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Leadership Skills in the AI-Driven Enterprise: Identifying New Competencies for Success and Humanities Conference

Abstract: - Leadership in AI-driven organizations demands a multifaceted skill set to navigate the complexities of rapidly evolving technology, diverse teams, and ethical considerations. A fundamental quality for leaders in these organizations is technical acumen. A foundational understanding of AI technologies, machine learning, and data science enables leaders to make informed decisions, effectively communicate with technical teams, and envision the strategic integration of AI within the organization.This study employs a quantitative research approach through a cross-sectional survey design to capture the perspectives of 100 employees, leaders, and HR representatives on leadership skills in AI-driven companies This study investigates diverse perspectives on leadership in technology-driven industries, examining opinions on traditional and contemporary leadership attributes. Findings highlight tensions between adaptability and resistance to change, varied views on the integration of technical knowledge, and diverse opinions on communication and emotional intelligence in leadership roles. The study underscores the need for adaptable leadership models that balance technical proficiency with traditional skills in response to the evolving nature of leadership in technology-driven environments.

Keywords: AI Integration, Leadership Skills, AI-Driven Enterprise, Challenges in AI Adoption, Awareness of AI Trends, Competencies for AI Leadership

Introduction

In today's dynamic work environments, leaders must possess a diverse set of skills to navigate the challenges presented by technological advancements, particularly in the age of AI. Emotional Intelligence (EI) is identified as a crucial skill. Agility is essential for leaders to adapt to the disruptions caused by AI, embracing change as an opportunity for growth and innovation (Krasnoff, B., et al 2015). Empathy plays a vital role in building trust and positive relationships within diverse teams. Cultural intelligence is necessary to manage teams with individuals from various cultural backgrounds successfully (Cameron, E., & Green, M. 2017).

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Critical and creative thinking remain pivotal for leaders, as AI cannot replicate their ability to analyze problems from multiple perspectives and make creative, innovative decisions. Ethical judgment becomes a human-exclusive skill, requiring leaders to align AI solutions with organizational values and navigate ethical considerations (Adair, J. E. 2005).. This paper aims to explore the essential leadership skills that are crucial for success in AI-based companies, shedding light on the competencies required to steer organizations through the complexities of the AI-driven era.

In the rapidly evolving landscape of technology, artificial intelligence (AI) has emerged as a transformative force, reshaping industries and driving innovation across the globe. As companies increasingly integrate AI into their operations, the need for effective leadership within these organizations becomes paramount. Leadership in AI-based companies requires a unique set of skills that combine traditional management capabilities with a deep understanding of the complex and dynamic nature of AI technologies (Klus, M., & Müller, J. 2020) .

Objectives

- To analyse the distinctive qualities of effective leadership in AI-based companies possess.
- To examine the intersection of technical knowledge and leadership acumen required to understand and oversee AI initiatives.

Literature Review

(Sagnières, B. 2022) addresses the increasing integration of AI in organizations worldwide. The study emphasizes the importance of not only enhancing technical capabilities but also upskilling leaders to harness the full potential of AI. The uncovered competencies are categorized into problem-solving, social judgment, technical, and ethical dimensions of leadership. Given the evolving nature of research on leadership competencies for AI implementation, the methodology is primarily exploratory. Qualitative data from 12 semi-structured interviews were collected to gain in-depth insights from participants with relevant knowledge about the managerial shifts required in the presence of AI. The findings highlight the necessity of upskilling leaders for successful AI adoption and reveal five new managerial challenges introduced by AI, necessitating the development of specific skillsets. Key skills identified include advocating for transparency, transitioning from skill-based to trust-based leadership, adopting a cross-functional approach, and embracing collaboration. The research also deepens understanding of the ethical dimension in AI contexts, uncovering several managerial skills associated with ethical considerations.

(Titareva, T. 2021) offers a commendable exploration of the intersection between leadership and artificial intelligence within the Industry 4.0 landscape. The review adeptly synthesizes existing research, focusing on the period from 2010 to 2020, to identify three primary perspectives: 1) AI as an enhancement to current leadership functions, 2) AI potentially replacing followers and leaders, and 3) AI being viewed skeptically as an oversold idea. One of the key strengths of this review is its recognition of a gap in the literature pertaining to a lack of substantial reviews and empirical data that holistically address the multifaceted impact of AI on leadership in contemporary organizations. By categorizing the perspectives, the paper provides a structured framework that facilitates a nuanced understanding of the diverse viewpoints in the field. The identified perspectives not only summarize the current state of knowledge but also serve as a foundation for future empirical research. This contribution is particularly noteworthy, as it offers a starting point for scholars and practitioners to explore the implications of AI on leadership further. While the review successfully outlines the identified perspectives, a more in-depth exploration of specific studies or key findings within each perspective could enhance the overall depth of the analysis.

(Milton, J., & Al-Busaidi, A. 2023) investigates into the evolving role of leadership in the educational sector in the context of the AI era. The authors emphasize the necessity for educators to adapt to digital technologies and undergo a digital transformation to remain competitive in higher education. AI is identified as a pivotal component in this transformation, offering significant opportunities not only in teaching and learning but also in leadership within the educational sector. The aim of the article is outlined through key questions addressing the changes in the role of leadership due to AI, the new competencies required by leaders in the future, and the potential for AI to replace human roles in leadership. The research methodology involves external desk research, utilizing publicly available materials such as reports and documents from libraries, websites, and surveys to gather data. The findings suggest that AI has brought about a transformation in the role of leadership, particularly in terms of both

IQ and EQ. The integration of robust data analytics, grounded in AI and machine learning, provides new insights for educational applications. Consequently, leaders in the digital era of educational sectors are expected to possess hard skills, including cloud computing and data flow management, alongside soft skills to effectively lead teams. The article highlights the importance of this dual skill set for guiding higher education institutions to the forefront in the digital age.

Research Methodology

Research Design: This study employs a quantitative research approach through a cross-sectional survey design to capture the perspectives of employees, leaders, and HR representatives on leadership skills in AI-driven companies.

Sampling: A sample size of 100 participants is chosen, utilizing a convenient sampling method to select individuals accessible and willing to participate.

Data Collection: Structured electronic questionnaires, consisting of six multiple-choice questions aligned with research objectives, are utilized for efficient and diverse data collection.

Survey Instrument: The survey instrument employed in this study was designed to gather insights into perceptions of leadership qualities and behaviors, particularly in technology-driven industries. The instrument comprised six key questions, each addressing distinct facets of leadership.

Ethical Considerations: Confidentiality and anonymity are assured, and participants provide informed consent. The voluntary nature of participation is emphasized.

Data Analysis: Quantitative data is analysed using statistical tools to derive frequencies, percentages, and descriptive statistics. Correlations reveals patterns and relationships between variables.

Result Analysis

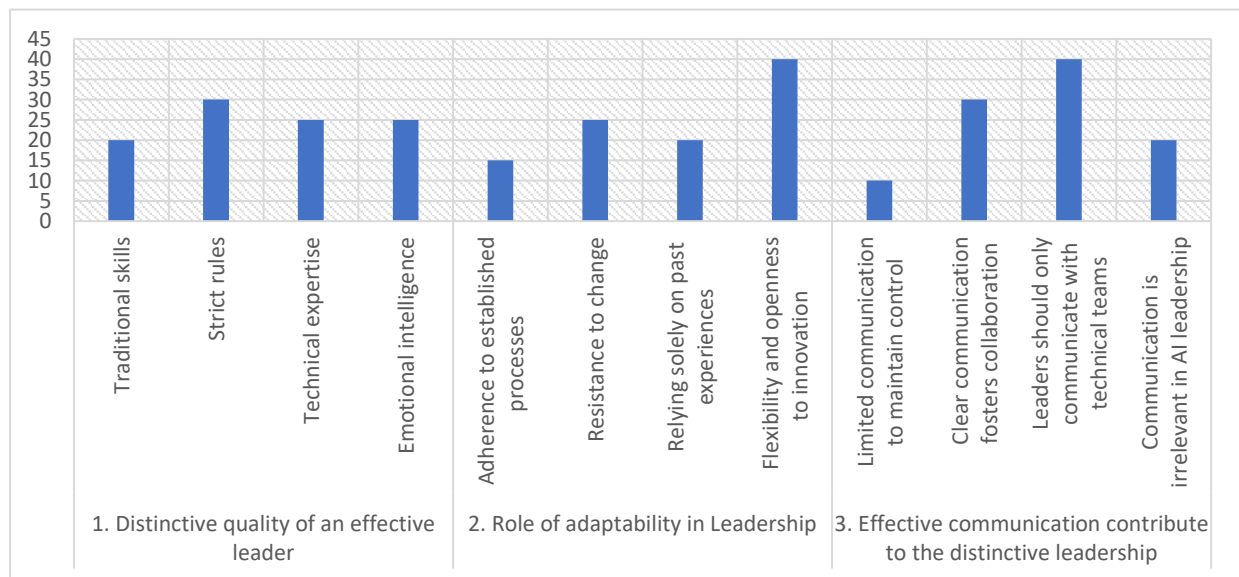**Analyse the Leadership skills required in the AI driven Organisation**

Fig 1. Overview of Leadership Skills in AI Enterprises

Table 1: Overview of Leadership Skills in AI Enterprises

Question	Options	Frequency	Cumulative Frequency
1. Distinctive quality of an effective leader	Traditional skills	20	20

	Strict rules	30	50
	Technical expertise	25	75
	Emotional intelligence	25	100
2. Role of adaptability in Leadership	Adherence to established processes	15	15
	Resistance to change	25	40
	Relying solely on past experiences	20	60
	Flexibility and openness to innovation	40	100
3. Effective communication contribute to the distinctive leadership	Limited communication to maintain control	10	10
	Clear communication fosters collaboration	30	40
	Leaders should only communicate with technical teams	40	80
	Communication is irrelevant in AI leadership	20	100

1. **Distinctive quality of an effective leader:** A significant portion (30%) of respondents believe that effective leadership is associated with strict adherence to rules, while another notable group (25%) emphasizes the importance of traditional skills. Additionally, technical expertise (25%) and emotional intelligence (25%) are also considered distinctive qualities of an effective leader.

2. **Role of adaptability in Leadership:** The majority of respondents (40%) see flexibility and openness to innovation as crucial elements of effective leadership. A notable percentage associates' effective leadership with resistance to change (25%) and relying solely on past experiences (20%). Only a minority (15%) believes in the importance of adherence to established processes.

3. **Effective communication contributes to distinctive leadership:** A large percentage (40%) believes that leaders should only communicate with technical teams. Clear communication fostering collaboration is considered important by a significant portion (30%) of respondents. There are diverse opinions, with some respondents believing in limited communication for control (10%) and others considering communication irrelevant in AI leadership (20%).

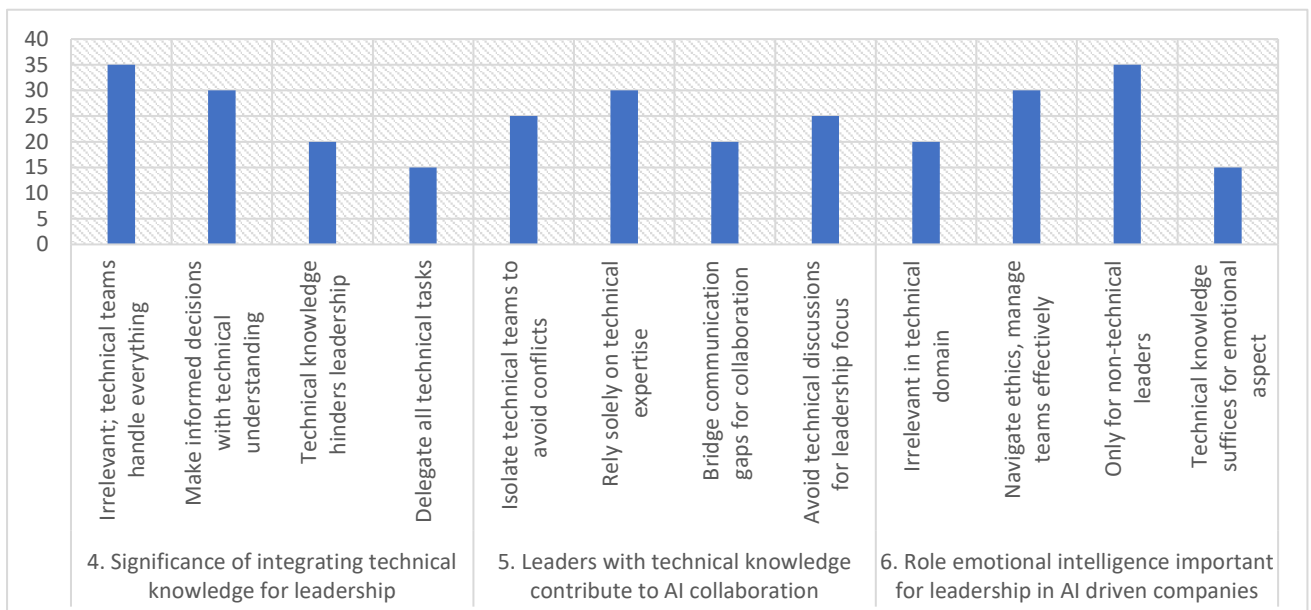**Technical Leadership Competencies for AI-Driven Environments**

Fig 2. Technical Leadership Competencies for AI-Driven Environments

Table 2: Technical Leadership Competencies for AI-Driven Environments

Question	Options	Frequency	Cumulative Frequency
4. Significance of integrating technical knowledge for leadership	Irrelevant; technical teams handle everything	35	35
	Make informed decisions with technical understanding	30	65
	Technical knowledge hinders leadership	20	85
	Delegate all technical tasks	15	100
5. Leaders with technical knowledge contribute to AI collaboration	Isolate technical teams to avoid conflicts	25	25
	Rely solely on technical expertise	30	55
	Bridge communication gaps for collaboration	20	75
	Avoid technical discussions for leadership focus	25	100
6. Role emotional intelligence important for leadership in AI driven companies	Irrelevant in technical domain	20	20
	Navigate ethics, manage teams effectively	30	50
	Only for non-technical leaders	35	85
	Technical knowledge suffices for emotional aspect	15	100

- **Significance of integrating technical knowledge for leadership:** A significant portion of respondents (35%) believes that technical knowledge is irrelevant for leadership, suggesting that technical teams should handle all tasks independently. Conversely, 30% of respondents emphasize the importance of leaders making informed decisions with a good understanding of technical aspects. There's a perspective (20%) that technical knowledge can hinder leadership, and a smaller percentage (15%) suggests leaders should delegate all technical tasks.

- **Leaders with technical knowledge contribute to AI collaboration:** A segment (25%) believes in isolating technical teams to avoid conflicts, while another significant portion (30%) thinks leaders should rely solely on technical expertise for AI collaboration. On the other hand, 20% emphasize the importance of leaders with technical knowledge bridging communication gaps for effective collaboration. 25% believe leaders should avoid technical discussions to maintain focus on leadership responsibilities.

- **Role of emotional intelligence important for leadership in AI-driven companies:** Some respondents (20%) consider emotional intelligence irrelevant in the technical domain. The majority (30%) believes that emotional intelligence is crucial for navigating ethics and managing teams effectively in AI-driven companies. A significant percentage (35%) thinks that emotional intelligence is relevant only for leaders who are non-technical, while a smaller portion (15%) believes that technical knowledge suffices for addressing the emotional aspect of leadership in AI-driven companies.

1.3 **There is a significant correlation between the distinctive leadership qualities perceived as effective leadership in AI-based companies.**
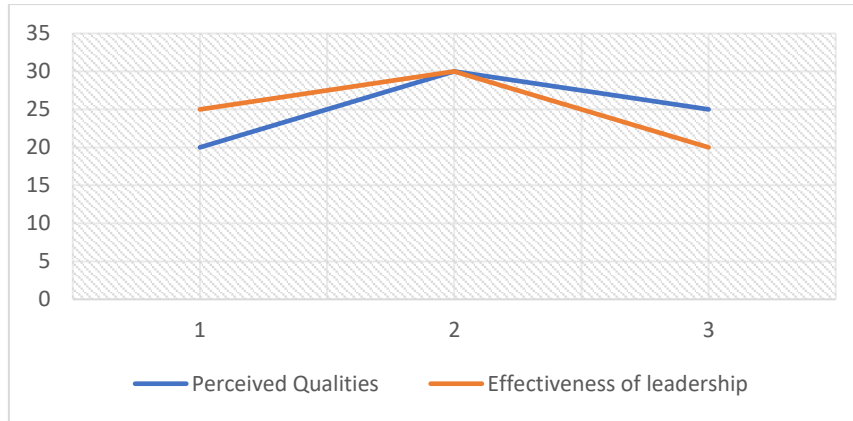
Fig 3. Correlation Analysis

	Perceived Qualities	Effectiveness of leadership
Perceived Qualities	1	
Effectiveness of leadership	0.5	1

A correlation coefficient of 0.5 denotes a moderate positive correlation. It implies that there is a positive relationship between the perceived qualities and the effectiveness of leadership, but the correlation is not perfect. The effectiveness of leadership tends to increase with an increase in perceived qualities, but the relationship is not absolute.

Conclusion

The overall findings from the survey provide a nuanced and diverse understanding of perceptions regarding leadership qualities and behaviors in the context of evolving industries, particularly those driven by technology.

Diverse Perspectives on Leadership Qualities: The responses indicate a wide range of opinions on the distinctive qualities of an effective leader. While some emphasize traditional skills and adherence to strict rules, others highlight the importance of technical expertise and emotional intelligence. This diversity suggests a dynamic and evolving concept of leadership, with respondents valuing a combination of both traditional and contemporary attributes.

Tension Between Adaptability and Resistance to Change: The data reveals a notable tension between the importance of adaptability and a resistance to change. The majority sees flexibility and openness to innovation as crucial for effective leadership, yet a substantial portion associates effective leadership with resistance to change and a reliance on past experiences. This tension reflects the ongoing debate on how leaders should navigate change in rapidly evolving environments.

Varied Perspectives on Communication in Leadership: Opinions on effective communication in leadership also exhibit diversity. While some emphasize the need for leaders to communicate exclusively with technical teams, others stress the importance of clear communication fostering collaboration. The perception that communication is irrelevant in AI leadership suggests differing viewpoints on the role and impact of communication in technical leadership roles.

Integration of Technical Knowledge: A Point of Contention: The integration of technical knowledge into leadership is a notable point of contention. A significant portion believes technical knowledge is irrelevant for leaders, while others emphasize the importance of leaders having a solid understanding of technical aspects for making informed decisions. This highlights an ongoing debate regarding the optimal balance between leadership skills and technical proficiency.

Leadership and AI Collaboration: The survey indicates diverse perspectives on the role of leaders with technical knowledge in AI collaboration. While some advocate for leaders relying solely on technical expertise, others stress the importance of leaders bridging communication gaps for effective collaboration. This suggests challenges in defining the role of leaders in technologically advanced fields and the balance between technical involvement and leadership responsibilities.

Emotional Intelligence: Varied Importance Across Roles: Opinions on the role of emotional intelligence in AI-driven companies vary, with some recognizing its importance for navigating ethics and effective team management. However, a significant portion believes emotional intelligence is relevant only for non-technical leaders. The contrasting views indicate ongoing discussions about the role of emotional intelligence and whether it is universally applicable or varies based on technical expertise.

Implications

The survey findings underscore the dynamic and multifaceted nature of leadership in contemporary, technology-driven industries. Organizations may need to adapt leadership development programs to encompass a broader range of skills, acknowledging the importance of both traditional leadership qualities and technical acumen. Ongoing discussions and considerations about the evolving nature of leadership are essential to shaping effective leadership models that can navigate the complexities and opportunities presented by advancements in technology. The findings highlight the need for leaders to possess a blend of skills, including adaptability, effective communication, and a nuanced understanding of both technical and traditional leadership aspects

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