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Scientific Research Ethics Report

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1. Introduction

Introduction Scientific research ethics form a system of values and standards that guide the researcher's behavior through all stages of the study, starting from selecting the problem and designing the methodology, through collecting and analyzing data, and ending with presenting and publishing the results. These ethics are not confined to preventing fraud or plagiarism; they also involve respecting participants, protecting their privacy, documenting sources accurately, revealing limitations and conflicts of interest, and avoiding exaggeration when interpreting results (National Academies of Sciences, Engineering, and Medicine [NASEM], 2017).

The importance of ethical commitment becomes greater in administrative and applied studies that depend on questionnaires and the participation of employees within organizations, because the researcher deals with professional opinions that may be sensitive, and participants might fear that their responses could influence their relationship with the employer. Additional challenges also arise when studying artificial intelligence, such as data quality, the risk of algorithmic bias, model transparency, and accountability for the resulting decisions. UNESCO has stressed that the use of artificial intelligence must be connected to the protection of human dignity, fairness, transparency, accountability, and human oversight (UNESCO, 2021).

This report aims to present the main principles of scientific research ethics, explain the most prominent ethical issues that may face the researcher, describe the role of committees and regulatory rules, and then apply these principles practically to the proposed research titled “The Impact of Artificial Intelligence on Construction Project Performance and Decision-Making Efficiency.” The application focuses on collecting data from engineers and workers in projects, the mechanisms of informed consent, confidentiality, risk reduction, and ensuring the responsible use of artificial intelligence tools while preparing the study

2. The Importance of Scientific Research Ethics

Research ethics represents the foundation that gives scientific results their value and trustworthiness. An accurate result has little meaning if it is obtained through methods that violate participants' rights or depend on fabricated or selective data. Thus, methodological quality and ethical quality are connected; ethical commitment helps improve the design of measurement tools, document research decisions, reduce bias, and store data in a verifiable way. It also encourages the

researcher to present results that contradict his expectations instead of concealing them, and to disclose limitations that might restrict the generalization of the findings

Ethics also directly protect participants from psychological, professional, or social harm. In field research within construction projects, questions may include evaluating management efficiency, decision quality, or the level of use of modern technologies. If a participant's identity is revealed, he may face embarrassment, misunderstanding, or pressure from management or colleagues. Therefore, ethical practice requires minimizing identifiable data, clarifying that participation is voluntary, and giving the participant the right to withdraw without any consequences.

Ethics also protect the scientific community and educational institutions from losing trust. Well-documented and transparent reports allow others to understand how results were produced, while improper practices waste time and resources and weaken decisions based on research. In the field of artificial intelligence, ethical responsibility extends to include the effect of the tool itself. An algorithm may appear objective while reflecting biases in the data used to train it. Therefore, artificial intelligence outputs should not be treated as final facts; they must be verified by humans, their limitations explained, and they should not be used to make automated decisions that affect individuals. The World Health Organization states that responsible governance of artificial intelligence requires protecting human autonomy and promoting safety, transparency, accountability, and equity

3. Basic Principles of Scientific Research Ethics

3.1 Scientific Honesty

Scientific Honesty Scientific honesty means presenting information and results as they are, without distortion or intentional omission, while attributing ideas and quotations to their original authors. It also includes not claiming that procedures were carried out when they were not, and not modifying results to match the researcher's hypotheses. For example, if the questionnaire results show that the use of artificial intelligence is not clearly linked to improvement in some performance indicators, this result must be presented even if it contradicts the researcher's expectations

3.2 Integrity

Integrity means consistency between what the researcher declares and what he actually does, as well as adherence to the research plan and approved standards. A practical example is that if the researcher states that the sample includes engineers from various specialties, he may not exclude a category after collecting the data simply because its responses weakened the statistical relationship. The plan may be modified only when there is a clear scientific reason, provided that the modification is documented and its justification explained

3.3 Objectivity

Objectivity means reducing the influence of personal preferences and prior interests on design, analysis, and interpretation. It can be supported by using neutral questions, predefined statistical criteria, supervisor review of results, and avoiding wording that directs the respondent toward a specific answer. For instance, instead of asking, “To what extent has artificial intelligence improved project decisions?” a more neutral phrasing would be, “What is the level of impact of using artificial intelligence on decision-making efficiency?”

3.4 Confidentiality and Privacy

Privacy concerns the individual’s right to control the information he provides, while confidentiality concerns the researcher’s responsibility not to disclose this information to unauthorized persons. For example, job title, experience, and type of project can be collected without requesting the name, employee number, or company name. The data can then be stored in a password-protected file, and the results can be presented in aggregated form so that no individual or entity can be identified

3.5 Informed Consent

Informed consent is the participant’s agreement to take part after receiving clear information about the purpose of the study, the nature of the questions, the expected duration, benefits and risks, the method of using the data, and the right to withdraw. For example, the questionnaire begins with a short information page, followed by a mandatory question confirming that the participant has

read the information and voluntarily agrees before moving to the questions. Any wording suggesting that participation is a job duty or a condition for receiving a benefit must be avoided.

4. Ethical Issues in Scientific Research

4.1 Plagiarism

Plagiarism occurs when a researcher uses the words, ideas, or data of others without proper acknowledgment, whether by copying directly or by paraphrasing in a way that remains too similar to the original source. It can also happen when a researcher repeats substantial parts of his own earlier work without citing it. For example, taking a paragraph from a study about artificial intelligence in project management and merely replacing a few words without providing a citation would be considered plagiarism. This issue can be avoided by fully understanding the source material, writing in the researcher's own words, using direct quotations only when needed, and documenting all sources according to APA style.

4.2 Data Fabrication or Falsification

Data fabrication refers to inventing responses or findings that were never actually obtained, whereas falsification involves altering, removing, or manipulating data in order to reach a preferred outcome. For instance, a researcher may add unreal questionnaire responses to achieve the required sample size or remove negative answers because they reduce the strength of the relationship between variables. Such actions undermine the credibility and validity of the study. Therefore, the original dataset should be preserved, and any rules for excluding invalid responses should be clearly defined and documented before the analysis begins.

4.3 Bias

Bias can occur during sample selection, question design, or interpretation of findings. For example, if the questionnaire is shared only with engineers who already use artificial intelligence tools, the findings may overstate the expected advantages. The researcher's personal wish to confirm a particular hypothesis may also influence the analysis. To limit this risk, the questionnaire should be distributed among participants from different specialties and levels of experience, the questions should be phrased neutrally, and the study should report both supportive and non-supportive results

4.4 Violation of Privacy

Privacy is violated when a researcher gathers unnecessary identifying details, gives access to data to people who are not authorized, or reports information that could reveal who a participant is. For instance, even if a participant's name is not stated, combining the name of a particular project with an uncommon job title and specific years of experience may make the person identifiable. To prevent this, the researcher should follow the principle of data minimization, use broad categories instead of detailed identifiers, and remove any information that may enable indirect identification.

4.5 Conflict of Interest

A conflict of interest occurs when the researcher, sponsor, or employer has a personal, financial, or professional interest that could influence the neutrality of the study. For example, if the research is funded by a company that develops artificial intelligence systems, the researcher may face pressure to emphasize positive outcomes. To address this issue ethically, the relationship must be disclosed, the independence of the research design and analysis must be maintained, and the sponsor should not be allowed to remove or suppress unfavorable findings⁵.

Rules and Regulations Governing Research Ethics

Research ethics committees, also known as institutional review boards (IRBs), review studies that involve human participants before the process of data collection starts. Their role is to ensure that the research objectives and methodology are clearly defined, that participants are selected fairly, that potential risks are reasonable in relation to the expected benefits, and that consent and confidentiality measures are sufficient. However, receiving committee approval does not remove the researcher's responsibility; the researcher must still carry out the study according to the approved procedures and report any major changes or unexpected events.

In Saudi Arabia, the National Committee of Bioethics acts as the main authority for establishing ethical controls and monitoring their implementation in studies involving human participants or biological materials. Its implementing regulations define the duties of local ethics committees and outline the requirements related to informed consent and the protection of information (NCBE, 2022). Although an anonymous questionnaire-based administrative study may involve limited risk,

the researcher should still follow the university's procedures and obtain either official approval or an exemption before distributing the questionnaire.

The APA manual provides guidance for academic writing and documentation, including the use of in-text citations, formatting of the reference list, prevention of plagiarism, presentation of tables and figures, and clear reporting of findings. These guidelines are important because they create a consistent method for presenting knowledge and allow readers to identify, check, and follow the sources used. In addition, current international standards offer wider ethical principles for artificial intelligence, including fairness, protection against discrimination, transparency, human supervision, and safeguarding data (UNESCO, 2021).

6. Practical Application to the Research Topic

6.1 Description of the Study and Participants

The topic of the study is “The Impact of Artificial Intelligence on Construction Project Performance and Decision-Making Efficiency.” The study follows a descriptive analytical approach and relies on a questionnaire directed to engineers and workers in construction projects, such as planning, site, electrical, mechanical, quality, and safety engineers, as well as project managers. It is preferable to diversify the sample and not limit it to one department so that it reflects differences in experience and methods of using artificial intelligence in planning, risk forecasting, time and cost management, and decision support.

6.2 Informed Consent and Voluntary Participation

Before the questionnaire begins, an information page will appear to the participant explaining the researcher's name and university, the purpose of the study, that participation is academic and not a job evaluation, and that answering takes about 7–10 minutes. The page will also explain that participation is fully voluntary, and that the participant has the right not to answer any question or to withdraw before submission. No reward will be offered that could create pressure, and managers will not be asked to oblige their employees to participate. Selecting “I agree to participate” will be required to proceed to the questionnaire.

6.3 Data Collection and Minimization of Identifiable Information

Only the necessary minimum of demographic and professional data will be collected, such as specialty, years of experience within categories, job level, type of project, and level of use of artificial intelligence tools. The name, national ID number, employee number, and phone number will not be requested. It is also preferable not to collect the email address or internet protocol address whenever the questionnaire platform allows this to be disabled. If mentioning the company name is not necessary for the analysis, it will be replaced with a general classification such as “contractor,” “consultant,” or “project owner.”.

6.4 Confidentiality and Data Security

The data will be stored in an encrypted file or a university account protected by a strong password, and only the researcher and supervisor will be able to access it when needed. Any contact list, if it exists for distribution purposes, will be separated from the response file. During analysis, random numbers will be used instead of any identifiers, and the results will be presented in aggregated tables and percentages. If the number of participants in a very small professional category is too limited, it will be merged with a broader category to reduce the possibility of indirect identification. After the required academic period ends, identifiable files and unnecessary copies will be securely deleted.

6.5 Potential Risks and Methods of Mitigation

The expected risks are minimal, but they may include discomfort when evaluating workplace practices, fear of revealing a negative opinion, or misunderstanding the questions. To reduce these risks, the questions will be written in a general and neutral manner, and no confidential incidents or names of individuals or projects will be requested. The participant will also be allowed to skip a question, and the researcher’s contact information will be provided for inquiries or for requesting withdrawal of the response as long as that is possible before identifiers are removed. Individual results will not be sent to employers and will not be used for performance evaluation.

6.6 Fair Selection of the Sample and Prevention of Coercion

Fair Selection of the Sample and Prevention of Coercion Participants must be selected based on their relevance to the study topic, not only based on ease of access. Therefore, the questionnaire will be distributed through multiple professional channels, aiming to represent different specialties and levels of experience. When distributing the questionnaire within an employer, it should be clarified that the manager will not know who participated and who did not, and that non-participation will not affect the employment relationship. Excessive reminders or personal messages that could be perceived as pressure should also be avoided.

6.7 Ethical Use of Artificial Intelligence in Preparing the Research

The researcher may use artificial intelligence tools to help organize ideas, proofread, or suggest initial wording, but they may not be relied upon as a scientific source or allowed to fabricate references and results. Every piece of information and every source must be independently verified, and the use of the tool should be disclosed if the university's policy requires it. Raw data containing sensitive information or files related to participants or companies will not be uploaded to such tools. Full responsibility for the text, analysis, and conclusions remains with the researcher, with the necessity of human oversight of any automated outputs, consistent with the principles of transparency and accountability emphasized by UNESCO (UNESCO, 2021).

6.8 Integrity in Analysis and Reporting

Integrity in Analysis and Reporting Data-cleaning procedures and exclusion criteria will be determined, as much as possible, before testing the hypotheses. The sample characteristics will be presented clearly, and the statistical tests used, significance levels, and study limitations will be stated. Values or non-significant results will not be deleted merely because they do not support the hypotheses. A distinction will also be made between correlation and causation; a descriptive study may reveal a relationship between the use of artificial intelligence and performance, but it alone does not prove that artificial intelligence is the direct cause of improvement. Generalizing results beyond the sample and studied environment will be avoided.

6.9 Conflict of Interest and Data Ownership

The researcher will disclose any employment relationship or interest that may be related to the study topic. If data are collected from an organization in which the researcher works, participants will be informed that the research is independent from administrative evaluation, and raw data will not be shared with management. Data ownership will also be determined according to the university's policy, and responses will not be used later in another study unless the required approval is obtained or this is clearly stated in the consent form.

6.10 Plan for Handling Ethical Comments

The questionnaire tool will be reviewed to ensure that it is free from leading or unnecessary sensitive questions, and then it will be presented to the supervisor or ethics committee according to the university's requirements. Any substantial modification to the target group, method of data collection, or type of information requested will be approved before implementation. If a complaint related to privacy or participation arises, the use of the relevant data will be stopped until the case is reviewed, and the appropriate action is taken.

7. Conclusion

It is Obvious that scientific research ethics are not an additional formality after preparing the study, but a framework that guides all research decisions. Honesty, integrity, objectivity, confidentiality, and informed consent protect participants' rights, improve data quality, and strengthen society's trust in the results. Avoiding plagiarism, falsification, bias, violation of privacy, and conflicts of interest is also essential for the scientific and academic acceptance of research.

When applied to the study of the impact of artificial intelligence on construction projects, ethical responsibility focuses on voluntary participation, minimizing identifiable data, protecting professional opinions, securing files, presenting results in aggregated form, and maintaining human oversight over the use of artificial intelligence tools. Commitment to these procedures ensures that the study achieves its objectives without harming participants or institutions, and that it provides reliable results that can be used in future studies and decisions.

8. References

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