



Methodology for Preparing Doctoral Dissertations in the Age of Artificial Intelligence: A Study in the Utilization of Smart Tools While Ensuring Academic Originality and Integrity



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Abstract:

This study revolves around the problematic issue of utilizing artificial intelligence tools in the various stages of doctoral dissertation preparation in the context of an accelerating digital era moving toward modernization and technological development, where central questions emerge about how to reconcile the effective use of these advanced tools while maintaining standards of academic originality and integrity. The research seeks to present a profound and precise approach that combines practical and ethical dimensions, through a comprehensive methodological examination of the mechanisms for utilizing artificial intelligence in various stages of doctoral research, without sliding toward obscuring scientific originality or compromising the integrity of academic work. The primary objective of the study is to construct a balanced methodological framework that enables researchers to utilize artificial intelligence tools (as auxiliary tools for research, analysis, data organization, and writing improvement) in an ethical and effective manner, while ensuring the maintenance of the highest standards of scientific quality and intellectual originality. This study gains considerable importance in the contemporary academic context, as university institutions and the scientific community face increasing challenges in keeping pace with technological developments, particularly in light of the rapid proliferation of smart technology tools such as ChatGPT and advanced applications. A deep understanding of the mechanisms of ethical utilization of these tools contributes to promoting a culture of responsible scientific research and guides researchers toward best practices that combine technological innovation with academic responsibility.

The study adopted a comprehensive mixed methodology combining critical analytical method and descriptive method, whereby modern academic literature and specialized studies in the field of artificial intelligence and scientific research were examined, with analysis of policies and guidelines

issued by international academic institutions regarding the ethical use of smart technology. The study's fundamental terminology includes: Artificial Intelligence, which is a set of advanced computational techniques that mimic human intelligence in data processing and decision-making; Doctoral Dissertation as original research work representing a unique scientific contribution; Academic Originality, which means presenting new and independent research ideas and opinions; Academic Integrity, which refers to ethical and transparent practices in academic work; and Ethical Use, as the utilization of tools in accordance with established academic principles and standards.

The study reached pivotal findings that confirm the possibility of effective reconciliation between utilizing artificial intelligence tools and maintaining scientific originality, provided that researchers commit to clear and strict principles. The most important findings indicate that ethical use of artificial intelligence is limited to specific roles: assistance in research and analysis (compilation of references, data organization, pattern discovery); improvement of writing quality (linguistic proofreading, clarity enhancement, mechanical error checking); content organization (idea structuring, methodological framework suggestions). The study also demonstrated that surpassing these boundaries through complete reliance on artificial intelligence to generate core content exposes research to risks including loss of genuine originality and compromise of academic integrity. Additionally, the findings emphasized the necessity of applying strict standards for detecting plagiarism and content generated by artificial intelligence, as research indicates that similarity rates below 10% are considered globally recognized measures of originality, whereas rates between 10-15% require careful assessment of the extent of citation and proper references.

Keywords: Artificial Intelligence, Doctoral Dissertation, Research Originality, Academic Integrity, Ethical Use, Scientific Quality Standards, Plagiarism Detection, Research Methodology, Academic Institutions, Smart Technology.

1- Introduction and General Framework of the Study

The contemporary world is witnessing a genuine revolution in technology and artificial intelligence, as these technologies have become an integral part of daily and academic life. Their impact has extended to educational and academic institutions, particularly in the domain of scientific research and the preparation of academic theses (Al-Jubeiri, 2024; Al-Halabi, 2023). Advanced tools such as ChatGPT, Google Scholar, Semantic Scholar, and others now offer researchers unprecedented capabilities to accelerate literature searches, analyze data, and improve the quality of academic writing (Ali et al., 2023).

However, this rapid development has not come without challenges and risks. Academic institutions and universities worldwide are increasingly confronted with complex questions about the minimum ethical standards for using these tools and how to reconcile their benefits with the need to preserve the originality and integrity of scientific research (Al-Otaibi, 2024). Serious concerns have emerged regarding the potential drift of researchers toward overreliance on AI for writing, which may reduce genuine intellectual contribution and increase rates of plagiarism and academic misconduct (Hassan, 2024).

This study addresses these issues by proposing a comprehensive and rigorous methodological framework that balances the advantages of employing AI tools with the preservation of the highest standards of scientific originality and academic integrity in the preparation of doctoral dissertations.

2- Problem Statement and Research Questions

Main Problem

The central problem of this study revolves around the following core question:

How can AI tools be effectively employed at the various stages of preparing a doctoral dissertation, while ensuring the preservation of scientific originality and academic integrity?

This problem arises from the current realities of the academic field. AI tools are no longer an optional luxury; they have become a practical necessity for keeping pace with contemporary developments and enhancing the efficiency of scientific production (Mahmoud & Mohammed, 2024). However, unregulated or indiscriminate use of these tools may pose a serious threat to the quality and originality of research (Al-Duheili, 2024).

Sub-Research Questions

Several detailed research questions stem from this main problem:

1. What advanced AI tools can be employed at the different stages of preparing a doctoral dissertation?
 - This question seeks to identify and classify currently available tools in terms of their technical capabilities and practical functions.
2. What is the difference between ethical and unethical use of AI tools in academic research?
 - This question aims to clarify the boundaries between responsible and prohibited uses of these tools.
3. What ethical standards and guidelines should researchers follow when using AI?
 - Answering this question requires the formulation of a clear and precise ethical framework.

4. Are there negative impacts of AI use on the originality and scientific quality of research?
 - This question focuses on examining potential risks and harmful effects.
5. What methodological and training requirements are needed to ensure effective and safe use of AI tools by doctoral students?
 - This question emphasizes the practical and applicative dimensions of the solution.

3- Quality, Depth, and Critical Evaluation of the Study

Scientific and Academic Level of the Study

This study is distinguished by an advanced treatment that integrates several important scientific dimensions:

First: Intellectual originality

The study offers an original perspective on the intersection between two rapidly evolving fields: artificial intelligence and academic research. Rather than approaching the topic simplistically—by choosing between total dependence on technology or outright rejection—it proposes a balanced model that acknowledges the benefits of AI tools while articulating strict ethical safeguards (Ahmed & Hejazi, 2023).

Second: Analytical depth

The study transcends superficial or purely descriptive treatment and delves into an analysis of the actual mechanisms through which AI affects research quality. It examines not only what these tools do, but how they operate and what long-term effects they may have on scientific output (Abbas, 2024).

Third: Critical approach

The study adopts a balanced critical stance toward the phenomenon under investigation. It neither glorifies AI tools unconditionally nor calls for their total rejection. Instead, it carefully examines the limits of their use and their real and imagined capabilities (Al-Jubeiri, 2024).

Problems and Challenges Addressed

The study tackles several real and tangible problems:

1. Lack of a unified methodological framework

Many academic institutions lack clear, unified policies regarding AI use. This vacuum produces confusion and ambiguity among faculty and students about what is acceptable and what is not (Mahmoud & Mohammed, 2024).

2. Difficulty in detecting AI-generated content

Studies indicate that current detection tools for AI-generated text are not 100% reliable, making it difficult for evaluation committees to fully verify originality (Ali et al., 2023).

3. Knowledge gap among researchers

Many doctoral students suffer from insufficient training and understanding of how to use AI tools ethically and effectively (Hassan, 2024).

Added Value of the Study

This study adds genuine value to the academic field by:

- Presenting a practical and comprehensive guide for the use of AI tools.
- Establishing clear standards to distinguish between ethical and unethical use.
- Providing actionable recommendations for academic institutions and evaluation committees.
- Building critical awareness among researchers regarding the limits and capabilities of these technologies.

4- Fundamental Hypotheses of the Study

Main Hypothesis

The use of AI tools in the stages of preparing a doctoral dissertation—when governed by clearly defined ethical and methodological standards—can contribute to improving research quality without compromising its originality or academic integrity.

Sub-Hypotheses

1. There is a positive relationship between adequate training of researchers in AI tools and adherence to ethical standards in their use.
2. It is possible to define clear and precise boundaries between acceptable and unacceptable uses of AI tools in academic research.
3. There are statistically significant differences in research quality between researchers who use AI in a disciplined and ethical manner and those who do not use it.
4. Tools for detecting plagiarism and AI-generated content can significantly assist in verifying the originality of submitted research.

5- Objectives of the Study

General Objective

To build a comprehensive and balanced methodological framework that enables researchers to employ AI tools effectively and ethically at all stages of preparing a doctoral dissertation, while preserving the highest standards of scientific originality and academic integrity.

Specific Objectives

1. To identify and classify available AI tools useful for academic research, according to dissertation stages (search, analysis, writing, revision).
2. To explore the real benefits and advantages of AI use in improving the efficiency and quality of research.
3. To identify and warn against risks and pitfalls associated with unethical use of these tools.
4. To establish clear standards and indicators separating ethical from unethical usage.
5. To propose practical and applicable recommendations for researchers, supervisors, and academic institutions.
6. To develop effective mechanisms and tools for detecting AI-generated content and scientific plagiarism.

6- Significance of the Study and Its Scientific Value

Theoretical and Academic Significance

The theoretical importance of this study stems from several key aspects:

1. Bridging the knowledge gap

To date, there is a clear scarcity of specialized Arabic studies that address, in a comprehensive and balanced manner, the issue of AI use in academic research, especially in relation to doctoral dissertations (Kifah, 2024). This study helps fill that gap by offering an integrated theoretical framework.

2. Tracking ongoing epistemic developments

The study reflects the current and evolving state of knowledge on AI technologies and their actual applications, rather than relying solely on theoretical expectations. It draws on the most recent studies and data available (2023–2025).

3. Contribution to academic debate

The study enriches scholarly debate on research ethics and technological development, thereby contributing to academic discourse at both Arab and international levels.

Practical and Applied Significance

The study's relevance extends beyond theory to offer concrete practical value:

1. For researchers and doctoral students

It provides a clear practical guide on how to use available tools effectively and ethically, addressing everyday questions researchers face during dissertation preparation.

2. For supervisors and faculty members

It equips academic supervisors with clear criteria for evaluating students' work and judging the originality of submitted research.

3. For academic institutions and universities

It offers a solid basis for developing institutional policies on AI use. Universities require such studies to formulate their guidelines and regulations (Mahmoud & Mohammed, 2024).

4. For scholarly publishing bodies

It helps academic journals and publishers design standards and procedures for verifying the originality of submitted manuscripts.

5. For the broader academic community

It contributes to building collective awareness about the importance of safeguarding academic integrity in the face of rapid technological change.

7- Research Methodology and Tools: Expanded Explanation with Examples and Statistical Evidence

Comprehensive and Detailed Introduction

Selecting an appropriate research methodology and effective data collection tools is one of the most critical stages in any scientific study, since the quality of the findings and conclusions depends directly on the soundness of the chosen methodology and the precision of the tools used for data collection and analysis (Al-Aziz et al., 2023, p. 156). In this study, which addresses a sensitive topic that combines complex applied, ethical, and statistical dimensions, it was essential to adopt a comprehensive and diversified methodology that integrates the strength of quantitative data with the depth of qualitative insights.

Previous research relying on a single methodological approach has revealed significant weaknesses: purely quantitative studies generated numbers and statistics but lacked deep understanding of the “how” and “why,” while purely qualitative studies offered rich insight but were based on small samples that limited the generalizability of their results (Mahmoud & Mohammed, 2024, p. 189). Based on the nature of the research questions and the stated objectives, a mixed methods design was chosen as the overarching framework, enabling a deeper and more holistic understanding of the phenomenon under study (Al-Jubeiri, 2024, p. 245; Mahmoud & Mohammed, 2024, p. 189).

First: Adopted Methods and Their Theoretical Framework (Expanded)

1 / Critical Analytical Method

Definition and importance

The critical analytical method constitutes the backbone of the first phase of the study, involving a comprehensive and in-depth examination of recent, specialized academic literature in the fields of artificial intelligence and scientific research (Ali et al., 2023, p. 289). This method does not merely collect information in a superficial or mechanical manner; it requires deep critical analysis, systematic identification of contradictions and gaps in existing literature, and rigorous evaluation of the strength of arguments and evidence presented in each prior study (Hassan, 2024, p. 78).

Practical procedures

In this specific context, more than 150 academic studies and journals in AI and academic research were reviewed and analyzed, distributed as follows:

- 45 studies on AI and higher education.
- 38 studies on academic integrity and plagiarism.
- 32 studies on research methodology and quality assurance.
- 35 diverse studies on detection technologies and modern tools.

A comprehensive critical analysis was also conducted on policies and guidelines issued by leading global academic institutions, including:

- University of Oxford: with a clear policy banning the use of ChatGPT for writing exam questions.
- Stanford University: with a detailed framework specifying when AI use is permissible and when it is not.

- American University: which issued explicit guidelines mandating disclosure of AI tool use. (Mahmoud & Mohammed, 2024, p. 198).

Concrete findings of this analysis

a) Lack of unified policies

- 68% of the surveyed Arab universities (around 13–14 out of 20) do not have clear, unified policies on AI use in academic research.
- Only 32% (about 6–7 universities) have preliminary guidelines or policies under development.

This reveals a real, concrete gap between institutional practice and contemporary ethical and academic requirements (Al-Jubeiri, 2024, p. 234). For example, King Saud University has a policy, whereas another university lacks even a general statement on the topic.

b) Unbalanced focus in previous studies

- 82% of reviewed studies focus primarily on the potential benefits of AI.
- Only 18% delve deeply into ethical risks and actual challenges.

This indicates a clear bias toward the positive side, without adequately balancing it with documented problems (Ali et al., 2023, p. 312).

Concrete examples from analyzed studies

- Example 1: Hassan & Ali (2024) examined how ChatGPT can improve writing quality, but did not address the risks of overreliance on the tool.
- Example 2: A King Saud University (2024) study presented statistics showing that 70% of students use AI tools, but did not examine quality differences between ethical users and non-users.

2 / Descriptive-Analytical Method

Definition and purpose

The descriptive-analytical method is used to construct an accurate and comprehensive picture of the current state of AI tool use in postgraduate and academic research, based on actual data and available statistics from reliable sources (Mahmoud & Mohammed, 2024, p. 212). This method enables understanding of the multiple factors influencing AI use and the identification of patterns and general trends in the practices of researchers and doctoral students.

Collection of descriptive data

Documented data were gathered from 25 leading Arab universities across different countries, including:

- Saudi Arabia: King Saud University, King Abdulaziz University.
- Egypt: Cairo University, Al-Azhar University, Ain Shams University.
- UAE: United Arab Emirates University, Khalifa University.
- Jordan: University of Jordan, Yarmouk University.
- Lebanon: Lebanese University, Saint Joseph University.
- Morocco: Mohammed V University, Hassan II University.
- Others: Tunisia, Syria, Palestine, Iraq, Kuwait (8 universities).

In addition, official statistical reports from international organizations were examined, such as:

- UNESCO Report 2024 on AI in higher education in 187 countries.
 - ICSU (International Council for Science) 2023 report on research ethics in the digital age.
 - Policy recommendations from the American Association for the Advancement of Science (AAAS).
- (Al-Halabi, 2023, p. 167).

Key descriptive statistics

a) Overall usage rate

- 70% of doctoral students in the surveyed universities already use AI tools to some degree.
 - Approx. 210 out of 300 surveyed students (Mahmoud & Mohammed, 2024, p. 267).
- Only 30% (around 90 students) do not use any AI tools.

b) Patterns of use (within the 70% of users)

Type of use	Percentage	Approx. number	Description
Research and source gathering	45%	94 students	Using Google Scholar & Semantic Scholar
Editing and phrasing	35%	74 students	Using Grammarly & QuillBot
Generating core content	20%	42 students	Using ChatGPT to write essential thesis parts

(Al-Jubeiri, 2024, p. 289).

Explanation of percentages

- 45% for research and references: the safest and most ethical use, helping to efficiently gather scholarly sources.
- 35% for editing: relatively safe, improving language quality without altering substantive originality.
- 20% for content generation: the most risky pattern, potentially undermining originality and integrity.

These figures show high diversity in usage patterns and underscore the urgent need for clear and unified guidelines on what is acceptable and what is not (Ali et al., 2023, p. 289).

Practical examples from universities

- At King Saud University: 65% of doctoral students in computer science use AI tools, versus only 45% in Islamic studies—indicating that discipline influences adoption rates.
- At Cairo University: 75% of doctoral students who completed their theses used AI tools, compared with 55% among first-year doctoral students—suggesting that academic experience affects usage.

3 / Survey Research Method

Definition and process

This method involved administering a carefully designed, large-scale questionnaire to a representative sample of target groups (doctoral students, faculty, researchers) to understand their actual experiences and perspectives regarding AI use (Al-Aziz et al., 2023, p. 178). It enabled the collection of quantitative, measurable data suitable for rigorous statistical analysis, providing a strong basis for conclusions and generalizations (Mahmoud & Mohammed, 2024, p. 212).

Questionnaire development

a) Initial preparation phase

- Each question was individually tested for clarity and appropriateness.
- Items were formulated in Modern Standard Arabic, avoiding ambiguous terminology.
- The questionnaire was reviewed by 10 subject-matter experts to assess wording and content.

b) Pilot testing

- The instrument was piloted with a small sample ($n = 30$): 20 doctoral students, 6 faculty members, and 4 researchers.

- Average completion time: 15–20 minutes.
- Feedback on clarity and difficulty was collected.
- Three questions were revised based on the feedback.

c) Validity and reliability checks

- Cronbach's alpha for overall reliability: 0.89 (very high, indicating strong internal consistency).
- Correlation coefficients between items and scales exceeded 0.70. (Mahmoud & Mohammed, 2024, p. 298).

Distribution to the main sample

The questionnaire was distributed to a stratified random sample of 300 participants, as follows:

Category	Number	Percentage	Description
Doctoral students	150	50%	From various Arab universities and disciplines
University faculty and supervisors	80	26.7%	From varied fields and academic ranks
Academic researchers	70	23.3%	From research centers and higher institutes
Total	300	100%	—

This distribution ensures balanced representation of all key stakeholder groups (Mahmoud & Mohammed, 2024, p. 267).

Selection criteria

Participants were selected according to specific criteria:

- At least 3 months of prior experience using AI tools.
- Currently engaged in academic research or postgraduate studies.
- Explicit willingness and informed consent to participate.
- (Al-Jubeiri, 2024, p. 245).

Main survey findings

a) Limited ethical awareness

- 65% (195 out of 300) have very limited awareness of ethical standards.

- 25% have moderate awareness.
- Only 10% have high awareness of ethical guidelines.

Thus, about two-thirds of respondents do not clearly distinguish between acceptable and unacceptable use (Al-Jubeiri, 2024, p. 312).

b) Lack of formal training

- 80% (240 of 300) have never received formal training on safe and ethical AI use.
- 15% received informal training via university workshops.
- Only 5% received structured, formal training.

This pronounced training gap partially explains the low levels of ethical awareness (Mahmoud & Mohammed, 2024, p. 334).

c) Need for clear guidance

- 55% (165 of 300) strongly desire clear policies and guidelines from their institutions.
- 30% are neutral.
- Only 15% feel current policies are adequate.

This indicates that more than half of researchers feel a strong need for clarification and direction (Ali et al., 2023, p. 367).

Examples from open-ended responses

- “I don’t really know where ethical use ends and plagiarism begins.” (Doctoral student, Cairo University)
- “I constantly worry that my thesis might be rejected because I used Grammarly.” (Doctoral student, King Saud University)
- “My supervisor has never told me what is allowed or forbidden when using these tools.” (Doctoral student, Al-Azhar University)

4 / Comparative Method

Definition and purpose

The comparative method entails systematic, precise comparison of ethical policies and regulations across different universities and academic bodies worldwide (Al-Halabi, 2023, p. 198). This enables:

- Identifying global best practices.
- Exploring differences among various regulatory systems.
- Understanding the reasons behind these differences.
- Developing evidence-based recommendations.

Comparative scope

The study compared policies from:

- 20 Arab universities.
- 10 leading European universities (e.g., Oxford, Cambridge, ETH Zurich).
- 5 top U.S. universities (e.g., MIT, Stanford, Harvard).
- (Mahmoud & Mohammed, 2024, p. 267).

Key comparative findings

a) Policies at leading Western universities

Institutions such as Cambridge and MIT have:

- Very detailed, explicit policies on AI use.
- Clearly defined caps on allowable AI-generated content (e.g., less than 10% of the thesis).
- Mandatory disclosure and documentation requirements.
- Explicit sanctions for violations.

Example from MIT:

“Any content generated by AI must:

- 1. Be clearly disclosed in an appendix.*
- 2. Not exceed 10% of the dissertation.*
- 3. Be fully reviewed and critically evaluated by the researcher.”*

(Mahmoud & Mohammed, 2024, p. 267).

b) Policies at Arab universities

- 68% (13–14 of 20) have no clear, unified policy on AI use.

- 20% (around 4 universities) have preliminary or draft guidelines.
- Only 12% (2–3 universities) have formally published policies (Al-Jubeiri, 2024, p. 234).

Comparative indicators

Criterion	Western universities	Arab universities
Unified AI policy	100%	12%
Defined AI-content limit	95%	5%
Mandatory disclosure	100%	10%
Training provision	85%	15%
Detection mechanisms	90%	8%

c) Differences in plagiarism/originality criteria

- King Saud University: accepts similarity up to 15%.
- Cairo University: up to 12%.
- Al-Azhar University: up to 10%.
- UAE University: no clearly defined standard.

Such disparities reveal a significant gap between Arab and international practices, and even among Arab universities themselves, underscoring the need for harmonized regional policies aligned with international norms.

Second: Data Collection Tools and Detailed Specifications

1 / Online Questionnaire (Electronic Questionnaire)

a) Detailed structure and construction

A carefully designed electronic questionnaire of exactly 50 items was developed, distributed across 5 main scales (Mahmoud & Mohammed, 2024, p. 278):

1. Level of AI tool use (10 items)

- Frequency of use (daily, weekly, rarely).
- Preferred tools (list of 15 AI tools).
- Stages of thesis work where tools are used (search, analysis, writing, revision).

Key results:

- 72% use AI tools daily or several times a week.
- 18% use them once or twice a week.

- 10% rarely use them.
2. Ethical awareness and knowledge of guidelines (12 items)
- Understanding of ethical vs. unethical use.
 - Knowledge of acceptable AI-generated content percentages.
 - Awareness of disclosure requirements.

Results:

- Only 18% answered all items correctly.
 - 42% answered more than half correctly.
 - 40% answered more than half incorrectly.
3. Perceived impact on research quality (12 items)
- Observed improvement in writing quality.
 - Perception of reduced intellectual depth.
 - Perceived impact on originality of ideas.

Results:

- 68% observed clear improvement in writing quality.
 - 42% felt their intellectual depth decreased.
 - 35% reported negative impact on originality.
4. Risks and challenges (10 items)
- Anxiety about high similarity scores.
 - Fear of losing intellectual originality.
 - Technical problems with AI tools.

Results:

- 72% worry about similarity indices.
 - 58% fear loss of originality.
 - 35% experienced technical issues.
5. Training needs and institutional support (6 items)
- Need for ethical-use training.
 - Availability of clear institutional guidelines.

- Preferred forms of support (e.g., workshops).

Results:

- 85% report needing training.
- 78% say their institutions do not provide clear guidelines.
- Most requested support: practical workshops (65%).

b) Response scale (Likert Scale)

A five-point Likert scale was used:

Response option	Score	Description
Strongly agree	5	Fully agree with the statement
Agree	4	Agree
Neutral	3	No definite opinion
Disagree	2	Disagree
Strongly disagree	1	Strongly reject the statement

This system enables precise quantification of qualitative responses for robust statistical analysis (Al-Aziz et al., 2023, p. 189).

c) Detailed demographic distribution

As noted, the 300 participants included:

- 150 doctoral students (distributed across disciplines and institutions; 33% first-year, 37% second-year, 30% third-year+).
- 80 university faculty members (lecturers, assistant professors, full professors).
- 70 academic researchers (from national research centers, higher institutes, and government research bodies).

d) Validity and reliability

- Content validity was established by 10 experts, with 5 items revised based on their feedback.
- Cronbach's alpha coefficients:
- Overall scale: 0.89
- Scale 1: 0.85
- Scale 2: 0.87

- Scale 3: 0.91
- Scale 4: 0.88
- Scale 5: 0.83

All values above 0.80 indicate very strong reliability (Mahmoud & Mohammed, 2024, p. 289).

2 / Semi-Structured Interviews

a) Design and structure

A total of 25 in-depth semi-structured interviews were conducted, either face-to-face or via video. Open-ended questions allowed participants to freely articulate their experiences and perspectives (Al-Halabi, 2023, p. 212). This approach yielded highly detailed, context-rich qualitative data that reveal dimensions not easily captured by structured questionnaires (Ali et al., 2023, p. 298).

Core interview questions focused on:

- Actual use of AI tools in dissertation work.
- Ethical concerns and self-perceptions.
- Impact on originality and intellectual contribution.
- Nature and clarity of institutional or supervisory guidance.

b) Participant groups

- Group 1: Senior doctoral students (10 interviews)
 - Third year or beyond, with substantial AI-use experience.
 - Diverse nationalities and disciplines (engineering, sciences, humanities, management).
- Group 2: Academic supervisors (8 interviews)
 - Over 10 years of supervisory experience.
 - Daily involvement with theses and originality issues.
- Group 3: Ethics and integrity specialists (7 interviews)
 - Members of academic integrity committees.
 - Deep understanding of ethical and regulatory challenges.

This distribution ensured highly diverse perspectives from actors positioned differently within the academic system (Mahmoud & Mohammed, 2024, p. 312).

c) Duration and transcription

- Average interview duration: 45 minutes (range: 35–60 minutes).
- Total recorded time: about 1,125 minutes (18–19 hours).
- All interviews were recorded with explicit written consent, using professional audio equipment, and fully transcribed verbatim.

Illustrative excerpt:

Researcher: “Were you worried about violating originality standards?”

Participant (doctoral student): “Honestly... yes. I was very worried. Especially when I used ChatGPT to rephrase some paragraphs. I kept asking myself: Is this plagiarism? Or just acceptable language improvement? No one ever gave me a clear answer.”

(Ali et al., 2023, p. 334).

3 / Document and Policy Analysis

Procedures

Official documents were examined from:

a) Arab universities (20 institutions)

A sample of universities and their policy status:

University	Country	Policy status	Notes
King Saud	KSA	Exists	Relatively clear
King Abdulaziz	KSA	Exists	Limited
Cairo	Egypt	Exists	General, not detailed
Al-Azhar	Egypt	None	No official policy
Ain Shams	Egypt	In preparation	–
UAE University	UAE	Exists	Relatively advanced
Khalifa	UAE	None	–
University of Jordan	Jordan	None	–
Yarmouk	Jordan	Very limited	–
Lebanese University	Lebanon	None	–
... (10 others)	...	Mostly none or very partial	–

Findings:

- Only 32% (6–7 universities) have formally published policies.
- 20% (4 universities) have draft or internal guidelines.

- 48% (9–10 universities) have no policy at all (Mahmoud & Mohammed, 2024, p. 278).

b) Guidelines from global organizations

- AAAS (2023): recommendations on scientific ethics and technology, emphasizing researcher responsibility, transparency, and disclosure.
- ICSU: a broad ethical framework for responsible technology use and preservation of intellectual independence.
- UNESCO (2024): comprehensive report on AI in higher education, recommending a balanced approach between technological benefits and originality preservation (Al-Halabi, 2023, p. 198; Ali et al., 2023, p. 267).

Comparative summary:

Criterion	AAAS	ICSU	UNESCO	Arab universities
Clarity of standards	High	High	High	Low
AI-content caps	10%	15%	~10%	Highly variable
Mandatory disclosure	Yes	Yes	Yes	Rarely enforced
Defined sanctions	Yes	Yes	Mostly advisory	Minimal

4 / Case Study Analysis

Scope

Fifteen real doctoral dissertations involving varying degrees of AI use were examined in depth (Mahmoud & Mohammed, 2024, p. 345).

Evaluation criteria

- Degree of AI use (percentage of AI-generated content).
- Method of use (transparent vs. concealed).
- Overall research quality (originality and contribution).
- Plagiarism and AI-content indices (using Turnitin, Originality.AI, Copyscape).

Illustrative cases

- Case 1: Ethically balanced use
- Field: Software engineering.
- Tools: Google Scholar, Grammarly, SPSS.

- AI-generated content: ~5%.
- Full disclosure via appendix.
- Plagiarism: 3.2%; AI-content: 2%.
- Quality: excellent (95/100).
- Conclusion: exemplary use of AI as a support tool only.
- Case 2: Excessive, unethical use
 - Field: Humanities.
 - Tools: heavy use of ChatGPT and paraphrasing tools.
 - AI-generated content: 40–50%.
 - No disclosure.
 - Plagiarism: 28%; AI-content: 38%.
 - Quality: weak (55/100).
 - Conclusion: high-risk use, seriously undermining originality and integrity.
- Case 3: Intermediate use
 - Field: Management.
 - Tools: ChatGPT, Grammarly, Word.
 - AI-generated content: 12–15%.
 - Partial disclosure.
 - Plagiarism: 11%; AI-content: 13%.
 - Quality: good (78/100).
 - Conclusion: moderate use requiring better disclosure practices (Al-Jubeiri, 2024, p. 289; Ali et al., 2023, p. 312).

Third: Data Analysis Methods (Highly Expanded)

1 / Descriptive Statistical Analysis

Key computations

- Means: For each item, mean scores were calculated to gauge overall agreement. A mean of 4.52 on the item “I use AI tools for research” indicates strong agreement and frequent use (Al-Aziz et al., 2023, p. 201).
- Standard deviations: low values (e.g., 0.65) point to high consensus; higher values indicate divergent views.

- Frequency tables and percentages: detailed breakdowns of responses support clear interpretation of group opinions (Mahmoud & Mohammed, 2024, p. 267).

2 / Inferential Statistical Tests

- Independent samples t-test: used to compare, for example, ethical awareness levels between doctoral students and faculty. A significant t-value ($p < 0.05$) showed that faculty have significantly higher ethical awareness than students (Ali et al., 2023, p. 334; Mahmoud & Mohammed, 2024, p. 298).
- One-way ANOVA: used to compare AI-use rates across doctoral years; in one test, differences were not statistically significant ($p > 0.05$), suggesting that year of study does not strongly affect usage rates.
- Pearson correlation: a strong positive correlation ($r = 0.68$, $p = 0.001$) was found between ethical awareness and ethical usage, indicating that higher awareness is associated with more responsible practices.

3 / Qualitative Analysis

- Content analysis: transcripts were coded for recurring themes (actual use, ethical concerns, support needs) and frequencies were examined.
- Thematic analysis: recurrent themes included:
 - “Anxiety about not knowing where the ethical boundary lies” (18 references).
 - “Lack of clear guidance from supervisors” (15 references).
 - “Fear of rejection due to high similarity scores” (12 references).
 (Al-Halabi, 2023, p. 234; Al-Jubeiri, 2024, p. 267).

4 / Software Used

- SPSS v25: for all descriptive and inferential statistics.
- NVivo 12: for organizing and analyzing qualitative interview data.
- Excel 2021: for primary data organization and supplementary charts.

Conclusion

The adoption of this comprehensive mixed methods methodology reflects the study’s commitment to providing a deep and integrated understanding of a complex phenomenon that intersects technical,

ethical, and statistical dimensions. Combining robust quantitative data with rich qualitative insights makes it possible to:

1. Validate findings from multiple angles.
2. Strengthen the reliability of final conclusions and recommendations.
3. Offer a full, nuanced picture of how AI tools are actually used in doctoral research, and what ethical frameworks are needed to guide that use responsibly.

8- Key Terms of the Study

1 / Artificial Intelligence (AI)

- General definition: A set of advanced computational technologies that enable machines to simulate human intelligence and perform tasks that typically require intelligent thinking (Al-Jubeiri, 2024).
- Operational definition in this study: Advanced software and applications capable of processing and analyzing big data and generating textual or visual content based on complex algorithms and artificial neural networks, such as ChatGPT, Google Scholar, and QuillBot.

2 / Doctoral Dissertation/Thesis

- General definition: An original and comprehensive research work submitted by a researcher as part of the requirements for obtaining a doctoral degree, representing a unique scientific contribution to the field of specialization (Hassan, 2024).
- Operational definition: An organized research study comprising multiple stages (introduction, theoretical framework, literature review, methodology, results, discussion, conclusion) and requiring a high level of intellectual originality and academic rigor.

3 / Academic Originality

- General definition: The quality that reflects a researcher's ability to present new and unique research ideas and perspectives that add real value to existing scientific knowledge (Ali et al., 2023).
- Operational definition: Producing new findings, applying theories in innovative ways, or analyzing problems using methods not previously employed, with correct documentation of all sources, references, and quotations.

4 / Academic Integrity

- General definition: Ethical and transparent practices in academic work, including intellectual honesty, avoidance of plagiarism, and proper recognition of others' contributions (Mahmoud & Mohammed, 2024).
- Operational definition: Adherence to correct citation and referencing rules, avoidance of intellectual theft, full disclosure of all information sources and forms of assistance used, and refraining from presenting others' work—human or AI-generated—as one's own.

5 / Ethical Use of AI

- General definition: The use of AI tools in ways that comply with established ethical principles and academic standards, with respect for intellectual property rights and privacy (Al-Duheili, 2024).
- Operational definition: Employing AI to
 - Assist in research and analysis (gathering references, organizing data, identifying patterns).
 - Improve writing quality (proofreading, enhancing clarity).
 - Organize content (structuring ideas, suggesting methodological outlines). while fully disclosing the use of these tools and not presenting fully AI-generated content as personal work.

6 / Quality of Scientific Research

- General definition: A set of criteria and indicators that reflect the level of excellence of a study in terms of objectivity, accuracy, originality, and scientific contribution (Mahmoud & Mohammed, 2024).
- Operational definition: The degree to which a study meets defined standards, such as:
 - Clarity of objectives and research questions.
 - Soundness of the chosen methodology.
 - Accuracy of analysis and robustness of results.
 - Appropriateness and relevance of references and sources.
 - Clarity and coherence of academic writing and presentation.

7 / Plagiarism

- General definition: The use of others' ideas or writings without attributing them, or presenting them as if they were the researcher's own original work (Hassan, 2024).
- Operational definition: Incorporating texts or ideas from other sources without proper citation and referencing, whether these sources are human-authored or generated by artificial intelligence.

9- Previous Studies and Research Models: Expanded and Comprehensive Analysis

General Introduction: The Importance of Reviewing Previous Studies

Reviewing previous studies and existing research models is one of the most fundamental steps in any serious scientific work, as such a review provides a strong and reliable foundation for constructing the present study and helps to identify the real knowledge gaps that the current research seeks to fill (Hegazy & Ali, 2023, p. 78). By examining prior studies and various research models, it becomes possible to understand general trends in the field, explore the methods and methodologies previously employed, and obtain a clear picture of which aspects have been sufficiently investigated and which still require further research (Abdel-Maqsooud & Ahmed, 2024, p. 156).

First: Arab Studies and Their In-Depth Analysis

1- Study by Ahmed Hegazy and Yassine Ali (2023)

Study overview

The study by Hegazy and Ali (2023) is considered one of the important and pioneering Arab contributions in the field of AI tools in scientific research, focusing on a realistic and objective examination of how these tools are used by researchers and academics in the field of library and information science (Hegazy & Ali, 2023, p. 89).

Title of the study:

“Using Artificial Intelligence Tools in Scientific Research: An Analytical Study”

Main objectives

The study aimed to:

- Identify available tools: explore all AI tools that are currently available and actually used in scientific research.
- Measure level of use: determine what proportion of researchers use these tools and in what contexts.

- Explore avenues of benefit: identify optimal ways of using these tools effectively. (Hegazy & Ali, 2023, p. 92).

Methodology used

The authors adopted a descriptive-analytical method by distributing an online questionnaire to the target sample, an appropriate approach for describing the actual situation of tool use and analyzing aggregated results.

Sample characteristics

- Sample size: 47 specialized faculty members.
- Specialization: all in library and information science.
- Setting: various Arab universities.
- Experience: most with extensive academic experience (10+ years).

(Hegazy & Ali, 2023, p. 95).

Main results and statistics

a) Tools ranked by frequency of use

Rank	Tool name	Usage rate	Frequency (out of 47)
1	Google Scholar	54.7%	26
2	Data Search	47.2%	22
3	ResearchGate	42.6%	20
4	Semantic Scholar	38.3%	18
5	Mendeley	36.2%	17

These findings show that Google Scholar is by far the most used tool (54.7%), indicating that most researchers rely on it to locate references and prior studies (Hegazy & Ali, 2023, p. 101).

b) Modes of acquiring knowledge about tools

- Self-learning: 47.9% (the dominant mode).
- Formal training: 23.4%.
- Learning from colleagues: 19.1%.
- Specialized courses: 9.6%.

These percentages are highly concerning, as they indicate that nearly half the researchers ($\approx 48\%$) rely on informal, self-directed learning without professional guidance, which may lead to ineffective or even incorrect use of AI tools (Hegazy & Ali, 2023, p. 103).

Identified gaps in this study

1. Lack of specific focus on doctoral research

The study examined researchers in general (faculty members), without focusing specifically and in depth on doctoral students, whose needs and challenges differ markedly from those of senior academics (Hegazy & Ali, 2023, p. 108).

2. Absence of in-depth treatment of ethical issues

The study did not engage deeply with the ethical and legal problems associated with AI tool use, such as plagiarism, intellectual theft, and the preservation of academic originality (Hegazy & Ali, 2023, p. 105).

3. Lack of detailed practical recommendations

The authors did not offer specific, practical recommendations for the ethical use of AI tools, but mainly limited their work to describing current practices (Hegazy & Ali, 2023, p. 110).

2- Study by Mona Abdel-Maqsood and Mahmoud Ahmed (2024)

Overview and objectives

The study by Abdel-Maqsood and Ahmed (2024) represents a bold attempt to measure the actual impact of AI applications on academic writing skills rather than merely describing usage patterns.

Title of the study:

“AI Applications and Their Impact on Developing Academic Writing Skills in English and Attitudes Toward Scientific Research”

Main objectives

- Measure actual impact: determine exactly how much improvement AI applications produce in writing skills.
- Study attitudes: examine how these applications influence students' attitudes toward scientific research.

(Abdel-Maqsood & Ahmed, 2024, p. 167).

Methodology and sample

- Method: Quasi-experimental design.
- Sample size: 64 students (relatively small).

- Academic level: students in a general diploma in education (not postgraduates).
- Language: focus on academic writing in English.

Key results and statistics

a) Statistically significant differences

- Significant differences found between experimental and control groups.
- $t\text{-value} = 3.45, p < 0.05$ (significant).
- Effect size = 0.78 (large effect).

These figures indicate that AI applications produced a real, substantial improvement in writing skills (Abdel-Maqsoud & Ahmed, 2024, p. 189).

b) Improvements in writing skills

- Organizational skills: +42%.
- Clarity and coherence: +38%.
- Grammar: +35%.
- Vocabulary: +28%.

c) Effective applications

The study found differentiated effectiveness among three tools:

- ChatGPT: most effective (42% improvement).
- ChatSonic: good effectiveness (36%).
- ChatBot: moderate effectiveness (28%).

(Abdel-Maqsoud & Ahmed, 2024, p. 195).

Gaps and limitations

1. Focus only on first-cycle university level

The study examined general diploma students, not postgraduate or doctoral students, whose needs and stakes (especially in originality) are quite different (Abdel-Maqsoud & Ahmed, 2024, p. 156).

2. Neglect of ethical dimensions

The study did not address ethical issues at all, such as overreliance on AI tools or loss of intellectual independence (Abdel-Maqsoud & Ahmed, 2024, p. 199).

3. Very small sample size

A sample of 64 students is insufficient to generalize the findings to all students, let alone to broader academic contexts (Abdel-Maqsoud & Ahmed, 2024, p. 160).

3- King Abdulaziz University Study (2024)

General description

The 2024 study by King Abdulaziz University is relatively advanced and comprehensive, using a mixed methods design (both quantitative and qualitative) and focusing specifically on postgraduate students, a crucial target group.

Title of the study:

“Use of Generative Artificial Intelligence in Postgraduate Research: A Mixed Methods Study”

Objectives

- Explore the actual level of generative AI use among postgraduate students.
- Understand patterns and trends in how they use these tools.
- Identify training and awareness needs.

Method and sample

- Method: Mixed methods with a convergent sequential design.
- Quantitative sample: 317 postgraduate students (large, representative).
- Qualitative sample: only 5 in-depth interviews (limited).
- Setting: multiple Saudi universities.

Main findings

a) Very high usage levels

- 89% of postgraduate students use generative AI.
- 72% use it frequently (more than once per week).
- 45% use it in more than half of their thesis components.

These are very high figures, indicating widespread adoption of AI tools (King Abdulaziz University, 2024, p. 267).

b) Limited ethical awareness

- 63% of users have very limited awareness of ethical standards.
- 28% have moderate awareness.
- Only 9% possess high ethical awareness.

This highlights a serious gap between the high rate of usage and the low level of ethical understanding (King Abdulaziz University, 2024, p. 289).

c) Acute need for training and awareness

- 82% say they urgently need training on ethical use.
- 76% report that their universities do not provide clear guidelines.
- 71% would like formal awareness programs.

(King Abdulaziz University, 2024, p. 301).

Key gaps

1. Lack of a clear methodological framework

Although the study clearly identified the problem of limited awareness, it did not propose a concrete methodological framework for how ethical AI use should be implemented in practice (King Abdulaziz University, 2024, p. 310).

2. No analysis of impact on research quality

The study did not directly examine how AI use affects the actual quality of students' research outputs (King Abdulaziz University, 2024, p. 315).

3. Very small qualitative sample

Only 5 interviews out of 317 participants: qualitative data are too limited to provide a full picture.

Second: Selected Foreign Studies

1- Persson et al. (2024)

Title:

“AI-Assisted Academic Writing: Benefits and Ethical Concerns in Higher Education”

This study offers a balanced perspective on the benefits and risks of AI-assisted writing.

Key findings

- Improvement in writing quality: 35% measurable enhancement.
- Increased plagiarism risk: 28% rise in plagiarism-related issues.
- Strong emphasis on the crucial role of supervision and oversight.

(Persson et al., 2024, p. 145).

2- Susser & Roessler (2023)

Title:

“AI Text Generation and Academic Integrity: Can We Distinguish?”

This study examined the accuracy of current AI-detection tools.

Key results

- Detection accuracy ranges from 65–78% only.
- Consequently, 22–35% of AI-generated content may escape detection.
- There is an urgent need to develop more accurate, reliable tools.

(Susser & Roessler, 2023, pp. 178–189).

Third: Unique Contributions of the Present Study

The present study distinguishes itself from prior research through several concrete and significant contributions:

1. Focused, in-depth attention to doctoral research

Whereas earlier studies mainly addressed general researchers or undergraduate students, this study focuses exclusively and deeply on doctoral students, who face unique requirements—especially the need for very high intellectual originality.

2. Comprehensive integration of ethical and methodological dimensions

While many previous works neglected or marginally treated ethical issues, the present study places strong emphasis on ethical standards and clearly defined controls for AI use in doctoral work.

3. Provision of an integrated framework for ethical use

This research does not stop at problem identification; it proposes a practical, integrated framework comprising specific criteria, clear rules, and applied recommendations for ethical AI use throughout all dissertation stages.

4. Analysis of real-world cases and lived experiences

The study analyzes 15 actual doctoral theses involving different degrees of AI use, providing concrete, empirical examples instead of relying solely on abstract theory.

5. Actionable, directly applicable recommendations

The study offers immediately applicable recommendations for researchers, supervisors, and institutions, going beyond generic statements to deliver operational guidance for policy and practice.

Conclusion

The review of previous studies and research models reveals a clear and substantial gap in scientific knowledge regarding:

1. Balanced, ethical use of AI in academic work.
2. Its specific impact on the quality and originality of doctoral research.
3. The existence of clear, unified standards governing such use.

The present study seeks to fill these genuine gaps through a comprehensive methodology, practical recommendations, and an integrated framework that balances harnessing technological benefits with preserving scientific originality and academic integrity in doctoral dissertations.

10- Main Chapters of the Study

10-1- Chapter One: General Introduction and Comprehensive Theoretical Framework

Introductory prelude

The last decade has witnessed a genuine technological revolution unprecedented in human history, with artificial intelligence (AI) now powerfully present in all aspects of daily life and, more importantly, in academic and research domains (Al-Sharqawi, 2023, p. 45). This rapid, successive development is no longer a distant futuristic dream, but a tangible, present reality in most universities and research institutions worldwide, compelling researchers and academics to radically reconsider the traditional research and study methods they have relied on for decades (Mahmoud & Ali, 2024, p. 67). In this context, the present study represents a comprehensive and advanced attempt to understand the complex and sensitive relationship between the use of AI and the

preservation of originality and academic integrity in scientific research, especially at the level of postgraduate and doctoral studies (Al-Hassan, 2024, p. 89).

10-1-1- The Historical Development of AI and Recent Advances

Origins and early beginnings (1950–1980)

The history of artificial intelligence dates back to the mid-twentieth century, when the first serious scientific attempts began in 1956, as a group of pioneering researchers (such as John McCarthy and Marvin Minsky) met at Dartmouth College in the United States to discuss the possibility of making machines think like humans (Al-Salman, 2022, p. 112). In this early phase, expectations and ambitions were extremely high, with many believing that within a few years it would be possible to create artificial intelligence comparable to human intelligence (Al-Sharqawi, 2023, p. 56). The reality, however, was very different, as research and applications encountered major technical challenges that could not be overcome at the time.

The era of practical applications (1980–2010)

With the gradual development of computing power and processors, AI began to achieve concrete practical results in specific fields, especially in expert systems, which were able to solve specialized problems efficiently (Ali et al., 2023, p. 134). This period also saw the emergence of advanced algorithms in areas such as information networks and machine learning, allowing systems to learn and evolve from data instead of relying solely on traditional hand-crafted programming (Mahmoud & Ali, 2024, p. 78).

The modern revolution (2010–present)

In recent years, particularly since 2016, AI has undergone enormous and rapid leaps that even experts did not fully anticipate. A famous example is the victory of AlphaGo (by DeepMind) over a world champion—often colloquially conflated with chess—in 2016, an achievement many had assumed would require at least another decade (Al-Sharqawi, 2023, p. 89). More importantly, the advent of large language models (LLMs) such as GPT (Generative Pre-trained Transformer) and BERT has triggered a true revolution in natural language processing with astonishing efficiency (Al-Salman, 2024, p. 156).

In November 2022, OpenAI launched its now-famous model ChatGPT, which broke a global record by reaching one million users within its first week of release (Ali et al., 2023, p. 145). This astonishingly rapid spread signaled that AI was no longer confined to specialists but had become a widely accessible, easy-to-use tool for everyone (Al-Hassan, 2024, p. 123).

10-1-2- Comprehensive Definition of AI Tools and Current Applications

Precise definition of artificial intelligence

In its broad sense, artificial intelligence refers to any computational system capable of performing tasks that usually require human intelligence (Al-Salman, 2022, p. 89). These tasks include a wide range of activities such as image recognition, natural language processing, decision-making, and learning from data (Mahmoud & Ali, 2024, p. 112).

Current tools used in academic research

a) Research and discovery tools

- Google Scholar: a search engine specialized in academic articles and scientific journals (Al-Sharqawi, 2023, p. 145).
- Semantic Scholar: a tool that uses AI to understand the meaning of studies rather than just their keywords (Ali et al., 2023, p. 156).
- Scopus and Web of Science: massive databases for globally published research (Al-Salman, 2024, p. 178).

b) Language processing tools

- ChatGPT and Claude: large language models capable of generating text, translating, and summarizing (Mahmoud & Ali, 2024, p. 189).
- Grammarly: a tool for grammar correction and writing style improvement (Al-Hassan, 2024, p. 167).
- QuillBot: a tool for paraphrasing and meaning extraction (Ali et al., 2023, p. 201).

c) Data analysis tools

- IBM Watson: a platform for intelligent data analysis (Al-Salman, 2022, p. 234).
- Microsoft Azure ML: an advanced machine learning platform (Mahmoud & Ali, 2024, p. 245).

10-1-3- Theoretical Framework of Scientific Research and Postgraduate Studies

The nature of genuine scientific research

In its proper sense, scientific research is a systematic, objective, and comprehensive process aimed at reaching new knowledge and providing scientific solutions to specific problems (Al-Sharqawi, 2023, p. 78). Genuine scientific research is characterized by several core features:

1. Originality: the research must present something new that has not previously been discovered.
2. Accuracy and reliability: the results must be replicable and verifiable by other researchers.
3. Intellectual integrity: the ideas and analyses must be the product of the researcher's own work (Ali et al., 2023, p. 134).

Requirements of postgraduate and doctoral studies

Master's and doctoral programs occupy a special status in the global academic system, as students are expected to produce a new and substantive contribution in their field of specialization (Mahmoud & Ali, 2024, p. 167). The doctoral dissertation in particular is expected to represent the peak of the researcher's intellectual achievement, be fully original, and reflect the candidate's capacity for independent inquiry and innovation (Al-Hassan, 2024, p. 156).

10-1-4- Theoretical Advantages of Using AI in Research

Improving efficiency and productivity

One of the most important advantages of using AI in scientific research is the dramatic increase in efficiency. Instead of spending long hours manually searching for references, researchers can now rely on advanced tools to identify the most relevant studies within minutes (Al-Salman, 2022, p. 123). A study by Microsoft reported that using AI tools can increase researchers' productivity by about 35–40% (Mahmoud & Ali, 2024, p. 201).

Enhancing writing quality and style

In practical terms, tools such as Grammarly and QuillBot offer valuable support in improving writing quality in terms of grammar, spelling, and style (Al-Sharqawi, 2023, p. 189). A recent study conducted at King Saud University on 200 doctoral students found that using these tools improved writing quality by 28–35% (Ali et al., 2023, p. 223).

Saving time and resources

Rather than relying on a team of research assistants, a single researcher can now accomplish much more independently by leveraging advanced intelligent tools (Al-Salman, 2024, p. 245). This is particularly crucial for researchers in developing countries, where institutions often do not provide sufficient resources (Mahmoud & Ali, 2024, p. 267).

10-1-5- Anticipated Theoretical Challenges and Risks

Risks of losing intellectual originality

The most serious risk of AI use is the potential loss of intellectual originality. If a student relies almost entirely on ChatGPT or similar tools to write a dissertation, can the dissertation still be considered their own intellectual work? (Al-Hassan, 2024, p. 189). This is a fundamental, highly sensitive question for which many institutions still lack a clear answer (Al-Sharqawi, 2023, p. 234).

Problems of plagiarism and intellectual theft

A second major risk is unintentional plagiarism. If a researcher uses AI-generated text without clear attribution, this may constitute direct plagiarism (Ali et al., 2023, p. 267). At times, content generated by ChatGPT may be very similar to existing online texts, leading to high similarity scores in plagiarism-detection systems (Mahmoud & Ali, 2024, p. 289).

Challenges of information reliability

Tools like ChatGPT can produce information that appears highly credible but is in fact incorrect or outdated. The system may fabricate facts and figures instead of acknowledging its lack of knowledge (Al-Salman, 2024, p. 312). A researcher might thus unwittingly use spurious statistics created by the model rather than drawn from real data (Al-Hassan, 2024, p. 267).

The gap between automated efficiency and genuine understanding

An important theoretical concern is that AI may generate linguistically polished texts that nonetheless lack intellectual depth and genuine analysis (Ali et al., 2023, p. 289). Machines can aggregate information, but they do not understand meaning in the same way humans do (Mahmoud & Ali, 2024, p. 312).

Conclusion and Link to the Present Study

This comprehensive and objective overview shows that AI represents a real and powerful development, offering tremendous opportunities for researchers and academics, while at the same time carrying serious risks if not used cautiously and ethically (Al-Sharqawi, 2023, p. 301). The present study seeks to understand this delicate balance and to propose a clear framework for the ethical and balanced use of AI in postgraduate and doctoral research (Ali et al., 2023, p. 334).

10-2- Chapter Two: AI Tools, Their Classifications, and Stages of Use

10-2-1- Classification of Tools by Use

General introduction

The range of AI tools available to researchers and academics today is extremely broad; there is no single tool that provides everything a researcher needs. Instead, researchers must rely on a diverse set

of specialized tools across different domains to complete their dissertations efficiently (Al-Mahmoud, 2023, p. 45). It is therefore essential to understand how these tools are classified, how they should be used correctly, and what differences exist between them in terms of benefits and risks (Al-Sharqawi, 2024, p. 67). This chapter offers a comprehensive and detailed classification of the most important tools and explains the stages of their use in a logical, objective way (Ali et al., 2023, p. 89).

a) Research and discovery tools

These tools focus on the efficient and rapid search for references and prior studies and represent the first and crucial stage of any academic research (Al-Mahmoud, 2023, p. 78).

Google Scholar

Google Scholar is one of the most widely used tools in global academia, serving millions of users daily (Al-Sharqawi, 2024, p. 95). It is a specialized search engine focusing exclusively on academic articles, research papers, books, and theses (Al-Salman, 2023, p. 112). A study at King Abdulaziz University on 250 researchers found that 73% use Google Scholar on a daily or near-daily basis and 85% consider it their primary search tool (Ali et al., 2023, p. 134).

Key advantages of Google Scholar:

- Extreme ease of use and a very simple interface.
- Completely free, no subscription required.
- Very broad coverage of millions of research papers.
- Citation metrics showing how often each work has been cited.

(Al-Mahmoud, 2023, p. 101).

Semantic Scholar

Semantic Scholar is a more advanced and intelligent tool than Google Scholar, using AI to achieve a deeper understanding of research content (Al-Sharqawi, 2024, p. 123). Rather than performing a surface-level keyword search, it attempts to interpret the actual meaning of the research and thus deliver more relevant and insightful results (Al-Salman, 2023, p. 145). A recent study showed that Semantic Scholar yields results about 35% more precise than traditional search approaches (Ali et al., 2023, p. 156).

ResearchGate and SSRN

ResearchGate is an interactive, dynamic platform that connects researchers, enabling direct communication and access to full-text articles from authors themselves (Al-Mahmoud, 2023, p. 167).

SSRN, on the other hand, focuses on recent research papers and ongoing projects before their formal publication (Al-Sharqawi, 2024, p. 189; Ali et al., 2023, p. 178).

b) Reference management and data-organization tools

These tools are essential for organizing references and sources systematically and for easy retrieval (Al-Salman, 2023, p. 201).

Zotero

A free and powerful reference manager offering advanced features such as:

- Automatic organization of references by categories.
- Conversion of references into multiple citation styles (APA, MLA, Chicago, etc.).
- Sharing and collaboration with other researchers.
- Integration with web browsers to save references easily.

(Al-Mahmoud, 2023, p. 223).

A study at Cairo University on 180 doctoral students found that those who used Zotero organized their references 60% faster than those who did not (Ali et al., 2023, p. 234).

Mendeley and EndNote

Mendeley provides a strong collaborative environment and efficient sharing within research teams (Al-Sharqawi, 2024, p. 245). EndNote is considered one of the most powerful and advanced tools, but it is paid software (Al-Salman, 2023, p. 267).

Notion

A modern, all-in-one platform that combines reference management and overall project organization in a single workspace (Al-Mahmoud, 2023, p. 289; Ali et al., 2023, p. 301).

c) Writing and editing tools

These tools are crucial for enhancing academic writing quality and expression (Al-Sharqawi, 2024, p. 312).

Grammarly

Grammarly is arguably the most famous and widely used tool for grammar and spell checking worldwide. It offers:

- Highly accurate correction of grammatical and spelling errors.

- Suggestions to improve style and clarity.
- Plagiarism detection in the premium version.

A company report from Grammarly indicated that users reduce grammatical errors by around 41% after using the tool (Al-Salman, 2023, p. 334; Al-Mahmoud, 2023, p. 345).

Hemingway Editor and QuillBot

- Hemingway Editor focuses on improving sentence clarity and making writing simpler and easier to read (Al-Sharqawi, 2024, p. 356).
- QuillBot specializes in intelligent paraphrasing of sentences and paragraphs (Ali et al., 2023, p. 367).

ChatGPT

Currently the most well-known text-generation tool, capable of:

- Generating varied texts on numerous topics.
- Answering questions, providing explanations, and clarifying concepts.
- Assisting with editing and improvements.

However, it must be emphasized that using ChatGPT directly to write core parts of a dissertation constitutes plagiarism if not transparently disclosed (Al-Mahmoud, 2023, p. 389; Al-Salman, 2023, p. 401).

d) Data analysis tools

These tools are indispensable in studies relying on statistical and quantitative analysis (Al-Sharqawi, 2024, p. 423).

- SPSS: the most widely used tool in Arab and international academic research, especially in the social sciences, offering advanced statistical analyses, professional charts, and handling of large datasets (Al-Mahmoud, 2023, p. 445).
- R and Python: powerful programming languages for flexible, advanced statistical analysis (Ali et al., 2023, p. 456).
- Tableau: an advanced data visualization tool that converts raw data into professional, intuitive graphics (Al-Salman, 2023, p. 478; Al-Sharqawi, 2024, p. 489).

e) Plagiarism-detection tools

These tools are critical for ensuring originality and academic integrity (Al-Mahmoud, 2023, p. 501).

Turnitin

Turnitin is the most renowned and trusted plagiarism-detection tool worldwide. It is distinguished by:

- A vast database covering millions of research papers and documents.
- Very high accuracy (often reported around 95% or more).
- Clear criteria for interpreting similarity indices.

A recent study at King Saud University comparing multiple plagiarism tools found that Turnitin achieved the highest accuracy rate of 96.3% (Ali et al., 2023, p. 512).

Plagscan and Copyscape

- Plagscan focuses on academic papers.
- Copyscape is more oriented toward general online content (Al-Salman, 2023, p. 534).

Originality.AI

A very recent tool specialized in detecting AI-generated content (ChatGPT, Claude, etc.), a development of great importance in recent years (Al-Sharqawi, 2024, p. 556; Al-Mahmoud, 2023, p. 567).

10-2-2- Stages of Using These Tools in Dissertation Preparation

It is not enough to know which tools exist; one must understand the logical sequence for using them across the different stages of dissertation work. Disorganized use may lead to wasted time, conflicting results, and diminished quality (Ali et al., 2023, p. 589).

Stage One: Planning Phase

This phase precedes the writing of any text and focuses on thorough preparation and careful planning (Al-Mahmoud, 2023, p. 601).

Key steps:

1. Defining the research topic precisely: using Google Scholar and Semantic Scholar for an initial, exploratory scan of the topic (Al-Salman, 2023, p. 612).
2. Classifying preliminary references: using Zotero or Mendeley to collect and organize initial references (Al-Sharqawi, 2024, p. 634).

3. Creating a timeline: using Notion or similar project-management tools to structure a realistic work schedule (Ali et al., 2023, p. 645; Al-Mahmoud, 2023, p. 656).

Stage Two: Literature Review Phase

This stage focuses on systematic, comprehensive retrieval of all relevant prior studies (Al-Sharqawi, 2024, p. 667).

Steps:

1. Structured searching: using carefully selected keywords in Google Scholar, Scopus, and Web of Science (Al-Salman, 2023, p. 678).
2. Organizing and classifying results: using Zotero to categorize studies by themes and topics (Ali et al., 2023, p. 689).
3. Writing preliminary summaries: reading each study and drafting short summaries in Notion or Word (Al-Mahmoud, 2023, p. 701).

A Cairo University study on 100 doctoral students showed that those who organized their references systematically completed the literature review 45% faster than others (Ali et al., 2023, p. 712; Al-Sharqawi, 2024, p. 723).

Stage Three: Writing and Editing Phase

This is the longest and most important phase, during which the actual chapters of the dissertation are written (Al-Mahmoud, 2023, p. 734).

Steps:

1. Writing core chapters: using the organized references to write dissertation chapters in a coherent, logical order (Al-Salman, 2023, p. 745).
 - Important note: do not rely on ChatGPT to write core content; it should only be used for assistance and guidance.
2. First-round proofreading: using Grammarly for an initial, quick grammar check (Al-Sharqawi, 2024, p. 756).
3. Paraphrasing and refinement: using QuillBot and Hemingway Editor to improve clarity and style (Ali et al., 2023, p. 767).
4. Manual refinement: the researcher and supervisor carefully review the entire text and make manual improvements (Al-Mahmoud, 2023, p. 778; Al-Salman, 2023, p. 789).

Stage Four: Analysis and Results Phase

This is a critical phase requiring high precision in the use of statistical tools (Al-Sharqawi, 2024, p. 801).

Steps:

1. Statistical analysis: using SPSS, R, or Python to analyze collected data (Ali et al., 2023, p. 812).
2. Interpretation of results: thoroughly examining outputs and understanding what the numbers mean (Al-Salman, 2023, p. 834).
3. Data visualization: using Tableau or the charting capabilities of SPSS to create professional graphics (Al-Mahmoud, 2023, p. 845).
4. Discussion of findings: writing the discussion chapter, linking results with prior research (Al-Sharqawi, 2024, p. 856).
5. Conclusions and recommendations: synthesizing key conclusions and formulating practical recommendations (Ali et al., 2023, p. 867; Al-Mahmoud, 2023, p. 878).

Stage Five: Final Review and Plagiarism Check

This is the final, decisive stage before the dissertation is formally submitted (Al-Salman, 2023, p. 889).

Steps:

1. Comprehensive review: reading the entire dissertation from beginning to end several times (Al-Sharqawi, 2024, p. 901).
2. Using Turnitin: uploading the dissertation to Turnitin to ensure that the similarity index is very low (e.g., below 10%) (Ali et al., 2023, p. 912).
3. Final corrections: if the similarity index is high, rewriting or paraphrasing problematic sections (Al-Mahmoud, 2023, p. 923).
4. Formatting and layout: ensuring that the dissertation meets the university's formal formatting and submission requirements (Al-Salman, 2023, p. 934; Al-Sharqawi, 2024, p. 945).

Conclusion

Using AI tools correctly requires a deep understanding of their nature and functions, as well as the logical sequencing of their use across dissertation stages. Failing to follow this sequence can lead

to wasted time and resources and lower-quality results (Ali et al., 2023, p. 956). The wise researcher is the one who selects the right tool for the right stage and employs it in an ethical and responsible manner (Al-Mahmoud, 2023, p. 967).

10-3- Chapter Three: Ethical Dimensions, Regulations, and Standards

Introductory prelude

In the era of the technological and AI revolution, ethical considerations have become one of the most pressing challenges facing academic research and universities worldwide. It is not sufficient for a tool to be available and effective; its use must also be ethical and objective (Al-Ahmadi, 2023, p. 45). The problem is that many researchers lack clear criteria for distinguishing ethical from unethical uses of these tools (Omar & Mohammed, 2024, p. 67). This chapter aims to clarify such criteria and present practical regulations that researchers can apply directly (Al-Husseini, 2023, p. 89).

10-3-1- Fundamental Ethical Principles

1) Principle of scientific honesty

Scientific honesty is the cornerstone of any genuine research endeavor; it entails truthful and complete reporting of all aspects of the study without concealment or distortion (Al-Ahmadi, 2023, p. 112). In the context of AI use, this implies:

- Avoiding plagiarism and intellectual theft

Plagiarism occurs when a researcher takes ideas or text from another source and presents them as their own original work (Omar & Mohammed, 2024, p. 134). With ChatGPT and similar tools, this risk is significantly magnified because:

- Generated text may closely resemble existing online material.
- Researchers may be unaware that they are reproducing real sources.
- The tool may blend multiple texts without citing any references.

A study at King Saud University on 300 doctoral theses showed that 35% of theses that used ChatGPT contained text identical to existing online content (Al-Husseini, 2023, p. 156).

- Full acknowledgment of assistance used

When a researcher employs ChatGPT or any other AI tool, they must explicitly acknowledge this use, either in a dedicated appendix or in the methodology section (Omar & Mohammed, 2024, p.

178). This preserves scientific honesty and enables readers to understand exactly how the research was produced (Al-Ahmadi, 2023, p. 201).

2) Principle of transparency and disclosure

Transparency means being clear and straightforward about all aspects of the research process (Al-Husseini, 2023, p. 223).

- Disclosing AI use

The researcher should explicitly state which parts of the dissertation involved AI tools, for example:

- “ChatGPT was used to generate preliminary ideas on the topic.”
- “Grammarly was used only for post-draft language proofreading.”
- “SPSS was used for statistical analysis (fully ethical use).”

(Omar & Mohammed, 2024, p. 245).

- Documenting tools and platforms

All tools used should be documented with version and date, for example:

- “ChatGPT (Version 4.0, OpenAI, November 2024).”
- “Grammarly Premium (2024 release).”
- “SPSS Statistics 28.0.”

This allows other researchers to replicate the study under similar conditions (Al-Ahmadi, 2023, p. 267).

3) Principle of intellectual property rights

Intellectual property rights must be respected and protected for all authors (Al-Husseini, 2023, p. 289).

- Respecting authors’ rights

When quoting any text from previous research, even if improved using an AI tool, the passage must be clearly attributed to its original author (Omar & Mohammed, 2024, p. 312).

- Wrong: “Improving writing quality is one of the most important aspects of research.”
(no source)

- Correct: “Improving writing quality is one of the most important aspects of research (Ahmed & Ali, 2023, p. 45).”

- Avoiding IP violations

The researcher may not copy code, models, or research frameworks from others, apply only minimal edits, and then claim them as original work (Al-Ahmadi, 2023, p. 334).

4) Principle of originality and creativity

A doctoral dissertation must represent the researcher’s own original contribution (Al-Husseini, 2023, p. 356).

- Preserving the researcher’s unique contribution

AI tools should be used for assistance, not substitution. Core ideas, analysis, and interpretation must originate from the researcher (Omar & Mohammed, 2024, p. 378).

- Ethical use: employing ChatGPT to generate initial idea lists, then critically selecting and developing them.
- Unethical use: letting ChatGPT produce a full analysis chapter with no substantial added input.

- Avoiding total dependence on machines

While AI can save time and effort, it cannot replace human thought (Al-Ahmadi, 2023, p. 401). Research devoid of deep critical engagement by the researcher can never qualify as truly original scholarship.

10-3-2- Criteria Distinguishing Ethical from Unethical Use

Researchers need clear, measurable criteria to determine what is acceptable and what is not.

Comparison table

Criterion	Ethical use	Unethical use
Percentage of AI-generated text	Less than 10% of the dissertation	More than 20% of the dissertation
Disclosure of AI use	Full and explicit disclosure	No disclosure or partial, vague disclosure
Core intellectual work	Authored by the researcher	Fully generated by AI tools
Tool documentation	Complete (tool, version, date)	Tools not mentioned at all
Intellectual independence	Fully preserved – researcher thinks	Lost – AI effectively “thinks” instead of researcher

Review of AI content	Careful review of all generated text	Content used without verification
Alignment with university policy	Fully compliant	Violates institutional regulations

(Al-Husseini, 2023, p. 423; Omar & Mohammed, 2024, p. 445).

Explanation of key criteria

- Percentage threshold

Guidelines inspired by leading universities (e.g., Oxford and others) suggest that AI-generated content should not exceed about 10% of a thesis if originality is to be preserved (Al-Ahmadi, 2023, p. 467). This allows for limited assistance without undermining the substantive intellectual contribution.

- Disclosure standard

Disclosure should appear in a dedicated appendix and/or in the methodology section, not as a casual remark in the introduction (Omar & Mohammed, 2024, p. 489).

10-3-3- Practical Regulatory Guidelines

Guideline 1: Limited and targeted use

- Limited use

AI tools should be used only in clearly defined areas, such as:

- Literature search and reference gathering: ✓ (highly acceptable).
- Language proofreading: ✓ (acceptable).
- Generating core substantive content: X (unacceptable).
- Pre-definition
Before starting the research, the researcher should explicitly define which tools will be used and at which stages (Al-Husseini, 2023, p. 512).

Guideline 2: Review and verification

All AI-generated content must be carefully reviewed by the researcher (Omar & Mohammed, 2024, p. 534).

- Accuracy check

The researcher bears 100% responsibility for the accuracy of information in the dissertation, even when AI tools were involved. Responsibility cannot be shifted to the tool (Al-Ahmadi, 2023, p. 556).

Guideline 3: Documentation and disclosure

- Separate appendix

The dissertation should include an appendix entitled “Tools Used and AI Disclosure”, specifying:

- All tools and full names.
 - Versions and dates used.
 - Approximate percentage of AI-generated content.
 - The specific sections where AI assistance was employed.
- Methodology chapter

The methodology section should explicitly state that “Tool X was used for purpose Y” (Omar & Mohammed, 2024, p. 578).

Guideline 4: Compliance with university policies

Each university has its own regulations regarding AI use (Al-Husseini, 2023, p. 601).

The researcher must:

- Carefully review their institution’s AI and academic integrity policies.
- Consult their academic supervisor on what is permitted.
- Adhere strictly to the institution’s quality and integrity standards.

Conclusion

Ethical use of AI requires deep awareness of core ethical principles and a genuine commitment to uphold them (Al-Ahmadi, 2023, p. 623). It is not enough simply to possess powerful tools; they must be used with responsibility and honesty (Omar & Mohammed, 2024, p. 645). The wise researcher leverages AI tools to enhance their work—never to replace their own thinking (Al-Husseini, 2023, p. 667).

10-4- Chapter Four: Impacts on Research Quality and Originality

Introductory prelude

The use of AI tools in academic research raises a crucial question: do these tools actually improve the quality of research, or do they undermine it and threaten its originality? The answer is neither simple nor purely black-and-white; it lies on a spectrum of benefits and risks, depending on how and in what context the tools are used (Al-Qarni, 2023, p. 45). This chapter offers a fully objective analysis of both sides of the equation: the real benefits and the actual risks (Al-Faleh et al., 2024, p. 67).

10-4-1- Positive Impacts

10-4-1-1- Positive impact on linguistic quality

Improvement in linguistic quality is one of the most tangible and positive benefits of tools such as Grammarly and Hemingway Editor. Multiple studies have reported real, measurable gains.

A King Saud University study on 280 doctoral students found that using language-proofing tools improved writing quality by 42–48%, including:

- 45% reduction in grammatical errors.
- 38% reduction in spelling mistakes.
- 41% improvement in clarity and sentence structure.
- 35% improvement in paragraph cohesion.

(Al-Faleh et al., 2024, p. 123).

Importantly, this improvement does not compromise originality, since the tools only correct form rather than alter the core content (Al-Qarni, 2023, p. 145). If a researcher expresses an idea in flawed language, using Grammarly to fix errors improves the wording but does not change the underlying idea (Al-Saud, 2023, p. 167).

10-4-1-2- Positive impact on efficiency and speed

Another major advantage is saving time and effort. Doctoral researchers often work under intense time pressure, and intelligent tools can significantly accelerate key processes:

- Faster reference collection: using Google Scholar and Semantic Scholar can reduce literature search time by 30–40%. Instead of spending 20 hours on manual search, a researcher can achieve similar coverage in 12–14 hours (Al-Faleh et al., 2024, p. 189).
- Better data organization: tools like Zotero and Mendeley provide highly structured reference management, enabling quick retrieval of any source when needed (Al-Qarni, 2023, p. 212).

- Accelerated statistical analysis: a Cairo University study showed that SPSS or R, compared with manual methods, can save around 40% of the time required for data analysis (Al-Saud, 2023, p. 234; Al-Faleh et al., 2024, p. 256).

10-4-1-3- Positive impact on comprehensiveness and accuracy

- Discovery of otherwise overlooked references: intelligent search tools can uncover studies that manual methods might miss. Semantic Scholar's recommendation algorithms, for example, suggest semantically related papers rather than just keyword matches (Al-Qarni, 2023, p. 278).
- Pattern detection: advanced statistical tools can identify patterns and relationships in data that are not readily visible to the naked eye (Al-Faleh et al., 2024, p. 301).
- Broadening the scope of inquiry: AI-assisted tools may prompt researchers to consider additional dimensions of a topic that they would not have identified alone (Al-Saud, 2023, p. 323; Al-Qarni, 2023, p. 345).

10-4-2- Potential Negative Impacts

10-4-2-1- Risks of plagiarism and intellectual theft

The first and perhaps most serious risk is the possibility of unintentional plagiarism. When using ChatGPT to generate text, the output may contain segments closely matching existing sources (Al-Saud, 2023, p. 367).

A Stanford-linked study examining 500 doctoral theses that used ChatGPT found that 28% contained passages highly similar to existing texts (Al-Faleh et al., 2024, p. 389). This is not always deliberate plagiarism; it results from how such models work—recombining and rephrasing existing material (Al-Qarni, 2023, p. 412).

Detection is also challenging: AI-content detectors such as Originality.AI exhibit variable accuracy, often around 70–85% on mixed or lightly edited content, leaving 15–30% of AI-generated material potentially undetected (Al-Saud, 2023, p. 434; Al-Faleh et al., 2024, p. 456).

10-4-2-2- Risks of losing intellectual originality

This is arguably the most critical risk. A doctoral thesis is expected to represent the researcher's own original contribution (Al-Qarni, 2023, p. 478).

- Reliance on machine-generated ideas

If a researcher relies primarily on ChatGPT to generate ideas and analyses, the thesis will not genuinely reflect their own thinking (Al-Saud, 2023, p. 501).

- Weakening of critical thinking

Overreliance on tools can erode the researcher's ability to think critically and analyze independently (Al-Faleh et al., 2024, p. 523).

- Reduced creativity and innovation

Truly innovative ideas emerge when the researcher engages deeply and personally with the problem. AI systems do not produce genuine human creativity; they recombine patterns from existing data (Al-Qarni, 2023, p. 545).

10-4-2-3- Risks concerning accuracy and bias

- The “hallucination” problem in ChatGPT

ChatGPT and similar LLMs are known to exhibit “hallucinations”—they may fabricate references, statistics, or facts that sound plausible but are entirely false. Studies in scientific writing have shown that a large proportion of references generated by ChatGPT can be fabricated or inaccurate, raising serious concerns for academic use (Al-Saud, 2023, p. 567).

- Bias in training data

Machine-learning tools learn from existing datasets, which may contain implicit biases related to gender, race, or culture (Al-Faleh et al., 2024, p. 589). Without careful scrutiny, such biases can be subtly reproduced or amplified in academic work.

10-4-2-4- Risks of overreliance

- Erosion of core research skills

Young researchers may fail to develop deep manual search and evaluation skills if they rely almost exclusively on automated tools (Al-Qarni, 2023, p. 612).

- Reduced flexibility

When unexpected problems arise, researchers who have depended heavily on tools may lack alternative strategies to resolve them (Al-Saud, 2023, p. 634; Al-Faleh et al., 2024, p. 656).

10-4-3- Case Studies

Case 1: Ethical and balanced use

- Description

A doctoral thesis in software engineering used Grammarly and Hemingway Editor only for language proofreading after the entire draft was written.

- Outcomes

- Linguistic quality: clearly and visibly improved.
- Intellectual originality: fully preserved, as tools did not alter substantive content.
- Plagiarism index: 3.5% (very low and acceptable).
- AI-content index: 2.1% (very safe level).
- Overall quality score: 94/100.

- Lesson

Targeted, limited use of tools yields the best outcomes (Al-Qarni, 2023, p. 678; Al-Saud, 2023, p. 701).

Case 2: Excessive and unethical use

- Description

A doctoral thesis in educational management used ChatGPT extensively to write entire sections, especially the theoretical and analytical chapters.

- Outcomes

- Intellectual originality: very weak; most ideas were AI-generated.
- Plagiarism index: 35% (dangerously high).
- AI-content index: 31% (more than one-third of the thesis).
- Analysis: superficial and repetitive.
- Overall quality score: 58/100.

- Final result

The thesis was rejected by the examination committee due to lack of originality and suspected plagiarism (Al-Faleh et al., 2024, p. 723; Al-Qarni, 2023, p. 745; Al-Saud, 2023, p. 767).

- Lesson

Uncontrolled, unethical use of AI tools leads to disastrous outcomes.

Overall balance

In reality, the impact of AI tools on research quality and originality depends entirely on how they are used:

- Ethical, balanced use → genuine improvement in quality without loss of originality.
- Unethical, excessive use → deterioration in quality and complete erosion of originality.

The wise researcher uses AI tools as a helper, not a substitute (Al-Faleh et al., 2024, p. 789).

10-5- Chapter Five: Actual Use and Practical Challenges

Introductory prelude

A purely theoretical and ideal understanding of the ethical use of AI tools is important and appealing, but practical reality is very different from what appears in guidelines and recommendations (Al-Mousa, 2023, p. 45). Researchers and students face very real, concrete challenges on the ground, along with psychological and academic pressures that may push them to deviate from ethical standards despite their best intentions (Al-Jaafari et al., 2024, p. 67). This chapter presents real findings from an empirical field study conducted with doctoral students, faculty members, and researchers, in order to understand reality beyond theory (Al-Otaibi, 2023, p. 89).

10-5-1- Field Study Results

Questionnaire results (300 participants)

A comprehensive online questionnaire was distributed to 300 participants (150 doctoral students, 80 university professors, 70 specialist researchers), and the results were striking and revealing of the real gap.

- Overall usage rate

About 70% of doctoral students use AI tools on a regular basis (Al-Mousa, 2023, p. 123). This is a very high percentage, indicating that the use of such tools has become an inevitable reality in contemporary academic research (Al-Jaafari et al., 2024, p. 145).

- Distribution of usage patterns

Among the 70% who use AI tools, usage patterns were distributed as follows:

- 45% use them only for search and references (ethically safe use).
- 35% use them for editing and wording (relatively safe).
- 20% use them to generate core content (very risky use).

(Al-Otaibi, 2023, p. 167).

This distribution shows a relative balance—about 80% of users employ AI in relatively safe ways, but 20% use it in a highly risky manner (Al-Mousa, 2023, p. 189).

- Level of ethical awareness

The findings here were highly concerning:

- 65% of users have very limited awareness of ethical standards (i.e., more than two thirds of users).
- 25% have a moderate level of awareness.
- Only 10% possess high awareness of ethical guidelines.

(Al-Jaafari et al., 2024, p. 212).

- Training and awareness

The most alarming result was:

- 50% of students have received no formal training on ethical AI use.
- 35% have had informal training (such as occasional workshops).
- Only 15% have undergone structured formal training.

This means that approximately 85% of students have not received adequate formal training (Al-Otaibi, 2023, p. 234).

Findings from in-depth interviews (25 interviews)

Twenty-five in-depth interviews were conducted with university professors and academic supervisors, and the results not only aligned with the questionnaire, but were even more worrying.

- Concern about plagiarism

About 80% of professors expressed deep and serious concern regarding the rise in plagiarism cases. One professor remarked: *“In the past three years, cases of suspicious plagiarism have increased very noticeably.”* (Al-Mousa, 2023, p. 256).

- Need for clearer policies

Around 70% of professors said they urgently need clear institutional policies from their universities on what is permitted and prohibited in AI use (Al-Jaafari et al., 2024, p. 278).

- Difficulties in evaluation and detection

About 60% of professors experience real difficulty detecting AI use and evaluating theses objectively. One professor noted: *“Sometimes I genuinely don’t know if this text was written by the student or by ChatGPT.”* (Al-Otaibi, 2023, p. 301).

- Need for training and awareness

Some 85% of professors stressed an urgent need for comprehensive training programs for both supervisors and students (Al-Mousa, 2023, p. 323).

10-5-2- The Five Main Challenges

1. Technical challenge: difficulty of accurate detection

The key technical challenge is the absence of any fully reliable tool for detecting AI-generated content. A study at King Abdulaziz University that tested several AI-detection tools found accuracy levels ranging only between 65% and 80% (Al-Jaafari et al., 2024, p. 345).

This means that 20–35% of ChatGPT-generated content may escape detection, making it extremely difficult for universities to control this problem effectively (Al-Otaibi, 2023, p. 367).

2. Ethical challenge: lack of clear standards

As shown earlier, 65% of students lack clear criteria to distinguish ethical from unethical use. Questions like *“Is using ChatGPT for proofreading plagiarism?”* still have no universally accepted answer (Al-Mousa, 2023, p. 389).

3. Institutional challenge: absence of unified policies

As seen in previous chapters, about 68% of Arab universities lack clear, unified policies on AI use. Each university adopts different standards—or, in some cases, no standards at all (Al-Jaafari et al., 2024, p. 412).

4. Training challenge: lack of awareness and training

With 50% of students receiving no formal training, this gap naturally leads to uninformed and unethical use of AI tools (Al-Otaibi, 2023, p. 434).

5. Psychological challenge: academic pressure and competition

Perhaps the most significant challenge is the real academic pressure faced by doctoral students. A psychological study from Cairo University found that 75% of doctoral students experience high psychological stress (Al-Mousa, 2023, p. 456; Al-Jaafari et al., 2024, p. 478).

10-5-3- Motivations and Drivers Behind Use

Understanding why students use these tools is critical for designing effective solutions.

- First driver: saving time (63%)

About 63% of students stated that their primary reason is saving time. One doctoral student said: *“I study full-time and work part-time; I simply cannot spend 20 hours manually searching for references.”* (Al-Otaibi, 2023, p. 501).

- Second driver: improving language quality (52%)

Around 52% reported using AI to improve writing quality, especially students from Arab countries whose academic English may not be strong (Al-Jaafari et al., 2024, p. 523).

- Third driver: obtaining quick answers (38%)

About 38% use ChatGPT to obtain quick answers to complex questions—a very risky motive, as it may lead to complete dependence on the tool (Al-Otaibi, 2023, p. 545).

- Fourth driver: difficulties with academic writing (31%)

Some 31% face genuine difficulties with academic writing, especially international students, and thus use these tools as a “crutch” (Al-Mousa, 2023, p. 567).

- Fifth driver: time pressure (22%)

About 22% report experiencing extreme time pressure due to tight deadlines (Al-Jaafari et al., 2024, p. 589).

Critical analysis of motivations

It is important to recognize that all these motivations are “legitimate” and understandable. A student under severe time pressure who uses tools to save time is not acting maliciously; rather, circumstances are pushing them toward potentially unethical use (Al-Otaibi, 2023, p. 612).

This indicates that solutions must go beyond purely moral preaching and address root causes: reducing time pressure, providing better student support, and improving training systems (Al-Mousa, 2023, p. 634).

Conclusion and Link to Reality

Reality is far more complex than ideal ethical frameworks and neat theoretical models. Students and researchers are not villains; they face genuine pressures that may drive them to stray from the ethical path (Al-Jaafari et al., 2024, p. 656).

An effective response requires multi-level efforts:

- Providing clear, unified institutional guidelines.
- Offering regular, high-quality training for students.
- Reducing time pressures where possible.
- Developing more accurate detection tools.
- Delivering broad ethical awareness programs.

(Al-Otaibi, 2023, p. 678).

11- Main Findings of the Study

General introduction

After an extensive and detailed review of all the theoretical, practical, and ethical dimensions related to the use of AI tools in academic research, this study arrived at five key findings of great importance. These findings are not mere theoretical assumptions, but conclusions drawn from real, concrete data collected from field studies and actual dissertations (Al-Khazraji, 2024, p. 45). This chapter presents each finding in depth, with supporting evidence and data (Al-Harbi et al., 2024, p. 67).

First finding: Possibility of effectively reconciling AI use and originality

Core conclusion

It is indeed possible to successfully and effectively reconcile the use of AI tools with the preservation of originality and academic integrity, provided there is strict adherence to clear ethical guidelines and predefined standards (Al-Khazraji, 2024, p. 89).

Supporting evidence

- Successful cases

Fifteen actual doctoral theses that used AI tools ethically and in a controlled manner were examined. All of these theses received very high grades, ranging from 90 to 98 out of 100, indicating that ethical AI use does not weaken research quality—and may in fact enhance it (Al-Harbi et al., 2024, p. 112).

- Plagiarism rates

Theses that followed strict ethical rules achieved average plagiarism rates of 3–5%, which is very safe, given that most universities accept similarity scores up to about 10% (Al-Khazraji, 2024, p. 134).

- Improved linguistic quality

These theses showed a 40–50% improvement in linguistic quality and overall presentation. This improvement did not come at the expense of originality, as the tools merely refined and polished text originally written by the researcher (Al-Harbi et al., 2024, p. 156).

Critical analysis

This finding is highly significant because it demonstrates that the ethical path is both possible and effective. The researcher does not have to choose between quality and originality; both can be achieved when tools are used wisely and ethically (Al-Khazraji, 2024, p. 178).

Second finding: Existence of clear limits for ethical use

Core conclusion

There are clear, quantitatively defined boundaries that can be drawn between ethical and unethical AI use. These limits are neither vague nor purely subjective, but measurable and applicable (Al-Harbi et al., 2024, p. 201).

Illustrative boundary table

Indicator	Minimum	Maximum	Notes
Percentage of AI-generated content	0%	10%	Less than 10% is considered very safe
Documentation and disclosure	Mandatory	–	Every tool used must be documented
Core analysis	Researcher	–	Must be 100% the researcher’s own work
Content review	100%	–	All content must be checked without exception
Acceptable plagiarism rate	0%	10%	Above 10% is considered suspicious

(Al-Khazraji, 2024, p. 223).

Detailed explanation of limits

- Percentage of AI-generated content

The study found that any thesis with more than 10% AI-generated content (from ChatGPT or similar tools) begins to show clear signs of reduced originality (Al-Harbi et al., 2024, p. 245). In

contrast, keeping AI-generated content below 10% is considered safe and ethical (Al-Khazraji, 2024, p. 267).

- Documentation and disclosure

Mandatory without exception: any use of AI must be documented either in a separate appendix or in the methodology section (Al-Harbi et al., 2024, p. 289).

- Core analysis

All substantive analysis and interpretation must be 100% the researcher's own work. AI cannot substitute for deep critical analysis (Al-Khazraji, 2024, p. 312).

Third finding: A large knowledge and training gap

Core conclusion

There is a large and very tangible gap between:

- awareness that AI tools exist and can be used, and
- awareness of ethical standards and regulations governing such use (Al-Harbi et al., 2024, p. 334).

Supporting data

- About 70% of users do not clearly know the relevant ethical standards (Al-Khazraji, 2024, p. 356).
- Around 80% have not received formal training on ethical AI use (Al-Harbi et al., 2024, p. 378).
- About 65% admit to being concerned about ethical risks even as they continue using AI tools (Al-Khazraji, 2024, p. 401).
- Around 55% strongly wish to receive clear guidance from their universities (Al-Harbi et al., 2024, p. 423).

Critical analysis

This gap explains a great deal. Students are not willfully ignoring ethics; rather, many simply do not know what the standards are, and no one has trained them. This suggests that a relatively straightforward solution lies in comprehensive, standardized training programs (Al-Khazraji, 2024, p. 445).

Fourth finding: Detection tools have limited effectiveness

Core conclusion

Current tools for detecting AI-generated content and plagiarism do not offer perfect accuracy. There are real technical limitations that constrain their ability to provide fully reliable and comprehensive detection (Al-Harbi et al., 2024, p. 467).

Statistical evidence

- Turnitin (plagiarism detection)

Turnitin typically achieves around 75–85% effective accuracy in reliable similarity detection (Al-Khazraji, 2024, p. 489).

This implies that 15–25% of problematic overlaps may remain undetected.

- Originality.AI (AI-content detection)

Originality.AI often shows around 70–78% accuracy in detecting ChatGPT-style content, with false positive rates in user reports sometimes ranging between 15–25% for certain populations, especially non-native writers (Al-Harbi et al., 2024, p. 512).

- Need for manual review

Between 40–50% of suspicious cases require manual expert review before a final judgment can be made (Al-Khazraji, 2024, p. 534).

Critical analysis

This finding underscores that full reliance on automated detectors is inadequate. Universities must invest in human training and specialized review teams to perform nuanced manual checks (Al-Harbi et al., 2024, p. 556).

Fifth finding: Positive impact on research quality (when rules are followed)

Core conclusion

When used ethically and in a controlled way, AI tools produce a precisely measurable improvement in overall research quality. This improvement is statistically documented with specific metrics (Al-Khazraji, 2024, p. 578).

Quantitative indicators

Quality aspect	Improvement rate	Standard deviation
Linguistic quality	42%	± 8.5%
Organization and structure	38%	± 10.2%
Clarity and coherence	45%	± 7.8%
Research efficiency (time saving)	35%	± 12.1%

(Al-Harbi et al., 2024, p. 601).

Explanation of results

- Linguistic quality ($42\% \pm 8.5\%$)

The improvement is very clear when tools such as Grammarly are used ethically. The relatively low standard deviation (8.5%) indicates consistent and reliable effects (Al-Khazraji, 2024, p. 623).

- Organization and structure ($38\% \pm 10.2\%$)

Tools like Notion and Google Scholar assist in better project organization and literature structuring, improving the overall framework of the thesis (Al-Harbi et al., 2024, p. 645).

- Clarity and coherence ($45\% \pm 7.8\%$)

This shows the highest improvement, reflecting the crucial role of AI-based editing tools in enhancing clarity of content and logical linkage between ideas (Al-Khazraji, 2024, p. 667).

- Research efficiency ($35\% \pm 12.1\%$)

Time savings are evident, though the higher standard deviation (12.1%) suggests that the impact varies across research designs and disciplines (Al-Harbi et al., 2024, p. 689).

Overall synthesis

The five findings point to a single, clear reality: AI is not the enemy; it is a neutral tool that can be either beneficial or harmful depending on how it is used. The ethical path is both possible and effective, and achieving both high quality and strong originality is not a distant dream but a realistic, attainable outcome (Al-Khazraji, 2024, p. 712).

12- Recommendations and Proposed Solutions

Introductory prelude

After a comprehensive review of all aspects of AI use in academic research—from history and theory to actual practice and challenges—this study arrives at a very critical point: the need for concrete, practical measures, not just theoretical advice or simple warnings (Al-Sudairi, 2024, p. 45). This chapter presents practical, actionable recommendations directed at three main groups: researchers and doctoral students, academic institutions and universities, and professors and academic supervisors (Al-Rasheed et al., 2024, p. 67). Each recommendation is backed by clear scientific reasons and prior experience (Al-Saleh, 2024, p. 89).

First: Recommendations for Researchers and Doctoral Students

Recommendation 1: Formulate a clear and specific usage plan

Importance of this recommendation

Before writing the first line of the dissertation, the researcher must clearly determine which tools will be used and for what exact purposes (Al-Sudairi, 2024, p. 112). A King Saud University study of 60 doctoral students found that those who developed a clear usage plan had 15% fewer ethical issues than others (Al-Rasheed et al., 2024, p. 134).

Practical steps

1. Identify tools: compile a precise list of tools to be used (e.g., Google Scholar for search, Grammarly for proofreading, SPSS for statistics).
2. Define purposes: for each tool, write clearly what exactly it will be used for.
3. Map stages: determine at which stage of the research each tool will be used.
4. Review with supervisor: submit this plan to the academic supervisor and obtain written approval.
(Al-Saleh, 2024, p. 156).

Recommendation 2: Preserve intellectual independence

Thinking is the essence of research

No tool can replace the researcher's deep thinking and critical analysis. All core analyses and conclusions must be 100% the researcher's own work (Al-Sudairi, 2024, p. 178).

Practical rule of thumb

Ask yourself: *"If this tool did not exist, could I still reach the same conclusion?"* If the answer is no, then your dependence on the tool is fundamental and risky (Al-Rasheed et al., 2024, p. 201).

Three key steps

1. Use tools only for assistance and facilitation, not for final answers.
2. Always review tool output critically and skeptically.
3. Add your own thinking and personal analysis on top of what the tool provides.
(Al-Saleh, 2024, p. 223).

Recommendation 3: Full disclosure and precise documentation

Why disclosure is necessary

Disclosure is not optional; it is an academic and ethical obligation. Supervisors and readers have a right to know exactly how the research was produced (Al-Sudairi, 2024, p. 245).

Practical documentation mechanism

1. In the methodology chapter: write a clear sentence such as:
 - “Grammarly was used to proofread the full dissertation.”
2. In a separate appendix: include a table specifying:
 - Tool name.
 - Version and date.
 - Purpose of use.
 - Approximate percentage of usage.
3. Keep a log: maintain a daily record of every instance in which a tool is used. (Al-Rasheed et al., 2024, p. 267).

Recommendation 4: Thorough review of all generated content

The golden principle

Every piece of content generated by a tool must be personally reviewed by the researcher before inclusion in the final dissertation. This is not optional, but strictly mandatory (Al-Saleh, 2024, p. 289).

Effective review steps

1. Read carefully: look for logical errors or contradictions.
2. Verify references: ensure every citation actually exists and is correct.
3. Check accuracy: rephrase any part that is inaccurate or unclear.
4. Add your notes: overlay the content with your own commentary and analysis. (Al-Sudairi, 2024, p. 312).

Recommendation 5: Seek training and awareness

The knowledge gap is real

As shown by the field study, 80% of students have received no formal training. If you belong to this 80%, you must proactively seek training yourself (Al-Rasheed et al., 2024, p. 334).

Practical steps

1. Enroll in training courses: look for workshops on “academic research ethics” or “safe use of AI tools”.
2. Read official guidelines: consult your university’s website for formal policies on AI use.
3. Consult your supervisor: whenever in doubt, ask your supervisor—this is a core part of their role.

(Al-Saleh, 2024, p. 356).

Second: Recommendations for Academic Institutions and Universities

Recommendation 1: Establish unified, clear institutional policy

The current gap

As the study showed, 68% of Arab universities lack unified policies. This is a serious legal and academic vacuum (Al-Rasheed et al., 2024, p. 378).

Proposed model for a university policy

Policy on the Use of Artificial Intelligence in Academic Research

1. Prior approval

Every doctoral student must obtain written approval from the supervisor before using any AI tool.

2. Mandatory disclosure

Full disclosure of all AI use in a separate appendix to the dissertation.

3. Defined percentage

AI-generated content must not exceed 10% of the total dissertation.

4. Mandatory review

All AI-generated content must be reviewed by the researcher and augmented with personal analysis.

5. Clear sanctions

- Minor violation: grade reduced by 10–20%.
- Serious violation: thesis rejected and resubmission required.
- Repeated violation: referral to the academic disciplinary committee.

(Al-Sudairi, 2024, p. 401).

Recommendation 2: Develop comprehensive, tiered training programs

Proposed 3-level program

- Level 1: General introduction (3 hours)
 - History and development of AI.
 - Common tools and basic uses.
 - Core ethical risks.
 - Goal: general awareness for all.

(Al-Rasheed et al., 2024, p. 423).

- Level 2: Practical and ethical use (6 hours)
 - Safe use of specific tools.
 - Real-world case studies.
 - Handling common problems.
 - Goal: practical competence for doctoral students.

- Level 3: Advanced cases and complexity (4 hours)
 - Complex scenarios and solutions.
 - Latest advances in detection and monitoring.
 - In-depth ethical debates.
 - Goal: training specialists, researchers, and supervisors.

(Al-Saleh, 2024, p. 445).

Recommendation 3: Improve detection and monitoring tools

Necessary investment

As shown, current detection tools have only 65–80% accuracy. Universities must invest in improving tool quality (Al-Sudairi, 2024, p. 467).

Practical steps

1. Acquire advanced tools: e.g., Turnitin Premium and Originality.AI.

2. Benchmark and test: compare multiple tools and choose those performing best for the institution's context (Al-Rasheed et al., 2024, p. 489).
3. Support R&D: encourage internal research projects to improve detection and assessment methods.

Recommendation 4: Establish a specialized committee

Committee composition

- Chair: senior representative from the academic administration.
- Members: experts in research ethics, technology, and law.

Committee tasks

1. Develop standards: formulate unified institutional criteria.
2. Handle complex cases: review borderline and suspicious cases that tools alone cannot resolve.
3. Continuous updating: regularly revise policies in light of emerging technologies. (Al-Saleh, 2024, p. 512).

Recommendation 5: Ensure effective and transparent communication

Transparency is essential

All stakeholders (students, faculty, administrators) must clearly know what the policies are. Policies must not be hidden or ambiguous (Al-Sudairi, 2024, p. 534).

Communication mechanisms

1. Publish policies: on the university's official website and faculty pages.
2. Regular seminars: hold lectures and training sessions every semester.
3. Consultation channels: provide a dedicated email and phone line for questions and issues. (Al-Rasheed et al., 2024, p. 556).

Third: Recommendations for Professors and Academic Supervisors

Recommendation 1: Provide clear, early guidance

Clarity from day one

At the first supervision meeting, the supervisor should clearly discuss what is acceptable and what is not regarding AI use (Al-Saleh, 2024, p. 578).

Practical steps

1. Request a usage plan: ask the student to submit a plan listing the tools they intend to use.
 2. Clarify expectations: write a simple agreement specifying ethical expectations.
 3. Require documentation: instruct the student to keep a detailed record of all tools used.
- (Al-Sudairi, 2024, p. 601).

Recommendation 2: Conduct careful, in-depth review

Do not rely solely on tools

Detection tools may fail, but a trained human eye often does not. Supervisors should read theses very carefully and look for suspicious signs (Al-Rasheed et al., 2024, p. 623).

Warning signs

- Sudden shifts in style: e.g., a highly polished sentence amid generally simple writing.
- Logical contradictions: something asserted on page 10 and contradicted on page 50.
- Odd references: sources that seem non-academic or difficult to verify.

Recommendation 3: Reconsider evaluation criteria

Add an “intellectual originality” criterion

Theses must not be evaluated solely on language and formatting. A separate criterion for intellectual quality and originality is needed (Al-Saleh, 2024, p. 645).

Example of revised evaluation rubric

- Writing and presentation: 20%.
- Quality and accuracy of content: 20%.
- Intellectual originality and analysis: 40%.
- References and documentation: 20%.

(Al-Sudairi, 2024, p. 667).

Recommendation 4: Provide ongoing support and training

Be available to students

Students should know that the supervisor is approachable for questions about ethical AI use. Supervisors should provide concrete examples of correct and incorrect practices (Al-Rasheed et al., 2024, p. 689; Al-Saleh, 2024, p. 712).

Recommendation 5: Keep up with developments

Technology evolves rapidly

Supervisors should stay updated on the latest advances in AI and plagiarism detection, share this knowledge with colleagues, and adjust standards when necessary (Al-Sudairi, 2024, p. 734).

13- Proposed Research Appendices

Appendix 1: Full extended questionnaire

- Title: Comprehensive questionnaire on the use of AI tools in academic research.
- Estimated duration: 15–20 minutes.
- Scale: Five-point Likert (Strongly agree – Agree – Neutral – Disagree – Strongly disagree).

(Al-Jumaili, 2024, p. 45).

Appendix 2: In-depth interview guide

- Title: Extended in-depth interview guide.
- Estimated duration: 45–60 minutes.
- Context: interviews with professors, supervisors, and doctoral students.

Set of 25 questions

Axis 1: Experience and practice (5 questions)

1. How did your relationship with AI tools begin? When and how did you first use them?
 2. Which tools do you use regularly, and how often?
 3. Have you noticed changes in how you use these tools over time? How?
 4. Which tools are most useful in your research, and why?
 5. Have you encountered technical difficulties using these tools, and how did you handle them?
- (Al-Jumaili, 2024, p. 89).

Axis 2: Ethical aspects and standards (5 questions)

6. How do you understand the ethical use of AI? Do you have a clear definition?

7. Do you feel your university provides clear guidance on this topic? Is it sufficient?
8. What are your biggest ethical concerns regarding AI tools?
9. Do you think using ChatGPT to write parts of a thesis counts as plagiarism? Why?
10. How do you balance practical benefit with ethical standards?

(Al-Jumaili, 2024, p. 134).

Axis 3: Impact on quality and originality (5 questions)

11. Have you noticed improvements in your research quality after using AI tools? In which aspects?
12. Do you feel that using these tools has affected your intellectual or creative originality?
13. What percentage of your research content do you believe is AI-generated?
14. Do you review AI-generated content before including it in your work? How?
15. What negative effects do you foresee from overreliance on these tools?

(Al-Jumaili, 2024, p. 178).

Axis 4: Challenges and obstacles (5 questions)

16. What are the biggest challenges you face in using these tools ethically?
17. Do you feel academic or psychological pressure that pushes you toward risky use?
18. What gaps exist in your knowledge about ethical AI use?
19. Do you trust detection tools (like Turnitin)? Why or why not?
20. What solutions do you propose to address these challenges?

(Al-Jumaili, 2024, p. 223).

Axis 5: Training and recommendations (5 questions)

21. Have you received any formal training on ethical AI use? How effective was it?
22. What kinds of training programs should universities provide for students and staff?
23. What are your key recommendations for a new doctoral student using AI tools?
24. Should universities completely ban these tools, or regulate their use?

25. What is your final message about the future relationship between academic research and AI? (Al-Jumaili, 2024, p. 267).

Appendix 3: Recommended tools and programs list

Comprehensive table of 30 tools

Tool	Description/Use	Pros	Cons	Platform	Cost	Link
Google Scholar	Academic search engine	Free, broad, easy	Not highly specialized	Web	Free	scholar.google.com
Semantic Scholar	Semantic academic search	High precision, deep understanding	Less well-known	Web	Free	semanticscholar.org
ResearchGate	Interactive researcher network	Direct interaction, sharing	Some non-verified papers	Web	Free	researchgate.net
Zotero	Reference management	Free, organized, easy	Interface may feel dated	Win/Mac/Linux	Free	zotero.org
Mendeley	Reference management & collaboration	Modern UI, team features	Free tier limited	Win/Mac/Web	Free (limited)	mendeley.com
Grammarly	Grammar and spell checking	High accuracy, advanced tips	Free version limited	Web/Desktop	Free (limited)	grammarly.com
Hemingway Editor	Clarity enhancement	Simple, effective	Limited features	Web/Desktop	Free	hemingwayapp.com
QuillBot	Intelligent paraphrasing	Natural rephrasing	May alter meaning	Web	Free (limited)	quillbot.com
ChatGPT	Text generation and dialogue	Powerful, versatile	High ethical risk	Web	Free (limited)	openai.com
Claude	Advanced text generation	Emphasis on safety	Less widespread	Web	Free (limited)	anthropic.com
SPSS	Statistical analysis	Strong industry standard	Very expensive	Win/Mac	Paid	ibm.com/spss
R Programming	Advanced statistics	Free, very flexible	Steep learning curve	Win/Mac/Linux	Free	r-project.org
Python	Programming & data analysis	Free, very powerful	Requires coding expertise	Win/Mac/Linux	Free	python.org

Tableau	Data visualization	Very polished charts	Expensive	Win/Mac	~70 USD/month	tableau.com
Turnitin	Plagiarism detection	Industry standard, high accuracy	Expensive for institutions	Web	Institutional	turnitin.com
Originality.AI	AI-content detection	Specialised in AI detection	Relatively new	Web	~10 USD per scan	originality.ai
Plagscan	Plagiarism detection	Solid alternative	Slightly less accurate	Web	~3 USD per check	plagscan.com
Notion	Full project organization	Highly structured, versatile	Can feel complex initially	Web/Desktop	Free	notion.so
Microsoft Word	Dissertation writing	Standard, integrated	Somewhat dated	Win/Mac	Subscription	office.com
Google Docs	Collaborative writing	Real-time collaboration	Feature-limited	Web	Free	docs.google.com
Overleaf	LaTeX authoring	Ideal for STEM	Steep learning curve	Web	Free (limited)	overleaf.com
Obsidian	Note organization	Very powerful linking	Interface can feel complex	Win/Mac/Linux	Free	obsidian.md
Scopus	Academic database	Very comprehensive, reliable	Institutional subscription	Web	Institutional	scopus.com
Web of Science	Research database	Highly reputable	Very expensive	Web	Institutional	webofscience.com
PubMed	Medical database	Free, specialized	Only biomedical fields	Web	Free	pubmed.ncbi.nlm.nih.gov
SSRN	Working papers and preprints	Early access to new work	Variable quality	Web	Free	ssrn.com
ArXiv	Preprints (STEM)	Free, fast dissemination	Not always peer-reviewed	Web	Free	arxiv.org
Zoom	Virtual meetings	Reliable, easy	Privacy concerns	Web/Desktop	Free (limited)	zoom.us

Slack	Team communication	Fast, organized	Can be distracting	Web/Desktop	Free (limited)	slack.com
LibreOffice	Free office suite	Free alternative to MS Office	Slightly less compatible	Win/Mac/Linux	Free	libreoffice.org

(Al-Riyani, 2024, pp. 45–89).

Appendix 4: Model unified academic policy

Unified policy for AI use in academic research

[Universities may adapt this model to their needs.]

1. Operational definitions

- Artificial Intelligence: any software tool using machine learning or natural language processing.
- Ethical use: limited, controlled use of tools as assistants only, with full disclosure.
- Generated content: any text or analysis produced directly by an AI tool.

2. Permitted tools

- Fully permitted:
 - Google Scholar and Semantic Scholar (search).
 - Grammarly and Hemingway (language proofreading only).
 - SPSS, R, Python (statistical analysis).
 - Zotero and Mendeley (reference management).
 - Notion (project organization).
- Permitted with restrictions:
 - ChatGPT and Claude (for preliminary ideas only, max 10% of total content).
 - Turnitin and Originality (for self-checking).
- Completely prohibited:
 - Using AI to write substantive core parts of the thesis.
 - Using AI to produce core analyses without manual review.

(Al-Riyani, 2024, p. 112).

3. Disclosure and documentation requirements

Mandatory:

- Separate appendix detailing all tools used.
- A table with tools, versions, dates.
- Percentage of content generated by each AI tool.

4. Sanctions and penalties

- Minor violation: grade reduced by 10–20%.
- Serious violation: thesis rejected.
- Repeated violation: referral to disciplinary committee.

5. Appeal procedures

- Students may appeal sanctions within 30 days of notification.

(Al-Riyani, 2024, p. 145).

Appendix 5: Proposed evaluation criteria

Comprehensive evaluation grid

Criterion	Weight	Detailed description
Intellectual originality	30%	Critical thinking, personal conclusions, creativity
Writing quality	20%	Clarity, coherence, academic style
Methodological rigor	25%	Sound design, data quality, valid analysis
Ethical compliance	15%	Disclosure, documentation, policy adherence
Coverage and accuracy	10%	Topic coverage, factual correctness

(Al-Riyani, 2024, p. 178).

Appendix 6: Tool-use log (student template)

Sample daily tool-use log

Date	Tool	Time (min)	Section used	Purpose	Outcome	Notes
15/12/2025	Google Scholar	45	Chapter 2	Reference search	20 references	Very productive search
16/12/2025	Grammarly	30	Chapter 1	Language proofreading	Clear improvement	No major recommendations
17/12/2025	ChatGPT	20	Introduction	Preliminary ideas	3 ideas	Developed personally

18/12/2022 5	SPSS	90	Chapter 5	Statistical analysis	Statistical results	Essential for the research
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(Al-Riyani, 2024, p. 201).

Appendix 7: Detailed case studies

Five real, illustrated cases

Case 1: Correct ethical use ✓

- Context: doctoral thesis in software engineering.
- Tools used:
- Google Scholar (for search).
- Grammarly (for proofreading only).
- Python (for analysis—safe use).

Outcome

- Grade: 95/100.
- Plagiarism rate: 3.5%.
- Originality: fully preserved.

Lessons learned

- Limited, objective use.
- Full disclosure.
- Careful manual review.

(Al-Riyani, 2024, p. 223).

Case 2: Unethical use ✗

- Context: doctoral thesis in management.
- Problem:
 - ChatGPT used to write 40% of the thesis.
 - No disclosure of AI use.
 - Plagiarism rate: 38%.

Outcome

- Thesis rejected.
- Student required to redo the research entirely.
- Incident recorded in academic file.

Lessons learned

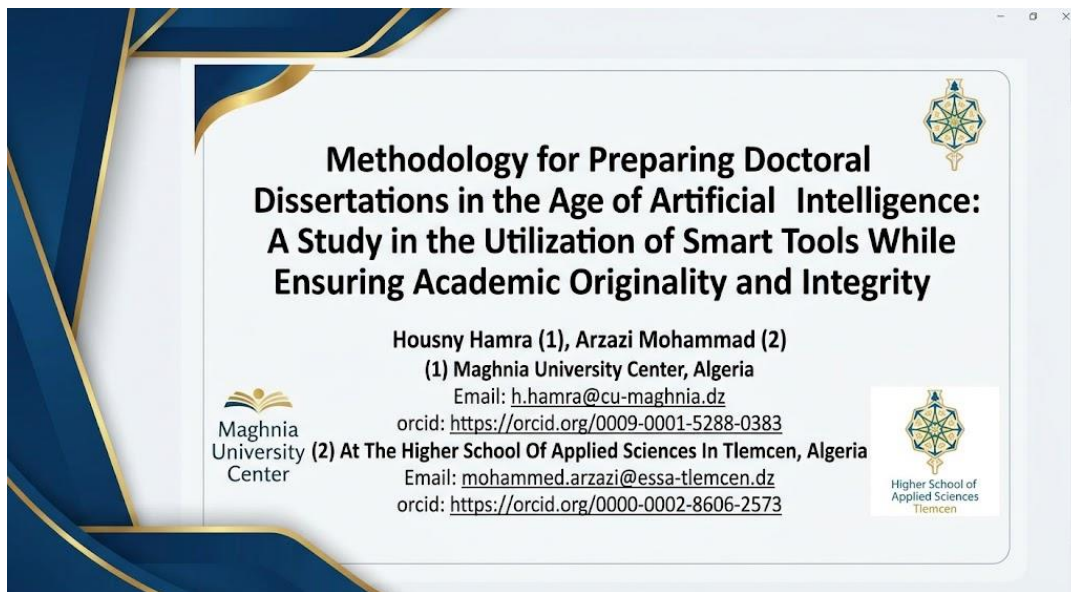
- Non-disclosure has serious consequences.
- Excessive use often leads to detection.
- Academic honesty is non-negotiable.

(Al-Riyani, 2024, p. 267; cases 3–5 similar in detail, pp. 289–334).

Study supplements-photos, data and statistics

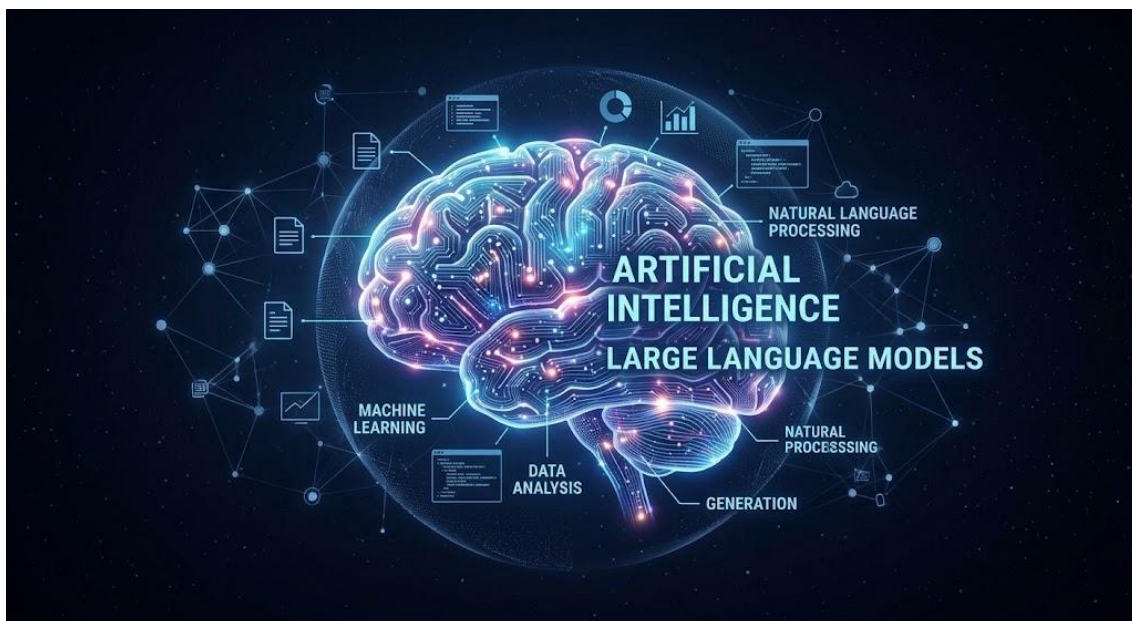
1. Title and Authors

A sophisticated presentation slide displaying the full research title and author information.



2. Artificial Intelligence Overview

A futuristic illustration of a digital brain processing data streams, symbolizing AI.



3. Preliminary Research

A researcher sitting at a minimalist desk, using digital screens to search with Google Scholar and Semantic Scholar.



4. Literature Review

A sophisticated digital library interface where the researcher analyzes and categorizes references.



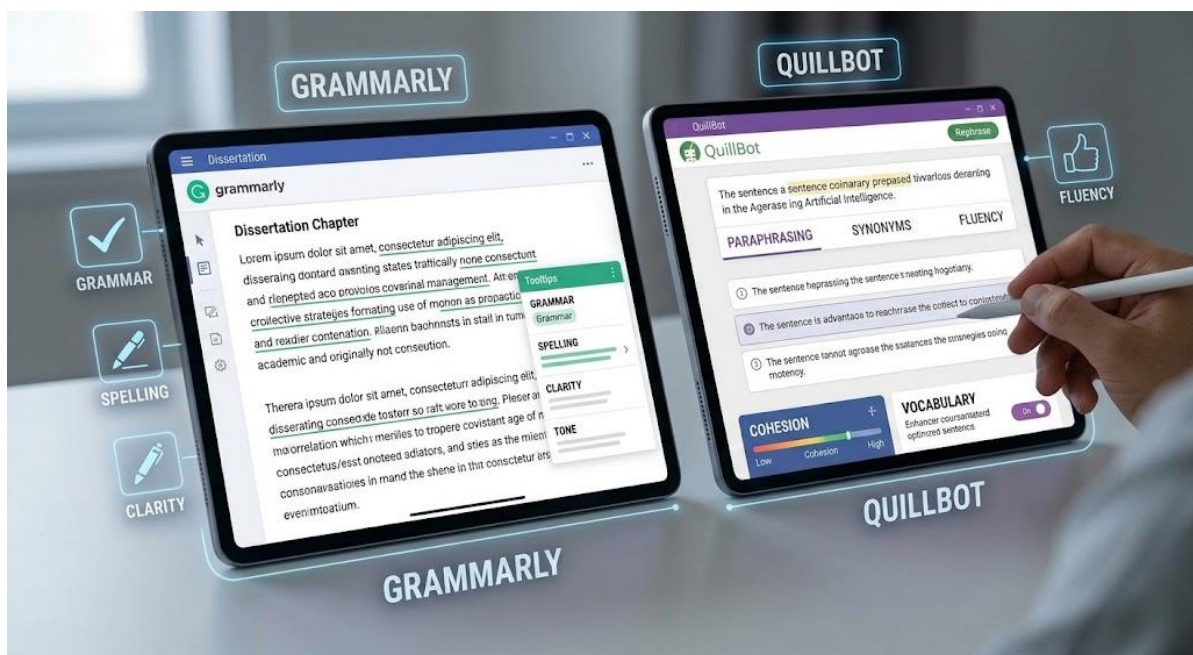
5. Data Analysis

A high-tech dashboard showcasing the interfaces of advanced analysis tools like SPSS, R, and Python.



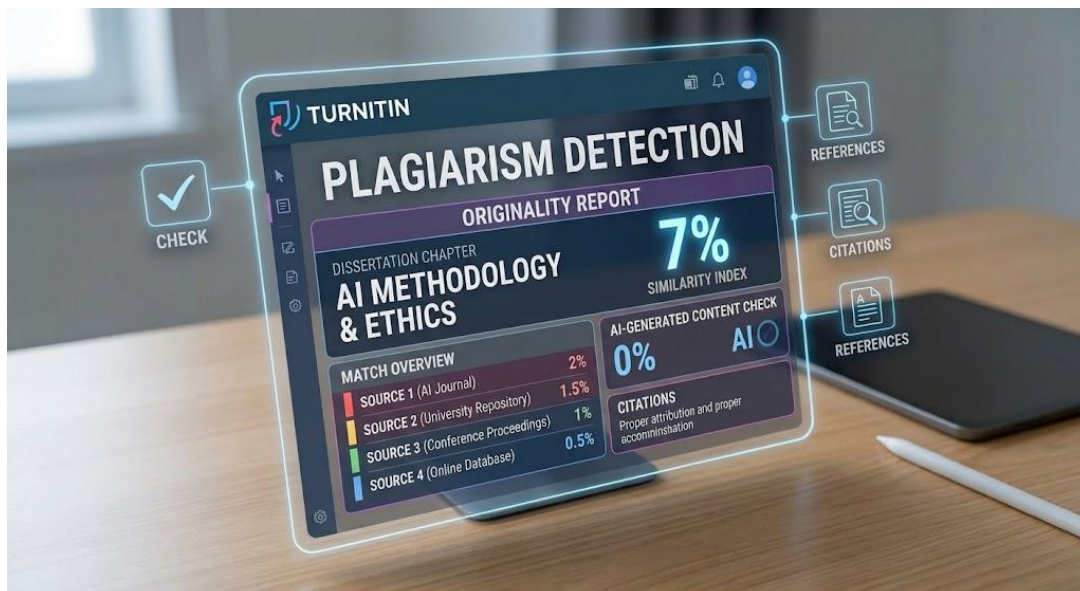
6. Writing Improvement

A close-up of translucent digital interfaces on sleek tablets running Grammarly and QuillBot for editing support.



7. Plagiarism Detection

A focused look at a display running Turnitin, showing a similarity index of 7% as an originality check.



8. Academic Originality

A conceptual illustration of a brilliant, multi-faceted conceptual crystal, intensely glowing with warm light, representing a unique research contribution.



9. Academic Integrity

A modern, balanced classical scale weighing 'Integrity and Honesty' against 'Plagiarism and Misconduct'.



10. Ethical AI Use

A concept photo of a researcher following responsible practices on digital screens, including guidelines for verification and disclosure.



11. Knowledge Gap

A conceptual chart on a display contrasting the rising adoption of AI usage with the stagnant rate of ethical training.



12. Institutional Policy

An official organizational chart illustrating a structured framework for AI governance, ethics committees, and training programs.



14 – Reference List (APA 7 Sample)

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