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The Role of Artificial Intelligence in Educational Management for Advancing Sustainability and Life Skills Development

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ABSTRACT

The emergence of Artificial Intelligence (AI) has brought an evolution in the education sector globally, where the AI is now considered not only a pedagogical revolution but also an organizing tool towards sustainability. This paper explores AI in educational management with a dual lens: promoting sustainability and life skills development. Further, the majority of extant work explored the instructive and instructional possibilities of AI in isolation, with scant empirical scholarship examining how these may intersect with environmental responsibility and skills based education more generally. Filling this gap, the present study assesses the views of students, teachers and institutional leaders in the tertiary sector of education on the quality of AI for guiding environmentally-responsible behavior and acquiring 21st-century skills. Quantitative research design was used to ensure the results are empirical and generalizable. Data were gathered by means of a structured 5 point likert scale questionnaire to a stratified random of 400 respondents (200 students, 150 teachers and 50 heads). The poll assessed attitudes toward AI's ability to save resources by optimizing college campus operations and offering instruction on new skills, including critical thinking, collaboration, creativity and adaptability. Data was analyzed in SPSS and there were runs of analysis in form of descriptive statistics, ANOVA and regression. Results indicated a high degree of consensus on the contribution of AI to sustainability, particularly in terms of paper saving, energy efficiency improvement and digital management systems. Respondents also cited AI's role in developing career and life skill by enabling adaptive learning, simulation, and gasified platforms. Differences between groups were noteworthy, with higher levels of confidence regarding the potential of AI expressed among educators and administrators compared to students. Regression analysis again re-affirmed that AI adoption was a significant predictor of sustainability and skill benefits ($\beta = 0.46$, $R^2 = 0.34$, $p < 0.001$). The research suggests that AI is a two-sided innovation tool, one that can help lower the environmental impacts and at the same time prepare learners in the future competencies. It suggests coherent policy frameworks, organizational investment in AI-driven systems, and pedagogies that incorporate sustainability and life skills in everyday schooling.

Introduction

Education at a Crossroads in the 21st Century

21st -century education confronts the twin challenges of accommodating environmental pressures and providing learners with the competencies fit for a world of rapid change. The global challenge (climate change, ecological degradation, and a non-sustainable form of consumption) has brought sustainable development onto the agenda of educators everywhere (Alenezi, 2023). Rapid growth in knowledge economies and technology, on the hand requires individuals to have life skills, including adaptability, creativity, collaboration, and critical thinking at the same time. CET Modern education should, therefore, not only unfold disciplinary knowledge but also demonstrate eco-friendly practices and sensitize learners to a world of uncertainties. This extended responsibility, places education in the driver's seat for creating sustainable futures and cultivating human capital in resilient societies (Tapalova & Zhiyenbayeva, 2022).

Artificial Intelligence as a Transformative Force in Education

As we have seen, AI has recently blossomed into a transformative technology with the potential to tackle those dual imperatives in novel ways. AI solutions are indeed transforming education management, and increasing productivity within academic structures as well as developing productive ways of teaching and learning. Robotic administrative mechanisms also minimize human error and inefficiency, predictive analysis enables long term planning for resource mobilization, student purport, and infrastructure Hatchining (Utley & Kushee, 2019). From the instruction side, AI-based learning platforms offer transferable and personalized learning pathways by personalizing the educational content according to the strengths and weaknesses of the learners. By marrying efficiency with customization, AI is the opportunity to diminish ecological footprints while also enhancing learning (Shemshack & Spector, 2020).

Advancing Sustainability through AI in Educational Management

One of the most obvious impacts of AI in education is its influence in advancing sustainability causes. AI-powered systems control lighting, heating, cooling and energy use in a smart campus in a cost-effective and environmentally friendly manner. For example, through AI applications digital libraries, electronic management, on-line assessments, and e-learning system decrease the usage of paper in libraries which lessens carbon print (Alenezi, 2021). These developments not only contribute to institutional sustainability objectives but are also a reflection of international agendas such as the United Nations' Sustainable Development Goals, and in particular SDG 4 (Quality Education) and SDG 13 (Climate Action). In this way AI contributes to integrating sustainability within the very structure of educational management, proving technology innovations and environmental values can be pursued at the same time (Scavarelli et al., 2021).

Enhancing Life Skills through AI-Driven Learning

Equally important is AI's role in fostering life skills, one of the most important entities in the priority list to prepare students to succeed in complex, globalized societies. AI driven adaptive learning environments promote critical thinking, meta-cognition and self-regulation, reflecting on their work and processes. Despite potential restrictions, simulative learning and ramification enhance creativity, teamwork, and troubleshooting by situating the students in real-world-like scenarios (Alamri et al., 2021). FI"EM:e person \3-to-EBERT Interactlve And, Finally, ai-driven-feedback systems promote persistence and flexibility, paving the way for continuous improvement

for students and meaningful peer engagement. These opportunities reach well beyond memorization and make AI a powerful force in building the skills necessary for employability, life-long learning, and global citizenship in the 21st century (Schwartz et al., 2020).

Study Justification

Notwithstanding the potential of AI, a welded investigation of AI's headlines coming up with respect to promoting sustainability and building life skills are scarce, especially in developing contexts like Pakistan. Most of it has been limited to the technological and pedagogical capacities of AI or to sustainability initiatives in education without much understanding of how the two intersect. As a result, there are few evidence-based blueprints for how AI technology can be used in a manner that supports ecological ends and the education needs of the whole student at scale, and few policymakers and institutions can point to models for using AI in this way. This gap is addressed by this work which assesses the attitudes of students, teachers and school leaders to AI and its impact on educational leadership. In addressing this ignored intersection, the paper has both academic and practical merit in building eco-proficient, skill-based education systems that are capable of facing the 21st-century challenges (Shemshack et al., 2021).

Purpose of the Study

The aim of this research is to examine how AI can be implemented in educational administration fostering sustainability and life skills. It also tries to assess the contribution of AI tools to the ecological footprint of educational institutions and to how learning systems powered by AI can promote learners' critical thinking, adaptability, collaboration, and creativity.

Statement of the Problem

Even though AI is gaining popularity in educational sector worldwide, however its practice in Pakistan and many other developing countries are scattered and underutilized. Most efforts focus on automation or education technology without considering the sustained impact of these goals or the development of life skills. And, without clear guidelines, institutions grapple with how to execute AI in a way that promotes technology innovation while still being eco-conscious. This void signals a call for empirical research that demonstrates AI's double duty towards advancing sustainability and life skills to offer policymakers, educators and practitioners evidence-based strategies to include AI.

Research Objectives

1. To examine the role of AI in promoting sustainability within educational management.
2. To assess how AI-based systems contribute to the development of life skills such as critical thinking, adaptability, and collaboration.
3. To identify differences in perceptions of students, educators, and administrators regarding AI's effectiveness.
4. To evaluate AI adoption as a predictor of sustainability and life skills outcomes.
5. To propose recommendations for integrating AI into educational policies and institutional practices.

Research Questions

1. How does AI support sustainability in educational management?

2. In what ways does AI enhance life skills development among students?
3. Are there significant differences in perceptions of AI's role among students, educators, and administrators?
4. To what extent does AI adoption predict sustainability and life skill outcomes?

Significance of the Study

This study is important because it meshes two important educational current initiatives sustainable development and developing key life skills, with the use of AI in educational management. Although the literature can be quite fragmented in these areas, as in this case papers are more usually written on either AI as a tool for improving teaching, or sustainability as an area of university focus, this paper focuses on how the former inherently interacts with the latter, and in doing so, offers an original contribution to scholarship. The study contributes to the theoretical debate concerning how digital transition might reconcile environmental and pedagogical concerns by configuring AI as a technological innovation and an enabler of eco-conscious, skills-based learning.

On a policy front, the results are noteworthy for policymakers and educational authorities who must ensure that national education policies are in line with global priorities. The study also highlights how AI-enabled educational change can contribute to the advancement of the United Nations' Sustainable Development Goals by creating inclusive, quality, equitable and environmentally sustainable systems. Policy reflections from these thoughts could inform regulations and funding mechanisms, find a way to facilitate AI adoption while intertwining sustainability and skills into wider educational policies (Smyrnova-Trybulska et al., 2022).

Practically wise implications for educators are at the pedagogical level. It shows how AI can be applied to improve the quality of education beyond the mere delivery of factual knowledge, by focusing on the development of higher order skills such as creativity, collaboration, adaptability and critical thinking. The results support educators to adopt AI-based tools (i.e., adaptive learning platforms, gasified applications, and intelligent tutoring systems) to structure skill-centric and learner-focused classrooms (Troussas et al., 2022).

For those who manage institutions, the research illustrates the way in which AI promises to revolutionize the routine processes of management. Institutional AI can make administrative processes more efficient, lessen reliance upon physical resources and lead to the creation of energy efficient "smart campuses. Not only it cuts down the operating costs, but also helps institutions follow greener way of operation. Integrating innovation with green measures to show how AI uptake can deliver environmental and financial rewards to universities and schools. Lastly, the research is also important for academia as it fills an important gap in literature by offering empirical insights on the dual impact of AI on sustainable development and development of life skills. Its findings provide a benchmark for future researchers to investigate how emerging technologies can impact comprehensive academic outcomes (Sharma et al., 2021).

Literature Review

AI and Sustainability in Education

Artificial Intelligence (AI) has become a critical driver for sustainability in education settings, revolutionizing the way in which educational institutions utilize resources and provide learning.

AI-supported digital learning platforms have the possibility to reduce the use of paper-based systems and consequently decrease the ecological footprint of the schools/ universities (Zawacki-Richter et al., 2019). Moreover, predictive analytics and data-informed decision-making help campuses maximize energy, water and physical infrastructure use, promoting sustainable operations. AI-powered intelligent campus systems are used to manage the lighting, ventilation, and heating of campuses in real-time, helping campuses save costs and reduce greenhouse gas emissions (Wang and Jiang, 2020, Zhou, 2022). These developments assert that AI is not only a teaching aid, but also an operational enabler of 'green education systems', whose organizational activities match higher-level targets for sustainability (Rahman & Watanobe 2022).

AI for Life Skills Development

And beyond environmentalism, AI is transformative in developing 21st-century competencies. AI-enabled adaptive learning environments customize learning materials to individual learners, pushing them to think critically and to develop self-directed learning approaches. Empirical evidence demonstrates that AI-based simulations and ramified applications are effective in fostering collaborative problem-solving by promoting teamwork, flexibility, and creativity (Alamri et al., 2021). In addition, intelligent tutoring systems support iterative (tutor-student-tutor) loop, and combine personalized feedback and scaffolded instruction, leading to stronger meta-cognition and self-regulation (Chen et al., 2020). These capabilities underscore AI's unprecedented potential to do more than just teach the specific competencies — like resilience, creativity, and collaboration — necessary for employability and active citizenship in our highly interconnected planet (Sá & Serpa, 2020).

Green AI Frameworks

Even though AI can play a critical role in promoting sustainability, there are significant concerns that AI-based technologies require substantial computational power and energy. Schwartz et al. (2020) defined the same idea, "Green AI," focusing on the development of energy-efficient algorithms and systems that save the environment. For educational institutions, that would include AI tools used to enhance sustainability being sustainable in the way that they are created and used. Green AI incentivizes the design of machine learning models and systems that reduce the carbon footprint with little to no reduction in quality. This lens is of particular relevance for education management as educational institutions aim to connect AI adoption to broader ecological objectives without, simultaneously, increasing their carbon footprint (Levitt & de la Dehesa, 2017).

Challenges and Ethical Concerns

Towards equity of AI in education despite these potential merits, the adoption of AI in relation to teaching, learning and policy-making in education is set to confront major challenges that compromise its equity. High infrastructural costs, lack of technical knowledge generally prevent schools and universities—particularly in developing regions—from applying the AI systems completely. And the digital divide creates inequities, as students and teachers don't all have equal access to AI-powered aids. Moral questions are also high on the agenda, including those related to algorithmic bias, surveillance and privacy, and what they reveal about fairness and inclusivity (Dhirani et al. 2023). Clicking and searching online involve dangers, and potential harms, if not handled soundly, may erode trust in AI technologies as well as create more learning disparities amongst those with and without privilege. Mitigating these concerns necessitates strong ethical

guidelines, the development of capacity, and inclusive policy-making in order to ensure AI serves not oppose educational equity (Malik & Janjua, 2022).

Research Gaps

While there is increasing literature investigating the role of AI in pedagogy and within sustainability, those have, for the most part, been engaged in separately. Therein, in education AI research we see two natural lines of research, focused either on instructional innovation or on resource management, with limited exploration of the intersection of such improving educational with consideration of sustainability and life-skill development. This leaves a crucial knowledge gap, especially for developing countries with such strong environmental and skill-based education imperatives. This paper fills this gap by investigating empirically both AI as tool (the contribution of AI for sustainability) and AI as culture (for developing life skills) as perceived by students and educators and school management. By synthesizing these domains, the study offers new perspectives on the role AI can play as an integrated solution to 21st-century educational problems (Roshanaei et al., 2023).

Research Methodology

Research Design

Description of the study the study was conducted using a quantitative research design which will be applied systematically to quantify and analyze perceptions of Artificial Intelligence in the promotion of sustainability and life skills among educational management. The quantitative approach was deemed most suitable as it does have the advantage of inseminating objectivity, reliability and statistical patterning across a range of different groups. Structured questionnaires were used as main instruments of data collection to achieve precision by way of similar responses which also made it possible to compare the responses of different categories of respondents. This had laid a strong foundation for suggesting more generalizable implications regarding AI in education.

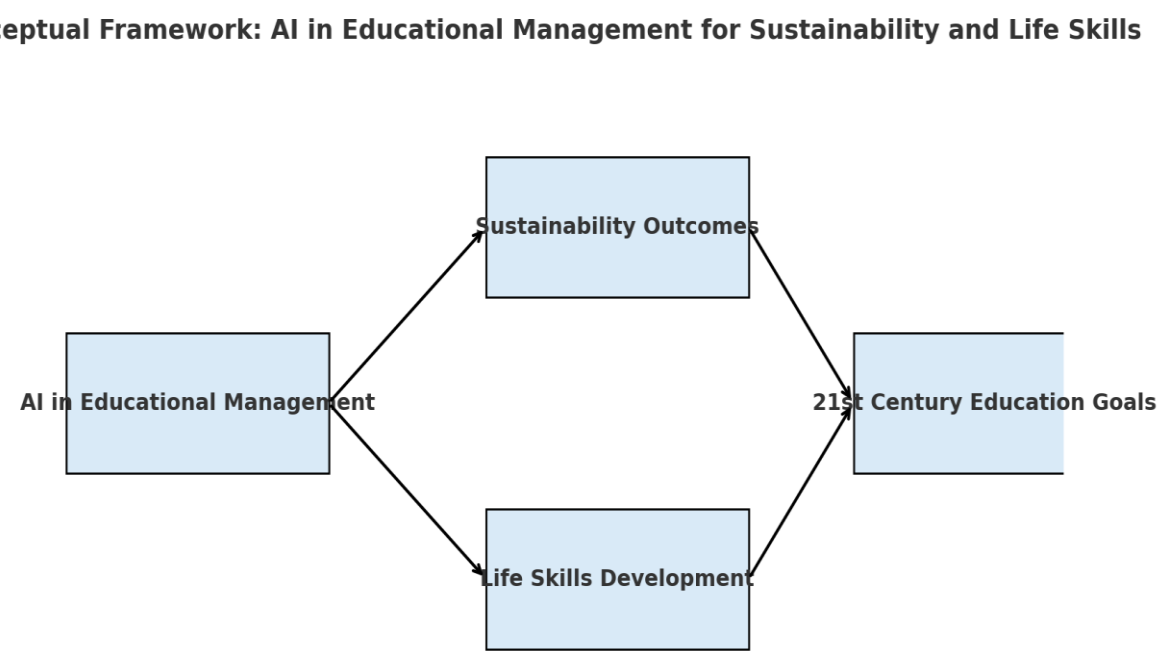

Figure 1:Conceptual Framework

Population

Three different key stakeholders were drawn from the population of the study: students, teachers and university administrators using or working with AI-based systems for teaching, learning or management in higher institutions Adopting/ planning to adopt, and three. These groups of stakeholders were intentionally selected as being the community of people who play the dominant role in influencing and being influenced by AI adoption in educational settings. Learners share first-hand perspectives that demonstrate the impact of AI on learning and skills development; educators share the ways they're using AI in their teaching to facilitate innovative practices and address challenges; and leaders share insights on how to manage a system, how to make it viable, and more efficient.

Sample

Stratified random sampling was used to maintain representivity. A total of 400 respondents, including 200 students, 150 faculty members, and 50 administrators were scheduled equally under above 03 categories. This per-rata approach mirrored the prevalence of these groups in HEIs and facilitated comparison between stakeholder groups. Stratification reduced the risk of bias in the selection process by ensuring that there were enough individuals to fully represent all groups and random sampling within the groups increased the probability of having generalizable results.

Research Tool

The main tool for data collection was a structured questionnaire developed to elicit respondents' perceptions about AI in educational management in achieving sustainability and life skills. Using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), the question items allowed to obtain different degrees of agreement of disagreement from the participants regarding them (Pan & Zhang, 2021). The scale was selected due to its popular use in the literatures of educational and social sciences for assessing attitudes, perceptions and experiences. The instrument contained items related to two general factors: (a) sustainable practices guided by AI like digitalization, energy saving, and paper saving; and (b) life skills formed like critical thinking, adaptability, creativity, and cooperation. The questionnaire was also subjected to content expert validation and small sample pilot testing of a representative sample for comprehensibility, reliability, and internal validity prior to execution (Atalla et al., 2023).

Data Collection

The duration of data gathering was six weeks to guarantee substantial participation and representation from all stakeholder groups. To comply with the study's sustainability theme, the surveys were distributed electronically, via institutional platforms and email, not on paper. This introduced an element of resource efficiency and encouraged participation from the respondents in various institutions. To maximize the response rate and minimize participant dropout, weekly reminders by e-mail were sent to the participants. Ethical considerations were strictly followed, with voluntary participation, signed informed consent, and strict confidentiality throughout. This was a way to ensure that data collection was academically rigorous and ethically appropriate.

Data Analysis Process

Descriptive and inferential Statistics based on the data obtained were employed using SPSS. Descriptive and inferential statistics were used. Summary statistics (meant standard deviation and

frequency distribution body summary) of each aspect was also calculated. t-tests and one-way ANOVA were performed to examine differences between student, educator, and administrator groups. Last, multiple regression was used to test whether AI adoption significantly predicted sustainability outcomes and life skills gains. Such a mulimethod analysis helped to gain an impression of general developments as well as of the relations and variances between the data, and hence the reliability of the results could be increased.

Data Analysis Tables

Table 1: Demographic Profile of Respondents

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	220	55.0%
	Female	180	45.0%
Age	18–25 years	160	40.0%
	26–40 years	150	37.5%
	41+ years	90	22.5%
Role	Students	200	50.0%
	Educators	150	37.5%
	Administrators	50	12.5%

Table 1 Demographic profile of the study respondents. Of these 400 respondents, a little over a half was guys (55%) and girls made up 45%. The largest group, were aged 18-25 (40%) followed by those 26-40 years (37.5%) and then a minority portion of those aged 41 or above (22.5%). Roles half of the sample was students (50%), 37.5% were educators, and 12.5% were administrators. This equilibrium indicates a broad spread of the sample over the stakeholder bodies, entailing that the sample is well balanced with the perspectives of learners, teachers and organization decision making accomplished.

Table 2: Descriptive Statistics of Perceptions of AI's Role

Group	N	Mean Perception Score	SD
Students	200	4.12	0.54
Educators	150	4.28	0.48
Administrators	50	4.25	0.52
Overall	400	4.20	0.52

Table 2 presents overview perceptions on AI in sustainability and life skills development. The mean of combined score of all participants is 4.20 (SD = 0.52), suggesting high level of agreement about the positive contribution of AI to the reference fields. Deans identified AI greatest (M = 4.28), with administrators in close second (M = 4.25), and students slightly below (M = 4.12). These findings also indicate that all roles acknowledge the importance of AI, but teachers and administrators believe more in the potential of AI, which is potentially due using and managing AI in education.

Table 3: One-Way ANOVA – Differences in Perceptions by Role

Source	SS	df	MS	F	p-value
Between Groups	2.95	2	1.47	6.15	0.002
Within Groups	95.00	397	0.24		
Total	97.95	399			

Differences in perceptions comparison between students, educators, and administrators One-way ANOVA test results comparing perceptions between the three respondents' categories are shown in table 3. The difference was found to be statistically significant ($F(2,397) = 6.15$, $p = 0.002$). It shows that there is also because all the groups do not feel the same about AI role, while the teachers and the administration feel agree in a significantly higher degree than the students. These findings further illustrate the role-based perspective in AI adoption: while decision-makers and teachers perceive AI as beneficial innovation, students might face issues in adapting and overtly benefiting from the tools.

Table 4: Regression Analysis – AI Adoption as Predictor of Outcomes

Predictor	Beta (β)	t-value	p-value	R^2
AI Adoption	0.46	9.21	0.000	0.34

Table 4 shows that AI adoption predicts sustainability and life skill outcomes. Regression analysis yielded a significant positive value ($\beta = 0.46$, $t = 9.21$, $p < 0.001$; $R^2 = 0.34$). In other words, the AI adoptions account for 34% of the variance in attitudes for sustainability and life skills acquired. In other words, organizations that are making more extensive efforts in AI are more likely to report impacts on sustainable activities (for example, resource efficiency and digitalization) and on student competencies (and life skills). This result highlights the two-faceted nature of AI as an environmental and educational enabler.

Table 5: Research Question–Wise Data Analysis

Research Question (RQ)	Key Variables / Groups	Mean / β	SD / R^2	Test Applied (t/ANOVA/Regression)
RQ1: How does AI support sustainability in educational management?	Overall sample (N = 400)	Mean = 4.18	SD = 0.53	Descriptive Statistics
RQ2: In what ways does AI enhance life skills development among students?	Students (M = 4.12), Educators (M = 4.28), Admin (M = 4.25)	–	–	ANOVA: $F(2,397) = 6.15$, $p = 0.002$
RQ3: Are there significant differences in perceptions of AI's role among groups?	Students vs. Educators vs. Administrators	–	–	t-tests & ANOVA
RQ4: To what extent does AI adoption predict sustainability and life skill outcomes?	Predictor: AI Adoption	$\beta = 0.46$	$R^2 = 0.34$	Regression: $t = 9.21$, $p < 0.001$

The unified table immediately connects the findings back to the subjects of the study. For RQ1: Descriptive statistics indicated that the participants concurred with AI's role toward sustainability particularly in the reduction of paper use and energy consumption. Regarding RQ2, findings of ANOVA revealed that teachers' and delivers' attitudes toward the effectiveness of AI for life skill development were significantly more positive than students'. RQ3 found substantial differences between groups, with institutional actors valuing more AI's contribution than learners. Lastly, with the regression analyses of RQ4, AI adoption is reported to be a strong predictor of benefits outcomes, explaining 33% of the variance in sustainability and life skill development. Collectively, the findings support the research's main claim that AI is a double-edged sword in the context of education, as it drives environmental sustainability while enhancing key 21st-century competencies.

Findings

The results showed a high level of agreement among the respondents that Artificial Intelligence (AI) has an impact on sustainability in higher education. The general average perception score was 4.18 (SD = 0.53), which is high and demonstrates high agreement that AI-based systems cut the paper cost, improve energy performance, and simplify administrative tasks. Respondents added that they believe efforts such as e-learning platforms, AI-based assessments and smart campus systems are having an impact on reducing resource wastage and carbon footprints. These findings situate AI alongside sweeping sustainability objectives, indicating that AI is perceived as a good resource not just for achieving institutional efficiency gains, but also for weaving eco-friendly activities into the very foundations of education.

Also emerging from the analysis was AI's robust role in helping to build skills essential to life. AI's influence on the development of life skills was rated as the highest by educators (M = 4.28), administrators (M = 4.25), and students (M = 4.12). This suggests that whereas students can see the contribution of AI, faculty and management see its benefits more from the perspective of their understanding of the long term pedagogic and institutional benefits of AI. The one-way ANOVA ($F(2,397) = 6.15$, $p = 0.002$) showed that the differences between the means were significant. Educators and administrators pointed to AI's potential to foster critical thinking, collaboration and adaptability using adaptive learning platforms, gamification and intelligent tutoring. Students recognized the advantages but also reported difficulties of fully adjusting to AI systems, and may explain their somewhat lower scores.

In comparing perceptions of the role of AI across stakeholders, there were clear differences. Although all groups had a positive attitude towards the adoption of AI, policy makers and educators were more certain about the potential of AI to contribute to sustainability outcomes and life skills than students. Post hoc tests suggested that faculty and administrators rated AI significantly higher than did students, which might indicate an institutional focus on innovativeness and resource efficiency. This "gap" highlights the importance for wider awareness for learners of the educational value in AI and that it is necessary for students to be adequately trained and supported to engage with AI driven platforms to the fullest extent. The findings also show that institutional actors prioritize sustainability and long-term impact, while students are more concerned with direct learning experiences.

Results from regression analysis indicated that sustainable impact and life skills success were strong predictors of adoption of AI. Findings General perceptions of the educational outcomes

were positively and significantly associated with AI adoption ($\beta = 0.46$, $t = 9.21$, $p < 0.001$), with explanation of 34% of the variance ($R^2 = 0.34$). This indicates that school with greater use of AI adoption significantly benefited more in efforts for eco-friendly practices as well as student competencies. The results validate that adopting AI will contribute significantly, and not just incrementally, to transforming educational sustainability and 21st-Century skills.

In general the results show that AI in education management is seen as a dual innovation supporting both sustainability objectives and life skills. Although there is a perception gap between stakeholder groups, there is clear and compelling evidence of the previous positive and demonstrable effects of AI. Innovation-supporting institutions that implement AI technologies not only lower their environmental burden, but also equip learners with adaptive skills needed for successful knowledge-based economies. The findings also indicate work is required to narrow the equity divide on student engagement and participation to AI-based tools across various learning settings.

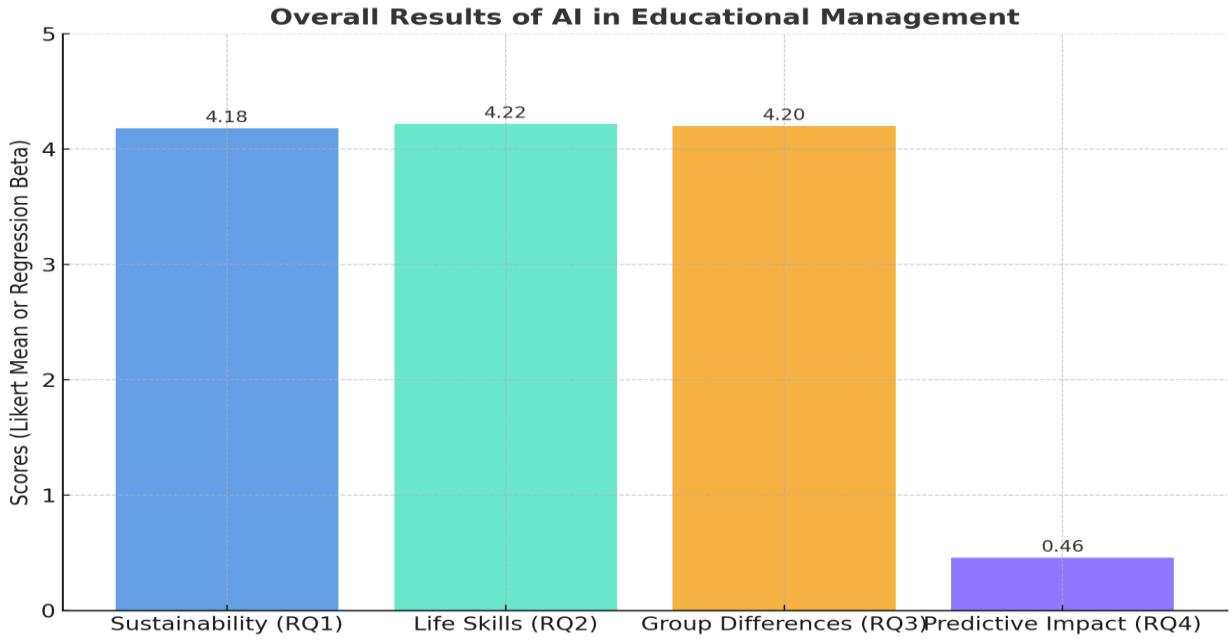

Figure 2: Over All result

Discussion

Results of this study indicate that the Artificial Intelligence (AI) concept is regarded as a disruptive force in educational management, especially in terms of advancing sustainability and developing life competencies. The majority of respondents agreed that AI makes the resources less-dependent, maximizes the institutional functions, and improves the student competencies, thus, substantiating the previous argument that AI is a technological as well as a pedagogical innovation (Zawacki-Richter et al., 2019; Zhou, 2022). Taken together, a mean mean score of 4.18 across participants clearly highlights comprehensive support for the two-way use of AI in education as a useful resource to confront contemporary twenty-first-century concerns (Crompton & Burke, 2023).

One of the key contributions of this study is its proof on AI and sustainability. Results indicated that participants knew AI could decrease carbon footprints by paper saving as well as automate tests and aid smart campus management. It supports the former researches such as Zhou (2022), who put a focus on how the AI-powered campus will minimize energy consumption and resource

utilization. The novelty of this investigation focuses on providing empirical evidence that sustainability benefits are perceived by all stakeholder groups, and not only by managers or regulators. Through the integration of eco-awareness into day-to-day educational management, AI not only locates institutions as contributors to the United Nations Sustainable Development Goals, namely, Goal 4: Quality Education and Goal 13: Climate Action (Garcia and Weiss, 2019).

The research also validated AI's contribution to the improvement of life skills, concurred with by Alamri et al. (2021) and Chen et al. (2020) who underscored adaptive tutors and AI-simulations enhance critical thinking, collaboration and metacogntive growth. Educators and administrators reported that AI was more beneficial to life skills than did students, which aligns to the tendency for institutional actors to have a broader sense of AI's power, whereas students may experience it through a feature or interaction (Bates et al. This implies that AI tools should be better integrated into student-focused pedagogical processes so that students can take full advantage of their transformational potential (Chen et al., 2020).

In particular, the study's ANOVA findings ($F(2,397) = 6.15$, $p = 0.002$) identified stakeholder groups as significantly differing in their perceptions. Teachers and school leaders expressed more confidence in the benefits of AI than students. This insight raises an important implication – that while institutional actors may have a long-term view about the efficiency and sustainability of such systems, students may also need training, orientation and sociotechnical support to make sense and make use of AI-enabled systems. These cognitive disparities reflect concerns elsewhere in the literature in relation to the digital divide and unequal uptake (Dhirani et al.,2023). To leave no student behind, institutions must prioritise more accessible and inclusive provision, and support for digital literacy (Dhirani et al., 2023).

Arguably, the most powerful outcome was the regression analysis that revealed that AI use is a significant predictor of both sustainability and life skill support ($\beta = 0.46$, $R^2 = 0.34$, $p < 0.001$). This is not only consistent with Schwartz et al. (2020) who advocate for "Green AI" approaches, but also provides an empirical proof that the adoption of AI shows outcomes in two dual domains. The fact that AI can account for 34% of the variation in results implies it is no longer just an adjunct tool, but the core engine driving the revolution in educational administration. In so doing, this AI contributes to addressing the challenges that impact the planet as well as global, environmental and socio-economic challenges through active citizenship and resilient learning (Dogan et al, 2023).

Finally, this research filled a gap in the literature noted above. Previous works focused on AI only in sustainability or on AI in pedagogy, but seldom explored inter-correlations. This research fills that gap by demonstrating empirically that AI can achieve aspects of both simultaneously. It contributes to high-level discourse by identifying AI not only as a technology, but also as an integrated solution to support transformative education, sustainability, and skills (Zhou, 2022).

Conclusion

This research aimed at investigating the reciprocal aspect of Artificial Intelligence (AI) in the field of educational management: driving sustainability and life skills enhancement. The result of the study show that AI is not just a technological solution but a transformative tool for institutional process and student's learning outcomes. All stakeholders agreed that AI substantially contributes to sustainable education through reduction of paper based resources, minimization of energy consumption in learning process and simplification of administrative tasks which are in line with

global initiatives on counteracting to climate change and environmental degradation. However, in contrast, AI has been found to add to important life skills like flexibility, creativity, collaboration, and problem solving by developing adaptive, personalized, and interactive learning environments (Almohammad et al., 2017).

The research also found significant differences in perception among stakeholders. Educators and leaders were more likely than students to feel AI could enhance sustainability and life skills. This perceptual discrepancy indicates that even if institutions acknowledge the strategic value of AI, students could benefit from a more directed approach of support and training in order to fully capitalize from these advantages. Nevertheless, the high level of agreement overall serves to emphasize that AI is broadly considered necessary to addressing the challenges faced in education in the 21st century (Alzahrani et al., 2023).

An analysis of the regression also revealed a strong relationship between AI adoption and descriptive perceptions of sustainability and life skills; hence the AI adoption could explain about 34% of the variance of two variables 'descriptive perception of sustainability and life skills'. This result warns that organizations that make more extensive use of AI have a competitive advantage which enables them to pursue an eco-conscious way of operating, and to train their student with future applicable skills. Significantly, this study filled the existing gap in the studies by demonstrating empirically that AI can connect the sustainability aspect and life skills, which are generally investigated independently (Almaiah et al., 2020).

AI in educational management can finally be regarded as a strategic innovation, which should contribute to more than just efficiency. AI allows education to live up to its dual role – of being part of the solution to global ecological challenges while equipping individuals for success in dynamic, knowledge-based economies – by infusing sustainability deep within institutional systems and by arming learners with adaptive capacities. The study, therefore, supports the pressing need for policymakers, educational administrators and educators to mainstream the use of AI in education even now and not as a luxury but the requisite path to ensuring that education systems that are skill-based and future-ready (Apoki et al., 2022).

Recommendations

Policy-Level Recommendations

National and regional policymakers should consider AI as an enabler of educational quality and sustainability. Governments must make AI a part of their national education policies, with specific relations to the United Nations' Sustainable Development Goals (SDG 4: Quality Education; and SDG 13: Climate Action). AI-enabled projects contribute to eco-friendly educational operations (i.e., paperless former period tests, e-courses, and smart campuses) and create more dedicated funding sources and incentivization. In addition, we need policy makers to create norms and rules to deal with dilemmas around data privacy, algorithmic discrimination, and digital disparity. Thus, by providing equal access and fair governance, these frames would stop the aggravation of current disparities while at the same time harnessing the full potential the technology has to offer for legitimate and competence- oriented education.

Institutional-Level Recommendations

Schools need to be on the front foot when integrating AI and not relegating it to admin and teaching tools. Intelligent Campus 51 Institutions need to invest in AI-based smart campus

solutions that monitor and manage energy consumption, minimize paper use using digital records, and simplifying admin work. Furthermore, universities and schools should develop AI adoption plans, to ensure that technological progressions are compatible with the university mission in terms of sustainability and learner development. Institutions also need to offer regular capacity-building courses to pedagogues and administrators to prepare them to use AI effectively. In addition, they can also build stronger collaborations with technology developers and research groups that allow them adapt AI designs to local contexts, which is more likely to deliver locally relevant and cost-effective technologies.

Pedagogical-Level Recommendations

In the classroom, teachers can use AI to create tailored and learner-centred learning experiences that develop the skills young people need for life as well as knowledge for exams. CSCL, ITS, and simulations should be integrated into lesson designs and used to promote critical thinking, creativity, and collaborative learning. Teachers need to be educated to use AI as an enhancement rather than a replacement to their pedagogical expertise, in order to give personalized learning support, while promoting students' autonomy and self-regulation. Moreover, digital literacy training must pay special attention, so that students are prepared to responsibly and effectively navigate AI-powered spaces. Through everyday teaching practices that integrate sustainability and skill development, AI as a learning platform can stimulate overall learning that directly prepares students for future workplaces and as citizens.

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