (scientific competency * scientific strategy) b= -.034, t (170) = -0.146, p= .884, which indicate an insignificant relationship, this means that the relationship between scientific competency and scientific productivity does not vary with different levels of scientific strategy. Therefore, we accept Ho2, which indicates that universities scientific strategies (SS) do not moderate the impact of research competencies (SC) on scientific productivity (SP).

The regression equation where Y (SC)=a (constant) + b * X (SP). Becomes

SC= 1.747 + .482* SP.

**Hypothesis 3:** Universities' scientific research strategies moderate the relationship between SC and RQ.

*Table 23: Model Summary for Research Quality (RQ)*

| R | R-sq | MSE | F(HC4) | df1 | df2 | p |
|---|---|---|---|---|---|---|
| .696 | .484 | .319 | 22.131 | 4.000 | 169.000 | .000 |

Table (23) shows that overall model is significant, where F (4,169) =22.131, p<001, and $R^2$ =.484. which means that 48.4% of the variance in research quality is explained by Scientific competency, scientific strategies, research productivity, interaction between scientific strategies and scientific competency (scientific competency * scientific strategies).

*Table 24: Model for Moderated Mediation*

| | Coeff | Se (HC4) | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| Constant | 3.600 | .113 | 31.953 | .000 | 3.378 | 3.823 |
| SC | .637 | .101 | 6.281 | .000 | .437 | .837 |
| SP | .181 | .056 | 3.268 | .001 | .072 | .291 |
| SS | .068 | .068 | 1.009 | .314 | -.065 | .202 |
| Int_1* | -.173 | .162 | -1.063 | .289 | -.493 | .148 |

*Interaction: Comp x SS

Table (24) shows the different values of 'b' regarding different predictors when predicting research quality. Regarding scientific competency, b=.637, t (169) = 6.281, p<.001, which indicate a significant relationship. This means that for every 1-unit increase in scientific competency there is 0.637-unit increase in research quality. Regarding scientific productivity, b=.181, t(169) =3.268, p=.001 which indicate a significant relationship, this means for every 1 unit increase in scientific productivity there is .181 unit increase in research quality. Regarding scientific strategy, b= .068, t (169) = -1.063, p= .289, which indicate an insignificant relationship. This means scientific strategy dos not predict scientific productivity. Regarding the interaction (scientific competency *

scientific strategy) b= -.173, t (169) = -1.063, p= .289, which indicate an insignificant relationship, this means that the relationship between scientific competency and research quality does not vary with different levels of scientific strategy. Therefore, we accept Ho3, which indicates that universities scientific strategies (SS) do not moderate the impact of research competencies (SC) on research quality (RQ).

**Hypothesis 4**: Scientific research productivity (SP) mediate the relationship between scientific research competencies (SC) and scientific research quality (RQ).

Table 22 & 23 show the direct (c') and indirect bath (a*b) of scientific competency on research quality. Where 'a' denote the coefficient of scientific competency on scientific productivity which is significant and equal to 0.482 and 'b' denote the coefficient of scientific productivity on research quality which is significant and equal to .181. therefore, the indirect effect of scientific competency on research quality(a*b) =.087. the direct effect (c') = .637. Therefore, total effect of scientific competency on research quality (direct effect + indirect effect) = .637+.087=.724. Therefore, we reject Ho4 and accept the alternative hypothesis which indicate that scientific productivity mediates the relationship between scientific competency and research quality. Moreover, the indirect effect contributes to 12 % of total effect.

*Table 25: Index of Moderated Mediation*

| | Index | BootSE | BootLLCI | BootULCI |
|---|---|---|---|---|
| SS | -.006 | .020 | -.061 | .020 |

Table (25) shows the index of moderated mediation of the model. because 0 belongs to the Bootstrap Lower-Level Confidence Interval (BootLLCI=-.061) and Bootstrap Upper-Level Confidence Interval (BootULCI=.02) we conclude that the moderated mediation is insignificant. Below is a diagram that illustrate the main results of hypotheses 1 to 4.

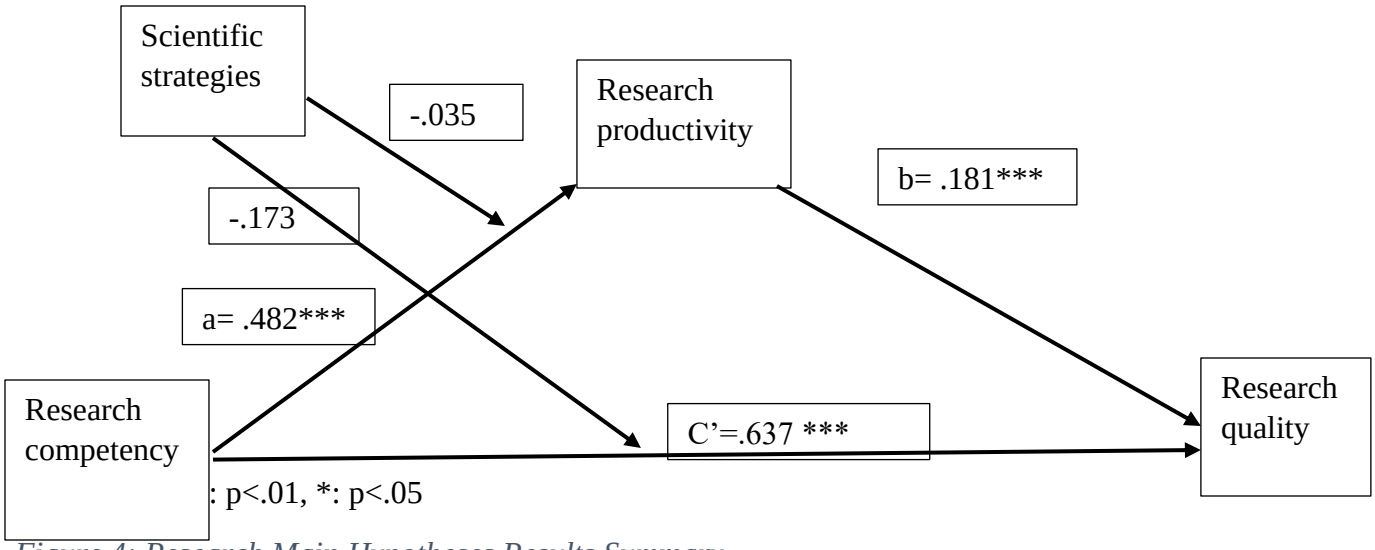


*Figure 4: Research Main Hypotheses Results Summary*

*Source: author work*

**Hypothesis 5**: At level (p< 0.05), there is no statistically significant difference in RQ of the faculty members in Palestinian universities with respect to demographic characteristics.

- Ho5.1: At level (p< 0.05), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members experience.

*Table 26: One Way ANOVA Test of RQ with Respect to Experience.*

**ANOVA**

RQ

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 10.181 | 2 | 5.090 | 9.224 | .000 |
| Within Groups | 94.362 | 171 | .552 | | |
| Total | 104.543 | 173 | | | |

*Table 27: RQ Differences with Respect to Faculty Members Experience*

**Multiple Comparisons**

Dependent Variable: RQ

Scheffe

| (I) Experience | (J) Experience | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |
|---|---|---|---|---|---|
| | | | | | Lower Bound |
| less than 5 | 5 to 10 | -.52048* | .19149 | .027 | -.9933 |
| | more than 10 years | -.62290* | .14531 | .000 | -.9817 |
| 5 to 10 | less than 5 | .52048* | .19149 | .027 | .0476 |
| | more than 10 years | -.10243 | .15913 | .813 | -.4954 |
| more than 10 years | less than 5 | .62290* | .14531 | .000 | .2641 |
| | 5 to 10 | .10243 | .15913 | .813 | -.2905 |

Table (26) shows that there was a statistically significant difference between groups as determined by one-way ANOVA (F (2,171) = 9.224, p = .000). Post hoc analyses (Table (27)) using the Scheffé post hoc criterion for significance indicated that the average RQ was significantly lower in the “less than 5” years (M = 3.4314, SD = .94341) than in the other two experience groups (“5 to 10” years and more than 10 years) combined (M = 3.9519, SD = .84870 and M= 4.0543, SD= .64271 respectively).

This means that the research quality of group “5 to 10” and group “more than 10” have better research quality than group “less than 5”.

Therefore, this hypothesis is rejected where there are statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members experience.

- Ho5.2: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' age.

*Table 28 One Way ANOVA Test of RQ with Respect to Age.*

**ANOVA**

RQ

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 12.037 | 3 | 4.012 | 7.373 | .000 |
| Within Groups | 92.506 | 170 | .544 | | |
| Total | 104.543 | 173 | | | |

*Table 29: RQ with Respect to Age*

**Multiple Comparisons**

Dependent Variable: RQ

Scheffe

| (I) age | (J) age | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| 25 -29 | 30-39 | -.86810* | .25320 | .010 | -1.5831 | -.1531 |
| | 40-49 | -.64126 | .23503 | .063 | -1.3049 | .0224 |
| | 50 or more | -.99110* | .22874 | .000 | -1.6370 | -.3452 |
| 30-39 | 25 -29 | .86810* | .25320 | .010 | .1531 | 1.5831 |
| | 40-49 | .22684 | .16929 | .617 | -.2512 | .7049 |
| | 50 or more | -.12299 | .16044 | .899 | -.5760 | .3300 |
| 40-49 | 25 -29 | .64126 | .23503 | .063 | -.0224 | 1.3049 |
| | 30-39 | -.22684 | .16929 | .617 | -.7049 | .2512 |
| | 50 or more | -.34983 | .12988 | .068 | -.7166 | .0169 |
| 50 or more | 25 -29 | .99110* | .22874 | .000 | .3452 | 1.6370 |
| | 30-39 | .12299 | .16044 | .899 | -.3300 | .5760 |
| | 40-49 | .34983 | .12988 | .068 | -.0169 | .7166 |

Table (28) shows that there was a statistically significant difference between groups as determined by one-way ANOVA (F (3, 170) = 7.373, p = .000). Post hoc analyses (Table (29)) using the Scheffé post hoc criterion for significance indicated that the average RQ was significantly lower in the "25 -29" years old (M = 3.1250, SD = .86982) than in the other two age groups ("30-39"

years and 50 or more years old) combined (M = 3.7663, SD = .85546and M= 4.1161, SD= .61420 respectively).

Table (29) shows that there is a significant difference between age group "50 and more" and age group "30-39", which means that these age groups have higher RQ than the "25-29" group. By that we reject the null hypothesis and accept the alternative hypothesis which indicate that there are statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' age.

- Ho5.3: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' gender.

*Table 30 Test for Variance Homogeneity with respect to gender variable*

**Test of Homogeneity of Variances**

RQ

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .484 | 1 | 172 | .488 |

*Table 31: One Way ANOVA*

**ANOVA**

RQ

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 2.864 | 1 | 2.864 | 4.844 | .029 |
| Within Groups | 101.679 | 172 | .591 | | |
| Total | 104.543 | 173 | | | |

Levene's test (table 30) indicated equal variances (F = 4.844, p = .488), so degrees of freedom were 172. Table (31) shows that there are differences in the means between males (M=3.9845,

SD=.762) and females (M=3.674, SD=.79119) (p=.029, t= 2.201). This means that male responders had higher quality in their research process.

As a result, this hypothesis is rejected where there are statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' gender. Therefore, we conclude that male academic staff produce higher quality researches than female.

- Ho5.4: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' academic rank.

*Table 32 One Way ANOVA Test*

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 17.340 | 4 | 4.335 | 8.401 | .000 |
| Within Groups | 87.203 | 169 | .516 | | |
| Total | 104.543 | 173 | | | |

*Table 33: RQ with Respect to Faculty Members' Academic Rank*

**Multiple Comparisons**
**Dependent Variable: RQ**
**Scheffe**

| (I) Academic_rank | (J) Academic_rank | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval |
|---|---|---|---|---|---|
| | | | | | Lower Bound |
| Teacher | Lecturer | .08757 | .23513 | .998 | -.6448 |
| | Assistant Professor | -.84352* | .25397 | .030 | -1.6345 |
| | Associate Professor | -.47792 | .22237 | .333 | -1.1705 |
| | Professor | -.56250 | .27432 | .382 | -1.4169 |
| Lecturer | Teacher | -.08757 | .23513 | .998 | -.8199 |
| | Assistant Professor | -.93108* | .18381 | .000 | -1.5036 |

| | | | | | |
|---|---|---|---|---|---|
| | Associate Professor | -.56548* | .13688 | .003 | -.9918 |
| | Professor | -.65007 | .21103 | .054 | -1.3073 |
| Assistant Professor | Teacher | .84352* | .25397 | .030 | .0525 |
| | Lecturer | .93108* | .18381 | .000 | .3586 |
| | Associate Professor | .36560 | .16718 | .315 | -.1551 |
| | Professor | .28102 | .23184 | .832 | -.4411 |
| Associate Professor | Teacher | .47792 | .22237 | .333 | -.2147 |
| | Lecturer | .56548* | .13688 | .003 | .1392 |
| | Assistant Professor | -.36560 | .16718 | .315 | -.8863 |
| | Professor | -.08458 | .19672 | .996 | -.6973 |
| Professor | Teacher | .56250 | .27432 | .382 | -.2919 |
| | Lecturer | .65007 | .21103 | .054 | -.0072 |
| | Assistant Professor | -.28102 | .23184 | .832 | -1.0031 |
| | Associate Professor | .08458 | .19672 | .996 | -.5281 |

Table (33) shows that there was a statistically significant difference between groups as determined by one-way ANOVA (F (4, 169) = 8.401, p = .000). Post hoc analyses (Table (34)) using the Scheffé post hoc criterion for significance indicated that the average RQ was significantly lower in the teacher group (M = 3.5500, SD = .85653) than in the "Associate Professor" groups (M = 4.0279, SD = .60221).

Table (34) shows that there are statistically significant differences between "Assistant Professor" and "Teacher". Therefore, RQ is better from "Assistant Professor" than the other ranks.

For that, the hypothesis is rejected where there are statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' academic rank.

- Ho5.5: At level (p≤ 0.05), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty member's education level.

*Table 34: Test for Covariance Homogeneity with respect to qualifications variable.*

Test of Homogeneity of Variances

RQ

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| 12.115 | 1 | 172 | .001 |

*Table 35: Test of ANOVA*

**RQ ANOVA**

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 10.907 | 1 | 10.907 | 20.035 | .000 |
| Within Groups | 93.636 | 172 | .544 | | |
| Total | 104.543 | 173 | | | |

Levene's test (table 34) indicated unequal variances (F = 20.035, p = .001), so degrees of freedom were adjusted from 172 to 77.486. Through table (35), it is noticed that there are differences in the means of Master (3.5168) and PhD (4.0734) where (p= .000 & t= -3.840). This means that the RQ is higher for PhD than for Master.

So, there is a statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty member's education level. so, we reject the hypothesis.

- Ho5.6: At level (p≤ 0.05), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty member's faculty type (humanities or science).

*Table 36: Test for Covariance Homogeneity with respect to collage type variable*

Test of Homogeneity of Variances

RQ

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .791 | 1 | 172 | .375 |

*Table 37: ANOVA test with respect to collage type variable*

**ANOVA**

RQ

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | .680 | 1 | .680 | 1.126 | .290 |
| Within Groups | 103.863 | 172 | .604 | | |
| Total | 104.543 | 173 | | | |

| | Faculty | N | Mean | Std. Deviation | Std. Error Mean | t- value | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| RQ | humanities | 133 | 3.8820 | .80405 | .06972 | -1.061 | .290 |
| | science | 41 | 4.0293 | .68053 | .10628 | -1.159 | |

Levene's test (table 36) indicated equal variances (F = 1.126, p = .290), so degrees of freedom were 172. Table (37) shows that there are no differences in the means between humanities faculties (M=3.8820, SD= .80405) and scientific faculties (M=4.0293, SD=.68053) where (p=.290, t= -1.061).

As a result, we can't reject this hypothesis, therefore there are no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty type.

*Table 38 Hypothesis Results Summary*

| Hypotheses | Result |
|---|---|
| **Ho1:** There is no statistically significant impact at level ($p \leq 0.05$) of scientific research competencies (SC) on quality of research productivity (RQ) for the faculty members in the Palestinian universities. | Rejected |
| **Ho2:** Universities' scientific research strategies (SS) moderate the relationship between SC and SP. | Accepted |
| **Ho3:** Universities' scientific research strategies moderate the relationship between SC and RQ. | Accepted |
| **Ho4:** Scientific research productivity (SP) mediate the relationship between scientific research competencies (SC) and scientific research quality (RQ). | Rejected |
| **Ho5.0:** At level ($p \leq 0.05$), there is no statistically significant difference in RQ of the faculty members in Palestinian universities with respect to demographic characteristics. | Rejected |
| **Ho5.1:** At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members experience | Rejected |
| **Ho5.2:** At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' age. | Rejected |
| **Ho5.3**: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' gender. | Rejected |
| **Ho5.4:** At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' academic rank. | Rejected |
| **Ho5.5**: At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' education level. | Rejected |
| **Ho5.6:** At level ($p \leq 0.05$), there is no statistically significant differences in RQ of the faculty members in Palestinian universities with respect to faculty members' faculty type (humanities or science). | Rejected |

# Chapter 6: Conclusion and Recommendations

## 6.1 Conclusion:

This study aimed to find the impact of research competencies of the academic staff in the Palestinians universities on the quality and quantity of research along with examine the universities strategies for scientific research. After having the results of the research questions and hypotheses which has been explained in details in the previous chapter, this chapter will discuss these results and suggest a list of recommendations based on it.

**First,** a brief summary will be presented about some of the sample demographic information in relation to research productivity.

According to the results of the study, males' academic percentage of doing SR are higher than females, this result might be because the fact the males can have more free time than women. Females have a social restriction that might affect their productivity of research such as marriage, children, the ability to travel, etc. (Besselaar & Sandström , Gender differences in research performance and its impact on careers: a longitudinal case study, 2015) had discussed the same reasons (social responsibility) that affect female productivity in comparing to males, and their results was that females produce less due to these factors, which make the results of our study reasonable.

Academics who are aged "50 or more" have the highest percentage of producing a SR, this might be due to the fact their experience helps them in increasing their productivity. They also might have more free time than younger academics. (Bonaccorsi & Daraio, 2003) in their research find

that the peak of productivity related to age factor was for their sample was between 40-48, which supports the results of our research.

Academics with PhD degree and working in the position of Associate professor had the highest productivity of research. This might be because it is required to have a PhD or to get promoted in job position to publish researches.

**Second**, a summary of the questionnaire findings.

In reference to universities strategies, we can conclude that universities have a clear policy and plan for SR, they also provide local and international data base for academics and they support participation in international and local conferences. Their weak strategies were in providing a research assistant, reducing teaching load, provide financial awards and to financially support research process.

In reference to the competencies, the academics have the basic skills for using computer, libraries, collecting data and the ability to write hypotheses. On the other hand, their weakness was in using the different statistical tools to examine and analyzing the data.

In reference to research quality, the majority of the journals that academics publish in have clear goals, specialized in specific topics, and have an evaluation system before publishing. Their weakness in this regard was publishing in journals that can be found in well-known database/ websites and that they provide their home page in English.

**Finally,** we will shed the light on the research questions answers in reference to the data analysis.

**Q1: What are the competencies of the SR that should be possessed by universities faculties?**

According to the results, the most important competencies the academics should have to produce scientific research are; having basic computer skills, having the ability to formulate scientific hypotheses, having the ability to use libraries, having the ability to interpret research results. In summary, it is clear that the major competencies researchers should have are related to search, analyze and interpretation.

**Q2: What are the adapted SR strategies by the Palestinian universities?**

The responders agreed that the universities they work in have these SR strategies; they provide local and international database and resources, they support academics participation in local and international conferences, they support having SR culture among academics, and that they have clear policy for SR.

**Q3: Do academic staffs have an appropriate level of SR productivity?**

Table (15) that shows the number of researches published for the responders display that the average was 1.75 which is considered low. Which lead us back to our research problem that Arab countries have a low percentage of producing SR.

**Q4 Do these strategies affect the quality, quantity and productivity of research?**

The data analysis showed that there is no relation between universities strategies and the quality or quantity of research. While in the discussed literature review and theoretical framework there is a relation between universities strategies and the quality, quantity and productivity of research.

We can interpretate this results that there is a problem in implementing these strategies in the reality or that universities implementing wrong strategies to support scientific research.

**6.2 Recommendations:**

The results of this study indicated that; competencies of academics affect their productivity and quality of scientific research and it also indicated that the universities strategies do not affect the productivity and quality of research. Therefore, the researcher recommends the following:

- Universities must reconsider their strategies and their effect on research productivity. Which had the lowest results according to the sample such as, reducing teaching load, offer financial awards, provide research assistance, provide financial support to conduct research.
- Universities must conduct trainings for academics on the weak competencies they have (according to the sample results) such as, training on the use of statistical tools and programs.
- Universities must work on their rewards strategies, especially the non-financial rewards, where they can have formal appreciation letters, honoring ceremonies, give academics extra days off, participation in decision making, flexible working hours.
- Researcher and universities must improve the quality of the research by choosing high standard journals.
- The government should improve their SR strategies and increase their budget for this matter.
- To have more studies regarding this topic with larger sample and more focused reasons on the lack of SR in Palestine.

- To have studies about SR and the reasons of its lack in Palestine from the perspective of the university's administration.

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# Appendix

## Appendix 1: Questionnaire

الجامعة العربية الأمريكية ARAB AMERICAN UNIVERSITY

الجامعة العربية الأمريكية **الاستبانة النهائية**

التخطيط الاستراتيجي وتجنيد الأموال

---

**أعضاء الهيئة التدريسيّة في الجامعات الفلسطينيّة الكرام؛**

**تحية تقدير واحترام وبعد...**

فتقوم الباحثة بدراسة بعنوان" **إستراتيجيات البحث العلميّ في الجامعات الفلسطينيّة وأثرها على إنتاجية البحث العلمي لأعضاء الهيئة التدريسية**" وذلك استكمالاً لمتطلبات الحصول على درجة الماجستير في التخطيط الاستراتيجي وتجنيد الأموال في الجامعة العربيّة الأمريكيّة.

ويسرُّ الباحثة أن تضع بين أيديكم الاستبانة المُرفقة، راجية منكم التكرم بالإجابة عن جميع فقراتها بدقة وعنايةٍ، ثمّ وضع إشارة (√) في خانة البديل الذي يُعبر عن وجهة نظركم.

علماً بأن إجابتكم سوف تُعامل بسريّة تامّة، ولن تُستخدم هذه المعلومات إلا لأغراض البحث العلمي فقط.

**مع جزيل شكري وامتناني لكم على حُسن تعاونكم.**

**الباحثة/ سيما حسين الجالودي**

**القسم الاول: المعلومات الديموغرافية**

| الرمز | الاستجابة |
|---|---|
| 1- | الجنس ☐ أنثى ☐ ذكر |
| 2- | العمر: ☐ 25- 29 ☐ 30- 39 ☐ 40- 49 ☐ 50 وأكثر |
| 3- | الحالة الاجتماعية: ☐ عزباء/ أعزب ☐ متزوجة/ متزوج |
| 4- | المؤهل العلمي: ☐ ماجستير ☐ دكتوراة |
| 5- | الجامعة التي تعمل بها: ☐ جامعة بيرزيت ☐ الجامعة العربية الامريكية ☐ جامعة القدس المفتوحة |
| 6- | الرتبة الأكاديمية: ☐ أستاذ ☐ أستاذ مساعد ☐ مدرس ☐ محاضر ☐ أستاذ مشارك |
| 7- | الكلية: ☐ علوم انسانية ☐ علوم طبيعية |
| 8- | طبيعة العقد: ☐ ثابت ☐ نظام العقود/ مؤقت |
| 9- | الخبرة الاكاديمية؟ ☐ اقل من 5 سنوات ☐ 5 – 9 سنوات ☐ 10 سنوات وأكثر |
| 10- | منذ متى وانت تعمل في الرتبة الأكاديمية الحالية؟ ..... ☐ اقل من 5 سنوات ☐ 9 سنوات ☐ 10 سنوات وأكثر |
| 11- | طبيعة العمل؟ ☐ أكاديمي ☐ أكاديمي إداري |
| 12- | عدد الأبحاث العلمية التي قمت بنشره في المجلات العلمية ☐ اقل من 5 ابحاث ☐ 5 – 9 ابحاث ☐ 10 ابحاث وأكثر |

| | |
|---|---|
| 13- | عدد الكتب العلمية المنشورة (منفرداً او مشترك مع مؤلفين) ..... |
| 14- | عدد الكتب العلمية المترجمة (منفرداً او مشترك مع مؤلفين) ..... |
| 15- | عدد المرات التي تم الاشارة بها الى منشوراتك ..... |
| 16- | عدد الجوائز التي تم الحصول عليها ..... |

**القسم الثاني: مجالات الاستبانة:**

**اولاً (استراتيجيات الجامعة في البحث العلمي)**

| م | العبـــــــــارة | 1 معارض بشدة | 2 معارض | 3 محايد | 4 موافق | 5 موافق بشدة |
|---|---|---|---|---|---|---|
| 17- | توفر الجامعة التي أعمل بها مساعد بحث | | | | | |
| 18- | لدى الجامعة سياسة واضحة للبحث العلمي | | | | | |
| 19- | لدى الجامعة خطة واضحة للبحث العلمي | | | | | |
| 20- | تقدم الجامعة مكافأت مالية عند نشر ابحاث علمية | | | | | |
| 21- | تخفف الجامعة العبء الدراسي للباحث عند القيام بالبحث العلمي | | | | | |
| 22- | تشترط الجامعة على أعضاء الهيئة التدريسية القيام بعدد من الأبحاث خلال فترة محددة | | | | | |
| 23- | توفر الجامعة مصادر ومراجع (قواعد معلومات) عالمية ومحلية للقيام بعملية البحث العلمي | | | | | |
| 24- | تساعد الجامعة بعملية نشر الأبحاث العلمية | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 25- | تدعم الجامعة القيام بالبحث العلمي مادياً | | | | | |
| 26- | تدعم وتعزز الجامعة ثقافة البحث العلمي بين أعضاء الهيئة التدريسية | | | | | |
| 27- | تدعم الجامعة المشاركة بالندوات والمؤتمرات المحلية والعالمية | | | | | |
| 28- | تقوم الجامعة بتحديد اشكال واولويات البحث العملي | | | | | |
| 29- | توفر الجامعة المنشآت الداعمة للبحث العلمي (مكتبات، مختبرات، مراكز، الخ ...) | | | | | |
| 30- | توفر الجامعة تدريب لكيفية القيام بالبحث العملي | | | | | |
| 31- | توفر الجامعة تعاون دولي مع جامعات مختصة بالبحث العملي | | | | | |

ثانيًا: **عنوان(الكفاءات)**

| م | العبـــــــــــارة | 1 معارض بشدة | 2 معارض | 3 محايد | 4 موافق | 5 موافق بشدة |
|---|---|---|---|---|---|---|
| 32- | أستطيع البحث عن المصادر العلمية اللازمة للبحث العلمي واستخدامها. | | | | | |
| 33- | لدي القدرة على استخدام المكتبات بشكل فعّال. | | | | | |
| 34- | أستطيع أنّ احدّد متى أستخدم المصادر الأولية والثانوية . | | | | | |
| 35- | لدي المهارات الأساسية اللازمة في استخدام الحاسوب . | | | | | |
| 36- | لدي القدرة على صياغة الفرضيات العلمية. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 37- | لدي المعرفة بكيفية استخدم الاختبارات الإحصائية اللازمة لتحليل البيانات وفحص الفرضيات. | | | | | |
| 38- | لدي القدرة على استخدم الاختبارات الإحصائية اللازمة لتحليل البيانات وفحص الفرضيات. | | | | | |
| 39- | قادر على اختيار واستخدام أدوات جمع البيانات المختلفة . | | | | | |
| 40- | قادر على استخدام أدوات جمع البيانات المختلفة | | | | | |
| 41- | قادر على استخدام طرق البحث الكمية لمعالجة البيانات | | | | | |
| 42- | قادر على تفسير نتائج البحث الكمي | | | | | |
| 43- | قادر على استخدام طرق البحث الكيفية لمعالجة البيانات | | | | | |
| 44- | قادر على تفسير نتائج الكيفي | | | | | |
| 45- | اتفهم محددات طرق تحليل النتائج . | | | | | |

ثالثاً: **عنوان (جودة البحث العلمي)**

| م | العبـــــــــــارة | 1 معارض بشدة | 2 معارض | 3 محايد | 4 موافق | 5 موافق بشدة |
|---|---|---|---|---|---|---|
| 46- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأن محتواها متوفر بالكامل على الانترنت | | | | | |
| 47- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأنها تصدر اعدادها في موعدها دون تأخير | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 48- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأنها تصدر اعدادها بدون تقطع | | | | | |
| 49- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأنها توفر صفحة انترنت رئيسية باللغة الإنجليزية | | | | | |
| 50- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأنها تقوم بتحكيم الأبحاث قبل النشر من خلال (peer review) | | | | | |
| 51- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأنها تطلب ان يكون للبحث مساهمة في مجال الدراسة حتى يتم نشر البحث | | | | | |
| 52- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأن لديها اهداف واضحة | | | | | |
| 53- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأنها متخصصة في مجال علمي معين | | | | | |
| 54- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأن لديها معامل تأثير | | | | | |
| 55- | المجلات التي أقوم بنشر ابحاثي فيها تتميز بأنها مدرجة في قواعد بيانات معروفة مثل (Scopus) | | | | | |

## Appendix 2: University Paper to Facilitate a Research Mission

Arab American University
Faculty of Graduate Studies
الجامعة العربية الأمريكية
كلية الدراسات العليا

2019-12-16

الى من يهمه الامر

**تسهيل مهمة بحثية**

**تحية طيبة وبعد،**

تهديكم الجامعة العربية الامريكية اطيب التحيات، وبالإشارة الى الموضوع أعلاه، تشهد كلية الدراسات العليا في الجامعة أن الطالبة **سيما حسين محمد الجالودي** والتي تحمل الرقم الجامعي 201712540 هي طالبة ماجستير في الجامعة العربية الامريكية تخصص تخطيط استراتيجي وتجنيد اموال، وتعمل على دراسة علمية حول:

**" استراتيجيات البحث العلمي في الجامعات الفلسطينية وأثرها على انتاجية البحث العلمي لأعضاء الهيئة التدريسية"**، نأمل من حضرتكم الايعاز لمن يلزم لمساعدتها للحصول على المعلومات اللازمة للدراسة، علما" ان المعلومات ستستخدم لغاية البحث فقط وسيتم التعامل معها بغاية السرية، وقد أعطيت هذه الرسالة بناء" على طلبها.

وتفضلوا بقبول فائق الاحترام

عميد كلية الدراسات العليا

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# الملخص

هدفت هذه الدراسة إلى دراسة أثر الكفاءات البحثية على كمية وجودة البحث العلمي لأعضاء الهيئة التدريسية في الجامعات الفلسطينية بالتزامن مع دراسة استراتيجيات البحث العلمي في الجامعات الفلسطينية. ولتحقيق أهداف الدراسة؛ اعتمدت الباحثة المنهج الوصفي والتحليلي، حيث تم دراسة ومراجعة الأدب النظري والدراسات السابقة المرتبطة بالموضوع، ومن ثم تم تطوير استبانة لجمع البيانات، وتكونت الاستبانة من (5) أقسام رئيسة وهي: المعلومات الديموغرافية، استراتيجيات الجامعات، كفاءات أعضاء الهيئة التدريسية، انتاجية البحث العلمي، وجودة البحث العلمي، تم توزيع العينة بشكل عشوائي على مجتمع الدراسة المتكون من ثلاث جامعات في فلسطين لتكون عدد العينة (176) عضو هيئة تدريسية.

بينت نتائج الدراسة أن كفاءات أعضاء الهيئة التدريسية تؤثر على انتاجيتهم وجودة البحث العلمي (R=0.399, R2=0.159; R=0.65, R2=0.425). كما أظهرت أن استراتيجيات الجامعات لا تؤثر على انتاجية وجودة البحث العلمي لأعضاء الهيئة التدريسية، كذلك أظهرت أن انتاجية البحث العملي تتوسط بشكل جزئي العلاقة بين الكفاءة العلمية وجودة البحث العلمي، بحيث أن التأثير غير المباشر للكفاءات العلمية على جودة البحث تساوي 0.087 والتأثير المباشر يساوي 0.637، وعليه فإن التأثير الكلي للكفاءات العلمية على جودة البحث يساوي 0.724.كما أظهرت نتائج الدراسة أن هناك فروق ذات دلالات احصائية تعزى لمتغيرات الجنس، والعمر، والرتبة الأكاديمية، والمستوى التعليمي التي تؤثر على جودة البحث.

وبناء على النتائج أوصت الدراسة؛ بإعداد برامج وتدريبات لتحسين وتطوير جودة البحث العملي وكفاءات أعضاء الهيئة التدريسية التي سوف تؤدي إلى تحسين وزيادة انتاجية البحث العلمي في فلسطين، وإلى زيادة ميزانية البحث العلمي في فلسطين، كما يجب على الجامعات العمل على استراتيجيات البحث العلمي، كما

خاطبت الدراسة الباحثين للتوسع والقيام بالمزيد من الأبحاث حول هذا الموضوع نظرا لأهميته وقلة الدراسات الفلسطينية.

**الكلمات المفتاحية:** البحث العلمي، استراتيجيات، جودة، انتاجية، كفاءات، أكاديميين.