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Factors Influencing Managers' Adoption of Artificial Intelligence and Data Analytics

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Research-in-Progress

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Abstract

Managers play key roles in the implementation and integration of artificial intelligence and data analytics for managerial decisions. We surveyed 76 managers to gather data and analyzed it by employing structural equation modeling. The preliminary findings indicate that while possessing the necessary skills and awareness is beneficial to managers' adoption of artificial intelligence and data analytics, factors such as unwillingness to share data, concerns about privacy and security, and professional skepticism are limitations. Furthermore, a significant number of companies do not actively encourage, or mandate training related to artificial intelligence and data analytics. This study contributes to the existing body of literature on technology acceptance by managers and argues that the absence of training and concern regarding privacy and security affect managers' engagement with artificial intelligence and data analytics. These preliminary findings have broader implications for fostering the adoption of artificial intelligence and data analytics among managers.

Keywords

Data Analytics, Artificial Intelligence, Professional Skepticism, Status Quo Bias.

Introduction

Technological advancements are transforming business landscapes, with artificial intelligence (AI) and data analytics (DA) playing a pivotal role (Lim, 2023). The adoption of AI and DA by managers is influenced by various interconnected factors, including technological innovation, organizational context, and individual preferences. These preferences encompass perceived value, benefits, risks, challenges, peer influence, and user experience. Managers leverage DA tools to analyze structured and unstructured data, unveiling hidden patterns, market trends, and customer preferences. This transformative capability enables efficient decision-making, shaping best practices, improving processes, and fostering innovation (Troisi et al., 2020). Despite the anticipated benefits, managers often exhibit skepticism beyond traditional Excel functions, emphasizing the importance of studying their attitudes toward AI and DA.

Current studies on AI and DA adoption often focus on the unified theory of acceptance and use of technology (UTAUT), assuming that knowledge is the primary driver. However, managers may resist change, maintaining the status quo, and revealing a disconnect in the adoption process. This resistance aligns with the Status Quo Bias present in the literature. We propose three factors rooted in managers' professional judgment that contribute to their reluctance to adopt AI and DA. Firstly, behavioral tendencies influenced by their perception of analytics knowledge and its relevance to management practices may hinder adoption. Secondly, professional skepticism, characterized by a critical mindset, influences AI and DA adoption. Lastly, the technology adoption process involves managers' judgment about the advantages and disadvantages, with perceptions of inadequacy in current perspectives driving the search for innovative

technologies. Considering dual-factor approaches to technology acceptance, we view AI and DA skills as enablers, while personal behavior and professional skepticism act as resistance (e.g., Juma'h and Li, 2023). Our research question explores how managers' training in AI and DA, their behavior, professional skepticism, and perceptions influence their intention to use AI and DA for decision-making purposes.

Literature Review

The accelerated growth of AI and DA has garnered widespread recognition, prompting substantial debates across various industries. These technologies not only enhance management functions, contributing to increased revenues and operational efficiency (Alkaraan et al., 2022) but also redefine managerial roles. Real-time updates through computer algorithms and shared transaction data on public ledgers, facilitated by AI and DA, streamline processes like transaction confirmation, minimizing time spent on verification and ensuring financial information accuracy and transparency.

Despite their potential benefits, managers encounter distinct challenges in adopting AI and DA, particularly in comparison to top management. Operational managers play a pivotal role in designing and implementing AI and DA solutions, collaborating with top management to guide decision-making transactions. Their perspectives become crucial in determining the AI and DA tools a company employs, and the information integrated into accounting information systems (Warren et al., 2015). Additionally, managers provide essential guidance on AI and DA use, ensuring alignment with management accounting practices, and their professional opinions contribute to shaping organizational policies.

However, managers face hurdles in adapting to advanced technology, necessitating training to effectively utilize specific software. While open data sources offer assistance, managers must exercise professional judgment to navigate potential challenges. Despite the anticipated benefits of AI and DA in management, managers often resist moving beyond traditional Excel functions due to perceived challenges and uncertainties (Grover et al., 2018).

Research exploring factors influencing managers' intention to use AI and DA has often focused on the dual-factor approach to technology acceptance, encompassing enablers and inhibitors. In this context, we consider AI and DA skills as enablers and managers' behavioral aspects, concerns regarding data security and privacy, and professional skepticism as inhibitors. Our study aims to delve into the intricacies of managers' adoption of AI and DA by considering both enablers and inhibitors. It explores how training, concerns, professional skepticism, and technological aspects shape managers' intention to use AI and DA for decision-making purposes in the evolving landscape of management practices.

Research Methodology

Behavioral management researchers commonly utilize surveys for data collection (e.g., Schmidt et al., 2020; Juma'h, 2019). In our study, we employed a survey to empirically investigate managers' knowledge of AI and DA, behavioral aspects, professional skepticism, and technology use. The survey, conducted globally among managers from various organizations, utilized the Qualtrics Research Suite, a widely used online platform for data collection.

Survey items were adopted from existing literature, measuring managers' skills and knowledge in AI and DA, professional skepticism, and AI and DA use intention. Psychometric properties, including reliability (Cronbach's α and Composite Reliability) and convergent validity (Average Variance Extracted), were assessed. Discriminant validity was tested through Fornell and Larcker's approach. To address common method bias, Harman's single-factor test was employed, and correlations between measurement items were examined. Structural equation modeling (SEM) was utilized to test hypotheses, with model probability RMSEA, comparative fit index (CFI), and Tucker–Lewis index (TLI) considered for validation. These rigorous methods ensure the robustness and validity of our cross-sectional data.

Data Analysis and Results

The primary results indicate that AI and DA skills and professional skepticism are positively related to AI and DA intention use. Also, professional experience and level of education are positively associated with Intention but not significant at the 5% level. The model Probability RMSEA <= 0.05 is 0.015 and the CFI

and TLI are 0.784 and 0.685, respectively. These preliminary results indicate the level of acceptance of the study model. We anticipate including more constructs when we increase the sample size and therefore, we can validate our research objectives.

Conclusion

This study project makes several contributions to the extant academic literature. First, the study extends the literature on the acceptance of AI and DA by managers by showing how the need to improve analytics use, which are important attributes of their professional judgments, may influence their use of DA. Second, this study provides valuable information on how DA training might help alleviate the status quo bias of managers' use of DA. Also, the study has implications for promoting DA among managers. Therefore, companies can use this study's results to manage their employees better and achieve organizational objectives.

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