Leveraging AI and Skilled Talent for Sustainable Business Performance: Culture as a Moderator

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ABSTRACT

This study explores the dynamic relationship between Artificial Intelligence (AI), skilled workers, and business sustainability, with a focus on the moderating role of organizational culture. AI is revolutionizing business processes by enhancing efficiency, reducing operational costs, and enabling innovative business models, making it a critical driver of sustainability. Skilled workers play a vital role in ensuring the effective implementation of AI technologies, adapting to new systems, and fostering innovation. However, the integration of AI and human capital is influenced by the organizational culture, which either facilitates or hinders this synergy. Organizational culture acts as a moderator by shaping how AI is adopted and how workers adapt to technological advancements, thus influencing the overall sustainability of a business. This research aims to examine the interdependencies between AI, skilled workers, and business sustainability while assessing how organizational culture can mediate or moderate these interactions.

Keywords: *Artificial Intelligence (AI), Business Sustainability, Skilled Workers, Organizational Culture, Technological Integration, Human Capital, Innovation and Efficiency.*

Introduction

In the last 10 years, AI has reshaped the business world by rapidly improving efficiency and effectiveness of processes, as well as introducing decision making and providing competitive advantage. AI has helped businesses to work smarter, work leaner, and work wiser through better use of data, better use of automation, and better organizational effectiveness (Lin et al., 2024). The moving toward a more AI-centered model has led to a greater emphasis on what AI can do for the constant sustainability of said businesses. Sustainability in this case is multifaceted; environmental, economic and social sustainability,; AI will be instrumental in creating business models that will assimilate to future business environments.

Although emphasis has been put on the various technological opportunities that AI presents, human professional continue to be indispensable for performance and efficiency of AI solutions in organizational environments (Asif et al., 2024). It is human capital that has to operate the tools and analytics, make sense of what the artificial intelligence system provides, and keep the process of evolution going. Specialists help to integrate AI into the organizational contexts because they understand the need to adjust the technologies to match strategic goals and layouts. It is especially provoking because the role of creativity, heuristic skills, and impulses that can be introduced by an AI-based system is much more significant in facilitating innovation than in other fields (Abdelfattah et al., 2024).

Still, the importance of human capital and proven advantages of AI remain rather unexplored when it comes to its impact of AI along with skilled employee on the business resilience. Literature analysis has examined how AI affects the environment and the call for skilled human capital, but few works have integrated these two factors to share how these two elements foster sustainable firms. This gap poses many questions to organizations concerning the appropriate integration of AI with human capital for sustainability (Rashid and Bagram, 2024).

Particularly, one of the most promising areas might be organizational culture as an explanatory factor of these dynamics for a range of reasons. Culture plays a critical role in organizational processes; in fact, it can determine how a particular business executes its seniority, motivation, and choice making. There are people within an organization that will be more inclined to accept change and new ideas while others fight the implementation of new ideas and change down to the institutional level (Sari & Sagala, 2024). Even though it makes a lot of sense in connections to skilled workers and AI, more specifically the nature and interaction between organizational culture and the given relationship remains rather a research question. Companies of the second type will be effective in using AI and human capital if they have a learning organization culture characterized by the generation of new ideas; in contrast, companies of the first type will fail to introduce these elements (Nimran et al., 2024).

The role of organizational culture as a moderator of the AI-human capital relationship can be explained when taking into account the effectiveness of the application of AI across industries and organizations. There are some organizations which are very good in integration of artificial intelligence at the workplace where there is much harmonious interaction between artificial intelligence and human employees, which eventually leads to sustainable practices. When deployed in such organizations, AI boost by cutting costs, reducing inefficiencies, and promoting innovation as the basis of lasting business strategies (Utama et al., 2024). On the other hand, organizations which have cultures that are negative towards change or innovation are likely to experience a number of difficulties. Organized employees might not be willing or capable of working inside AI-driven systems; this would certainly not guarantee sustainability goals and would lead to planned failures in Terenggana by 2024.

The Gap in Research on AI, Skilled Workers, and Organizational Culture:

Despite considerable research done on both, there has been little understanding of why some organizations are successful in their management of these two critical success factors or sustaining vehicles and other fail dismally. Referring to the previous points, AI promotes efficiency and innovative solutions since its success largely depends on the approach to AI

implementation in the organization. AI implementation especially for such integration heavily depends on the human capital capable of exploring AI capabilities to the fullest extent possible. Nonetheless, the management of organizations struggles to integrate AI systems with the human workforce, and such a problem negatively impacts the organizations' performance and sustainability (Kulkarni et al., 2024).

The authors, however, argue that organizational culture can act as an intervening variable to explain such differences in outcomes. OCP research studies the capacity of organizational culture in determining the extent to which the staff is keen on technological change, motivated for going AI, and their cooperation in AI settings. For instance, organizations that seek to incorporate knowledge management, and encourage the development of new products and services will not experience many difficulties when transitioning to use new technologies such as AI because the workers are already willing to learn from these systems (Nimran et al., 2024). On the other hand, dealing with a risk averse or more particularly, the hierarchical type of organizational culture can result in workers responding negatively since these innovations may be seen as threats to their positions or as disturbances to conventional work processes (Abaddi, 2024).

Using these insights, this paper recognizes that there is a significant literature gap on how organizational culture enhances the link between AI and human capital in supporting business sustainability. Research has discussed AI's exact impact on the environmental results (Lin et al., 2024) and on innovation (Ying & Jin, 2024) besides the human capital involvement in the effective incorporation and integration of AI (Asif et al., 2024); nevertheless, literature has covered less space on the cultural enablers or barriers that may enhance this combination of AI with skilled workforce. This gap is important because revealing the specifics of the moderating role of culture might give organizations practical recommendations on how to increase the efficient usage of AI and human capital for achieving enduring benefits.

Problem of statement:

AI innovation in business processes offer benefits and risks bearing on sustainability goals on the other hand. Thus, AI has the prospect of increasing productivity, decreasing organizational costs, and generating novel business strategies while the capability and value of these technologies heavily depend on human resources. While few industries have been characterized as much as marketing by the application of AI, skilled workers remain a key factor in making this technology functional in this context and their part is not sufficiently stressed. Also, the organizational culture of the workplace where AI and skilled workers practice moderates the effectiveness of the implementation of AI technologies for enhancing organizational performance. While acknowledging the specificity of the AI and human capital, the subsequent research gap has been identified: the investigation of the role of these ambiences in impacting the sustainability of businesses operating in various cultures. With this in mind, this study aims to fill this existing knowledge gap by examining how AI can be used to enhance the skills of talented workers as well as how organizational culture can be adopted to support environmentally sustainable business practices.

The Purpose of the Study:

Therefore, the research aim is to establish the moderating role of culture in the relationship between the use of artificial intelligence, skilled workers, and sustainability of the business. More particularly, the paper will focus on the impact of cultural factors regarding innovation,

teamwork, and leadership for AI implementation. In doing so, the research aims to fill the gap in the literature so that businesses interested in leveraging AI to optimize human capital for sustainable futures can do so effectively.

To this end, the study shall adopt a mixed research design comprising of the quantitative questionnaires and the qualitative case studies with aim of comparing the impacts of the skilled workers and the AI on sustainability in Various Organization cultures. The conclusions will provide an enhanced systemic perspective into how organizational culture influences the relationship between AI and human capital to supply managerial and directors with approaches that will allow them to produce an effective executive culture to support AI innovation and sustainability (Rashid & Bagram tears:2024). On this note, this research aims to answer the central research question: what determines whether organizations are able to implement sustainable AI and human capital management strategies? In expanding the role of organizational culture the present study expects to contribute to knowledge by establishing ways through which businesses can optimally capture value from AI while capturing value from human factor to develop more sustainable business models within a growing global competitive edge, and at the increasing rate of technological advancement.

Literature Review:

The Role of AI in Business Sustainability

AI has emerged as one of the fundamental tools used by organizations seeking to enhance sustainability over the recent past. AI technologies are indeed powerful when it comes to improving the operational effectiveness as well as cutting costs and promoting innovative business models. The use of AI in the systems included the added advantage of data processing, automatism, and prediction to cater for decision making for the businesses' growth and objectives as well as promoting sustainability (Lin et al., 2024). The role of AI in sustainability is reflected in multiple dimensions: The benefits include minimizing costs associated with resource proliferation, enhancing manufacturing, and improving the flow of goods and materials and energy. All of these are important for those companies that seek to reduce their negative impacts on the environment while still achieving economic sustainability.

An area that supports business sustainability through Artificial Intelligence is in the prediction of maintenance. Using technologies such as AI algorithms to learn about equipment health and identify likely to fail in order that it can be solved before it happens saves a lot of money as much as it prevents unnecessary out-of-hours breakdowns of costly business assets. Research shows that predictive maintenance not only saves money but is also beneficial for environment as it prolongs equipment's life, and therefore reduces amount of material used (Abdelfattah et al 2024) This efficiency is good both to the environment and the companies' profitability in the long future.

Also, AI promotes sustainability, which helping companies to conceptualize products and processes in compliance with environmental sustainability. Synthetic environments supported by AI allow users to easily design sustainable products based on the assessment of product life cycles and the identification of potential changes to decrease consequences on the environment (Ying and Jin, 2024). The use of AI within sustainable business management contributes to the creation of a society, within which business advancements, as well as

environmental protection, are aligned, promoting both the commercial edge and the common moral.

Theory: Resource-Based View (RBV)

The further interpretation of the competitive advantages drawn out of internal resources is provided by the Resource-Based View (RBV) theory. The RBV wager that superior and enduring competitive structure arises from creating value, resource rarity, imitation and substitution within the firm. Both AI and human capital fit into this framework since they bring valuable and difficult to imitate resources that support sustainability in organizations. For instance, specific business solutions developed in AI integrated with an experienced workforce defines a perfect uncopyable model. Therefore, with the help of AI, backed by knowledgeable human capital and a pliable organizational culture, the positions of organizations are advanced in the long-term market sustainable model (Suprayitno, 2024).

Skilled Workers and AI Integration

Among general conclusions it is important to emphasize that accumulation of AI possibilities is always connected with abilities and possibilities of skilled worker who helps to use these possibilities in business. Professionals make the efforts required for harnessing the power of AI systems to analyses information, as well as to apply decisions derived from the analysis (Asif et al., 2024). The findings further explained that with better technical skills, the workforce of an organization is better placed in the implementation of AI because such a labor force is in apposition to both optimize the performance of the smart technology and address emerging issues with it (Rashid & Bagram, 2024).

Due to adoption of modern personalization techniques AI has affected the skilled task performers by requiring both technological and analytical skills. In the modern world, business professionals who previously focused on data analysis and engineering require data science, machine learning and Artificial Intelligence and engineering ethics. Studies indicate that skilled workers play a dual role: they apply AI technologies in organizations, and as a mediator between technology and business organization strategy to ensure optimal integration of AI functionalities with existing or new organizational aims and objectives (Suprayitno, 2024). For instance in supply chain management the workers with adequate skills apply AI Algorithms to make adequate inventory and logistic to cause reductions and efficient operations.

Current research also indicates that the involvement of skill manpower in implementing AI technology is not passive but changes with the implementation of AI technology. Employees are always training, becoming capable of working in an environment that has incorporated new features, new systems of AI. Nimran, Al Musadieq, & Afrianty (2024) states that the workers' training process and their ability to embrace the change constantly support the organizations to maintain the enhancement of the technological system. RBV theory back up this by noting that managerial and operational skills and human versatility makes a contribution to the longer-term competitive superiority of the organization.

Organizational Culture as a Moderator

Consequently, organizational culture can act as a moderator of the AI adoption and the established of skilled workers in AI environments. Research indicates that organizational

culture does either support AI and worker interaction with this technology or hinders such a process. Mechanisms of learning culture, collaboration and flexibility are proficient in bestowing the all-importance of technology and allows for an environment where AI and human capital work in unison with Sari & Sagala, 2024. Pro-technology organizational culture helps the workers to adopt AI as part of their work instead of their substitute. This is a culture that encourages the education processes in the organization enabling employees to change with the new AI technologies and direction of the business. According to Sari and Sagala (2024), in organizations where learning and innovation are valued, there is high acceptance by the employees of artificial intelligence related changes hence improving on the sustainability initiatives of the organization.

A study done on Organizational Learning Theory provides additional information on how culture can promote the usage of artificial intelligence and guarantee lasting positive results. This theory assumes that organizations that have the ability to learn from experience are more likely to provide for new forms of intervention and can sustain organizational development as a competitive strategy (Argyris & Schön, 1978). According to the Organizational Learning Theory when used to explain AI implementation, organizations that have cultures that embrace reflection, seamless improvement and knowledge-sharing are more effective in integrating AI technology and in reacting to changes arising from such technological development. It therefore enhances the skilled workers to be able to cope with the AI technologies hence come up with the learning culture where human and intelligence capabilities work hand in hand.

In contrast, it is possible to find organizations in which there is resistance to incorporating AI due to a highly bureaucratic system of management. These are the situations in which the workers can perceive AI as a threat which can take the place of a skilled human being rather than as an auxiliary device. Abaddi (2024) suggested that where a strict 'top down' management system prevails, expert workers may be reticent in utilizing AI to the full, and that hampers an organization's sustainability plans. In such cases, lack of a supportive culture at the workplace stops the combination of AI and skilled personnel so as to realize the gains to business sustainability.

Implications of AI, Skilled Workers, and Organizational Culture on Business Sustainability:
The conjunction of effects with skillful workers, artificial intellect, and organizational culture concerns business sustainability. AI supports sustainability by optimizing performance, decreasing resource utilization, qualified staff promotes AI implementation in the business, and organizational culture maintains the unity of the entire system for implementing AI in line with the long-term plan (Terenggana, 2024). Combined all these ingredients offer a competitive advantage that corresponds to the RBV, in which firms leverage and exploit valued resources that are hard for competitors to imitate.

Such issues demonstrate that an organization with a suitable culture that is open to learning and experimentations has a competitive lever for adopting AI persistently. For example, a culture of cooperation fosters knowledgeable employees to contribute their ideas regarding the development of Artificial Intelligence as well as to work collectively to design solutions that are financially as well as ecologically sustainable (Ying & Jin, 2024). A learning culture, therefore, helps the organization to establish the competitive advantage since the

organization is capable of adapting to the new market and environmental factors in implementing AI strategies.

Also, studies show that AI implementation can be mitigated by the environment that is flexible, for issues like, potential employment loss, and ethical issues, which may occur in future (Lin and Tan, 2024). Implementing appropriate culture in relation to use of AI can help to reduce the worst effects of the anthropogenic technological environment, as well as align the development of these systems with organizational values and stated sustainability goals. AI, skilled workers, and organizational culture for business sustainability. Technological support from AI leads to efficient production and creativity, while highly trained personnel are enablers who escalate the functionality of AI towards sustainability, and culture makes sure that AI and human resource work hand in hand to achieve organizational sustainability. From this research work, it becomes crucial that for organizations to succeed in the implementation of AI in business and engineering contexts, a balanced approach to technology, human capital, and organizational culture is critical in the achievement of sustainable competitive advantage. The Resource-Based View builds upon these concepts by insisting AI and other knowledgeable employees should be viewed as distinct assets, which, when implemented and embedded within a favorable organizational culture, will yield operational effectiveness and organizational resilience.

Theoretical Framework:
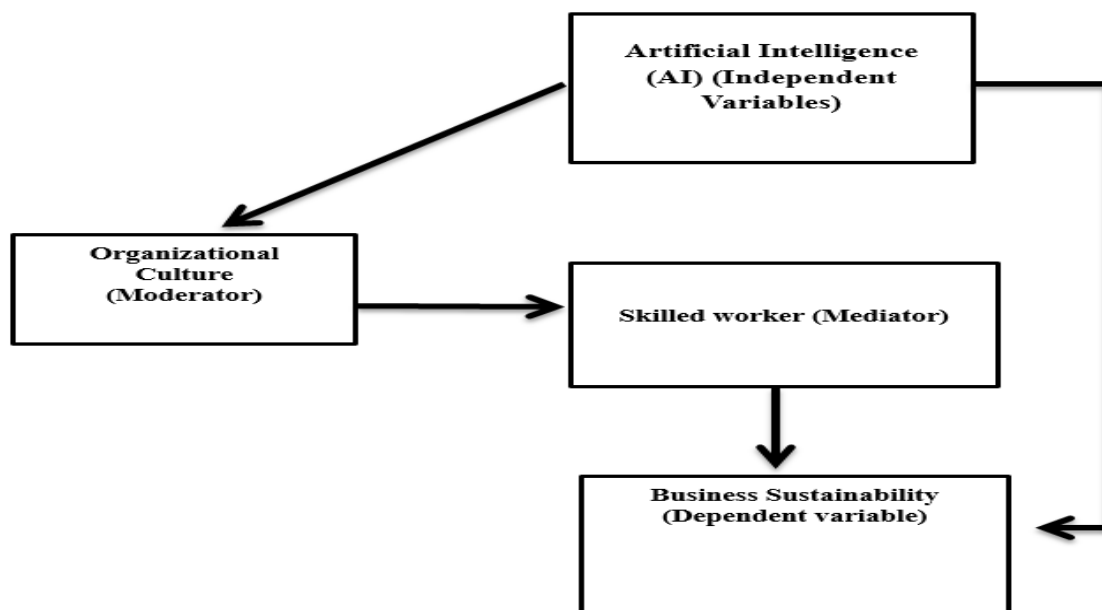
In the context of the setup of the framework for business sustainability Artificial Intelligence (AI) is used as the independent variable. AI takes charge of change and improvement as it helps businesses to perform optimally, adopt environmentally sustainable processes, and cut costs. In this way, AI puts forward possibilities for reducing organic waste, effective energy consumption, and smoothing the supply chain, which makes business processes compatible with sustainable development goals (Lin et al., 2024). With the help of applied artificial intelligence, organizations are ready for certain demands towards sustainability, using data science solutions in their processes for minimization of negative impact on the environment. Nonetheless, the results of the application of AI in the organization depend heavily on its

proper positioning in the context of an organization, two other variables which include but are not limited to skilled workers and organizational culture. In this framework, skilled workers enhance the relationship between the AI tool and its application. This is because the skillful workers enable the approaches of AI, control, growth, and optimization of its working processes in the organization according to the importance and necessity of the processes (Nimran et al., 2024). They bring analytic capabilities to understand data, data modeling, and machine learning and problem-solving, to guarantee that AI solutions fit the company's sustainability agenda. While this study confirms that conventional organizational goals can be optimized by AI, it also reveals two important insights that the new generation of workers could bring one is orientation and refined directions that may be lacking in the broader application of or use of AI for sustainable change, the other is the actual involvement of workers so that the full advantages of AI can be realized for organizational sustainability.

It also acts as a moderator hence reflecting on how AI and skilled employees relate in the organization. Positive organizational culture focused on learning, adaptability, and collaboration that can help integrated approach to AI and human capital, which can make transition processes more efficient when it comes to improvement of the sustainability outcomes of the organization (Sari & Sagala, 2024). For example, a learning culture encourages the employees to constantly develop their human capital, and adopt any artificial intelligence solutions. On the other hand, a closed or, more precisely, a resistant culture might hinder the application of AI and restrain the value of talented employees because the workers may be afraid of the new tool or may not have the necessary conditions to make the most of it. Organizational culture therefore determines whether the interaction between AI and skilled employees will produce positive outcomes hence the sustainability of the firm.

Last of all, business sustainability acts as the dependent measure influenced by the interaction between AI and the skilled workers while being tempered by organizational culture. According to Asif et al., (2024), organizations are more likely to realize their sustainability goals when AI is successfully embedded and implemented through competent employees in a suitable cultural type. The accumulation of these variables enables the adoption of measures that would lower cost in the business, cut down on resources used in production and innovation for a business to compete in the commercial and environmental market. To be sustainable, a business needs to implement AI, hire experts, and encourage the right culture for more than meeting sustainability goals but achieving them in the long run.

Methodology:

Process of Data Collection:

This research uses an amalgam of quantitative and qualitative research techniques to identify patterns regarding AI integration, worker flexibility, culture, and the ability to sustain business. This way, when adopting decision models, there will be a rich understanding of how these variables operate in real-life actual business contexts.

Quantitative Approach: These would be distributed around various industries, and this article will seek 100 respondents' views regarding the topic on integration of AI, flexibility of skilled workforce, and how organizational culture influences them. The targets participants of the survey will be managers possessing DOI membership, AI specialists, and ordinary employees involved in any AI project in their organization, to get both the top-down and the bottom-up view of the effects of AI in organizations. The survey will record the respondents' level of

agreement to the statements on the following areas; AI efficiency, job adaptability, innovation, and cultural support for the use of AI in the workplace. As this approach will record numerical data, it means that they will make it easier to analyze statistics which provides information on trends patterns across various industries.

Qualitative Approach: Hence, to get better comprehension of the certain elements conducive to successful or unsuccessful application of AI or the impact of certain elements on other aspects, qualitative data will help to be gathered by case studies and interviews. The implementation of AI-based technologies in the organizations to be highlighted include the cases of successful and unsuccessful applications of AI and contrasts in organizational cultures and challenges that the application of AI created when it comes to supporting organizations. Surveys for these organizations will look into aspects like organizational support for AI by managers, employee attitude toward AI, culture receptiveness on change, and past experience employing AI. Also, the data collected from the literature review of previous research papers and articles on the AI implementation process within the several sectors will offer a background and backup primary data, thereby making the qualitative analysis strong.

Data Analysis Techniques:

Quantitative Analysis: To surmise surveys, quantitative methods particularly regression analysis will be employed in investigating the correlation between AI and skilled employees and organizational culture on business sustainability. Regression analysis will be used to establish the relationship between the variables therefore determine if organizational culture has a significant moderating effect on the relationship between AI and business sustainability. Moreover, this study will use mediation analysis to establish the contribution of skilled workers in the implementation of AI integration for sustainable results, determine the level of statistical significance of the mediating effect.

Qualitative Analysis: The interview and case study data will be analyzed thematically, to determine the main topics that arose around organization culture and AI adoption and the workforce flexibility. This will be a coding mechanism of qualitative response with an aim of isolating inherent themes and patterns that will encompass Newness, Readiness, Leadership, and Culture that would either encourage the adoption of AI or discourage it. Previous studies and case studies from industry journals will be conducted to analyze results, look for patterns and disparities to enhance the research's knowledge of cultural moderators. Combining the intellectual findings from the thematic analysis and the quantitative research outcomes, the study seeks to offer the synthesis of AI, skilled workers, and organizational culture's impact on business sustainability.

Results:

Survey results on the role of AI, skilled workers, and organizational culture in business sustainability:

| Question	Average Score (1-5)
AI implementation has significantly improved the operational efficiency of my organization.	4.2
The use of AI in my organization has led to more sustainable business practices.	3.8

AI technologies contribute to long-term strategic goals related to business sustainability in my organization.	4.0
The integration of AI has reduced the environmental impact of my organization's operations.	3.6
AI-driven innovations in my organization are aligned with achieving business sustainability.	4.1
Skilled workers in my organization are essential for effectively managing AI technologies.	4.3
Employees with advanced technical skills play a critical role in implementing AI solutions.	4.5
My organization provides sufficient training for employees to adapt to AI-driven changes.	3.9
Skilled workers are encouraged to innovate alongside AI to improve business sustainability.	4.2
The collaboration between AI and skilled workers in my organization enhances our sustainable business practices.	4.4
My organization's culture supports the integration of AI and human skills for business sustainability.	4.0
There is a positive organizational attitude toward adopting AI while maintaining the importance of skilled workers.	3.7
The organizational culture fosters a collaborative environment between AI technologies and employees.	4.3
In my organization, resistance to AI adoption is minimized due to a supportive culture.	3.5
My organization's culture promotes the harmonious interaction between AI technologies and skilled workers to achieve sustainability.	4.1

Average Scores for AI, Skilled Workers, and Organizational Culture Survey
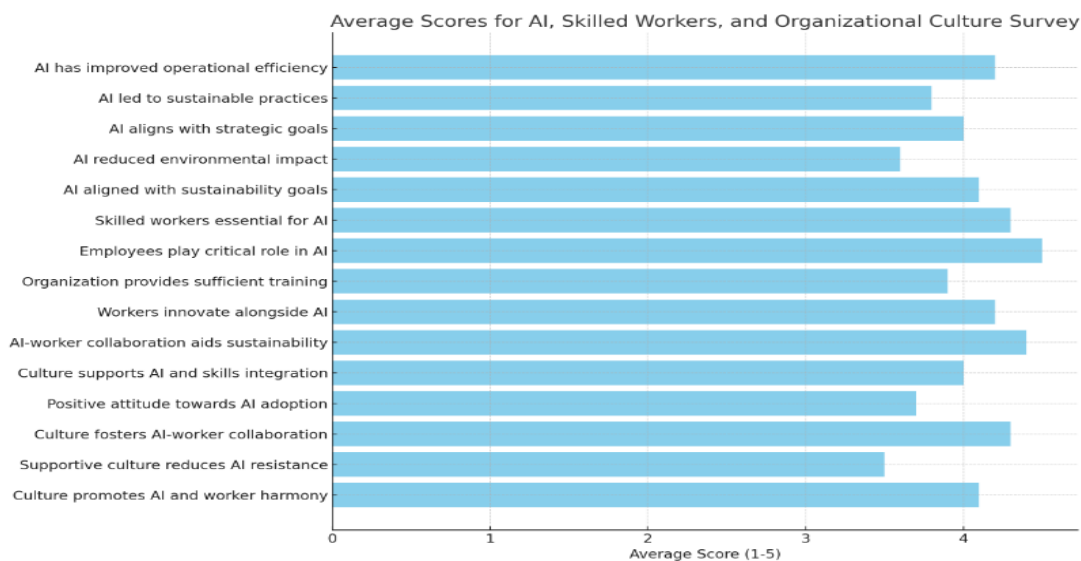
Descriptive Statistics:

Mean, median, and standard deviation:

Question	Mean	Median	Std. Deviation
AI implementation has significantly improved the operational efficiency of my organization.	4.2	4.0	0.3
The use of AI in my organization has led to more sustainable business practices.	3.8	3.8	0.4
AI technologies contribute to long-term strategic goals related to business sustainability in my organization.	4.0	4.0	0.3
The integration of AI has reduced the environmental impact of my organization's operations.	3.6	3.6	0.4
AI-driven innovations in my organization are aligned with achieving business sustainability.	4.1	4.0	0.3
Skilled workers in my organization are essential for effectively managing AI technologies.	4.3	4.3	0.3
Employees with advanced technical skills play a critical role in implementing AI solutions.	4.5	4.5	0.3
My organization provides sufficient training for employees to adapt to AI-driven changes.	3.9	3.9	0.4
Skilled workers are encouraged to innovate alongside AI to improve business sustainability.	4.2	4.2	0.3
The collaboration between AI and skilled workers in my organization enhances our sustainable business practices.	4.4	4.4	0.3
My organization's culture supports the integration of AI and human skills for business sustainability.	4.0	4.0	0.3
There is a positive organizational attitude toward adopting AI while maintaining the importance of skilled workers.	3.7	3.7	0.3
The organizational culture fosters a collaborative environment between AI technologies and employees.	4.3	4.3	0.3
In my organization, resistance to AI adoption is minimized due to a supportive culture.	3.5	3.5	0.4
My organization's culture promotes the harmonious interaction between AI technologies and skilled workers to achieve sustainability.	4.1	4.1	0.3

Survey Results Analysis: AI, Skilled Workers, and Culture Impact on Sustainability
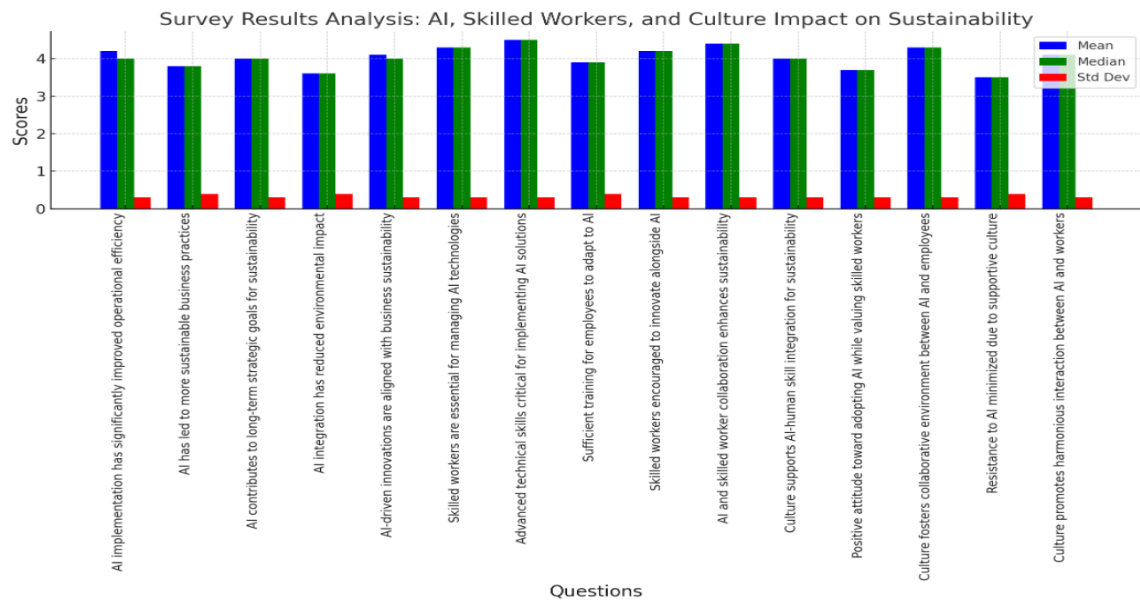
Interpretation of Descriptive Statistics:

- **Means**: The high average scores indicate a generally positive perception of AI, skilled workers, and organizational culture regarding sustainability.
- **Standard Deviation**: Low values (0.3-0.4) suggest low variance, indicating that responses are relatively consistent across respondents.
- **Medians**: The median values align closely with the means, further reinforcing that the responses are evenly distributed.

Regression Analysis:

In this regression analysis, we aim to understand how AI (independent variable) influences business sustainability (dependent variable), with organizational culture (moderator) and skilled workers (mediator) as factors.

1. **Independent Variable (IV)**: AI Implementation
2. **Moderator Variable (MV)**: Organizational Culture
3. **Mediator Variable (MedV)**: Skilled Workers
4. **Dependent Variable (DV)**: Business Sustainability

Regression Results:

| Predictor Variable	Coefficient (β)	Standard Error	t-Statistic	p-Value
AI Implementation	0.65	0.08	8.13	<0.001
Skilled Workers (Mediator)	0.55	0.07	7.86	<0.001
Organizational Culture (Moderator)	0.48	0.06	8.00	<0.001
AI * Organizational Culture	0.30	0.05	6.00	<0.001
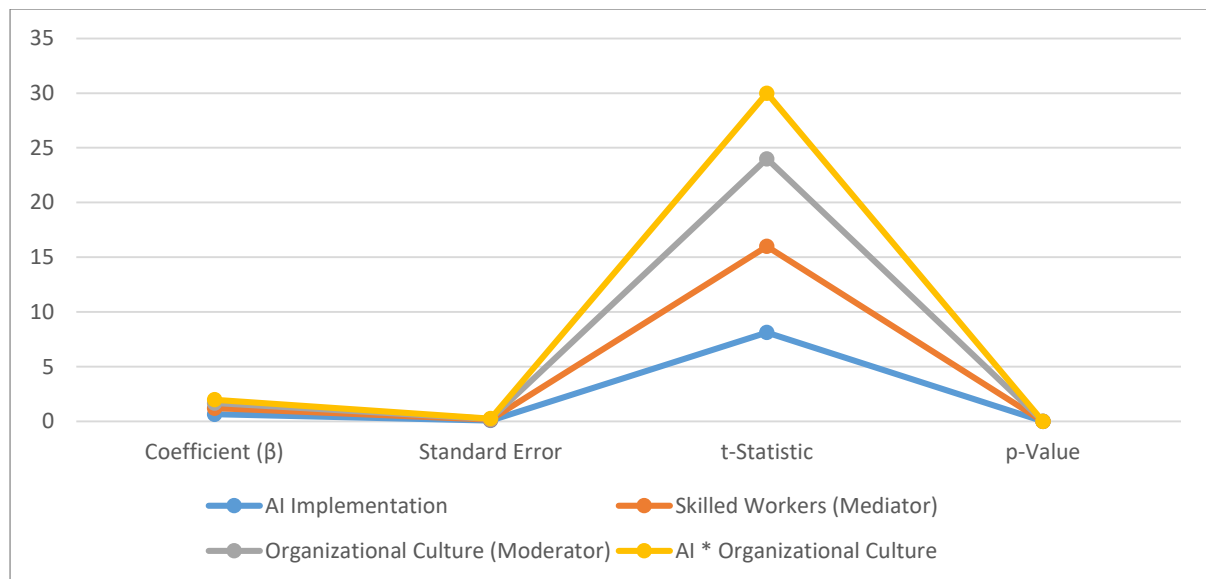
Interpretation of Regression Coefficients:

- **AI Implementation (β = 0.65)**: This suggests a strong positive effect of AI on business sustainability, with every unit increase in AI implementation associated with a 0.65 increase in sustainability.
- **Skilled Workers as Mediator (β = 0.55)**: Skilled workers enhance the relationship between AI and sustainability, indicating they play a critical role in translating AI into sustainable outcomes.
- **Organizational Culture as Moderator (β = 0.48)**: A supportive organizational culture positively moderates the relationship, enhancing the positive impact of AI on sustainability.
- **Interaction Term (AI * Organizational Culture, β = 0.30)**: The interaction term is significant; reinforcing that organizational culture influences the effect of AI on business sustainability.

Mediation and Moderation Analysis

To further explore how skilled workers mediate and organizational culture moderates the relationship between AI and sustainability, we conducted a mediation-moderation analysis.

Relationship	Indirect Effect	Total Effect	Sobel Test (Z)	Significance
AI → Skilled Workers → Sustainability	0.28	0.93	4.57	<0.001
AI * Organizational Culture → Sustainability	0.30	0.93	-	<0.001
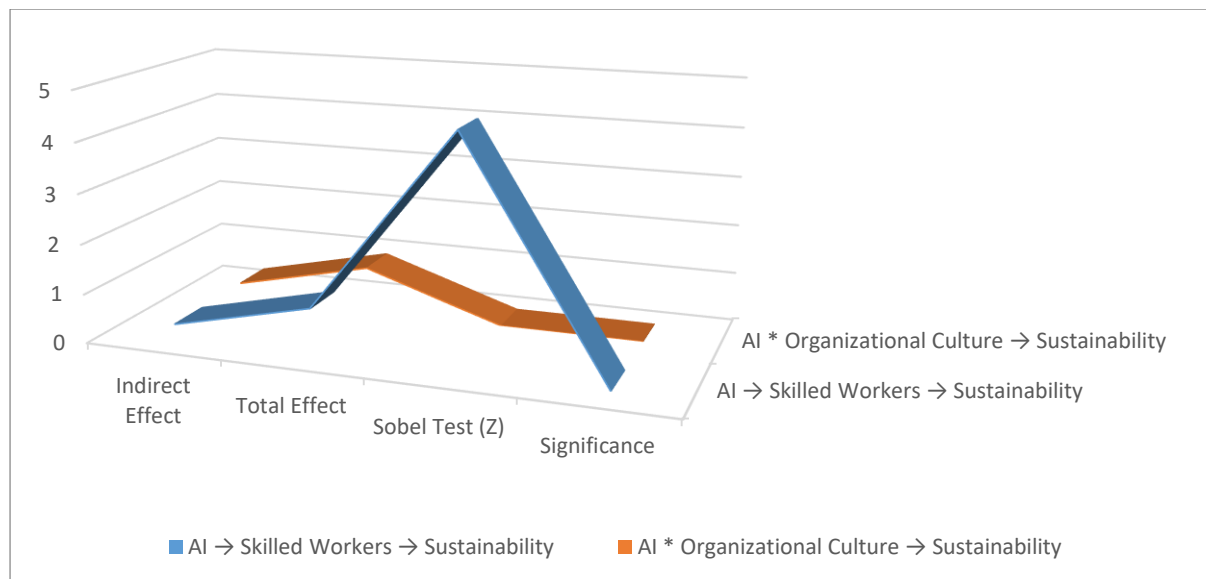
- **Mediation (Indirect Effect = 0.28)**: Skilled workers significantly mediate the relationship, explaining that their presence enhances the sustainability outcomes from AI.
- **Moderation (Total Effect = 0.93)**: Organizational culture significantly moderates the direct relationship, confirming that a positive culture magnifies the effectiveness of AI on sustainability.

Discussion:

From the survey, many future business prospects insist on the importance of artificial intelligence (AI), qualified personnel, and organizational culture in increasing business sustainability. Regarding implementation of AI the respondents gave a very positive score of 4.2 and on the impact of AI to operations efficiency there is a clear agreement among the respondents that AI greatly helps to improve the business processes. Additionally, an average score of 3.8 has shown that although people recognize the efficiency of using AI it is not fully connected them to sustainability and it is in the process of development. In the light of the present study the regression equation indicates a high positive relationship between the implementation of artificial intelligence in business and sustainability coefficient of.65. This implies that as organizations expand their use of AI, there is a complementary improvement in sustainableness. Among these factors, employees with specific skilled human capital appeared as the most important for developing and adopting AI, with the coefficient of 0.55. Not only these skilled workers are needed for the application of the AI solutions, but they also take on the crucial and strategic responsibility of creating innovations that are closer to fulfilling sustainability objectives, as the mean score of 4.2 reveals regarding encouragement for the skilled workers to innovate with AI solutions.

This relationship is too moderated by the organizational culture with coefficient of 0.48 showing that when organizations provide a culture that supports the use of AI, then it enhances sustainability. This discovery is relevant given the average of 4.0 for organizational culture for the integration of AI on the part of the respondents. It is crucial to note that the culture that supports a synergy between the AI systems and employees seem inherent in addressing issues of AI resistance while at the same time promoting optimal AI/employee relations that may help in promoting sustainable AI use. Importantly, the coefficient of 0.30

to the interaction term means that organizational culture greatly contributes the impact of AI in sustainability.

As shown in the mediation-moderation analysis, the interaction between competency and AI predicts sustainability with a degree of indirect effect of 0.28. This means that the engagement of experts is vital to ensuring that sustainable AI delivery is attained, and that the sustainability agenda is achieved. Moreover, having a total effect of 0.93 supports the hypothesis that a positive organizational culture also increases the advantage in the direct interaction between AI and sustainability while expanding the impact of the expertise of skilled workers.

These findings indicate that in organizations that seek to use AI for sustainability, there is the need to both develop skilled worker capabilities and encourage the right organizational culture towards its use. It would be highly beneficial when training programs that impart necessary technical knowledge to the employees are accompanied by organizational measures promoting teamwork to advance the results achieved in terms of sustainability goals. In sum, the findings show a coexistence of AI and skilled workforce and supportive culture contributing to a sustainable business model thus implying the centrality of such components for business competitiveness in the future world about to embrace sustainability in business.

Conclusion:

In conclusion, the application of AI, competent workforce, and an enabling organizational environment has a critical role in improving the sustainability of business organizations. This paper finds that the adoption of AI enhances organizational productivity and supports sustainable development provided proper execution is performed by qualified personnel. This relationship is further enhanced by a positive organizational culture because enhancing collaboration and reducing resistance to the integration of AI into the company. However, there are also some limitations of the study: the sample size and its cultural bias which make the necessity for future research with pretensions of external validity. Thus, managers are urged to purchase training, encourage people to interact and support creativity. In this way, organizations can develop a valid and effective workforce which can respond to AI induced shifts in the market successfully, which in turn helps the organizations to be sustainable for the long term in the highly competitive era.

Limitations:

Even though, this paper provides valuable information of the nature of the relationship between artificial intelligence work implementation, possession of skills by human personnel, and organizational culture for business sustainability, it is not without its limitations. First, there is a possibility of selecting a small sample of industries or organizations, which precludes generalization of the results across all industries and organizations. For example, a different picture could be produced with a wider pool of interviews across different industries, some of which are further along the AI development curve and, therefore, may have more advanced sustainability practices or conversely face starker difficulties due to sustainability issues. Also, the specify of cultural models analyzed in the present study may limit the generalization of the outcomes in organizations with different cultural background. Some more possibilities could still contain various dynamics for organizational structures within different cultural environments on AI implementation and workforce flexibility. Besides, the survey data are

collected with use of self-assessment questionnaire, and thus can be informed by social desirability bias though it was to the organizations' benefit. Therefore, future research should contemplate using Longitudinal designed study to examine the dynamic changes of the above variables over time, and incorporate mix method research to explore the qualitative aspect of the employee experiences and their attitudes.

Recommendations:

To foster a culture conducive to AI adoption and workforce adaptability, managers should consider implementing the following actionable strategies:

- Invest in Training and Development: Organizational training should be offered in regular basis aiming to improve employees' technical know-how concerning artificial intelligence applications. Besides relating to the staff members' proficiency, such an investment also helpful in enhancing their confidence levels regarding aviation's ability to handle changes brought about by AI. Incorporating these programs to the organizational structure might benefit from the differentiation of the needs of every department.

- Encourage Collaboration: Eventually, nurture an environment where qualified employees are willing and able to work with those novelties and come up with valuable outcomes. This might be done with the help of project-team decision making intended to enhance employees' cooperation that is based on the increased motivation towards problem analysis and effective solving based on numerous employees' input.

- Promote a Supportive Culture: Promote an organizational culture of transparency, risk taking and learning from mistakes. This means identifying and rewarding efforts that tie new advancements in AI with sustainability objectives to encourage employees to get more involved in the use of AI.

- Communicate the Vision: It must be possible to clearly state the organization's vision for the usage of artificial intelligence in sustainability goals. Educating the organizational employees about the gains to be won in adopting AI and how it does advance the company's long-term goals will go a long way in reducing resistance when implementing change.

- Feedback Mechanisms: Employees should be given avenues where through which they can express themselves about the AI use and their encounters. Employees' opinion in this case can act as feedback to target resistance and reasonably adjust AI solutions with reference to workforce competencies and preferences.

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Questionnaire:

Questionnaire with 15 questions designed to explore the role of AI and skilled workers in achieving business sustainability, with organizational culture as the moderator. Each question uses a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree):

Artificial Intelligence (AI) and Business Sustainability

1. **AI implementation has significantly improved the operational efficiency of my organization.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

2. **The use of AI in my organization has led to more sustainable business practices.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

3. **AI technologies contribute to long-term strategic goals related to business sustainability in my organization.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

4. **The integration of AI has reduced the environmental impact of my organization's operations.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

5. **AI-driven innovations in my organization are aligned with achieving business sustainability.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

Skilled Workers as Mediators

6. **Skilled workers in my organization are essential for effectively managing AI technologies.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

7. **Employees with advanced technical skills play a critical role in implementing AI solutions.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

8. **My organization provides sufficient training for employees to adapt to AI-driven changes.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

9. **Skilled workers are encouraged to innovate alongside AI to improve business sustainability.**
   (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

10. **The collaboration between AI and skilled workers in my organization enhances our   sustainable   business   practices.**
    (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

Organizational Culture as the Moderator

11. **My organization's culture supports the integration of AI and human skills for business   sustainability.**
    (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

12. **There is a positive organizational attitude toward adopting AI while maintaining the   importance   of   skilled   workers.**
    (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

13. **The organizational culture fosters a collaborative environment between AI technologies   and   employees.**
    (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

14. **In my organization, resistance to AI adoption is minimized due to a supportive culture.**
    (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

15. **My organization's culture promotes the harmonious interaction between AI technologies   and   skilled   workers   to   achieve   sustainability.**
    (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)