

Communication

Conflict of Interest in Research at Universities: A pioneer investigation in Jordan

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Abstract: Conflict of interest (COI) is defined as a circumstance that might create a risk that professional judgments or actions regarding a primary interest, such as research, education or patient care, will be unduly influenced by a secondary interest, such as financial gain or personal prestige. The aim of this article is to examine the management of conflict of interest in ten public and ten private Jordanian universities. Sufficient literature review was performed on the COI policies and regulation. Unfortunately, no sufficient COI information has been found from the published research regulations on the universities' websites. Additionally, the legislation enforced by Ministries of higher education is presented. To conclude, there is a major need for regulation improvement, especially in the management of COI and its declaration processes. University leaders should assess the sufficiency of their COI management systems. Therefore, universities are urged to give immediate attention to reviewing and strengthening their COI policies. The regulations of funding for scientific research, as well as publication rules are not very different for public or private Jordanian universities.

Keywords: Conflict of Interest; Jordanian University; Scientific Research.

Introduction

Acquiring knowledge must be done in a systemic manner in order to be able to draw legit conclusions, which can be generalized and shared with the world. This manner is called research. "Research is systemic study and examination aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws" [1]. The use of techniques and tools to reach specific knowledge and new proofs is defined as research methods [2]. Many international regulations govern the research methodology to overcome the challenges, which may face research. One of these challenges is what is known as a conflict of interest. "Conflicts of interest are defined as circumstances that create a risk that professional judgments or actions regarding a primary interest, such as research, education or patient care, will be unduly influenced by a secondary interest, such as financial gain or personal prestige" [3]. Conflict of interest, in addition, can be described as a discord of an individual or organization interest and that of another party that might adversely affect it [4]. For the researcher, COI depicts circumstances where the integrity of research may come to since the analyst stands to benefit somehow from the decisions they make [5]. The expression "conflict of interest" in this way incorporates clashes of obligation, rights, commitments, and interests [6]. Each researcher holds different kinds of interest that can be money related, individual, and ideological, which may prompt inclination about research. The topic of revealing conflicts of interest has been discussed since the 1980s, with contradictions about whether or not conflicts of interest ought to be revealed and whether strategies for peer survey are

adequate for relieving the potential for prejudice that is related with research that is conducted by researchers who keep conflicts of interest [5]. The way to control the conflicts of interest is to guarantee that they are proclaimed.

Following the basics of selflessness, morality, objectivity, responsibility, leadership, and openness, thus all staff are required to realize and declare actions or conditions that may lead to a conflict of interest and to guarantee that such clashes should be appropriately controlled or eliminated. A potential conflict may occur when the use of a research or managerial facilities is set to seek a private concern, business, or consulting operation. [6]. In this paper, we are focusing on the regulations dealing with COI in the scientific research in public and private universities in Jordan comparing them to the regulations of the Jordanian Ministry of Higher Education (MOHE)[8].

Literature Review

Historical background

Along with the advancement in research, regulation for COI was vital to be established. The U.S Congress introduced the first recorded COI regulations in the medical and clinical fields concerning financial gain or aspect in the 1970s.

Regulations started in the medical and clinical testing fields because the safety of participants is of great significance. One high profile case that highlighted the importance of such regulations was after 19-year-old Jesse Gelsinger died in a gene transfer study at the University of Pennsylvania in 1999 [9].

Even though the first regulations were focused on the financial angle of conflicts, it grew to enclose other direct or indirect interests such as personal, professional development in either career or education, manipulating results of research for one's benefit, or being biased to a particular subject or someone while working on research.

Nowadays, many associations, university boards, and even institutional laws govern the conflict of interest conduct worldwide. Some of these distinguished associations are; the Federal Regulation of Conflicts of Interest in Research which are passed by U.S Congress in Washington, DC [4], and the UK Research and Innovation Board (UKRI), based in London, the UK with many boards spread internationally [10]. Governance of research, in general, and Conflict of Interest, in particular, has emerged significantly in the past 50 years. COI regulations have firstly appeared in research related to the medical and clinical fields, and then the term developed to cover different aspects in different fields even outside of research.

Theoretical background

Generally, COIs can be divided into two categories; tangible and intangible. Tangible COIs are conflicts associated with financial matters, while intangible COIs are conflicts associated with academic activities and scholarships. In a more specific manner; COIs can happen at three different levels; Individual level, Institutional Review Board (IRB) level, and Institutional level [11].

Conflicts of Interests at the individual level are pressures that can influence how researchers interpret the research process. Researchers are under pressure to publish, to get funding, promotions, and to earn respect from colleagues.

- Academic COI or Intellectual Bias occurs when a researcher intermediates with the peer-review process for elusive personal gain.

- Conflicts of Commitment arise when most of the time spent on an unrelated secondary activity contradicts with the time that should be spent on a primary activity such as, teaching or research.

- Conflict of Conscience happens when personal beliefs obstruct objectivity in research [11].

COI at the Institutional Review Board level includes IRB engagement in dealing with conflicts of interest of researchers and IRB members. There are many potential sources of conflicts of interest such as the pressure or desire to protect the institution, concern for institution's reputation or prestige, promoting research vs. protecting subjects, and pressure for quick reviews [11].

COI at the Institutional level occur when financial interests of the institution or an institutional official might affect institutional processes, including the conduct, review, or oversight of human research. "Institutional COI may occur when one or more aspects of either internal relationships between different units within the university or external relationships between the university and other entities are incongruent with institutional core values, and result, or have the potential to result in choices or actions that are harmful to the missions, the obligations, or the values of the university." [11, 12].

The mentioned COIs levels can be further categorized into four areas; Educational Mission, Finance and Compensation, Commitment and Loyalty, and Research Integrity.

Educational Mission

In the educational system, a conflict of interest may occur when a supervisor's essential obligation to a student is compromised by failure to prioritize research goal. Conflicts of interest could go from unwittingly enabling another primacy to influence one's judgment, just too apparently and purposely violating a strategy for personal earn [13]. Considerations must be taken into perspective to guarantee that the choice of a student's research topic and the implementation of the research is not affected by any supervisor's interest whether the interest intangible or not. For example, when a student receives support for his research project from a specific company in which the proposed scholarly supervisor has a considerable financial interest in it. In such circumstances, it is hard to monitor the supervisor and the university since they both are defenseless against affirmations that the student's research was coordinated in such a way that the student did not have interest in it [6].

Conflicts of Commitment and Loyalty

Researchers should dedicate their time and energy to their research. Moreover, they should dedicate their professional loyalty to their workplace. This type of conflict may become apparent, especially when the researcher has activities other than his central commitment. External activities such as being a member of external committees, board advisory and/or groups will increase the overall duties of the researcher. In some situation, these duties may contradict with the primary researcher's tasks of their workplace [6, 15].

Financial and Compensation Conflicts

A financial conflict of interest stands when there is a chance for a personal financial gain, during research, or when the financial benefits might affect the person's actions and judgment regarding the research process [4]. Researchers must declare, respect, and promote the potential financial interest. Moreover, the researcher should ensure that all the financial benefits for both parties are apparent, such as research services consultancy and the use or commercialization of place of work. On the other hand, payment such as an advisory

committee, scientific or technical appointments, and payment for lectures should be stated clearly [6, 15].

Research Integrity

Research integrity might be characterized as active adherence to the moral standards and expert benchmarks necessary for the responsible practice of research. By ethical standards, it means sincerity, reliability, and high respect for scientific standards. There are different ranges of practices that describes the responsibility of the research manner, such as trustworthiness and decency in proposing, performing, and announcing research, collegiality in technological collaborations, correspondences and sharing of resources, report of conflicts of interest, and security of human subjects in the research conduct. Research misconduct may be the most common behavior that may dismiss its integrity while dealing with research. Research misconduct is concerned with invention, misrepresentation, and plagiarism in performing, proposing, or in reporting research results [14]. Conflict of Interest is bound to happen in most research. However, maintaining the risks of COI under control while preserving their benefits is the essence of conducting a good research.

Methodology

This part explains the research approach adopted for this project. There is different types of research approaches, mainly inductive and deductive approach. For inductive approach known as a theory-building process, it starts from specific observation then integrating general conclusion based on them. Inductive approach is the most successful approach for scientific research. On the other hand, the deductive approach starts with generalization until reaching a specific conclusion from given reasons [2].

For this project, the inductive approach will be adopted, starting from historical data and information available on the internet, literature review addressing project problem and comparison between data collected.

Findings

Data were collected from online documentations related to the scientific research for ten public universities: Jordan University (www.ju.edu.jo), Yarmouk University (www.yu.edu.jo), Muta University (www.mutah.edu.jo), Jordan University of Science & Technology (www.just.edu.jo), Hashemite University (www.hu.edu.jo), Al-Albays University (www.aabu.edu.jo), Al-Balqa Applied University (www.bau.edu.jo), Hussein Bin Talal (www.ahu.edu.jo), Tafila Technical University (www.ttu.edu.jo), German Jordanian University (www.gju.edu.jo). In addition to ten private universities: Middle East University (www.meu.edu.jo), Al-Ahliyya Amman University (www.ammanu.edu.jo), Al-Zaytoonah University (www.zuj.edu.jo), Applied Science University (www.asu.edu.jo), Philadelphia University (www.philadelphia.edu.jo), Jadara University (www.jadara.edu.jo), Princess Sumaya University of Technology (www.psut.edu.jo), Isra University (www.iu.edu.jo), Petra University (www.uop.edu.jo), American University in Madaba (www.aum.edu.jo), and Ministry of Higher Education in Jordan (<http://www.mohe.gov.jo>). The findings were tabulated as follows:

1 Table 1: Comparison of Conflict of interest management among Jordanian universities.

Conflict Cases		Public University										Ministry of Higher Education (MOHE)
		University of Jordan	Yarmouk University	Mutah University	Jordan University of Science & Technology	Hashemite University	Al-Albayt University	Al-Balqa Applied University	Hussein Bin Talal	Tafila Technical University	German Jordanian University	
1.	Insignificant conflict	Any aspects relating to scientific research is referred to the Scientific Research Committee	-no data-	-no data-	Council of Scientific Research sets the rules and regulations	-no data-	-no data-	-no data-	-no data-	-no data-	-no data-	The scientific research council issue the necessary instructions
2.	Financial conflict	The committee decides on the percentage of rewards offered to researchers as long as it does not exceed 40% of total funding.	-no data-	Financial support of research is based on the recommendation of the committee of scientific research	Council of Scientific Research define the necessary foundations for the conservation of university and researcher financial rights	Financial support is based on the recommendation of the council of scientific research	Financial support is based on the recommendation of the council of scientific research and the annual budget	Referral to the instructions issued by the Board of Deans	Research committee for each faculty evaluate the case to be later approved by university president	Financial support is based on the recommendation of the council of scientific research	Instructions on research incentives or rewards distribution but not on how to deal with financial conflicts	Scientific research council proposes the inclusion of scientific research from the university budget
3.	Educational conflict	-no data-	-no data-	-no data-	-no data-	-no data-	-no data-	The student is considered the primary researcher in his thesis according to Instructions issued by the Board of Deans	-no data-	-no data-	Instructions on how to deal with scientific severe malpractice include: 1. Plagiarism 2. Forging data 3. If a large portion of the thesis such as programming and statistical analysis, or thesis itself...etc. is written by a third party not authorized to do so by the department or the supervisor.	No data
4.	Commitment and loyalty	-no data-	-no data-	Joint Projects Regulations	-no data-	Funds can be retrieved by the council of scientific research if the researcher is not committed to his workplan	-no data-	-no data-	The board of the dean approves the support of outside activities	-no data-	-no data-	The council of the department approves the dedication of the faculty member in full or part-time to work.

Conflict Cases		Private University										
		The Middle East University	Al - Ahliyya Amman University	Al-Zaytoonah University	Applied Science University	Princess Sumaya University of Technology	Philadelphia University	American University in Madaba	Petra University	Isra University	Jerash university	Ministry of Higher Education (MOHE)
1.	Insignificant conflict	-no data-	-no data-	General Scientific Research Regulations	-no data-	Any aspects relating to scientific research is referred to the Scientific Research Committee	-no data-	-no data-	The Scientific Research Board undertakes the responsibility for any other matters related to scientific research.	-no data-	-no data-	The scientific research council issue the necessary instructions
2.	Financial conflict	-no data-	Data only on Intellectual Property Rights, Financial Support & Financial Rewards	Data only on Intellectual Property Rights, Financial Support & Financial Rewards	The Deans Council assigns researchers to the university to carry out a specific scientific research as recommended by the Dean of Scientific Research. The Council of Deans determines the terms of support for each case	Projects to be funded are chosen by the Scientific Research Council. Priority is given to those which support the industrial and production sector Funds are permanently stopped or retrieved if the researcher does not follow his/her work plan without explaining and/or the fund is spent in ways other than its original purpose.	Data only on Intellectual Property Rights, Financial Support for conferences & Financial Rewards	-no data-	The Ethical committee requires that members of the faculty conducting research involving human participants at the University of Petra must disclose any financial interests that would affect the research project in any way. Any existing conflict must be resolved prior to inception of the research.	Data only on Intellectual Property Rights, Financial Support for conferences & Financial Rewards	Financial support is based on the recommendation of the council of scientific research	Scientific research council proposes the inclusion of scientific research from the university budget
3.	Educational conflict	The concerned graduate school board draws up regulations concerning such courses.	-no data-	Data on Involving Students in Scientific Research	-no data-	-no data-	-no data-	-no data-	-no data-	-no data-	General information on that the master degree students are under the responsibility of the deanship of scientific research	-no data-
4.	Commitment and loyalty	-no data-	-no data-	-no data-	-no data-	-no data-	-no data-	-no data-	The researchers should agree to conduct research in accordance to the policies and procedures of the ethical committee at the University of Petra, and accept inspection by the committee during conductance of the research if this application is approved.	-no data-	-no data-	The council of the department approves the dedication of the faculty member in full or part-time to work

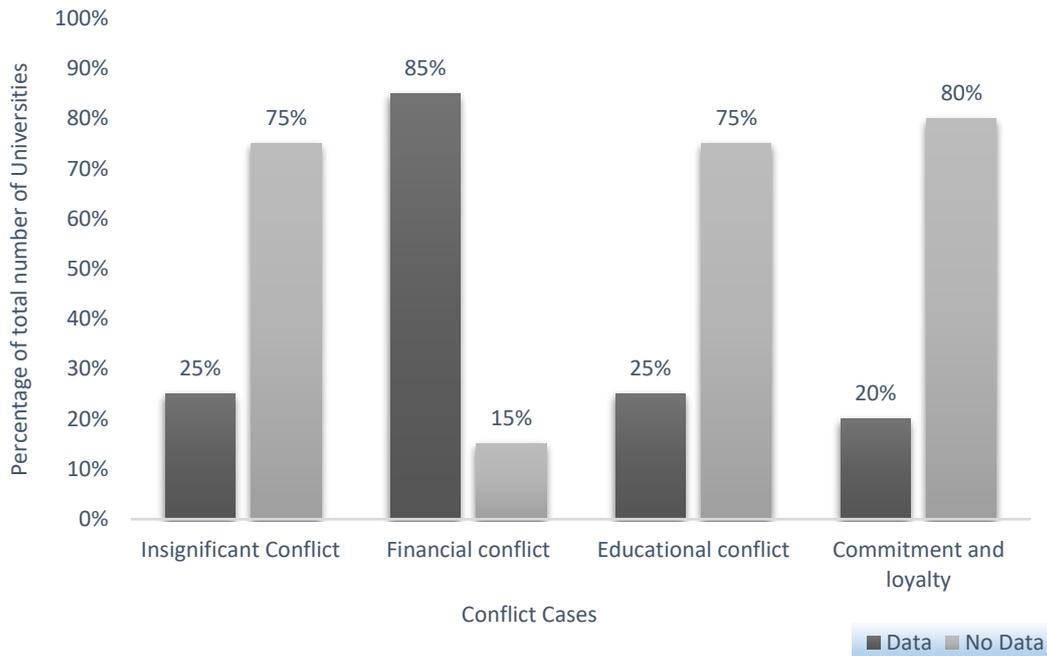


Figure 1: Analysis of data present among the twenty Jordanian universities

Discussion

With the purpose to better, understand the findings, collected qualitative data were converted to quantitative data in Figure 1. It was observed that three out of four conflict cases were lacking data. Even though 85% of the universities had regulations related to financial matters, these regulations were confined to financial rewards and incentives, but they did not include any instructions on how to deal with financial conflicts that may arise during the research conduct.

It is essential to highlight the fact that only 25% of the universities had general information concerning the aspects mentioned in Table 1. However, it was discussed in a broad perspective. Moreover, the regulations found were not comprehensive on potential conflicts. One observation worth mentioning was that most of the regulations were extracted from the Regulation of Jordanian Universities published by the MOHE [8].

An extensive investigation carried out show that the term COI was not mentioned in any of the documentation of the public or private universities nor the MOHE. The concept of COI has not developed yet in any of the research boards in educational institutions in Jordan. Additionally, international regulations of COI were investigated in furtherance of highlighting the importance of this matter regarding the research conduct.

According to the statement of policy and procedure on COI in Oxford University, England. There are certain procedures that should be followed when any research conduct has potential COI [16]:

- Clarification of any personal interests: when the researcher is applying for Researchscholarship or contract negotiation that could lead to a real COI due to that the universityrequires the researcher to clarify if they have a personal interest in relation to the proposedsponsor.
- Ethics: According to the appropriate Ethics Committee declaration, requirements, theResearcher should go along with them.
- Requirements of funding bodies: there are special requirements that some of the fundingagencies set related to the COI, so the researcher needs to be aware and comply with theserequirements
- Financial interest in a company involved in an area related to an individual's academicwork, in particular biomedical or clinical research projects: the clinical research or biomedical research has special attention in particular due to the financial consequences of researchoutcome and the harm to members involved in the clinical trials or under treatment.
- Student receiving support from a company in which his or her supervisor has a financialinterest, or where the outcomes of the research are related to the activities of such scompany: the student and their supervisor should reveal the conflict to the head departmentand the chair of the COI Committee to protect the integrity of the research.

Table 2: Comparison between JU, PSUT, and MOHE regarding Scientific Research Regulations.

Aspect	JU	PSUT	MOHE
Councils and Committees	More than one committee; Academic Committee, Scientific Research Committee, Administrative and Financial Committee, Specialized Sector Committee, and Support Fund Committee	Scientific Research Council	The Higher Education Council - Supervises private universities regarding their objectives and tasks The Scientific Research Support Fund Board
Regulations approval and decision making	Voting by the majority is practiced in each committee's official meetings. If the votes are equal, the president of the committee has the final say	The Council shall lay the rules for organizing its meetings	Meetings shall be legal if attended by eight members at least provided that president or vice-president is attending Voting by the majority is practiced in the committee's official meetings. If the votes are equal, the president of the committee has the final say
Support Funds regulations	Projects to be funded are chosen by the Support Fund committee according to their priority and contribution to economic and technologic markets in Jordan and the Arab world Funds are permanently stopped or retrieved if the researcher does not follow his/her work plan without explaining and/or the fund is spent in ways other than its original purpose.	Projects to be funded are chosen by the Scientific Research Council. Priority is given to those which support the industrial and production sector Funds are permanently stopped or retrieved if the researcher does not follow his/her work plan without explaining and/or the fund is spent in ways other than its original purpose.	The fund aims to encourage and support scientific research in the kingdom Offers financial aids for educational institutions regarding protecting copyrights and filing patents
Copyrights and patents	If the research is funded by the university, all researchers have to sign a contract to waiver all copyrights and patents to the university	-no data-	-no data-
Patents' revenues and financial rewards	The committee decides on the percentage of rewards offered to researchers as long as it does not exceed 40% of total funding.	-no data-	-no data-

Discussion on the case study

According to the scientific research regulations in JU, PSUT, and MOHE the concept of COI was not mentioned in any of the documents. Only a brief of financial COI was mentioned in the support fund regulations in JU and PSUT. These documents focused on the following point; retrieval or discontinuance of the fund if the researcher did not follow the timeline of the work plan without giving a legitimate reason and/or if the amount was spent in ways outside the scope of the original research purpose. Other regulation focused on other matters such as; copyrights, patents, and financial rewards. In addition, if any situation or obstacle emerged and was not mentioned in the above-mentioned regulations, it will be referred to the council or committee responsible

in each institute. Normally a meeting will be held according to the specific rules for each committee:

- In JU, a meeting is held and voting by majority is practiced regarding issuing new regulations. However, when the votes are equal, the president of the committee has the final say.

- In PSUT, the council lays the rules regarding the flow of its meetings and issuing new regulations.

- In MOHE, the meeting is considered official if at least eight members are present and the president or the vice president is among the attendees. Voting by the majority is also practiced here and the president has the final say when the votes are tied.

In a narrower perspective, JU has a research center called the Cell Therapy Center, which specializes in clinical and medical research. While many clinical testing is performed in this center, which is where COI started back in the 1970s, they have no mention of any regulations related to COI.

Realizing that the term of COI in the mentioned universities and MOHE in Jordan is not used, we expanded the search process to include COI regulations in international universities. The University of Oxford, London was used as an example because it is the largest and second oldest University in the world. Moreover, it is consistently ranked as one of the best universities worldwide. Based on what was found, a committee is specialized in resolving and detecting COI in the research conduct. Their regulations are inclusive to cover most of the types of COI and are updated annually to prevent and minimize the occurrence of any obstacle that may face the research regarding COI.

Conclusion and Recommendation

The term “Conflict of Interest” has existed since 1999 worldwide. After that year, it started to gain momentum. COI can be categorized into many different types. However, COI cases vary from one research to another. Although some financial aspects are discussed ambiguously in the documents investigated, clear regulations regarding different forms of COI were not declared. Around 60% of the documents investigated had no data.

On the other hand, some of these universities excel in research. Moreover, it is obligatory for students and scholars to publish papers on an annual basis. For the sake of the development of the level of research in Jordan, COI regulations should be established at governmental and institutional levels. Furthermore, regulations should be updated and tested every year. A turning point would be establishing these regulations through MOHE as it is the responsible governmental body. Since MOHE is responsible for the management of educational institutions in Jordan, these regulations would be enforced to both public and private universities. From a scholar perspective, the first step would be taking the initiative of forming a committee focused on COI in the scientific research deanships at the Jordanian universities, which could be a leading example for other academic institutions not only in Jordan but also in the region. This committee approach would institute a set of COI regulations. Establishing such regulations and maintaining them up-to-date would be accomplished in many steps and requires significant and severe efforts, as it is not a straightforward mission. However, preserving research integrity and virtues, and public trust in research would be the ultimate target.

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