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An assessment of AI readiness for the adoption of AI technologies in organisations

Dr. Nigel Walton

Prof. Dr. Sercan Ozcan



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Introduction

- AI is growing exponentially but organisations have little in-house knowledge of how to evaluate their readiness and manage future adoption.
- Research on AI readiness and AI adoption is still in its infancy and needs developing further.
- Governments and regulators need to better understand the implications of AI adoption.
- Challenges companies face when adopting AI
 - The complexity and cost of the technology
 - Whether to adopt open or closed approaches to AI
 - The need to re-architect the organisation
 - Understanding the readiness and adoption stages that lead to successful implementation
 - Lack of a systematic method to evaluate if an organisation is ready to adopt an AI technology

Literature Review

- Research on AI readiness and AI adoption is still in its infancy resulting in a lack of guidance for researchers and practitioners alike (Johnk et al., 2021).
- Not only is the literature on AI readiness and AI adoption scarce but there is also an absence of any meaningful discussion of how the two work together. (Alshawi, 2007; Alsheibani et al., 2018; 2019).
- According to Hoffman et al., (2020) AI readiness and adoption are distinct but highly inter-dependent and can reinforce or restrict one-another.
- Acknowledging the future aspired AI adoption purpose and how AI readiness and adoption are aligned together is overlooked (Ransbotham et al., 2017).
- The research gap is the absence of an integrated AI readiness framework incorporating an AI adoption process to provide a holistic model for practitioners and academics alike.

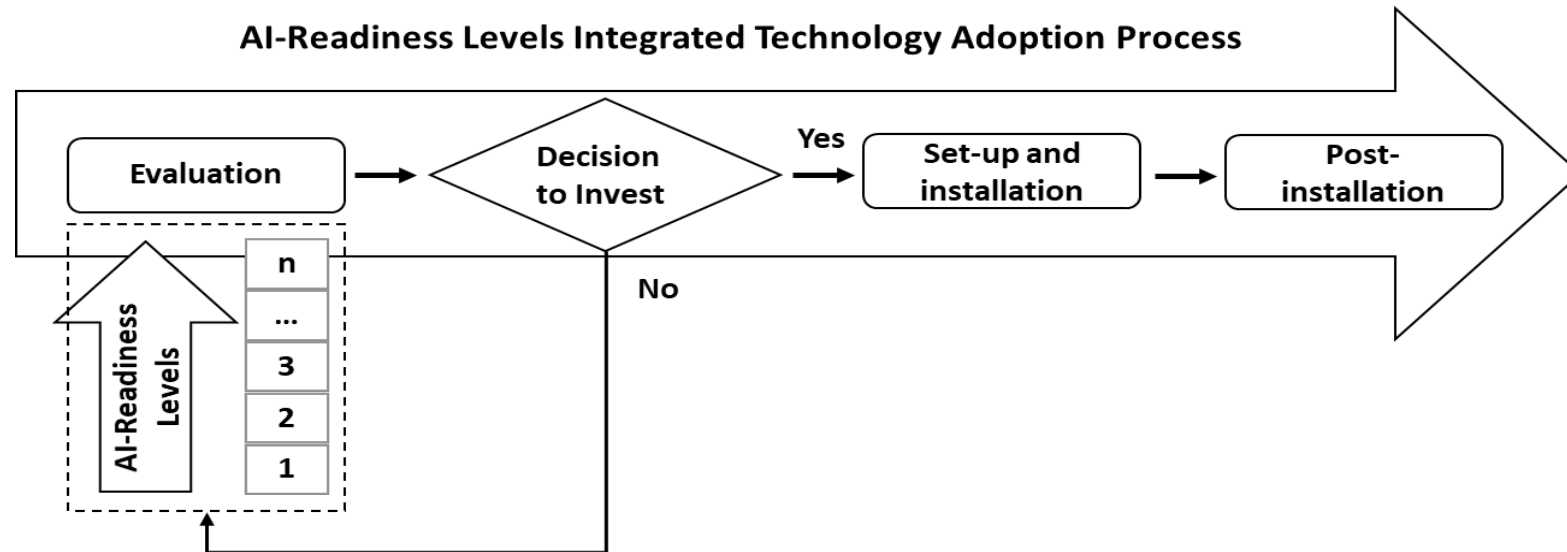
Relevant Theories and Models

- Technology adoption models (Organisational level factors)
- TOE – Technology, Organisation, Environment
- TAM - Technology Acceptance Model (Individual level factors)
- Technology readiness levels (NASA)
- Other readiness levels
 - Manufacturing readiness levels
 - Marketing readiness levels
 - Innovation readiness levels

Research Aim & Objectives

To build an integrated AI readiness and adoption framework for organisations to assess future implementation

1. To evaluate existing AI readiness, AI adoption and approaches to AI.
2. To develop AI-specific technology adoption process
3. To create an AI readiness model specific to organisational level assessments



Methodology

- Purpose: To systematically review and synthesize research on AI readiness and AI adoption.
- Scope: Focused on 62 selected articles specific to AI adoption and AI readiness.
- Search Strategy: Conducted in Web of Science and Scopus databases.
- Search Terms: Used keywords including (AI AND “technology adoption”) OR “AI readiness” OR “AI maturity”
- Data Extraction: Key themes and insights were extracted and coded using NVivo 12.
- Coding Process: Employed open and axial coding to categorize themes such as technology adoption stages and AI readiness levels.
- Outcomes: Developed an integrated AI readiness and adoption model, providing practical guidance for implementation.

Results

- AI Adoption Process Stages
- Key Factors Influencing AI Adoption
- AI Readiness Levels and Dimensions
- Integrated AI Adoption & Readiness Model



AI Adoption Process Stages

	Stage 1 Awareness and Identification of Needs/Problems	Stage 2 Evaluation and Assessment	Stage 3 Pilot Projects and Experimentation	Stage 4 Partial Integration
Description	Organizations recognize the need for AI and become aware of potential applications to address challenges.	Organizations evaluate AI's readiness and potential, assessing internal resources, technical capabilities, and external factors.	Pilot projects are initiated to experiment with AI on a small scale to test its viability in solving key problems.	Organizations begin to integrate AI into non-core processes, extending its use gradually within the organization.
Objectives	To develop an understanding of AI capabilities and identify specific business challenges AI can solve.	To assess organizational readiness and evaluate the feasibility of AI adoption in terms of infrastructure and skills.	To experiment with AI solutions and validate their effectiveness in a controlled environment.	To gradually integrate AI technologies in selected operations and monitor their impact.
Activities	Research, workshops, and industry discussions to raise awareness of AI possibilities.	Internal audits, assessments of technological and organizational readiness, and pilot evaluations.	Implementation of pilot AI projects in selected departments or operations.	Scaling up AI solutions from pilot projects to non-core processes.
Outputs	A clear understanding of AI's relevance and an outline of potential business problems it can solve.	Comprehensive evaluation report with recommendations for next steps.	Validated AI solutions that address key organizational needs.	AI successfully integrated into several processes, showing early impact on efficiency.
References	Ameye et al. (2023); Das & Datta (2024)	Neumann et al. (2024); Solaimani & Swaak (2023); Shahzadi et al. (2024)	Singh et al. (2024); Rapp et al. (2023)	Ameye et al. (2023); Shahzadi et al. (2024)

Key findings:

- This highlighted how interactions occur not only between the process stages but also the interactions between key influencing factors which operate as a system
- Stage 3 and successful progression to Stage 4 is heavily dependent upon influencing factors such as cultural and employee readiness, change management and availability of specialist know how.

AI Adoption Process Stages (Continued)

Stage 5	Stage 6	Stage 7
Full-Scale Implementation	Optimization and Scaling	Continuous Improvement and Innovation
AI technologies are fully integrated into core business operations, and AI becomes a standard part of the organization's processes.	AI solutions are optimized and scaled to achieve greater efficiency and effectiveness across the organization.	Ongoing innovation efforts are focused on leveraging AI for new opportunities, continuously improving processes.
To achieve widespread AI adoption across all business functions.	To optimize existing AI systems and scale their use across all relevant areas of the organization.	To foster continuous innovation and ensure that AI remains a driving force for business improvement.
AI systems are deployed organization-wide, supporting critical operations and decision-making.	Continuous improvement of AI models, scaling AI capabilities to additional departments.	Research and development focused on new AI applications and process improvements.
Fully operational AI systems embedded in core processes.	Enhanced efficiency and value derived from AI across the organization	New AI-driven innovations that sustain long-term business growth.
Ameye et al. (2023); Rapp et al. (2023)	Shahzadi et al. (2024); Stoykova & Shakev (2023)	Agrawal (2023); Solaimani & Swaak (2023)

Key findings: Most studies overlook Stage 7 and see AI readiness as being a permanent one-off consideration when it is actually a highly iterative and cyclical process.

Success Factors Influencing AI Adoption

Perceived Usefulness	The belief that AI technologies will enhance productivity and efficiency drives adoption.	Sharma et al. (2024); Chatterjee et al. (2021); Bhattacharyya (2024)
Perceived Ease of Use	Ease of use positively influences the adoption process, as simpler technologies are more likely to be adopted.	Sharma et al. (2024); Chatterjee et al. (2021); Bhattacharyya (2024)
Organizational Readiness	The organization's ability to support AI adoption through resources, infrastructure, and skilled employees.	Kinkel et al. (2022); Sharma et al. (2024); Nguyen Van (2022); Chatterjee et al. (2021)
Leadership Support	Strong leadership commitment is crucial in driving AI adoption, as it ensures resources are allocated and resistance is minimized.	Sharma et al. (2024); Chatterjee et al. (2021); Upadhyay et al. (2023)
Digital Skills	The presence of digital skills within the organization is crucial for the successful adoption and implementation of AI technologies.	Kinkel et al. (2022); Sharma et al. (2024); Nguyen Van (2022)
Government and Regulatory Support	Government policies and regulatory frameworks that support AI initiatives can significantly boost adoption rates.	Nguyen Van (2022); Merhi & Harfouche (2023); Upadhyay et al. (2023)
External Pressure (Competitive & Customer)	Competitive pressure and customer demands can act as catalysts for AI adoption, pushing organizations to adopt AI to maintain their market position.	Sharma et al. (2024); Ameye et al. (2023); Nguyen Van (2022); Upadhyay et al. (2023)
Vendor Partnerships	Collaborations with technology vendors provide necessary technical support and resources, facilitating AI adoption.	Nguyen Van (2022); Merhi & Harfouche (2023)

Key findings:

- Perceived usefulness and perceived ease of use are critical starting factors. If company leaders ignore the potential impact of AI on performance all the other influences become irrelevant.
- Alternatively, if firms fail to master the use of the technology projects will fail regardless of leadership and government support.
- This is why this research is so important in highlighting these influences and preventing them from becoming barriers.

Barriers to AI Adoption

Technological Complexity	High complexity in understanding and integrating AI technologies can deter adoption, especially in organizations with limited IT capabilities.	Nguyen Van (2022); Chatterjee et al. (2021); Agrawal (2023); Sharma et al. (2024)
High Implementation Costs	The significant costs associated with AI implementation and maintenance are a major barrier, particularly for SMEs.	Sharma et al. (2024); Nguyen Van (2022); Chatterjee et al. (2021); Ameye et al. (2023)
Resistance to Change	Organizational resistance, often due to fear of job displacement or disruption of established workflows, can hinder AI adoption.	Sharma et al. (2024); Nguyen Van (2022); Upadhyay et al. (2023)
Lack of Skilled Employees	A shortage of employees with the necessary skills to manage AI technologies is a significant barrier to adoption.	Nguyen Van (2022); Chatterjee et al. (2021); Sharma et al. (2024); Merhi & Harfouche (2023)
Regulatory Challenges	Navigating complex regulatory frameworks can impede AI adoption, particularly in highly regulated industries.	Kinkel et al. (2022); Merhi & Harfouche (2023); Ameye et al. (2023)

Key findings:

- AI adoption is extremely high risk and despite all the hype surrounding the technology there are significant barriers to overcome including huge costs and technological complexity, displacement of employees and new regulation regarding privacy and safety.
- These challenges may prove to be too great for many businesses and organisations and prevent them from moving through seven adoption stages.
- This emphasises the importance of developing new frameworks for research and analysis.

AI Readiness Levels

Level	Level Name	Description	Characterization	Criteria	References
Level 0	Unaware or Inactive	Organizations at this level are either unaware of AI's potential or ignore its relevance. There is no engagement with AI technologies, and the organization lacks an AI strategy.	Demonstrate limited openness to new technologies and are generally risk averse. No internal discussion or planning related to AI.	Absence of AI-related activities, no AI knowledge among employees, no management support for AI initiatives.	Lichtenthaler (2020); Hansen et al. (2024)
Level 1	Exploratory or Initial Engagement	Organizations begin to explore AI, recognizing its potential but are still in the early stages of adoption. AI projects are isolated and experimental.	AI initiatives are limited to specific departments or teams and are not aligned with a broader organizational strategy. Significant uncertainty about the long-term value of AI.	Presence of pilot AI projects, initial investment in AI, some organizational awareness of AI's potential. Limited understanding of AI and fragmented data infrastructure.	Lichtenthaler (2020); Alsheiabni et al. (2019); Hansen et al. (2024)
Level 2	Fragmented or Decentralised Efforts	AI initiatives become more structured, with multiple projects underway across different departments. These efforts remain decentralized and lack strategic alignment.	Recognize the value of AI and begin to integrate it into specific processes. However, there is no cohesive strategy. AI activities are often siloed, with varying levels of success across the organization.	Multiple AI projects exist but with limited integration or coordination. Development of an AI strategy has begun with some AI governance structures in place, but these are not fully implemented.	Oktavian et al. (2023); Alsheiabni et al. (2019); Hansen et al. (2024)

Key findings:

- The AI readiness framework needs to be viewed in an iterative and non-linear manner.
- Each level builds on the preceding level but progression upwards is not guaranteed with firms failing to meet the readiness criteria of the next level, stagnating at an existing level or moving backwards from a previously higher readiness level.

AI Readiness Levels (Continued)

<p>Level 3</p>	<p>Strategic and Coordinated Implementation</p>	<p>AI is systematically integrated into the organization's operations and is aligned with the organization's strategic goals. AI drives both process optimization and new business opportunities.</p>	<p>AI is used strategically across different units, supported by a clear AI strategy and active management. Continuous improvement efforts focus on maintaining a competitive edge.</p>	<p>Coordinated AI initiatives with strategic alignment, centralized AI governance, robust data infrastructure, and proactive AI governance. AI is driving significant business outcomes.</p>	<p>Holmström (2022); Alsheiabni et al. (2019); Hansen et al. (2024)</p>
<p>Level 4</p>	<p>AI-Driven Innovation and Leadership</p>	<p>AI is deeply embedded in the organization, creating a seamless intelligence architecture that integrates AI with human capabilities. The organization leads its industry with AI innovations.</p>	<p>AI is central to the organization's strategy and innovation, driving continuous improvement and setting industry standards. AI and human intelligence work together in a reciprocal relationship.</p>	<p>Comprehensive AI integration, continuous innovation, mature AI governance with a strong focus on ethics and regulatory compliance. AI is a key driver of strategic differentiation.</p>	<p>Lichtenthaler (2020); Alsheiabni et al. (2019); Hansen et al. (2024)</p>

Key findings: at Levels 3 and 4, the organisation becomes a leader in its market/industry and will be able to use its newly -established capabilities to develop new business models and value propositions. These will be highly disruptive.

Dimensions for AI Readiness

Main Dimensions	Sub-Dimensions	Descriptions	References
Technological Readiness	IT Infrastructure and Maturity	The availability, scalability, quality, and robustness of IT infrastructure needed to support AI applications, including hardware, software, networking systems, and overall readiness.	Lachvajderová & Kádárová, 2022; Van Hoek, 2024; Ronaghi, 2024; Hradecky et al., 2022; Holmström, 2022; Tehrani et al., 2024; Nortje & Grobbelaar, 2024; Lichtenthaler, 2020; Bettoni et al., 2021
	AI Tools and Techniques	The maturity and suitability of AI tools, algorithms, and techniques available to support the organization's goals.	Oke et al., 2024; Alsheiabni et al., 2019; Chen et al., 2024; Pingali et al., 2023; Jöhnk et al., 2021
	Interoperability	The ability of AI technologies to integrate seamlessly with existing systems.	Ronaghi, 2024
	Process Automation	The extent to which processes are automated and ready for AI integration.	Uren & Edwards, 2023
Data Readiness	Data Quality and Management	The maturity of data management processes, including governance, quality, accessibility, and the ability to manage large datasets, ensuring data quality, relevance, and volume necessary to support AI applications.	Tehrani et al., 2024; Holmström, 2022; Oktavian et al., 2023; Mahmud et al., 2023; Ronaghi, 2024
Organizational Readiness	Leadership Support and Strategic Vision	Commitment from top management to driving AI initiatives, providing strategic direction, and aligning AI initiatives with the organization's goals.	Tehrani et al., 2024; Van Hoek, 2024; Bettoni et al., 2021; Lichtenthaler, 2020; Nortje & Grobbelaar, 2024; Abaddi, 2023; Uren & Edwards, 2023
	AI Integration Strategy	The development and formalization of AI initiatives, aligning them with the organization's strategic objectives.	Chen et al., 2024; Tehrani et al., 2024; Hansen et al., 2024; Jöhnk et al., 2021; Abaddi, 2023
	Cultural Readiness	The openness of the organization's culture to innovation and change.	Behl et al., 2022; Ronaghi, 2024

Key Findings:

- Areas of research weakness revealed a lack of `AI integration strategy` in companies that focused on exploitative rather than exploratory strategies (cost cutting not competitive innovation).
- Organisational readiness and human resource readiness also lacked details in areas such as the make or buy decision and how resources might be sourced.

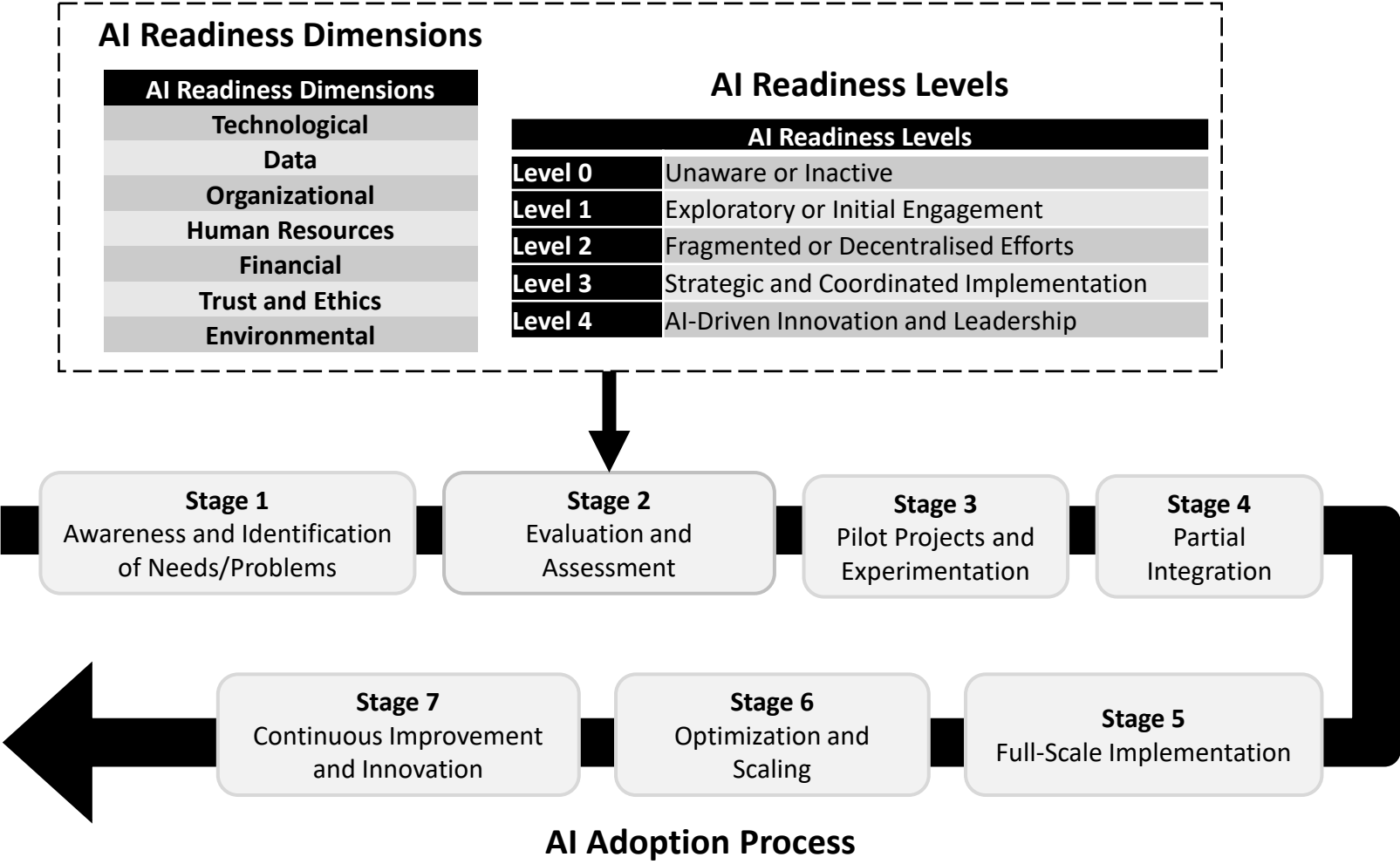
Dimensions for AI Readiness (Continued)

Human Resources Readiness	Change Management	The organization's ability to manage transitions effectively during AI integration.	Mahmud et al., 2023
	Operational Alignment	The degree to which AI technologies are integrated into existing processes.	Bettoni et al., 2021
	Technical and Workforce Training	Availability of AI-related skills, ongoing training programs, and efforts to enhance employee skills in AI-related technologies.	Bettoni et al., 2021; Shah et al., 2024; Van Hoek, 2024; Ronaghi, 2024; Nortje & Grobbelaar, 2024; Uren & Edwards, 2023
	AI Specialist Availability	The presence of AI specialists and data scientists capable of managing AI projects.	Oktavian et al., 2023; Bettoni et al., 2021; Jöhnk et al., 2021
Financial Readiness	Employee Readiness	The readiness of the workforce to engage with AI technologies.	Hradecky et al., 2022
	Investment Capacity	The availability of financial resources to support AI projects.	Bettoni et al., 2021
	Budget Allocation for AI	How well financial resources are distributed for AI initiatives.	Ronaghi, 2024
Trust and Ethics	Ethical AI Deployment	Adherence to ethical standards, transparency, and privacy regulations in AI systems to ensure trustworthiness and user acceptance.	Shah et al., 2024; Behl et al., 2022; Ronaghi, 2024; Hossain et al., 2024; Holmström, 2022
Environmental Readiness	Regulatory Support	The impact of government policies and regulations on AI adoption.	Hradecky et al., 2022
	Market Conditions and Competition	The influence of market dynamics and competitive pressures.	Abaddi, 2023

Key findings:

- Organisational readiness and human resource readiness lacked details in areas such as the make or buy decision and how resources might be sourced.
- Regulatory support and market competition are not well covered by current literature.
- Regulatory support is probably influenced by regional differences and market competition has yet to develop outside the large platform technology ecosystems.
- Research was weak in areas such as financial readiness and policies on AI regulation and AI adoption. This may be due to the problems of estimating the future costs of AI adoption and the nascent nature of AI regulation.

Integrated AI Adoption & Readiness Model



Discussion

- The ***theoretical contribution*** of the research is that it has generated an integrated AI adoption and AI readiness model that provides a more holistic picture of the critical success factors that need to be considered when considering AI implementation where no alternative framework exists.
- The research also ***contributes to literature*** by advancing our theoretical understanding of the broader issues relating to AI adoption and readiness. It also fills a salient gap in existing theory and deepens existing knowledge of the subject
- The ***practical contribution*** is that a robust analytical tool has been created that will aid companies on the journey to achieving successful AI implementation throughout the entire readiness and adoption life cycle stages.



Conclusion

- The key findings are that there is a need for a multi-dimensional and holistic integrated perspective when analysing AI readiness and adoption.
- The limitations of the research are that it is still in its early stages with most journal articles and conference papers only being published in the last three years in direct response to the launch of generative AI.
- Therefore, as AI adoption increases, this will generate more. better quality literature in leading peer reviewed journals.
- There is also a lack of journal articles based on empirical data with limited literature on LLM and Gen-AI focused studies.
- The authors therefore plan to extend their existing research paper beyond the literature review and gather primary empirical data to further support their conceptual model.

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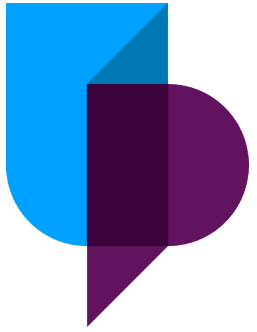
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**Thank you!
Any questions?**

