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The Intersection of Financial and Technological Literacy in AI Adoption

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Abstract

The integration of artificial intelligence (AI) into IT departments enhances efficiency, innovation, and decision making but also introduces organizational, technological, and human challenges. This study investigates factors influencing AI adoption, including technological capability, organizational culture, managerial support, IT innovation, flexibility, AI expertise, job insecurity, and resistance to change. It further examines the mediating role of attitudes toward AI and the moderating effect of information security policy awareness. In this study, a statistically analyzed survey of 213 IT professionals shows that technological capability, organizational culture, and managerial support promote AI adoption, whereas job insecurity and resistance impede it. The study offers a theoretical framework and practical recommendations, highlighting the importance of training, supportive policies, and strategic change management. Addressing employee concerns and strengthening security awareness can support AI integration and guide future research.

Keywords: Artificial Intelligence, AI Adoption, IT Departments, Information Systems

INTRODUCTION

Artificial intelligence (AI) is transforming business and technology by enhancing efficiency, fostering innovation, and enabling competitive advantages (Dwivedi et al., 2021). Despite its potential for automation, data analysis, and complex decision making, AI adoption is hindered by technological, organizational, and human barriers (Brynjolfsson & McAfee, 2020). Challenges include resistance to change, skill gaps, and structural adjustments (2022; Zhang et al., 2021).

The literature shows that IT departments are pivotal to AI integration, requiring managerial support, technological adaptability, and an innovation oriented culture (Makarius et al., 2020). However, concerns over job security, strategic misalignment, and implementation issues can obstruct progress.

Notably, only 35% of organizations achieve large scale AI success, and 43% of projects fall short of objectives (Ransbotham et al., 2022; Tarafdar et al., 2021).

While research often emphasizes AI's capabilities and ROI, a comprehensive view integrating technological, organizational, and human aspects is essential. Leaders acknowledge AI's strategic value but face resistance and coordination challenges (Riethorst et al., 2020). Overcoming these issues requires training, supportive policies, and structured change management.

This study explores the enablers and barriers influencing AI adoption in IT departments, offering insights to optimize implementation. The remainder of the paper includes a literature review (Section 2), methodology (Section 3), findings (Section 4), Discussion (Section 5), Implications, limitations and future research (Section 6).

As a result, the purpose of this research lies with the following **research question**:

Q1: How do organizational, technological, and human factors serve as barriers or enablers in the adoption of artificial intelligence technologies in IT departments?

To answer this question, we formulated several hypotheses as shown below:

H1: A positive relationship will be found between organizational factors (technological capability, organizational culture, and managerial support) and technological factors (IT innovation, IT flexibility, and IT capabilities).

H2: There will be a positive relationship between organizational factors (technological capability, organizational culture, and managerial support) and the willingness to adopt AI technologies.

H3: A positive relationship will be found between technological factors (IT innovation, IT flexibility, and IT capabilities) and the willingness / readiness to adopt AI technologies.

LITERATURE REVIEW

Artificial intelligence (AI) is a key catalyst for organizational transformation, enhancing efficiency, innovation, and strategic decision making. Core AI technologies—such as machine learning, deep learning, and computer vision enable automation, optimize data processing, and support complex business functions (Dwivedi et al., 2021). Machine learning facilitates data driven learning (Domingos, 2015), deep learning supports tasks like speech and image recognition (LeCun et al., 2015), and computer vision is applied in fields such as autonomous systems and healthcare (Szeliski, 2010). Despite these advantages, AI adoption is constrained by technological infrastructure limitations, data privacy concerns, and challenges in workforce adaptation (Brynjolfsson & McAfee, 2014).

IT departments are critical in mediating AI integration, balancing technical implementation and organizational needs (Makarius et al., 2020). Key enablers include technological capabilities, managerial support, and an innovation driven culture (Salisu & Abu Bakar, 2020). However, barriers such as job insecurity, algorithmic bias, and cybersecurity risks can hinder progress (Zhang et al., 2018). Resistance to AI often stems from fears of displacement and uncertainty, underscoring the need for strategic change management and targeted training (Shoss, 2017).

Psychological and behavioral dimensions also shape employee responses to AI adoption. Shapiro et al. (2022), in their study of adolescents during COVID 19, the authors found that uncertainty and lack of support exacerbated distress paralleling workplace contexts where unclear communication and limited support increase resistance. Organizations that prioritize transparency, emotional support, and ongoing training are better positioned to manage these transitions.

Although existing literature emphasizes system performance and ROI, emerging research highlights the necessity of a holistic approach integrating technological, organizational, and human factors. Organizational readiness, leadership commitment, and employee engagement are essential for successful AI integration (Jöhnk et al., 2021). Nevertheless, only 35% of organizations report large scale AI success, and nearly half of projects fail due to poor planning and employee resistance (Ransbotham et al., 2022; Tarafdar et al., 2021).

AI enhances competitive advantage through predictive analytics, improved customer experience, and streamlined operations (Chesbrough, 2010; Davenport & Ronanki, 2018). IT departments apply AI to monitor systems, detect threats, and automate workflows (Chui et al., 2018). Yet, employee proficiency in AI and IT remains a critical determinant of success; skills gaps impede adoption, while leadership can foster readiness through resource allocation and structured training (Liang et al., 2022; Hsu et al., 2019).

This study advances current research by analyzing the interplay of technological, organizational, and human factors in AI adoption within IT departments. It focuses on key variables such as technological capability, organizational culture, managerial support, IT innovation, flexibility, and human concerns including job insecurity and resistance to change. Furthermore, it assesses how employee expertise in IT and AI moderates adoption outcomes. This integrative approach offers comprehensive insights for organizations aiming to implement AI effectively while navigating the complexities of digital transformation.

Overall, This study provides a comprehensive framework for AI adoption in IT departments, integrating organizational, technological, and human dimensions to inform digital transformation and workforce adaptation strategies.

RESEARCH METHODOLOGY

A quantitative study surveyed 213 Israeli IT professionals using a Google Forms questionnaire distributed via snowball sampling and the I panel survey conducted by a survey company was carried. The survey covered demographics and AI adoption factors, measured with 5 point Likert scales, including one reverse coded item per construct (All variables were found as valid in the literature or by statistical measures [$\alpha \geq 0.7$)

The sample was 75.1% male, mostly aged 35+, with over half holding higher education and managerial roles. Most had 6+ years of IT experience, worked in high tech, and were employed at Israeli based companies. While 35.7% were from large firms, 60% worked in small IT teams (≤20 employees).

With the ethics approval of the university, the data was analyzed in SPSS, producing 13 composite indices. Results highlight key enablers and barriers to AI adoption in IT departments.

FINDINGS

The study examined hypotheses through correlation and multiple regression analyses using IBM SPSS. Pearson correlation coefficients were computed to assess the relationships between variables, followed by hierarchical regression to evaluate the explanatory power of different predictors.

Descriptive Statistics

Table 1 presents the means (M) and standard deviations (SD) of the key study variables. The results indicate relatively high mean scores for technological and organizational factors, whereas human risk factors such as job insecurity and resistance to change exhibited lower mean scores.

Table 1: Descriptive Statistics of the Study Data

Variable	Mean (M)	Standard Deviation (SD)
Technological Capability	3.33	0.75
Managerial Support	3.48	0.71
Attitude Toward AI	3.70	0.67
IT Innovation	3.63	0.68
AI Knowledge	2.95	0.93
Job Insecurity	2.59	0.77
Resistance to Change	2.74	0.61
AI Adoption Readiness	3.42	0.92

The highest mean score was observed for *attitude toward AI* (M = 3.70, SD = 0.67), indicating a generally favorable perception of AI within IT departments. Conversely, *job insecurity* (M = 2.59, SD = 0.77) and *resistance to change* (M = 2.74, SD = 0.61) received the lowest mean scores, suggesting minimal concerns regarding job displacement due to AI implementation.

Hypotheses Testing

The study focused on three core hypotheses related to AI adoption in IT departments. The results, summarized in Table 2, highlight the significance of technological capability, managerial support, and AI knowledge as key enablers of AI adoption.

Hypothesis	Relationship Tested	Significant Findings	Outcome
H1	Organizational Factors → Technological Factors	Pearson correlation coefficients ranged from r = 0.283 to r = 0.703 (all $p < .05^{*}$), indicating statistically significant positive associations between all **organizational and technological factors**. These findings are consistent with prior research.	Confirmed
H2	Organizational Factors → AI Adoption Readiness	***Managerial support*** ($B = 0.263, < 0.05^{*}$); ***Technological capability*** ($B = 0.182, p < 0.05^{*}$); ***Organizational culture*** was not found as significant ($p > 0.05$)	Confirmed

H3	Technological Factors → AI Adoption Readiness	**IT innovation and knowledge** was found significant ($B = 0.253$, $p < 0.01$**)	Confirmed

The findings obtained from stepwise regression analysis, as well as the Pearson correlation, indicate that both technological and organizational capabilities are critical determinants in the advancement of IT infrastructure within organizations. In parallel, managerial support emerges as a significant facilitator of AI adoption readiness by securing the allocation of necessary resources and pushing forward strategic alignment. Additionally, AI related innovation and knowledge exert a positive influence on adoption levels, implying that employees possessing greater familiarity with AI technologies and a proclivity for innovation demonstrate higher readiness to adopt and implement AI based solutions.

DISCUSSION

The findings provide valuable insights into the factors influencing AI adoption in IT departments. The results support the critical role of organizational and technological factors in driving AI adoption readiness.

The confirmation of **H1** highlights the strong relationship between organizational and technological factors, demonstrating that organizations with advanced technological capabilities and strong managerial support are more likely to push forward IT innovation and flexibility. This aligns with previous research emphasizing the role of technological infrastructure in digital transformation.

For **H2**, while managerial support and technological capability significantly influenced AI adoption readiness, organizational culture did not show a meaningful impact. This suggests that in IT departments, leadership commitment and robust infrastructure are more critical for AI adoption than cultural aspects, though future studies should examine potential variations across industries.

Regarding **H3**, IT innovation was found to be a significant predictor of AI adoption readiness. This finding aligns with prior studies, indicating that innovation is a key driver for AI integration and adoption readiness.

IMPLICATIONS, FUTURE RESEARCH AND LIMITATIONS

This study underscores the importance of technological and organizational enablers in AI adoption within IT departments. Managerial support, IT innovation and knowledge, and technological capability were key drivers, highlighting the need for leadership engagement, innovation-friendly environments, and robust infrastructure to support AI integration. Addressing barriers such as employee resistance and regulatory challenges remains essential for maximizing benefits.

Future research should investigate how industry specific factors and organizational culture influence the acceptance and integration of AI. Additionally, as reliance on AI technologies increases, it is imperative to examine cybersecurity risks and corresponding mitigation strategies that may impact AI deployment (Zwilling, 2022). The relationship between employee awareness, organizational implementation, and exposure to cyber threats also warrants further exploration to enhance AI related security frameworks (Zwilling et al., 2019). Furthermore, understanding how digital transformation affects behavioral patterns and risk perception, particularly in high stakes domains such as finance and sport can offer valuable guidance for developing ethical and effective AI governance models (Ben Shalom et al., 2019).

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