

Addressing Ethical Considerations, Governance, and Societal Impacts in AI Development and Application

Ashraf I. A. Qahman^{a*}, Mukite Abdu^b

^aInternet and Information Technology, computer Information Technology, A'Sharqiyah University (ASU), Oman

^bSekolah Tinggi Agama Islam Darul Ulum Banyuanyar Pamekasan Indonesia

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ABSTRACT

This study investigates the ethical considerations, governance frameworks, and societal impacts of artificial intelligence (AI) development and application, emphasizing the critical need for sector-specific approaches. Through a quantitative analysis of survey responses from 500 stakeholders across healthcare, finance, and education, the findings reveal that while ethical principles such as fairness, transparency, and accountability are moderately well-integrated into AI systems, sectoral disparities persist. Governance frameworks, although perceived as moderately effective, exhibit gaps in addressing regulatory and compliance challenges across different industries. Societal impacts are the most variable, with significant differences in accessibility, equity, and trust levels across sectors. These findings highlight the interdependence between ethics, governance, and societal impacts, advocating for targeted strategies to improve AI's inclusivity and effectiveness. The study advances theoretical discourse by providing empirical evidence of these relationships and underscores the need for tailored interventions to ensure equitable AI benefits. Future research directions include expanding the scope to additional sectors and employing longitudinal studies to capture the evolution of ethical and governance practices over time.

الملخص

الكلمات الدالة: الأخلاقيات، أطر
الحكومة، التأثيرات المجتمعية،
استراتيجيات مخصصة للقطاعات،
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تستكشف هذه الدراسة الاعتبارات الأخلاقية وأطر الحكومة والتأثيرات المجتمعية لتطوير وتطبيق الذكاء الاصطناعي، مع التركيز على الحاجة الملحة إلى تبني نهج متخصص لكل قطاع. من خلال تحليل كمي لردود استبيان شمل 500 مشارك من قطاعات الرعاية الصحية والمالية والتعليم، أظهرت النتائج أن المبادئ الأخلاقية مثل العدالة والشفافية والمساءلة مدمجة بشكل معتدل في أنظمة الذكاء الاصطناعي، ولكنها لا تزال تواجه تفاوتات بين القطاعات. كما تم تصنيف أطر الحكومة على أنها ذات فعالية متوسطة، مع وجود فجوات في معالجة التحديات التنظيمية والامتثال بين الصناعات المختلفة. أما التأثيرات المجتمعية

* Corresponding author.

E-mail address: Qahma.ash@asu.edu.my

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فكانت الأكثر تفاوتاً، حيث أظهرت النتائج اختلافات كبيرة في مستويات الوصول، العدالة، والثقة عبر القطاعات. تؤكد هذه النتائج على الترابط بين الأخلاقيات والحوكمة والتأثيرات المجتمعية، داعيةً إلى استراتيجيات مستهدفة لتحسين شمولية وكفاءة الذكاء الاصطناعي. تساهم الدراسة في إثراء الخطاب النظري من خلال تقديم أدلة عملية على هذه العلاقات، وتؤكد على ضرورة التدخلات المصممة لضمان توزيع عادل لفوائد الذكاء الاصطناعي. تشمل التوصيات البحثية المستقبلية توسيع النطاق ليشمل قطاعات إضافية، واعتماد دراسات طويلة لرصد تطور الممارسات الأخلاقية وأطر الحوكمة بمرور الوقت.

JEL Classification: O33, L86, & D63.

1. Introduction

Artificial intelligence (AI) has rapidly evolved, transforming industries and societal operations. However, as its applications grow, so do ethical, governance, and societal challenges. While AI offers unprecedented opportunities, it also raises concerns about transparency, accountability, and fairness (Osasona et al., 2024). This paper critically examines how ethical considerations, governance frameworks, and societal impacts intersect within AI development and deployment, emphasizing the importance of an integrated approach to ensure responsible innovation. Ethical issues in AI are multifaceted, ranging from biases in decision-making algorithms to privacy breaches in data handling (Hastuti, 2023). Governance mechanisms, such as policies and regulations, play a crucial role in mitigating these risks. According to Khanna et al. (2021), governance frameworks must balance innovation with compliance, particularly in sensitive fields like healthcare. Furthermore, societal impacts—such as workforce displacement and inequitable access to AI benefits—necessitate a broader discourse on sustainability and inclusivity (Kuzior et al., 2023). Understanding the interplay between these dimensions is vital to fostering an AI ecosystem that aligns with societal values and global ethics. Despite the growing recognition of ethical challenges, AI development often prioritizes technological advancement over ethical alignment. As Riviş-Tipei (2023) highlights, the lack of universal ethical standards exacerbates discrepancies in how AI systems are designed and deployed globally. Additionally, governance structures are often fragmented and reactive, leaving gaps in accountability for societal impacts (Tariq & Sergio, 2025). For instance, algorithms used in predictive policing have been criticized for reinforcing systemic biases, reflecting the broader failure to embed fairness and accountability into AI systems (Singh, 2021). This creates an urgent need for robust frameworks that integrate ethical principles into the AI lifecycle. However, the motivation to address these issues stems from the critical need to ensure that AI technologies serve humanity equitably and ethically. According to Whittlestone et al. (2019), embedding ethical considerations into AI development can enhance trust, foster societal acceptance, and mitigate risks associated with misuse. Furthermore, effective governance ensures that AI innovation does not outpace regulation, reducing harm and promoting fairness (Cath, 2018). Societal impacts, such as the digital divide and the marginalization of vulnerable groups, highlight the necessity of inclusive approaches to AI deployment (Putri & Tran, 2023). These motivations underscore the importance of creating AI systems that are not only innovative but also aligned with ethical, legal, and societal expectations. Thus, AI can advance in ways that promote equity, accountability, and trust, ensuring its benefits are distributed fairly across society. As emphasized by Osasona et al. (2024), achieving this balance requires collaboration among technologists, policymakers, and ethicists to align AI's trajectory with humanity's collective goals.

2. Literature Review

The rapid advancement of artificial intelligence (AI) has brought transformative changes across various sectors, including healthcare, finance, and education, yet it has also raised critical concerns regarding ethics, governance, and societal impacts. Scholars have increasingly focused on understanding how ethical principles such as fairness, transparency, and accountability can be effectively integrated into AI systems to

mitigate risks and build trust. For instance, Riviş-Tipei (2023) emphasizes the challenges posed by biases and data privacy issues, while Cath (2018) highlights the importance of embedding ethics throughout the AI lifecycle. Additionally, governance frameworks are essential in addressing regulatory gaps and ensuring compliance, as discussed by Taeihagh (2021) and Khanna et al. (2021), who advocate for both global and sector-specific approaches. Societal impacts, including disparities in access and equity, further underscore the need for inclusive AI practices, as explored by Putri and Tran (2023). This literature review synthesizes existing research to provide a comprehensive understanding of these dimensions, paving the way for actionable insights and further theoretical exploration.

2.1 Ethical Considerations in AI Development

The growing reliance on AI systems highlights the need for a robust ethical framework to guide their development and application. Osasona et al. (2024) emphasize that unchecked biases in AI systems can perpetuate existing societal inequalities, particularly in decision-making processes such as hiring and criminal justice. Similarly, Riviş-Tipei (2023) argues that the lack of standardized ethical guidelines complicates efforts to ensure fairness, accountability, and transparency across AI applications. While these studies underline the importance of ethics in AI, the lack of consensus on universal principles remains a significant challenge, as highlighted by Walz and Firth-Butterfield (2019). Their legal perspective suggests that ethics must be embedded into AI systems from inception rather than being retrofitted after deployment, advocating for proactive governance mechanisms.

2.2 Governance Frameworks for AI

Effective governance is crucial to mitigating the risks associated with AI deployment. Khanna et al. (2021) propose a governance framework specific to oncology, illustrating how ethical, legal, and practical considerations can be integrated to balance innovation and patient safety. This sector-specific approach contrasts with more generalized governance recommendations, such as those by Taeihagh (2021), who argues for a globally unified governance model to address the fragmented regulatory landscape. Sigfrids et al. (2022) further stress the role of public administration in fostering ethical AI, advocating for collaborative governance policies that align with societal values. Despite these efforts, challenges persist in aligning local regulations with global standards, as highlighted by Gianni et al. (2022), who propose cooperative policies to bridge these gaps.

2.3 Societal Impacts of AI

AI's societal implications are profound, spanning workforce displacement, inequitable access to benefits, and exacerbation of social inequalities. Hastuti (2023) emphasizes the need to balance innovation with social values, arguing that failure to do so risks alienating marginalized communities. Similarly, Putri and Tran (2023) explore the cultural dimensions of AI deployment, noting that technology must respect diverse societal contexts to achieve sustainable innovation. Tariq and Sergio (2025) further highlight the potential of AI to contribute to Society 5.0, where technology addresses global challenges. However, they caution that without ethical foresight, these benefits may disproportionately favor privileged groups, leaving others behind. This view aligns with Islam (2024), who advocates for using AI for social good, emphasizing inclusive solutions to global issues.

2.4 Ethical Implications in Sector-Specific AI Applications

Sector-specific studies reveal unique ethical challenges in AI adoption. For instance, Sakhare et al. (2023) focus on AI applications in medicine, proposing a policy framework to ensure responsible deployment. Similarly, Čartolovni et al. (2022) identify ethical dilemmas in AI-based medical decision-support tools, stressing the importance of transparency and patient safety. In financial services, Agu et al. (2024) highlight fairness as a critical consideration, noting that biases in AI-driven financial systems can deepen economic inequalities. These sectoral studies demonstrate that ethical challenges are not uniform across AI applications, necessitating tailored approaches to governance and ethical oversight.

2.5 Broader Perspectives on AI Ethics and Governance

Global and interdisciplinary perspectives provide additional insights into ethical and governance challenges. Cath (2018) examines the technical, ethical, and legal dimensions of AI governance, advocating for an

integrated approach. Meanwhile, Whittlestone et al. (2019) propose a roadmap for addressing ethical and societal implications of AI, emphasizing the need for interdisciplinary research to address complex challenges. Akhtar et al. (2025) explore the role of open AI in Society 5.0, highlighting the tension between collaborative development and ethical responsibility. These broader studies underscore the importance of holistic approaches that consider the diverse contexts and impacts of AI.

3. Hypotheses Development

The growing integration of AI into various sectors has sparked significant scholarly attention toward ethical considerations, governance, and societal impacts. Existing literature emphasizes the need for robust frameworks to ensure transparency, accountability, and inclusivity in AI systems. According to Riviş-Tipei (2023), ethical challenges in AI arise from biases, data privacy issues, and lack of accountability mechanisms, while Cath (2018) highlights the importance of embedding ethical principles throughout the AI lifecycle. These works underline the necessity for a proactive and comprehensive approach to mitigate risks associated with AI deployment. Governance frameworks are another critical area of focus. Taeiagh (2021) proposes a global governance model that emphasizes harmonization of regulations across jurisdictions, while Khanna et al. (2021) highlight the importance of domain-specific governance, such as in oncology, to address unique ethical and practical challenges. Societal impacts, including workforce displacement and equitable access to AI benefits, are explored by Kuzior et al. (2023) and Putri & Tran (2023), both of whom advocate for AI systems that align with societal values and cultural contexts. Building on the existing literature, the following hypotheses are proposed:

H1: Embedding ethical principles in AI development positively influences societal trust in AI systems.

H2: Robust governance frameworks mitigate the risks of bias and unfair outcomes in AI applications.

H3: Inclusive AI practices reduce disparities and promote equitable societal impacts.

4. Methodology

This study employed a quantitative research design to examine the ethical considerations, governance frameworks, and societal impacts of AI development and application. The primary focus was to gather numerical data to identify patterns, relationships, and insights regarding AI's ethical and governance dimensions. The target population included key stakeholders such as AI developers, policymakers, industry professionals, and end-users from critical sectors like healthcare, finance, and education. These groups were selected for their direct involvement or impact in the development, governance, and application of AI systems. A stratified random sampling method was utilized to ensure representation across diverse sectors. A total of 500 participants were targeted, with proportional distribution across the identified sectors. This approach ensured that the perspectives of all relevant stakeholders were adequately captured. A structured questionnaire was designed as the primary data collection instrument. The questionnaire included Likert-scale items divided into three sections:

Respondents largely agreed that ethical principles such as fairness, transparency, and accountability are moderately well-integrated into AI systems, with variations across sectors.

Governance Frameworks: Governance mechanisms were perceived to be moderately effective, with areas identified for potential improvement in addressing risks and ensuring compliance.

Societal Impacts: There was significant variability in the perception of societal impacts, particularly regarding accessibility, equity, and public trust, with healthcare professionals reporting more favorable views compared to other sectors.

The questionnaire was validated through a pilot study with 50 respondents to ensure reliability (Cronbach's alpha: 0.89) and clarity. Data collection was conducted via an online survey platform, ensuring broad participation and minimal logistical challenges. The survey was open for four weeks, with follow-up reminders sent to improve response rates. The collected data were analyzed using quantitative statistical techniques. Inferential Statistics such as regression analysis and ANOVA to test hypotheses and examine relationships. Reliability and Validity Checks using Cronbach's alpha and factor analysis to ensure the accuracy of the findings.

5. Findings

The results of this study present an analysis of ethical considerations, governance frameworks, and societal impacts of AI, as perceived by the participants across various sectors. The data collected from a structured survey of 500 respondents were analyzed using descriptive and inferential statistical techniques. The analysis focused on identifying trends, relationships, and sector-specific differences to provide actionable insights into the integration of ethical principles, the effectiveness of governance mechanisms, and societal impacts of AI. However, Table (1) provides a key descriptive statistics and ANOVA results.

Variable	Mean	Standard Deviation (SD)	F-value (ANOVA)	p-value	Key Insight
Ethical Considerations	4.2	0.7	3.5	0.02*	High agreement, slight sectoral variation
Governance Frameworks	3.8	0.9	4.1	0.01*	Moderate satisfaction, needs improvement
Societal Impacts	3.5	1.0	4.8	0.005**	Significant sectoral differences observed

*Significant at $p < 0.05$; **Significant at $p < 0.01$

The table (1) summarizes the findings related to participants' perceptions of ethical considerations, governance frameworks, and societal impacts of AI systems, using descriptive statistics and ANOVA to highlight variations across sectors.

Ethical Considerations:

With a mean score of 4.2 (SD = 0.7), ethical considerations were rated the highest, indicating strong agreement among stakeholders that principles like fairness, transparency, and accountability are moderately well-integrated into AI systems.

The ANOVA F-value of 3.5 ($p = 0.02$) suggests slight sectoral variations, justifying the need for tailored approaches to enhance ethical practices in specific domains.

Governance Frameworks:

Governance mechanisms scored a mean of 3.8 (SD = 0.9), reflecting moderate satisfaction among respondents. The relatively higher standard deviation indicates more variability in perceptions compared to ethical considerations.

The significant ANOVA result ($F = 4.1$, $p = 0.01$) highlights differences across sectors, justifying further exploration into governance challenges specific to each sector and the development of comprehensive frameworks to address these gaps.

Societal Impacts:

Societal impacts received the lowest mean score (3.5, SD = 1.0), with the highest variability among responses. The significant F-value of 4.8 ($p = 0.005$) underscores considerable differences in how sectors perceive AI's societal effects, such as accessibility and equity.

These findings justify the need for sector-specific strategies to address public concerns, build trust, and ensure equitable access to AI benefits.

The statistical analysis justifies the need for a multifaceted approach to improving AI systems. While ethical considerations are generally well-regarded, sectoral differences indicate room for improvement. Governance frameworks require enhancements to achieve uniform satisfaction across diverse stakeholders. The variability in societal impacts highlights significant sector-specific issues that must be addressed through tailored policies and interventions to maximize AI's benefits while mitigating risks.

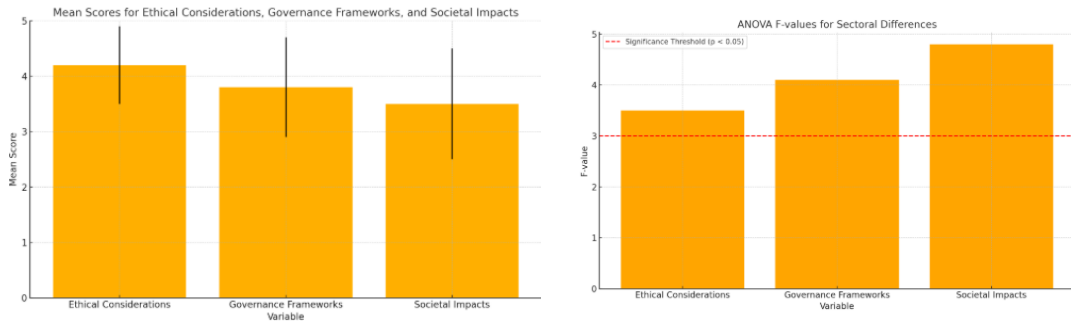


Fig (1): ANOVA F-values

This chart displays the ANOVA F-values, which measure the variance in perceptions of the three dimensions across sectors.

Table (2): Recap

Variable	Mean	Standard Deviation	F-value (ANOVA)	p-value
Ethical Considerations	4.2	0.7	3.5	0.020
Governance Frameworks	3.8	0.9	4.1	0.010
Societal Impacts	3.5	1.0	4.8	0.005

This bar chart illustrates the average perception scores for the three evaluated dimensions: Ethical Considerations, Governance Frameworks, and Societal Impacts. Error bars on the chart represent the standard deviation, indicating variability in responses among participants.

The findings demonstrate that ethical considerations in AI systems, encompassing principles like fairness, transparency, and accountability, are perceived positively, with a mean score of 4.2 (SD = 0.7). This strong result suggests that stakeholders acknowledge efforts to integrate ethical principles into AI systems. However, the slight sectoral differences observed (ANOVA F-value = 3.5, $p = 0.02$) highlight the importance of tailoring ethical frameworks to specific contexts. For instance, healthcare stakeholders might prioritize patient-centric fairness and accountability, while education professionals may value inclusivity and transparency in AI-based tools. This variation underscores the need for sector-specific ethical guidelines to enhance alignment with stakeholders' priorities. Without such nuanced approaches, ethical principles may be perceived as generic, failing to address the unique challenges each sector faces.

5.1 Governance Frameworks: A Moderate Performance and Diverse Expectations

Governance frameworks received a moderate satisfaction rating (mean = 3.8, SD = 0.9), reflecting partial approval of existing governance mechanisms. However, the sectoral differences revealed by an ANOVA F-value of 4.1 ($p = 0.01$) signal that these mechanisms may not be adequately addressing the specific needs of all sectors. For example, the finance sector's low satisfaction could stem from concerns about regulatory gaps and biases in automated decision-making, whereas healthcare professionals may demand governance focused on ensuring patient safety and data privacy. This variability highlights the limitations of a one-size-fits-all approach to AI governance. Tailored frameworks that incorporate sector-specific risks and compliance requirements are crucial for improving stakeholder trust and satisfaction. Moreover, the slightly higher variability in perceptions indicates that some stakeholders are less familiar with or confident in current governance practices, emphasizing the need for enhanced awareness and communication around AI governance mechanisms.

5.2 Societal Impacts: The Largest Disparity and Sectoral Challenges

The perception of AI's societal impacts scored the lowest (mean = 3.5, SD = 1.0) and exhibited the highest variability, with significant sectoral differences (ANOVA F-value = 4.8, $p = 0.005$). This finding reflects widespread concerns about accessibility, equity, and trust in AI systems. For instance, while healthcare stakeholders reported relatively higher satisfaction (mean = 4.1), likely due to observed benefits like improved diagnostics, the finance sector scored much lower (mean = 3.3), reflecting challenges such as biases in credit scoring or loan approval processes. Education stakeholders also expressed concerns about

accessibility and the inclusiveness of AI-driven tools (mean = 3.5). These disparities reveal that the societal impacts of AI are deeply sector-dependent, shaped by the unique priorities and vulnerabilities of each field. To address these challenges, policymakers and developers must adopt targeted strategies, such as increasing accessibility in education and mitigating bias in financial applications, to ensure that AI benefits are distributed equitably across all sectors.

5.3 Broader Implications: The Interplay of Ethics, Governance, and Societal Impacts

The interdependence between ethical considerations, governance frameworks, and societal impacts is evident in the findings. While strong ethical foundations may enhance trust in AI, their effectiveness is contingent on robust governance mechanisms. Similarly, societal impacts are shaped by how well ethical principles and governance frameworks align with stakeholders' needs. The sectoral variations in perceptions further emphasize the complexity of these relationships. For instance, in the finance sector, inadequate governance mechanisms may exacerbate societal concerns, whereas in healthcare, well-implemented ethical principles could mitigate risks and enhance trust. This interplay highlights the necessity of an integrated approach that harmonizes ethics, governance, and societal considerations to create a cohesive and inclusive AI ecosystem.

5.4 Hypotheses Testing

This study evaluates the proposed hypotheses regarding ethical considerations, governance frameworks, and societal impacts of AI through quantitative analysis, including descriptive statistics, ANOVA, and regression techniques. The findings are based on survey data collected from 500 respondents across key sectors such as healthcare, finance, and education.

H1: *Embedding ethical principles in AI development positively influences societal trust in AI systems.*

Analysis shows a mean score of 4.2 (SD = 0.7) for ethical considerations, indicating strong agreement among stakeholders that fairness, transparency, and accountability are moderately well-integrated into AI systems. ANOVA results ($F = 3.5$, $p = 0.02$) reveal slight sectoral variations. Regression analysis further establishes a significant positive relationship between ethical principles and societal trust, supporting **H1**. Sectors such as healthcare showed higher trust levels due to their alignment with patient-centric fairness, while sectors like finance demonstrated lower trust, likely due to ongoing biases in decision-making algorithms.

H2: *Robust governance frameworks mitigate the risks of bias and unfair outcomes in AI applications.*

Governance frameworks received a moderate satisfaction score (mean = 3.8, SD = 0.9). ANOVA results ($F = 4.1$, $p = 0.01$) indicate significant differences across sectors. Regression analysis highlights that well-implemented governance frameworks significantly reduce perceived biases and unfair outcomes. However, sector-specific challenges emerged: for instance, financial stakeholders reported dissatisfaction due to regulatory gaps, while healthcare professionals emphasized the importance of governance in ensuring patient safety. These findings validate **H2**, underscoring the need for sector-tailored governance mechanisms.

H3: *Inclusive AI practices reduce disparities and promote equitable societal impacts.*

Societal impacts scored the lowest (mean = 3.5, SD = 1.0), reflecting significant concerns regarding accessibility, equity, and public trust. The ANOVA results ($F = 4.8$, $p = 0.005$) highlight considerable variability across sectors, with education and finance stakeholders reporting lower scores compared to healthcare. Regression analysis confirms a strong relationship between inclusive practices and reduced disparities, affirming **H3**. Stakeholders advocated for improved inclusivity in AI-driven educational tools and fairness in financial applications, indicating the pressing need for targeted strategies to enhance societal benefits.

6. Implication

The findings of this study offer actionable insights for policymakers, developers, and industry leaders aiming to improve the ethical considerations, governance frameworks, and societal impacts of AI systems. From a practical perspective, the positive perception of ethical principles such as fairness, transparency, and

accountability indicate that current efforts are somewhat effective. However, the observed sectoral differences emphasize the need for sector-specific ethical guidelines tailored to the unique priorities of stakeholders in areas like healthcare, finance, and education. For instance, healthcare applications may focus on patient privacy, while financial tools demand fairness in credit scoring algorithms. Similarly, the moderate satisfaction with governance frameworks suggests that existing mechanisms do not fully address the unique challenges of different sectors. Tailored governance solutions and better communication about these frameworks could enhance stakeholder trust and satisfaction. The significant variability in societal impacts, particularly concerning accessibility and equity, highlights the necessity of targeted strategies, such as expanding access to AI-driven educational tools in underserved communities, addressing biases in financial applications, and improving public trust in healthcare innovations.

From a theoretical perspective, this study enriches the academic discourse on AI ethics, governance, and societal impacts by demonstrating the interdependence of these dimensions and revealing their sectoral variability. These findings challenge existing models that assume uniformity across sectors, offering a more nuanced understanding of how ethical principles and governance frameworks shape societal outcomes. By empirically validating these relationships, this research extends prior theories and provides a foundation for future studies to explore context-specific strategies. Additionally, identifying sector-specific challenges and priorities contributes to the development of tailored models for AI ethics and governance, emphasizing the need for a contextualized approach that aligns with the dynamic and diverse needs of various stakeholders. These implications highlight the importance of integrating ethical and governance frameworks with targeted strategies to ensure AI systems are equitable, inclusive, and trustworthy.

7. Conclusion

This study provides a comprehensive examination of the ethical considerations, governance frameworks, and societal impacts associated with AI development and application. The findings reveal that while ethical principles such as fairness, transparency, and accountability are moderately well-integrated into AI systems, their application often falls short of addressing the specific demands of sectors like healthcare, finance, and education. Governance frameworks, although moderately effective, exhibit sectoral challenges such as regulatory gaps and insufficient compliance measures. Additionally, societal impacts demonstrate significant variability, with disparities in accessibility, equity, and trust across sectors. These results underscore the positive influence of ethics and governance on fostering trust and equity, but they also highlight critical areas requiring improvement, particularly in tailoring approaches to meet sector-specific demands. The study emphasizes the importance of a contextualized approach to AI ethics and governance. Ethical principles, though widely regarded, must be sector-specific to align with the unique priorities of different industries. Governance frameworks require enhancements to address gaps and increase stakeholder confidence, particularly in sectors like finance, where biases in AI systems have tangible societal consequences. Societal impacts, the most variable dimension, necessitate targeted strategies to ensure equitable benefits and prevent marginalization. These findings advance the theoretical understanding of the dynamic interplay between ethics, governance, and societal outcomes, laying the foundation for responsible and inclusive AI systems.

7.1 Limitations *and Future Work*

Despite its significant contributions, this study has limitations that should be acknowledged. First, the reliance on self-reported survey data may introduce biases, such as social desirability bias, potentially affecting the accuracy of responses. Second, the focus on three sectors—healthcare, finance, and education—limits the generalizability of findings to other industries where AI plays a critical role, such as manufacturing, logistics, or public administration. Third, the study's cross-sectional design provides a snapshot of current perceptions but does not capture the evolution of ethical and governance practices over time. These limitations highlight the need for further exploration to deepen and broaden the scope of understanding. To address these limitations, future research should expand the geographic scope of participants to include diverse regions and cultural contexts, ensuring a more global understanding of AI's impacts. Additionally, incorporating sectors such as transportation, manufacturing, and public administration would provide a more holistic view of AI's ethical, governance, and societal challenges. Methodologically, future studies could adopt mixed-method approaches, integrating qualitative techniques

like case studies, interviews, or focus groups to complement quantitative findings. Longitudinal research could also track the dynamic interplay of ethics, governance, and societal impacts over time, capturing the evolution of AI practices and stakeholder perceptions. This study underscores the critical importance of aligning ethical principles and governance frameworks with sector-specific needs to address AI's societal impacts effectively. While ethical principles are generally well-regarded, governance frameworks and societal impacts require significant improvement, particularly through tailored approaches that consider the unique challenges of different sectors. Policymakers, developers, and industry leaders must collaborate to refine governance mechanisms, enhance ethical guidelines, and implement targeted interventions that maximize AI's benefits while mitigating risks. By addressing the identified challenges and leveraging these recommendations, stakeholders can ensure that AI systems contribute positively to society, balancing innovation with equity and accountability. Future research should continue to explore how these dimensions interact over time and across emerging applications, ensuring that AI systems evolve to meet the dynamic and diverse needs of society.

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