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Research Article

Evaluation of adapting artificial intelligence in sustainable leadership roles: A survey-based study

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ABSTRACT

In businesses, artificial intelligence (AI) has the potential to alter workflows and upend professions, including management. In an increasingly fast-paced corporate environment and during periods of digital transformation, company executives are debating whether and how AI can replace managers in their current roles or even take over management responsibilities. To investigate this topic, this manuscript offers a first step in this conversation by analyzing the expectations and acceptance levels of the potential user base regarding the use of AI technology in organizational leadership positions. This was accomplished by surveying managers and staff (N = 74) using an online questionnaire that offered three fictitious scenarios with varying degrees of interaction with potential users in which AI handles specific managerial tasks. An analysis of variance revealed that among the scenarios, AI managers who function as (digital) cognitive agents had the highest acceptance levels. Executives and top-level managers can use the study's insights and research agenda to help them get ready for AI adoption and make wise choices that will hasten the process. In the context of Industry 4.0, this study explores how AI technologies are changing leadership roles, paying special attention to organizational decision-making and employee engagement. The technology acceptance model will be used to measure perceived usefulness and perceived ease of use across leadership functions to gauge how people feel about AI-driven leadership.

Keywords: *artificial intelligence, management strategy, leadership, sustainability, Industry 4.0, AI managers*

1. Introduction

The advances in the digital and Industry 4.0 environment have radically changed over the last few years. Today's drastic changes have affected and impacted business activities, causing damage by increasing unprecedented pressure on organizations. The introduction of breakthrough innovations in various technologies, such as deep learning, artificial intelligence (AI), computer vision, friendly robotics, the Internet of Things, smart sensors, and many more, is still in progress and results in dynamic change every moment. This change can facilitate and enhance the vision and key direction of any modern small or large sector organization. The purpose of these integrated smart AI technologies is the development of a new generation of smart organizations grounded in process digitization. Smart modern enterprises are identified by their increased production flexibility using real-time machines and personalized production capabilities. With this rapid production growth, the Industry 4.0 revolution can also cause damage to the environment in many ways, giving direct stress to the management. Nowadays, organizations should participate in protecting the natural environment and have a regular check on the environmental performance of sustainable organizations by keeping a regular check in the fields of waste management, pollution control systems, recycling, and mitigation of environmental releases. The main goal of this work is to explore effective strategies by leaders in different cultures of the organization and their impacts on the employees of the organization. The success of any leadership will be determined by the research's exploration of employee engagement across various teams. Additionally, we will present different studies about how the engagement of an employee is important and how it can be achieved in several ways. AI is a buzzword today, and having some new success in technology is something that is evolving timely. We will also study and find new ways to integrate, determine, and support the leadership methods and measure the different ways to engage

employees. Going towards the common success or the goal that any organization or its leadership would like to achieve will also involve some other factors, like change management, meaning how spontaneous change can be managed and adapted through several different factors related to leadership.

2. Literature Survey

As we have already seen, AI systems are associated with multiple issues and will need the support of organizational leaders for successful adoption. This section, therefore, further investigates the competencies connected to a leadership role by proposing a skill-based model for organizational leadership by Mumford et al. (2017). The model identifies effective leadership competencies, which will serve as the organizing structure for the integrative framework
presented in the final section of this chapter. Moreover, the literature, which emphasizes the significance of the leaders' role during any organizational change and identifies the preferred leadership styles when undergoing an organizational change process, is also reviewed. Also mentioned is the ability of leaders to have an ethical basis to get the best outcome of a change. Research has focused on conceptualizing leadership from an abilities-focused standpoint since the 1950s. In addition to Mumford et al. (2017) and Duffour and Pattanaik (2025) more recent contributions, Katz's work from 1955 was crucial in these discussions, as Northouse et al. (2007) point out. Based on the idea that a skills-based approach to leadership makes it easier for organizations to improve their leaders while incorporating AI systems, this thesis focuses on the development of leadership abilities.
Although Moore and Rudd's (2004) study sparked conversations about leadership abilities, Mumford et al.'s (2017) more thorough skill-based model represented a major advancement in the field. Mumford et al. (2017) found that knowledge, social judgment, and problem-solving abilities are the three main factors that are strongly associated with effective leadership performance. Their research indicates that problem-solving abilities include both the creative ability to come up with novel solutions and the ability to recognize and comprehend organizational challenges. Understanding social structures and human behavior, as well as inspiring, guiding, and winning over employees to solve issues and make changes, are all components of social judgment skills. The third element, knowledge, is essential since it is inextricably linked to leadership and problem-solving, whereas the first two categories concentrate on particular skills. It has a direct impact on a leader's ability to handle organizational problems and put solutions in place. According to Mumford et al. (2017), knowledge is a sophisticated collection of mental models that aid in learning and data organization rather than merely being a collection of facts. Three other components are also included in their skill-based model: career experiences that mold a leader's skills and characteristics; environmental influences (like natural disasters, economic conditions, and subordinates' expertise, all of which can affect leadership performance); and individual attributes (like cognitive ability, personality traits, and motivation, which contribute to the development and application of leadership competencies). The three core competencies–problem-solving, social
judgment, and knowledge–remain the focus of this thesis even though these other factors also affect leadership competencies. This is because these are the most developable and are the most successful in enhancing overall leadership performance (Northouse et al., 2007). A leader inspires, encourages, and directs others to perform tasks that are consistent with the goals and objectives of the company. Through the efforts of their team, leaders are the engine that propels an organization toward its objectives
and commercial success (Liu et al., 2017; Prentice, 2004). They are the organization's lifeblood and have a significant impact on whether it succeeds or fails (Ojokuku et al., 2012). The ability to engage with followers in a way that influences, directs, inspires, and motivates them to accomplish organizational goals is a key component of leadership (Robbins & Judge, 2017). In a similar vein, Hauer et al. (2021) characterize leadership as a social process that motivates followers to voluntarily commit and exert effort. Performance is improved and positive employee behavior is encouraged in the workplace by effective leadership (Burns, 1978). Due to differences across disciplines, there isn't a single, widely recognized definition of leadership style, despite the enormous number of leadership styles examined in the literature (Burns, 1978). Nonetheless, over the past 20 years, transformational leadership has remained well-liked and extensively discussed (Decuypere & Schaufeli, 2020; Islam et al., 2021), and it has become a fundamental style in leadership theory (McCleskey, 2014). It is particularly noticeable in companies that operate in rapidly changing environments, have geographically scattered operations, and have a diverse range of technologies (Basu, 2015). Burns (1978) first proposed transformational leadership, which has four main characteristics: intellectual

stimulation, idealized influence, inspirational motivation, and individualized consideration (Avolio, 2004). According to Mohelska and Sokolova (2018), organizational culture is a unique fusion of common beliefs, practices, norms, expectations, philosophies, traditions, values, and understandings that influence how its members behave. The conventional definition of organizational culture, according to Schein et al. (1990), is a collection of fundamental beliefs that a group has created, learned, or created as the proper way to see, feel, and think about problems. Organizational culture can be interpreted in a variety of ways, despite the absence of a single, widely recognized definition. Most academics concur that values, norms, and beliefs that affect how workers think, act, and perceive their workplace are all part of organizational culture (Chung et al., 2016; Mohelska & Sokolova, 2018; Rehman et al., 2019; Viltard & Acebo, 2020; Warrick et al., 2016). The intricate and interconnected system of institutionalized and standardized behaviors that characterizes an organization's personality and manner of functioning is known as its organizational culture (Osborne & Brown, 2005). As a social glue, it promotes unity and directs members' choices, behaviors, and interactions. Leadership styles, decision-making procedures, communication styles, and even the organization's internal symbols, customs, and language are frequently examples of how culture is expressed. By giving workers a feeling of identity and belonging, it helps them match their actions with the goals of the company. Furthermore, a strong corporate culture can boost productivity and performance while also increasing job satisfaction and employee motivation. It also has a significant impact on how well an organization adapts to change and performs overall in a cutthroat market. Because organizational culture can affect innovation, employee engagement, and long-term sustainability, leaders must comprehend and manage it.

Several scholars have attempted to distinguish between digital transformation and digitalization. However, these terms have frequently been used interchangeably because there isn't a single, widely recognized definition of digitalization (Khan & Ismail, 2016). Technically speaking, digitalization is the process of transforming data, signals, and objects into binary code so that computers can process them. The convergence of numerous technological applications in diverse fields is facilitated by this underlying technology (Ardelin et al., 2020). By integrating systems and services both horizontally (across industries) and vertically (within organizations), Industry 4.0, the next stage of manufacturing and organizational systems, aims to digitalize work environments (Fischer & Pohler, 2018). The review by Petrat et al. (2022) emphasizes that user trust, transparency, and compatibility with human values are essential for the adoption of AI in leadership, in addition to technical effectiveness. According to their research, AI can help managers with hiring and strategic planning, but its effectiveness depends on how fair and straightforward its implementation is seen to be. Titareva (2021) highlights a move toward skill-based leadership models that are appropriate for environments with AI integration. She states that for leaders to successfully navigate AI-driven workplaces, they must possess three fundamental competencies: problem-solving, social judgment, and knowledge application.

Nevertheless, current empirical studies frequently underinvest in these competencies. When taken as a whole, these sources highlight how crucial leadership flexibility and technology acceptance are to the effective integration of AI into management.

Through the use of digital technologies, such as augmented reality, improved information processing systems, and human-machine collaboration, workplace digitalization directly affects the working environment (Fischer & Pohler, 2018). Robotic arms for heavy lifting, mobile devices for managing distant information, and sophisticated tools for information processing and visualization are a few examples of such digital technologies (Fischer & Pohler, 2018). The emergence of bimodal IT operations, which are intended to satisfy the constantly changing needs of both business dynamics and workforce expectations, is one noteworthy trend in workplace digitalization (Gartner, 2016). IT systems have historically prioritized multimedia, telecommunications, and office automation (Guo & Yang, 2024). Digitalization, however, now entails deeper innovations that go beyond simple process optimization. More agility is made possible by the more seamless integration of business and IT operations. Therefore, to improve productivity and foster organizational expansion, digitalization necessitates a reshaping of IT roles (Guo & Yang, 2024). Bimodal IT frameworks, which oversee two different IT delivery modalities, are thus adopted (Gartner, 2016). While the new, agile IT model places more emphasis on speed and innovation to meet the demands of workplace digitalization, the traditional model places more emphasis on accuracy, stability, and safety. Businesses can strike a balance between the need to maintain a stable IT infrastructure and the growing demand for digital integration by using this dual-mode approach (Donaldson, 2020).

The existence of digital talent is a crucial success factor for workplace digitalization (Gartner, 2016). This includes workers' resources and abilities as well as their readiness to adjust. Finding and keeping digital talent is one of the biggest challenges in digitalization, according to research, with about 30% of organizations citing this as a major concern. Achieving alignment between IT and business functions (20%), tackling technology-related barriers like security threats and legacy systems, and obtaining sufficient funding (15%) are additional challenges (Gartner, 2016). One intriguing finding regarding automation is that,ratherthan taking the place of human roles in the workplace, it improves human existence. Automation, for example, can lower the number of workers in dangerous or potentially fatal jobs (Khan & Ismail, 2016). Broadly speaking, digitalization describes how digital technologies, such as media infrastructures and digital communication platforms, influence everyday social life and practices (Brennen & Kreiss, 2014; Leonardi & Treem, 2020; Plesner & Justesen, 2021). Digitalization, according to Doran and Folan (2021), is the process of using digital technologies to drastically alter how we participate in different activities. In a broader sense, it denotes the acceptance or growing utilization of computer-based or digital technologies (Brennen & Kreiss, 2014). Email, instant messaging, document management software, and business social media platforms are a few examples of these technologies (Meske & Junglas, 2021). Digitalization is frequently understood in the business context to mean the development of innovative business models and procedures that capitalize on digital opportunities (Kiron et al., 2017). It is commonly known that the concept of employee engagement includes more than just psychological climate, organizational commitment, and job involvement. A multifaceted concept that encompasses behavioral, cognitive, and attitudinal outcomes, employee engagement is frequently viewed as a more comprehensive way to invest in one's work (Ababneh, 2021; Kwon & Kim, 2020; Macey & Schneider, 2008). Employee engagement is a dynamic motivational state that reflects the energy, passion, and effort an employee is willing to put into their work, in contrast to job involvement or job satisfaction, which are primarily attitudinal (Christian et al., 2011; Kahn, 1990; Rich et al., 2010; Saks, 2021).
Researchers have discovered that several favorable outcomes for both workers and organizations, such as increased productivity, enhanced well-being, and improved organizational performance, are positively connected with employee engagement (Albrecht & Marty, 2020; Bakker & Leiter, 2017; Decuypere & Schaufeli, 2020). In general, engaged workers are more devoted to their supervisors and organizations, have higher levels of motivation, and are more involved in their work (Zufrie et al., 2021). According to Almotawa and Shaari (2020) and Xu et al. (2020), they are also more likely to exhibit positive attitudes and intentions toward their work and the company. According to Memon et al. (2018), Iddagoda and Opatha (2020), and Vuong and Sid (2020), engaged employees are more likely to apply their skills energetically and work towards organizational goals with a high level of commitment. They go above and beyond to support the company's performance and success because they comprehend and share the organization's mission and values (Madhani, 2020). High levels of employee engagement have been linked to better organizational outcomes, such as enhanced performance and efficiency, according to empirical research (Bailey et al., 2015; Baqir et al., 2020; Jabeen & Rahim, 2021). It is assumed that workers in today's digital workplace have the fundamental abilities needed to use digital tools. These abilities include using digital tools' main functions, installing and uninstalling apps, interacting with social media sites like Facebook, LinkedIn, and Twitter, and troubleshooting issues with the help of online resources or manuals. The ability to critically evaluate and use digital tools and resources to complete particular tasks is a crucial component of digital literacy.

To summarize and validate our research work, we have presented an overview of different developed leadership strategies tailored specifically for sustainable organizations within medium and large enterprises. So, the objectives of this paper are as follows:

1. By looking at how users perceive various AI leadership scenarios and determining which types of AI leadership are most likely to be adopted in practice, this study aims to analyze managers' and employees' expectations and acceptance levels of the use of AI technologies in organizational leadership roles.
2. A description of the existing state-of-the-art AI techniques, which identify and implement effective leadership approaches promoting long-term viability, resilience, and organizational success. 3. Review of some integrated AI and agile-based models to perform smart performance management and achieve

digital transformation 4. Description of the techniques to handle unique challenges due to organization sizes, resource constraints, and the dynamic nature of the organizations. 5. Summarization of the technique outcomes, including potential research strategic studies, cost-benefit analysis, leadership members, and transactional leadership exchange vs social exchange theory. The whole article is structured in a scheduled way as follows: We first explain the impact of leadership on organizational growth, with an overview of different medium and large organizations and their strategies, with the recent studies that employ the most popular AI techniques to protect the natural environment. We then assess the challenges faced nowadays by the medium and large sector organizations' systems. After that, we focus on the implementations and results of the AI techniques used in setting strategies in leadership for performance changes, and finally, we summarize the major remarks of different chapters and future further research.

3. Role of AI in Leadership

AI is becoming embedded in vital management and leadership tasks as businesses embrace Industry 4.0 technologies. The use of AI tools has expanded beyond automating repetitive tasks to include talent acquisition, performance monitoring, and strategic decision-making. AI has the potential to improve leadership situations by reducing human bias, increasing efficiency, and providing data-driven insights, especially in hiring and evaluation procedures (Petrat et al., 2022). For instance, AI-powered hiring platforms can screen applicants faster and more reliably than human recruiters, and supervisory tools can track employee performance in real time and provide predictive analytics to help managers make decisions. Leaders can identify market trends, risks, and opportunities with the help of AI systems that can analyze complex data sets and inform long-term organizational strategies. Nevertheless, there are some significant obstacles to integrating AI into leadership. As noted by Petrat et al. (2022), worries include the depersonalization of leadership interactions, algorithmic transparency, data privacy, and a loss of human judgment. Furthermore, middle management and employee resistance, motivated by a fear of losing their jobs or having less autonomy, can make implementation more difficult. To assess AI's acceptability and efficacy in leadership, it is crucial to comprehend the current state of the technology. Using the technology acceptance model (TAM) as an analytical framework, this study expands on that foundation by evaluating how people view the value and usability of AI tools in leadership roles.

4. Theoretical Framework

This section describes the methodology used to answer the main research question after reviewing the literature and presenting an integrative framework that summarizes the body of knowledge regarding AI leadership competencies: Which essential skills must managers develop when putting in place an AI system to successfully lead employee adoption and flourish with the technology? The data collection method is explained at the beginning of the chapter, and then the entire data collection process–including the recruitment strategy and interview procedures–is thoroughly described. It also describes the coding procedure used to analyze the gathered data and gives a summary of the finished sample. This study takes an exploratory approach because research on the managerial skills required to support AI implementation is still in its infancy. The objective is to learn more about the changing competencies that managers need by interviewing people who have had firsthand experience with AI implementations. Since in-person interviews are well known for offering deep, nuanced insights from people who have personally experienced the phenomenon, they were selected as the main technique for gathering data (Hoflund 2013). Semi-structured interviews were used to gather data to make it easier to explore particular topics. The semi-structured format was chosen because it permits a flexible approach: although an interview guide guarantees that pertinent topics are consistently covered, it also provides the flexibility to explore new themes that may come up during the discussion. Open-ended questions that were modified according to the participants' role and degree of involvement in AI implementation

were used to entice participants to go into further detail about their experiences. To guide the conversation across a variety of topics pertinent to the research question, an interview guide can be created. Among the guide's important queries were: Could you give an overview of your company's AI implementation history? How did the training you received help you get ready for these changes? In your opinion, how well have your staff members adapted to the new technology? As a leader, what steps did you take to get your team and yourself ready for this change? Other inquiries delved into topics like ethical considerations, employee preparedness, and leadership tactics.

A preliminary literature review that determined three key competencies necessary for AI leadership–technical proficiency, ethical leadership, and business skills–guided the interview guide's design. To better understand these competencies' practical application in the context of AI implementation, they were converted into particular interview questions and sub-questions. Depending on the participant's role and degree of experience with AI systems or leadership duties during the implementation process, different parts of the interview guide were given more attention than others due to the sample's diversity.

This study aimed to explore a wider range of questions about the relationship between leadership, organizational culture, digitalization, and employee engagement, in addition to the competencies needed for AI leadership. The following important research questions are the focus of this study:

1. Do workplace digitalization, creative culture, and transformational leadership affect employee engagement?

2. What role do innovative cultures and transformational leadership play in the digitalization of the workplace?

3. Does the relationship between innovative culture, employee engagement, and transformational leadership get mediated by workplace digitalization?

4. Do incentives, recognition, and digital literacy act as moderators in the relationship between employee engagement and workplace digitization?

The growing interest in comprehending how leadership philosophies, cultural elements, and digital transformation interact to influence employee engagement in a digitalized workplace is reflected in these extra inquiries. The results of the semi-structured interviews will provide insightful information about the interactions between these components, assisting in determining the skills managers must acquire to successfully guide AI adoption initiatives and successfully involve staff in a quickly changing technological landscape. While guaranteeing a thorough analysis of the essential skills that allow managers to succeed in an AI-driven business environment, this research design highlights the necessity of flexibility in data collection. The study intends to add useful information to the expanding body of literature by concentrating on the actual experiences of managers leading the way in AI implementation. As a result, the two hypotheses listed below were created:

1. Hypothesis 1. The first hypothesis states that there should be mean variations in perceived ease of use (PEU) across various scenarios: the highest PEU is for digital cognitive assistants used in staff recruitment, the second highest is for digital cognitive assistants used in supervision, and the lowest is for physical autonomous systems used in strategy.

2. Hypothesis 2. Mean variations in perceived utility across scenarios are anticipated, with digital cognitive assistants in hiring having the highest perceived utility, digital cognitive assistants in supervision having the second highest, and physical autonomous systems in strategy having the lowest.

5. Research Methodology

Employee engagement was not specifically measured in the final survey, despite being initially recognized as a pertinent focus area. Survey length restrictions and the requirement to keep a laser-like focus on the TAM constructs of perceived usefulness (PU) and PEU were the causes of this. Dedicated engagement metrics were not included, even though some scenario elements might have an indirect connection to engagement. Future studies are urged to examine the effect of AI-led leadership on employee engagement through more focused metrics in light of this limitation. To gather information on participants' acceptance and expectations of AI as a manager, both hypotheses were operationalized in a questionnaire. Based on literature-based insights, established instruments, and the authors' considerations, the online questionnaire was developed in English on the Google Assessment Form and website. Regarding the subsequent statistical tests in this section, McDonald's omega coefficient will be applied to all subsequent reliability evaluations. Moreover, this section will present the scenarios that were utilized. Data Collection A variety of communication channels, including Xing, LinkedIn, the university mailing list, and others, were used to distribute the Google assessment questionnaire. The ability to work was the only prerequisite for taking the survey. 34 females, 39 males, and one participant who indicated a diverse gender made up the sample, which had a total of N = 74. Participants were 37.96 years old on average (standard deviation [SD] = 12.65). Most participants (72.97%) were employed, while the remaining participants were either unemployed (6.76%), civil servants (9.46%), or students enrolled in school (8.11%). Academic degrees accounted for 62.16% of all respondents, while the English general qualification for higher education (Abitur) was held by 21.62%. With a combined 29.73%, the finance and insurance sectors were the most represented, followed by the IT sector (17.56%) and the educational sector (12.16%). Figure 1 illustrates how the sample's responsibilities are distributed, showcasing team distribution based on their responsibilities.

Figure 1: Distribution of sample responsibilities (Source: Authors' own elaboration)

5.1. Questionnaire

This survey focused on people's perceptions and expectations of AI in a leadership role. However, the main obstacle in this case was that existing psychometrically tested questionnaires could not be used because of the lack of research in this field. However, whenever feasible, trustworthy questionnaires were used to guarantee sufficient data quality. To prevent misunderstandings, a concise definition of AI was included on the first page of the questionnaire. This article focuses on three distinct AI manager systems and examines acceptance scores that arise from using the TAM (see hypotheses 1 and 2). Following a detailed description of each scenario, complete with illustrations, acceptability was evaluated using six items for each of the two TAM beliefs. These items were taken from an original questionnaire that Davis (1985) translated. According to Davis (1985), PU is the degree to which a person thinks that utilizing a specific system would enhance his or her performance at work. PEU stands for PEU, which is defined as "the degree to which an individual believes that the use of a particular system would require no mental or physical effort". There was no change made to the original seven-point Likert scale. Numerous TAM applications contain reliability data, in part due to the model's multiple iterations. This online survey made use of seventy items in total. The average completion time was twenty minutes.

5.2. Scheme

The survey's stimuli for asking participants about AI managers were the following three scenarios. Real use cases from the business world, such as the previously mentioned VITAL, Klick, and B12 cases, served as inspiration for their formulation. 1. Digital cognitive support for hiring (inspired by Klick): AI is specialized software used in human resources to help with hiring decisions. Additionally, all personal information gathered online and combined with the application materials can be processed by AI. Based on Davis (1985) TAM and current research on scenario-based TAM in digital transformation (e.g., Smith et al., 2021), the three AI leadership scenarios were created. Real-world AI applications in management are reflected in each of the following scenarios:

(1) digital cognitive assistant in hiring,

(2) a digital cognitive assistant in monitoring, and

(3) A physical autonomous system in strategic planning.

Their relevance and clarity were validated by expert reviews and pilot testing. To improve validity, a summary table of scenarios and real-world examples has been included. The survey's stimuli for asking participants about AI managers were the following three scenarios. Real use cases from the business world, such as the previously mentioned VITAL, Klick, and B12 cases, served as inspiration for their formulation.

1. Digital cognitive support for hiring (inspired by Klick): AI is specialized software used in human resources to help with hiring decisions. Additionally, all personal information gathered online and combined with the application materials can be processed by AI.

2. Digital cognitive support for supervision (inspired by B12): AI is a smart screen that helps the manager record and assess employee performance metrics to give accurate and personalized performance-based feedback.

3. An AI-powered robot that assists managers in strategic tasks and assigns tasks appropriately is a physical autonomous system in strategy modeled after VITAL. It also takes part in strategic meetings

and can vote. To avoid creating bias, special attention was taken when crafting the texts to use objective language rather than promotional language.

6. Experimental Results

This section begins with a presentation of the quantitative analysis's findings. To obtain a comprehensive understanding of the connections among the investigated constructs in this investigation, correlations were computed. The following calculations' prerequisites were all verified and met. Variables of Outcome: Scenario-Specific Acceptance. To begin, a repeated ANOVA was conducted concerning hypotheses 1 and 2 to identify differences in the means of the three distinct scenarios for TAM acceptance. Keep in mind that because not every respondent answered every question, the sample sizes for the first, second, and third scenarios were different (n = 72, 69, and 66, respectively). For PU and PEU, a different ANOVA was computed. Not in PU (F-value = 1.42, p = .245), but in PEU (F-value = 6.58, p = .002), there were notable differences between the scenarios. At this stage, hypothesis 2 is repudiated since there was no discernible variation in PU between the scenarios. However, to determine which specific scenarios deviate from one another, a pairwise comparison using post hoc t-test statistical tests that follow an ANOVA and reveal which scenarios differ significantly from one another was carried out for hypothesis 1. There was no significant difference between scenario 1 and scenario 2 (p = .2589) or between scenario 1 and scenario 3 (p = .1431), but there was one between scenario 2 and scenario 3 (p = .0012). Hypothesis 1 states that scenario 2 has a statistically significantly higher mean value for PEU than scenario 3, while scenario 1 has a lower mean value for PEU, albeit not statistically significant. Therefore, even though the differences in mean values support hypothesis 2, hypothesis 1 will only be partially rejected because PU was not found to be significant. The intention or acceptance of using AI managers is meant to be predicted jointly by both TAM beliefs. The sum of the respondents' individual PEU and PU scores reveals that scenario 2 was the most widely accepted, followed by scenario 1 and scenario 3. The average rating for PEU was higher (mean [M] = 4.61, SD = 1.35), which was evident when all scenarios were combined.

7. Discussion

The three scenarios presented within the framework showed mean differences in TAM scores, as anticipated. However, in contrast to the predictions, the AI managers who assist leaders in overseeing their teams using digital cognitive assistants (scenario 2) achieved the highest acceptance scores overall. In every situation, usability was ranked lower than ease of use. The results of the analysis of individual AI manager scenarios, the aggregated form, and the analysis conducted outside of the TAM framework varied. This suggests that a particular application is thought to be simpler to use by potential users. Figure 2 shows the AI leadership acceptance analysis roadmap. The roadmap showcases the data collection, with the next steps of testing hypotheses, followed by ANOVA or statistical analysis, then analysing the post-hoc data and assessing the hypothesis.

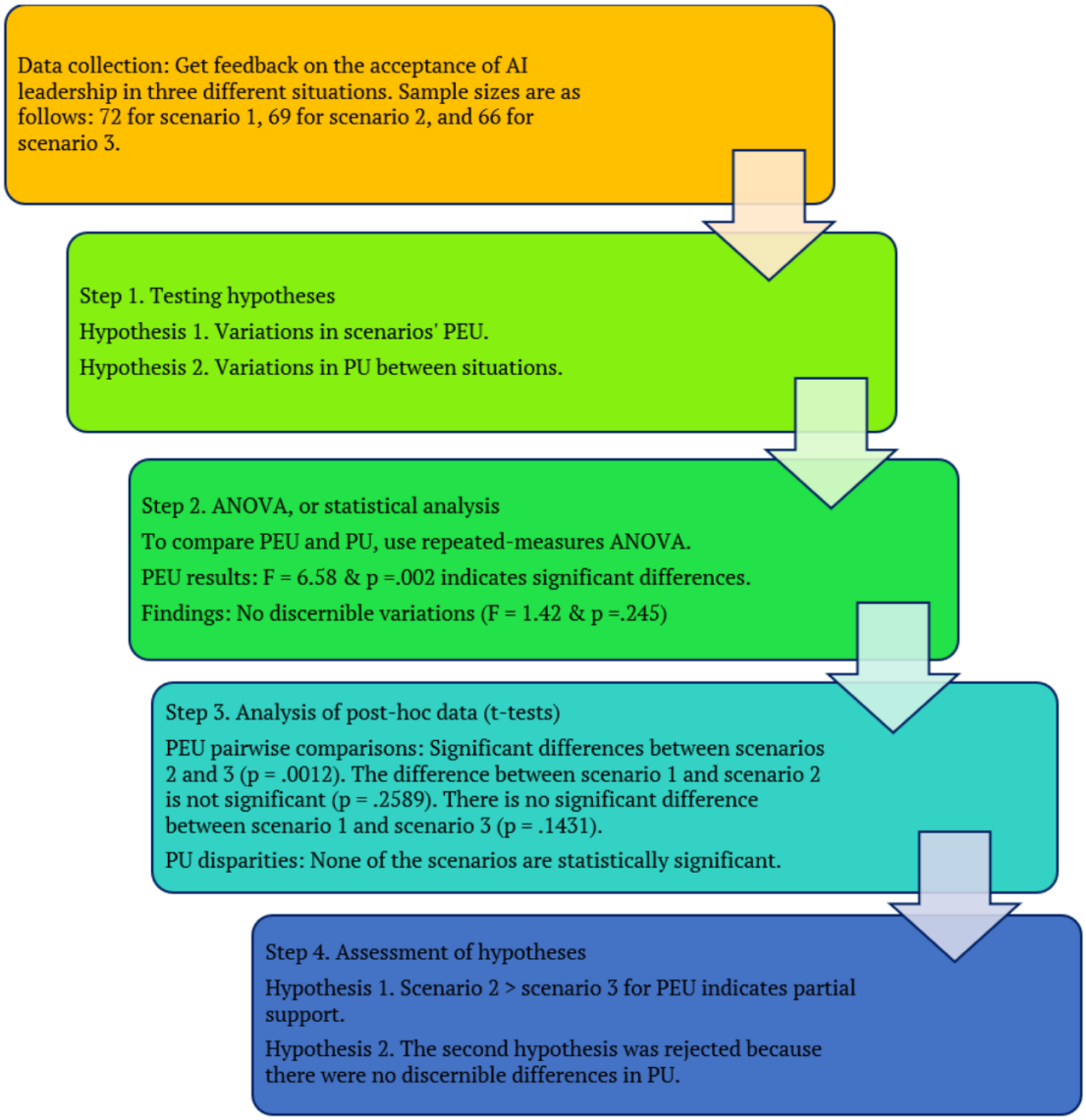

Figure 2: AI leadership acceptance analysis roadmap (Source: Authors' own elaboration)

Despite some worries about being closely watched, scenario 2-type AI managers have attained the highest acceptance levels, indicating that potential users require objective, data-driven oversight and feedback in organizations. For this type of cognitive assistant to be successfully adopted, decision-makers will need to encourage the user base's overall openness to technology and belief in technological competence. There would be less interaction with most employees if senior management positions used AI applications or recruitment software, which typically operate in the background. Future studies must conduct a more thorough investigation into these possible influences. Another question that might be raised is whether the scenarios that served as fictitious reference systems were suitably selected for this study. In this regard, it would also be possible to alter the number of scenarios or present them more thoroughly. This could give them more substance, enabling a more thorough examination, since they are entirely hypothetical. According to Baharum et al. (2017), the majority of IS research that employed TAM frameworks was grounded in actual use cases. This study emphasizes how AI is accepted in leadership roles in a variety of ways, with a preference for AI as cognitive assistants over completely independent managers. In the future, longitudinal studies should be conducted to monitor shifts in employee acceptance as AI tools advance in sophistication and integration. It will be more insightful to investigate how trust-building techniques, organizational culture, and AI literacy affect acceptance.

Before moving on to autonomous AI leadership roles, organizations should, practically speaking, think about using AI as a supporting tool in hiring and oversight. Building trust and productive cooperation between human leaders and AI systems will require a focus on openness, moral protection, and user education. These results can direct organizational design and human resources strategies to optimize AI's advantages while resolving employee concerns.

The results of this study demonstrate that incorporating artificial intelligence into organizational frameworks can greatly improve sustainable leadership's efficacy and flexibility. AI frees up leaders to concentrate on long-term strategic objectives, moral governance, and resource optimization—all important pillars of sustainability—by automating data-driven decision-making. Additionally, AI-driven insights help leaders anticipate the effects on society and the environment, promoting an innovative and ever-learning culture. Thus, by coordinating technological advancement with ethical and inclusive management practices, the adoption of AI not only improves operational efficiency but also fortifies the fundamental basis of sustainable leadership.

8. Conclusions

Decision-makers can now better understand which factors affect which types of potential AI managers and how to handle these gaps. A certain level of technological expertise and the tangible arrangements of AI managers, like the degree of interaction, were found to be the most significant determinants of AI acceptance, whereas significant variations were observed among the various fictitious use cases. These initial findings now require confirmation in a large-scale investigation. By applying TAM theory to AI in leadership, this study advances the theory by demonstrating how ethics, autonomy, and trust influence technology adoption in intricate organizational contexts. It provides useful information for HR and policymakers, highlighting the necessity of ethical, transparent AI systems and staff assistance to facilitate the successful integration of AI in leadership positions. Future studies could delve deeper into the long-term effects and sectoral or cultural differences in AI-led leadership models, enhancing sustainable leadership development theory and practice.

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References

[1] Ababneh, O. M. A. (2021). How do green HRM practices affect employees' green behaviors? The role of employee engagement and personality attributes. Journal of Environmental Planning and Management, 64(7), 1204-1226. https://doi.org/10.1080/09640568.2020.1814708

[2] Ardelin et. al. (2020). The impact of digitalisation on human resources development. *Prizren Social Science Journal*, *4*(3), 39-46. https://www.ceeol.com/search/article-detail?id=919656

[3] Avolio, B. J. (2004). Examining the full range model of leadership: Looking back to transform forward. In D. V. Day, S. J. Zaccaro, & S. M. Halpin (Eds.), Leader development for transforming organizations: Growing leaders for tomorrow (pp. 71–98). Lawrence Erlbaum Associates Publishers.

[4] Baharum, A., Amirul, S. M., Yusop, N. M. M., Halamy, S., Fabeil, N. F., & Ramli, R. Z. (2017). Development of questionnaire to measure user acceptance towards user interface design. In Advances in visual informatics (pp. 531-543). Springer. https://doi.org/10.1007/978-3-319-70010-6_49

[5] Basu, K. K. (2015). Organisational culture and leadership in ERP implementation. International Journal of Strategic Change Management, 6(3-4), 292-313. https://doi.org/10.1504/IJSCM.2015.075919

[6] Brennen, S., & Kreiss, D. (2014). Digitalization and digitization. Culture Digitally, 8(2), 10-19.

[7] Brown, K., & Osborne, S. (2012). *Managing change and innovation in public service organizations*. Routledge. https://doi.org/10.4324/9780203391129

[8] Burns, J. M. (1978). Leadership. Harper & Row. Davis, F. (1985). A technology acceptance model for empirically testing new end-user information systems [PhD thesis, Massachusetts Institute of Technology].

[9] Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel psychology*, *64*(1), 89-136. https://doi.org/10.1111/j.1744-6570.2010.01203.x

[10] Chung, et. at. (2016). Leader inclusiveness, psychological diversity climate, and helping behaviors. *Journal of Managerial Psychology*, *31*(1), 216-234. https://doi.org/10.1108/JMP-04-2013-0123

[11] Decuypere, A., & Schaufeli, W. (2020). Leadership and work engagement: Exploring explanatory mechanisms. German Journal of Human Resource Management, 34(1), 69-95. https://doi.org/10.1177/2397002219892197

[12] Donaldson, S. K. (2020). Effects of leadership on correction officers' organizational citizenship behaviors [PhD thesis, Keiser University].

[13] Doran, M., & Nugent-Folan, G. (2021). Digitized beckett: samuel beckett's self-translation praxes mediated through digital technology. *Anglia*, *139*(1), 181-194. https://www.degruyterbrill.com/document/doi/10.1515/ang-2021-0009/html

[14] Duffour, N. K. D., & Pattanaik, P. (2025). Environmental sustainability audit analysis to maintain operational excellence. Green Futures: Navigating the Path to Environmental Resilience, 531-549. https://doi.org/10.1007/ 978-981-96-0843-0_27

[15] Fischer, C., & Pöhler, A. (2017). Supporting the change to digitalized production environments through learning organization development. In *The impact of digitalization in the workplace: An educational view,* pp. 141-160. Cham: Springer International Publishing. https://link.springer.com/chapter/10.1007/978-3-319-63257-5_10

[16] Gartner, R. (2016). Metadata. Springer. https://doi.org/10.1007 /978-3-319-40893-4 Guo, S., & Yang, Y. (2024). Politics matter: Public leadership and taking charge behavior in the public sector. Public Policy and Administration. https://doi.org/10.4018/979-8- 3693-3665-6

[17] Hauer, G., Quan, T. A. J., & Liang, Y. K. (2021). Leadership as an influencing factor in employee retention–A case study analysis in East Asian multinational corporations in the digital age. Revista Română de Informatică și Automatică, 31(1), 89-100. https://doi.org/10.33436/v31i1y202107

[18] Hoflund, A. B. (2013). Exploring the use of grounded theory as a methodological approach to examine the 'black box'of network leadership in the national quality forum. Journal of Health and Human Services Administration, 35(4), 469-504. https://doi.org/10.1177/107937391303500402

[19] Islam, M. N., Furuoka, F., & Idris, A. (2021). Mapping the relationship between transformational leadership, trust in leadership and employee championing behavior during organizational change. Asia Pacific Management Review, 26(2), 95-102. https://doi.org/10.1016/j.apmrv.2020.09.002

[20] Kardoyo, K., Feriady, M., Farliana, N., & Nurkhin, A. (2020). Influence of the green leadership toward environmental policies support. The Journal of Asian Finance, Economics and Business, 7(11), 459-467. https://doi.org/10.13106/

[21] Khan, S. A., & Ismail, W. K. W. (2016). To evaluate the impact of transformational leadership on organizational learning. CLEAR International Journal of Research in Commerce & Management, 8(9).

[22] Kiron, D., Unruh, G., Reeves, M., Kruschwitz, N., Rubel, H., & ZumFelde, A. M. (2017). Corporate sustainability at a crossroads. MIT Sloan Management Review, 58(4).

[23] Kwon, K., & Kim, T. (2020). An integrative literature review of employee engagement and innovative behavior: Revisiting the JD-R model. Human Resource Management Review, 30(2), Article 100704. https://doi.org/10.1016/j.hrmr.2019. 100704

[24] Leonardi, P. M., & Treem, J. W. (2020). Behavioral visibility: A new paradigm for organization studies in the age of digitization, digitalization, and datafication. Organization Studies, 41(12), 1601-1625. https://doi.org/10.1177/ 0170840620970728

[25] Liu, W., Song, Z., Li, X., & Liao, Z. (2017). Why and when leaders' affective states influence employees upward voice. Academy of Management Journal, 60(1), 238-263. https://doi.org/10.5465/amj.2013.1082

[26] Macey, W. H., & Schneider, B. (2008). The meaning of employee engagement. *Industrial and organizational Psychology*, *1*(1), 3-30. https://doi.org/10.1111/j.1754-9434.2007.0002.x

[27] McCleskey, J. A. (2014). Situational, transformational, and transactional leadership and leadership development. Journal of Business Studies Quarterly, 5(4), Article 117.

[28] Meske, C., & Junglas, I. (2021). Investigating the elicitation of employees' support towards digital workplace transformation. *Behaviour & Information Technology*, *40*(11), 1120-1136. https://doi.org/10.1080/0144929X.2020.1742382

[29] Mohelska, H., & Sokolova, M. (2018). Management approaches for Industry 4.0–The organizational culture perspective. Technological and Economic Development of Economy, 24(6), 2225-2240. https://doi.org/10.3846/tede.2018.6397

[30] Moore, L. L., & Rudd, R. D. (2004). Leadership skills and competencies for extension directors and administrators. Journal of Agricultural Education, 45(3), 22-33. https://doi.org/10.5032/jae.2004.03022

[31] Mumford, M. D., Todd, E. M., Higgs, C., & McIntosh, T. (2017). Cognitive skills and leadership performance: The nine critical skills. The Leadership Quarterly, 28(1), 24-39. https://doi.org/10.1016/j.leaqua.2016.10.012

[32] Ng, E. S., & Sears, G. J. (2012). CEO leadership styles and the implementation of organizational diversity practices: Moderating effects of social values and age. Journal of Business Ethics, 105(1), 41-52. https://doi.org/10.1007/ s10551-011-0933-7

[33] Northouse, G. (2007). *Leadership theory and practice*. Thousand Oak, London, New Delhi, Sage Publications, Inc.

[34] Nusrat, A., Zongming, Z., Li, J., & Muhammad Muneeb, F. (2025). Thriving big data artificial intelligence: Entrepreneurial leadership, proactive personality and affective commitment to innovate micro and small family businesses. Asia-Pacific Journal of Business Administration. https://doi.org/10.1108/APJBA-05-2024-0280

[35] Ojokuku, R. M., Odetayo, T. A., & Sajuyigbe, A. S. (2012). Impact of leadership style on organizational performance: A case study of Nigerian banks. American Journal of Business and Management, 1(4), 202-207. https://doi.org/ 10.11634/216796061706212

[36] Petrat, D., Yenice, I., Bier, L., & Subtil, I. (2022). Acceptance of artificial intelligence as organizational leadership: A survey. TATuP–Zeitschrift für Technikfolgenabschätzung in Theorie und Praxis/Journal for Technology Assessment in Theory and Practice, 31(2), 64-69. https://doi.org/10.14512/ tatup.31.2.64

[37] Prentice, W. C. H. (2004). Understanding leadership. Harvard Business Review, 82(1), 102-109. Robbins, S. P., & Judge, T. A. 2017. Essentials of organizational behavior. Pearson.

[38] Plesner, U., Justesen, L., & Winthereik, B. R. (2021). Digital gnidningsløshed og arbejdet bag. https://research.cbs.dk/en/publications/digital-gnidningsløshed-og-arbejdet-bag

[39] Rehman, et. al. (2019). The moderating role of trust and commitment between consumer purchase intention and online shopping behavior in the context of Pakistan. *Journal of Global Entrepreneurship Research*, *9*(1), 1-25. https://link.springer.com/article/10.1186/s40497-019-0166-2

[40] Shakilla, U., & Saputro, E. P. (2025). Revolutionizing management: The role of AI and technology in modern leadership practices. Solo International Collaboration and Publication of Social Sciences and Humanities, 3(1), pp.53- 68. https://doi.org/10.61455/sicopus.v3i01.235

[41] Smith, A. M., & Green, M. (2018). Artificial intelligence and the role of leadership. Journal of Leadership Studies, 12(3), 85- 87. https://doi.org/10.1002/jls.21605

[42] Titareva, T. (2021). Leadership in an artificial intelligence era. In Proceedings of the Leading Change Conference (pp. 1-26).

[43] Viltard, L. A., & Acebo, M. N. (2020). Developing an innovative culture in Argentinean SME. *Independent Journal of Management & Production*, *11*(3), 853-879. https://dialnet.unirioja.es/servlet/articulo?codigo=7528752

[44] Warrick, D. D. (2016). Positive Transformational Leadership: Building Positive Organizations. *Leading The Positive Organization: Actions, Tools, and Processes*, 143-162.