Enshrining Scientific Integrity in the Context of Technological Development

قواعد الأمانة العلمية المتعلقة بالحماية من السرقات العلمية ونتاجها القانوني.

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Abstract:

Any new contribution to the existing body of knowledge requires the accuracy of the reported facts. This is how the scientific heritage of humanity is built, but in a way that the public can trust its researchers and experts. Any misrepresentation, distortion, or falsification of the truth can have serious consequences for society, and cast unfounded doubts on the nature and purpose of research and its contributions. As scientific integrity is a dynamic and relatively new field, it needs to be restructured as it is now increasingly dependent on technological progress. Digital technology allows access to source data, and at the same time powerful tools for detecting fraud are being developed. This is what the Ministry of Higher Education and Scientific Research in Egypt has done through Decision No. 1082 of 2020, which defines the rules for preventing and combating scientific plagiarism, through a set of amendments to Decision No. 933 of 2016. In this paper, we will discuss the most important points related to scientific integrity raised by the aforementioned ministerial decision.

key words: Scientific research, Plagiarism, Artificial intelligence (AI), The scientific spirit.

الملخص:

إن أي مساهمة جديدة في مجموعة المعرفة الحالية، تتطلب صحة الحقائق المبلغ عنها، فبهذه الطريقة يتم بناء التراث العلمي للبشرية، ولكن بشكل يكون فيه الجمهور قادرا على الثقة في باحثيها وخبرائها. وأي اقتطاع للحقيقة أو تحريف أو تزوير لها يمكن أن يؤدي إلى عواقب وخيمة على المستوى المجتمعي، وإلقاء شكوك دائمة لا أساس لها على طبيعة وأغراض البحث ومساهماته. وبما أن الأمانة العلمية مجال غير ثابت، وحديث نسبيا، لا بد من هيكلته من جديد لأنه بات يعتمد وبشكل وثيق على التقدم التكنولوجي، حيث تسمح التكنولوجيا الرقمية

بالوصول إلى بيانات المصدر وفي نفس الوقت يتم تطوير أدوات قوية للكشف عن الاحتيال بفضل البرامج المناسبة لذلك، وهو ما عمدت إليه وزارة التعليم العالي والبحث العلمي من خلال ما جاء به القرار رقم 1082 لسنة 2020 والمحدد للقواعد المتعلقة بالوقاية من السرقة العلمية ومكافحتها، من خلال مجموع التعديلات التي مست القرار رقم 933 لسنة 2016. وسنحاول من خلال هذه المداخلة التطرق لأهم النقاط المتعلقة بالأمانة العلمية والتي أثارها القرار الوزاري سالف الذكر.

الكلمات المفتاحية: الأمانة العلمية، البحث العلمي، السرقة العلمية، الذكاء الاصطناعي، الروح العلمية.

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Introduction:

The methodologies of scientific research vary according to the diversity of fields of knowledge, but they generally rely on scientific integrity, whether in collecting the information and data upon which the research is based, or in their transmission, analysis, or even when they are presented for discussion.

It is widely agreed that scientific integrity is a cornerstone of writing and presenting scientific research and one of the most important pillars of the researcher's character in any field. Scientific integrity has two main roles or reasons: the first is to attribute the works, research, and studies that were a source of information and data used in scientific research to their owners as a form of scientific fairness and integrity. The second reason concerns the concerns of the entities responsible for scientific research and the ministries of higher education in all countries of the world, which is the integrity of the information provided, its truthfulness, accuracy, and not including data and information contrary to the reality of the phenomenon under study.

Perhaps the most significant reasons contributing to the spread of these behaviors are researchers' reliance on data and information provided by open science or artificial intelligence, which has increasingly contributed to numbing the conscience of the researcher and encouraging laziness that kills the spirit of research and scrutiny in general.

Thus, in this intervention, we will try to answer the problem of the dual role of the Scientific Secretariat, and how did the Ministry try to enshrine it in the scientific research carried out under its guardianship?

Following the descriptive analytical approach by describing the legal phenomenon dealt with as well as analysing the legal materials relating thereto,

and to that end, we have decided to divide the study into two axes. First, we are dealing with the enshrinement of the principle of scientific honesty and the images of its violation, and the second with legal methods of reducing the scientific secretariat's violations.

Therefore, in this article, we will attempt to address the problem related to the dual role of scientific integrity, and how the supervising ministry has attempted to institutionalize it in research conducted under its supervision.

To address the problem at hand, we have decided to divide the study into two axis , addressing the first :

Axis One: Institutionalizing the Principle of Scientific Integrity

Awareness of scientific integrity violations and their handling has evolved over the past twenty to thirty years in most countries, albeit with varying degrees of responsiveness and methods. Engaging in scientific research is a noble profession, and any new contribution to the current body of knowledge requires the accuracy of the reported facts. This is the most appropriate way to build the scientific heritage of humanity. Distortion, forgery, or deviation from the truth may lead to serious consequences at the public level, casting constant doubts on the nature, purpose,
contribution, and even the results and implications of the research in some instances[1].

Simultaneously, there is a growing call for the necessity of institutionalizing scientific integrity in scientific research. More broadly, there is a reminder of the constituent standards of research ethics. It is imperative to formulate rules and laws accompanied by penalties, which will be elucidated in this axis.

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[1] - Recently, Olivier Voinnet, the research director at the National Center for Scientific Research (CNRS) assigned to the Swiss Federal Institute of Technology in Zurich, was interrogated. Voinnet, who has received prestigious awards and substantial financial support for his work related to RNA interference mechanisms established by plants against some pathogens by silencing their genes, was involved in forging a number of illustrations accompanying his articles, which was discovered on the Pub Peer and Retraction Watch websites. At that time, an investigation was opened by the relevant institution, considering this forgery not just a series of mistakes but the result of bad practices constituting serious violations of the principle of scientific integrity in scientific research, harming the image of the concerned institution and the scientific community as a whole. See: Sophie Roux, Intégrité, éthos scientifique, fraudes et négligences, Hal open science, February 6, 2020, published at: http://www.hal.science/hal-02461581, consulted on October 10, 2023.

First: Conceptual Definitions

1- Concept of Scientific Research:

Scientific research involves utilizing one's intellectual capacity to answer inquiries in a particular subject, leading to solving a problem that may have obstructed progress either through spontaneous reactions to similar or recurring situations, or by requiring the development of suitable solutions through organized scientific methods. This entails organizing stages and steps to gather information, data, and facts that aid in reaching appropriate solutions[1].

2- Concept of Academic Integrity:

Academic integrity is a responsibility that requires researchers to uphold honesty. It entails faithfully transferring texts as they are from their sources without addition, subtraction, distortion, or alteration, whether in wording or meaning. It involves impartial comprehension, objectivity in dealing with information, and, most importantly, attributing them to their rightful owners. Neglecting to acknowledge sources used in research is considered a breach of academic integrity[2].

Some scholars define it as the pursuit of truth, accuracy, and faithful transmission of information without distortion[3].

In its general and traditional sense, academic integrity involves researchers relying partially on previous works and studies in the same field or related areas, which naturally build upon the efforts of other researchers. Thus, the researcher uses or integrates this previous information and data into their scientific research. To regulate this process, it is essential to properly reference and document the sources relied upon by the researcher in presenting their work. The matter of objectivity and the accuracy and truthfulness of the results obtained by the researcher themselves should not be overlooked[4].

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[1] - Maha Mohamed Farid, Al-Buhth Al-'Ilmi Fi Majal Al-Fann Wal-Tasmeem, Anglo-Egyptian Library, Egypt, 2023, p. 21

[2] - Youssef Al-Mur'ashli, Asul Kitabat Al-Buhth Al-'Ilmi wa Minahijuh, Dar Al-Ma'rifah lil-Taba'ah wal-Nashr, Lebanon, 2016, pp. 26-27.

[3] - Maha Mohamed Farid, previous reference, p. 21.

[4] - Cases of fraud and scientific misconduct have been making headlines for years. In 2011, Baron Karl-Theodore Zu Gutenberg, the German Defense Minister, who many considered as Angela Merkel's successor, was stripped of his law doctorate title, awarded to him by the University of Bayreuth four years prior, compelling him to resign from his ministerial position. Even before the university's self-regulatory scientific committee issued its verdict, the Gutten Plag Wiki website, with contributions

As for the legal concept of academic integrity, unlike Algerian legislation, French legislation provides a definition of academic integrity in Article 3 of the Decree issued on 12/3/2021 regarding academic integrity, stating: "All the rules and values that must govern research activities to ensure their honest and rigorous nature"[1]. Scientific theft, on the other hand, is defined in Article 3 of Ministerial Decision No. 1083 issued by the Ministry of Higher Education and Scientific Research, as will be explained later.

Second: Regulations and Conditions of Academic Integrity

Researchers should base their research on original and accredited studies and must be meticulous in collecting information and exploring various opinions and ideas presented in their research field. Academic integrity in quoting and benefiting from information and its transmission is of utmost importance, as it relies on two fundamental aspects[2]:

1- Referring to the sources from which the research gathered its information and ideas, with the necessity of citing bibliographic data.

2- Ensuring that the ideas and opinions from which the information is conveyed are not distorted.

To achieve this, there must be a set of guidelines[3], including:

1- The researcher must delve into the methods, i.e., scientific methodologies and reputable sources for acquiring knowledge in their research. The key issue

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from over 10,000 individuals, proved that the minister's thesis was rife with literary thefts in most of its content. See: Sophie Roux, Op Cit, p1.

[1] - "The set of rules and values that must govern research activities to ensure honesty and rigor" Decree No. 02021-1572 of December 3, 2021, concerning compliance with the requirements of scientific integrity by public establishments contributing to the public service of research and recognized public utility foundations whose main activity is public research. JORF No. 00283 of December 5, 2021.
Amer Ibrahim Qandjli, Methodology of Scientific Research, Yazouri Publishing and Distribution Group, Oman, 2020, p. 17.

[2] - According to studies by the Ethics Committee of the National Center for Scientific Research (CNRS) in France on scientific integrity for the year 2012, it was found that in the field of life sciences, the number of retractions of articles published in prestigious scientific journals is increasing significantly due to erroneous or irreproducible results in new research. CNRS: "In the field of life sciences, the number of retractions of articles published in prestigious journals due to false or non-reproducible results is increasing dramatically." See: Léo Coutelle and Emmanuel Hirsch, Reflections on Training in Scientific Integrity and Research Ethics - Landmarks and Proposals.

[3] - Hussein Khalil Matar, Administrative Procedures Arising from Violations of Scientific Integrity in Iraqi Legislation, Middle East Journal of Legal and Jurisprudential Studies, Minaret of the East for Studies and Research, Volume 2, Number 4, 2022, pp. 79-81.

here is the gradual exploration of research topics, and the researcher should adhere to a method that helps reach a sound conclusion.

2- Academic integrity also requires the researcher to prioritize accuracy and credibility and to avoid misleading or distorting information.

3- To ensure scientific integrity in research, the researcher must attribute knowledge to its source, meaning they must be honest when acquiring knowledge and avoid falsification and distortion.

4- Regarding scientific competence, a researcher should not delve into issues unless they have reached a level that qualifies them to do so, in order to avoid errors, considering that drawing conclusions and discussions require a high level of scientific competence.

Thirdly: Violations of Academic Integrity in the Age of Technological Advancement

The diversity of research specializations, the state of knowledge advancement, and the influence of external elements on actual research activity, along with the difficulty of collecting tangible evidence, make it challenging to identify practices that could constitute distinctive violations of academic integrity comprehensively and accurately. It is the responsibility of research stakeholders to ensure the dissemination of these good practices and to raise awareness within the scientific community.

Before delving into violations of academic integrity using the means provided by technological advancement, it is necessary to address classic violations, which still represent the majority of cases of academic dishonesty.[1] These violations can be summarized as follows:

1- Fabrication, meaning the researcher fabricates results out of their imagination.

2- Falsification, where instead of seeking truth, the researcher resorts to falsifying data without obtaining reliable outputs.

3- Plagiarism, which involves the researcher appropriating an entire research without any alteration and attributing it to themselves.

4- Verbatim copying without referencing the original source or without following citation principles.

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[1] - Mahmoud Mohamed Fahmi, Lack of Integrity in Scientific Research. Retrieved from: http://eng.tanta.edu/tqac/files/. Consulted on October 15, 2023.

5- Unlawful exploitation of electronic platforms.
6- Concealment of research collaboration aspects.
7- Repetitive publication of the same research in multiple outlets such as journals, conferences, etc., as well as duplication and lack of self-disclosure regarding the repetition of parts of previous research without explicit acknowledgment.
8- Rewriting paragraphs or other research works deemed suitable for one's work without expressing original ideas in one's own style.
9- Reliance on inaccurate or imprecise sources.
10- Unfaithful reviewing can significantly contribute to the dissemination and exacerbation of such behaviors, and reviewers should consider all factors to ensure their reviews are faithful.

Fourthly: Technological Advancement as a Double-Edged Sword

The information revolution and information technology, being a shared human knowledge accumulation, facilitate the rapid flow of information without cost or effort to access it[1]. Technological advancement in communication enables access to information, disregarding geographical and temporal constraints and without physical limitations. While platforms and digital platforms contribute to storing and displaying a vast amount of intellectual works, this can lead to issues like scientific theft or plagiarism, threatening the authenticity of scientific research and the privacy of researchers[2], especially in the era of artificial intelligence.

Artificial intelligence refers to a computer or machine's ability to simulate human mind capabilities such as learning from examples and experiences, recognizing things, understanding and responding to language, making decisions, problem-solving, and combining these abilities with others[3]. The frequent use of AI techniques to generate texts has created new possibilities for impersonation, allowing the creation of scientific articles that appear realistic

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[1] - Abdel Latif Boroubi, Technology Contributed to the Proliferation of Scientific Theft. Egyptian Electronic Victory Newspaper, publication date August 3, 2021. See: www.annasroline.com. Consulted on October 14, 2023.

[2] - Ibrahim Boulmakahl, Towards Globalization of Scientific Theft. Egyptian Electronic Victory Newspaper, publication date August 3, 2021. See: http://www.annasronline.com/index.php/2014-08-09-10-34-08/2014-08-25-12-21-09/181829-2021-08-03-02-32. Consulted on October 14, 2023.

[3] - Research and Information Center, Artificial Intelligence. Abha Chamber, 2021, p. 5. See: http://www.abhacc.org.sa. Consulted on October 14, 2023.

without containing any original ideas or research. This poses serious concerns about the integrity of scientific works across various fields, as well as risks of fraud and misconduct.

However, technological advancement, especially artificial intelligence, can be one of the most effective solutions in protecting academic integrity by providing services to detect scientific and literary theft. This involves developing and providing computer programs related to plagiarism detection while ensuring comprehensive databases for all scientific production electronically. Many programs and websites assist in identifying impersonation and scientific theft in research, ranging from theses to valuable research, relying on free or paid software to detect scientific theft and impersonation by comparing multiple research works[1]. Turnitin is one of the most famous programs helping researchers review their scientific output to ensure it is free from scientific impersonation before publication. It allows researchers to electronically submit their works over the internet for verification against impersonation and scientific theft, detecting literary impersonation by comparing scientific output with the archive or database available in the program itself [4]. Other programs such as

Aplog and Guarnet have also proved effective in reducing the phenomenon of scientific impersonation[2].

The second axis: Legal Methods to Curb Violations of Academic Integrity

Similar to other countries worldwide, the Algerian legislature hastened to enact laws and regulations to ensure the integrity of scientific research presented in universities, laboratories, or any legally qualified scientific entities. Ministerial Decision 1082 of 2020 contained a set of provisions[3], the most important of which was defining scientific theft, while it would have been preferable to define academic integrity, its characteristics, and means first, and

[1] - Saeed bin Saleh Banwas, Mechanism for Detecting Scientific Plagiarism Using the Turintin Program. Deanship of Scientific Research, University Agency for Graduate Studies and Scientific Research, Al-Majma'ah University, Saudi Arabia, 2023, pp.

[2] - Proceedings of the Joint Conference "Scientific Integrity", Center for Scientific Research Generation, Lebanon, 2017, p. 38.

[3] - Ministerial Decree No. 1082 dated December 27, 2020, specifying the rules related to the prevention and combating of scientific theft.

then address what is not considered academic integrity, such as scientific theft and not just scientific theft.

The decision summarized the definition of scientific theft in Article 3 by stating: "Scientific theft, for the purposes of this decision, is considered to be any act carried out by a student, professor, research assistant, permanent researcher, or anyone involved in forging results or cheating in scientific work required, or in any other scientific or pedagogical publications." It further elaborated on the types of scientific theft in the last paragraph.

To activate the scientific integrity index, the Ministry responsible for scientific research followed methods ranging from prevention to punishment, as detailed below.

Firstly: Preventive Measures.

Ethics are elevated when coupled with knowledge. Therefore, it seems unusual when a researcher exhibits unethical behavior such as dishonesty, theft, or impersonation. To avoid this, the Ministry of Higher Education and Scientific Research outlined a series of preventive measures, summarized as follows.

1- Awareness and Education

One of the most significant reasons leading to scientific plagiarism in general are:

- Weak scientific background of the researcher, author, or student.
- Absence of human values in the personality of the researcher, author, or student.
- Proliferation of what is known as commercial libraries and the pricing of scientific research.
- Ease of use and rapid spread of the Internet.
- Absence of strictness and punishment in the face of legal diversity.

For these reasons and others, it was incumbent upon the supervisory authority in the field of scientific research and its development to take action to establish controls and procedures to prevent researchers, authors, and even students from falling into the pitfalls of scientific plagiarism and anything that could distort scientific production. This was done by taking some measures under the directive of the supervisory ministry, which include[1]:

[1] - Articles 4 and 5 of Decree No. 1082 for the year 2020.

- Organizing training courses on scientific documentation rules and how to avoid scientific plagiarism.
- Organizing seminars and study days.
- Incorporating ethics of scientific research and documentation in all stages of higher education.
- Including a commitment to adhere to scientific integrity and reminding of legal procedures in case of proven scientific plagiarism.

Among the preventive measures[1], aligning the regulatory provisions related to doctoral training and organizing scientific research activities is crucial.

To further entrench the principle of scientific integrity in research works of all kinds, the supervisory ministry emphasized the need to take a series of preventive measures , summarized as follows:

- Establishing a database for all works completed by students and professors/researchers on the websites of higher education and scientific research institutions, including graduation theses, master's theses, doctoral dissertations, and university publications.
- Establishing a digital database including the names of professors/researchers according to their specialization fields and resumes at all higher education institutions and research institutions to utilize their expertise for evaluating scientific research works and activities.
- Purchasing the rights to use information technology software that detects scientific plagiarism in Arabic and foreign languages.
- Signing the Scientific Integrity Commitment by the student and the researcher is deposited with the relevant administrative authorities of the education and research unit.

All of this is an effort by the ministry to ensure that works submitted under its auspices are characterized by integrity, scientific honesty, and above all, the ethics of scientific research.

Secondly: Punitive Measures

When a report from the Ethics Committee of the institution confirms scientific plagiarism by a student, the head of the education and research unit

[1] - Articles 6 and 7 of the aforementioned decree.

refers the file to the unit's disciplinary council[1]. If a report from the Ethics Committee of the institution confirms scientific plagiarism in a work submitted by a research professor, the institution's director notifies the equal members committee within the legally specified deadlines [- Article 20 of the aforementioned decision][2] . According to Articles 27 and 28 of the aforementioned decision, any act that constitutes scientific plagiarism within the meaning of Article 3 of the same decision and is related to scientific and pedagogical works of the student in undergraduate, master's, master's, or doctoral theses before or after their defense exposes the perpetrator to the annulment of the defense and the withdrawal of the degree.

As for the research professor, any act that constitutes scientific plagiarism within the meaning of Article 3 of the same decision and is related to scientific and pedagogical works required for research projects, qualification works, scientific or pedagogical publications, or evaluations, whether during or after their defense or publication exposes the perpetrator to the annulment of the defense and the withdrawal of the degree, or the suspension of the publication of those works, or their withdrawal from publication. However, according to Article 29 of the same decision, all disciplinary proceedings against any person are suspended due to insufficient evidence or due to facts not included in the text of Article 3 of the aforementioned decision.

Conclusion:

Scientific research is a tool before it is a scientific means and the Scientific Secretariat is an ethical picture before being a scientific officer, Even in a digital environment, which allows the ethics of scientific honesty, which is the basis of each research, to be enshrined. To reply any information or study on which scientific research is based to its owners with honesty, honesty and impartiality. digital technology ", making digital technology a tool for achieving scientific research and increasing its quality and authenticity. However, the misuse of such techniques could negatively affect its credibility and directly affect the ethics of the Scientific Secretariat, and it was therefore necessary to seek effective means to put an end to such a scourge.

[1] - Articles 4 and 5 of Decree No. 1082 for the year 2020.
[2] - Articles 6 and 7 of the aforementioned decree.

In light of the discussion about scientific integrity and the challenges it faces, a set of recommendations can be presented to help prevent and address violations of scientific integrity:

1- The necessity of raising awareness among students and researchers about the dangers of impersonation and all forms of scientific plagiarism.
2- Training beginner students and researchers on the fundamentals of scientific research methodology and instilling a scientific spirit in the researcher's character.
3- Training students on how to cite properly to avoid impersonation and scientific plagiarism in all its forms.
4- Activating and strictly implementing the texts of penalties for scientific plagiarism and lack of integrity.
5- Providing databases containing theses, dissertations, and scientific works in universities, research centers, and laboratories and publishing them on the World Wide Web.
6- Using and developing programs and technologies that detect impersonation and scientific plagiarism.
7- Enhancing quality control of scientific papers at all stages.

Bibliography

- Corvol, P., & Gicquel, R. (2016, June 29). Bilan et propositions de mise en œuvre de la charte nationale d'intégrité scientifique [Assessment and proposals for the implementation of the national charter of scientific integrity]. *Vie Publique*. Retrieved from http://www.vie-publique.fr/rapport/35787
- Roux, S. (2020, February 6). Intégrité, éthos scientifique, fraudes et négligences [Integrity, scientific ethos, frauds, and negligence]. *Hal Open Science*. Retrieved from http://www.hal.science/hal-02461581
- Farid, M. M. (2023). *Al-Buhth al-'Ilmi fi Majal al-Fann wal-Tasmeem* [Scientific Research in the Field of Art and Design]. Anglo-Egyptian Library, Egypt.
- Al-Mur'ashli, Y. (2016). *Asul Kitabat al-Buhth al-'Ilmi wa Minahijuh* [Principles of Scientific Research Writing and Methodologies]. Dar al-Ma'rifah li al-Taba'ah wal-Nashr, Lebanon.
- Décret n02021-1572 du 3décembre 2021 relatif au respect des exigences de l'intégrité scientifique par les établissements publics contribuant au service public de la recherche et les fondations reconnues d'utilité publique ayant pour activité principale

la recherche publique [Decree No. 02021-1572 of December 3, 2021, on compliance with the requirements of scientific integrity by public establishments contributing to the public service of research and foundations recognized as serving the public interest with research as their main activity]. *JORF*, n00283 du 5déc 2021.

- Qandjli, A. I. (2020). *Manhajiyat al-Buhth al-'Ilmi* [Methodology of Scientific Research]. Yazouri Publishing and Distribution Group, Oman.
- Matr, H. K. (2022). *Al-Ijra'at al-Idariyya al-Mutartiba 'ala Intihak al-Amanah al-'Ilmiyya fi at-Tashri' al-Iraqi* [Administrative Procedures Resulting from Violations of Scientific Integrity in Iraqi Legislation]. *Majallat al-Sharq al-Awsat lil-Dirasat al-Qanuniyya wal-Fiqhiyya*, 2(4).
- Fahmi, M. M. (n.d.). *Adam al-Amanah fi al-Buhuth al-'Ilmiyya* [Lack of Integrity in Scientific Research]. Retrieved October 15, 2023, from http://eng.tanta.edu/tqac/files/
- Boroubi, A. L. (2021, August 3). *Al-Technologia Sahmat fi Astifal al-Siraqat al-Ilmiyya* [Technology Contributed to the Proliferation of Scientific Theft]. *Al-Nasr Al-Electronia* [Electronic Victory]. Retrieved from www.annasroline.com
- Boulmakahl, I. (2021, August 3). *Nahwa 'Aulmah al-Siraqat al-Ilmiyya* [Towards Globalization of Scientific Theft]. *Al-Nasr Al-Electronia* [Electronic Victory]. Retrieved from

http://www.annasronline.com/index.php/2014-08-09-10-34-08/2014-08-25-12-21-09/181829-2021-08-03-02-32

- Research and Information Center. (2021). *Al-Dhikai' al-Istintai'* [Artificial Intelligence]. Abha Chamber. Retrieved from http://www.abhacc.org.sa
- Al-Dihshani, J. A. (2018). *Muharabat al-Siraqat al-Ilmiyya Madkhulan li Tahqiq Judud al-Buhth al-Tarbiyy al-'Arabi* [Combating Scientific Theft as an Entry Point to Achieving the Quality of Arab Educational Research]. *Majallat Ittihad al-Jami'at al-'Arabiyya wal-Nafs*, 6(4), Syria.
- Banwas, S. B. S. (2023). *Al-Iliyah al-Kashf 'an al-Iqtibas al-'Ilmi bi Istikhdam Barnamaj Turintin* [Mechanism for Detecting Scientific Plagiarism Using the Turintin Program]. Deanship of Scientific Research, University Agency for Graduate Studies and Scientific Research, Al-Majma'ah University, Saudi Arabia.
- Tawil, N. (2017). *Al-Dawabit al-Akhlaqiyya lil-Buhuth al-'Ilmiyya Bayna al-Intizam wal-Kharuq al-'Ilmi* [Ethical Standards for Scientific Research between Compliance

and Scientific Violations]. In *A'mal al-Multaqa al-Mushtarik "Al-Amanah al-'Ilmiyya"* [Proceedings of the Joint Conference "Scientific Integrity"]. Center for Scientific Research Generation, Lebanon.

- Ministry Decree No. 1082 of December 27, 2020, specifying the rules related to the prevention and combating of scientific theft.