

AI and Work Engagement: A Study of IT Professionals Through the Lens of Self-Determination Theory

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Abstract. Artificial intelligence (AI) is reshaping work, presenting new challenges and opportunities for professionals across industries. This study, grounded in Self-Determination Theory (SDT), examines the impact of AI integration on work engagement among IT professionals. Our research reveals that AI both augments and complicates professionals' work lives, providing opportunities for growth while also demanding ongoing adaptation. Key findings indicate that AI tools like UiPath and GitHub Copilot enhance work efficiency by automating routine tasks, enabling professionals to concentrate on more complex aspects of their work and enhancing their perceived competence. However, this efficiency gain requires continuous learning and adaptation, posing challenges in maintaining engagement and mastery. These findings illuminate the complex balance between leveraging AI for increased efficiency and maintaining the intrinsic human elements of IT design, offering some insights for navigating AI integration in the workplace.

Keywords: Work Engagement, Artificial Intelligence (AI), User Experience (UX) Professionals, Professional Development, Self-Determination Theory

1 Introduction

Work practices are undergoing a profound transformation due to the advent of artificial intelligence (AI), with significant changes particularly evident within the information technology (IT) sector [3, 10, 12]. This technological revolution is reshaping task management, promising efficiency gains while introducing challenges in adapting to new workflows. As pioneers in technology adoption, IT professionals are uniquely positioned to assess AI's impact on work practices and engagement.

Self-Determination Theory (SDT) offers a valuable framework for this exploration, emphasizing how AI integration might affect basic psychological needs—autonomy, competence, and relatedness—crucial for high work engagement [5, 6, 8]. This study focuses particularly on the need for competence, exploring how AI's role in automating

tasks might alter professionals' perceptions of their effectiveness and mastery, thus impacting their motivation to engage in work.

This research seeks to understand the implications of AI on competence and overall work engagement through qualitative interviews with IT professionals. By concentrating on the competence aspect of SDT, the study aims to unravel the complex interplay between technological changes and their psychological effects.

Responding to academic calls for more detailed exploration of AI's workplace impact, such as those by Zirar et al. [25] and Simsek et al. [21], this study aims to bridge gaps in understanding how AI influences worker competencies and work engagement. Given this backdrop, this study's research question is: "How does the integration of artificial intelligence in IT design work influence professionals' perceptions of competence and overall work engagement?" Our findings aim to provide a more comprehensive understanding of AI's role, highlighting the importance of creating work environments that support performance and well-being.

2. Background

Evolution and Integration of AI in the Workplace

Integrating AI from its developing stages to its current pervasive role in workplace tools and processes marks a significant evolution in how work is conducted, especially within the IT and design sectors. The journey of AI began with the development of artificial neural networks in the mid-20th century and formalized as a distinct discipline in the 1950s. Today, driven by advancements in machine learning, big data, and computational power, AI is deeply integrated into modern workplaces, fundamentally transforming job roles and tasks [2].

Applying AI technologies has changed software development, data analysis, and cybersecurity in the IT sector [23]. These innovations require specialized skills, and addressing the knowledge gap between business managers and data scientists is critical for successful AI implementation [13]. Similarly, the IT sector has witnessed a shift from manual tasks to more strategic and creative roles facilitated by AI, enabling rapid prototyping and trend prediction, thus reshaping the creative process [7, 11].

The dual impact of AI in the workplace is evident in its capacity to enhance efficiency and foster innovation while challenging traditional job roles and skill requirements. This paradigm shift underscores the need for continual learning and adaptation among professionals to fully leverage AI's benefits.

Bainbridge's paper on the ironies inherent in the automation process, published in the eighties yet still relevant to this day [22], provides a pertinent framework for understanding the paradoxes presented by AI in the workplace. One of the core ironies identified is that while automation aims to reduce the need for human labor, it simultaneously creates a demand for higher-order human skills to oversee, manage, and intervene in automated systems. This irony highlights a paradox in AI's role in competence development: the displacement of routine tasks by AI necessitates a shift towards more complex, abstract competencies that are harder to define, acquire, and assess [1].

The integration of AI also raises ethical considerations and safety risks, including concerns related to data privacy and algorithmic biases, which are pivotal in navigating the sustainable deployment of AI technologies in the workplace [24].

As AI evolves, organizations must balance the technological benefits against socio-technical and ethical considerations. This balance is crucial for fostering environments that support performance and holistic well-being. The future workplace will likely be characterized by a hybrid model where AI augments human capabilities, requiring a re-examination of job roles, skills, and the nature of work [4, 9].

Work Engagement and Self-Determination Theory

Work engagement, characterized by vigor, dedication, and absorption, is essential to employee motivation and productivity. Research by Schaufeli, Bakker, and Salanova [17, 18] provides a foundational understanding of this construct, emphasizing its significance in fostering a motivated and committed workforce. Work engagement is closely linked to SDT [5, 6, 8], a psychological framework for understanding human motivation and personality in social contexts. SDT, developed by Deci and Ryan, emphasizes the role of intrinsic and extrinsic motivations in driving human behavior and highlights three basic psychological needs: autonomy, competence, and relatedness:

Autonomy refers to feeling in control of one's actions and decisions. Autonomy is associated with a sense of choice and freedom in performing tasks. When employees feel autonomous, they are more likely to be engaged in their work, perceiving their actions as self-endorsed and aligned with their values and interests.

Competence reflects the desire to feel adequate and capable within one's environment. At work, feeling competent involves the perception that one can successfully meet job demands and challenges. When employees feel competent, they are more likely to experience work engagement, as they feel a sense of accomplishment and efficacy in their roles. The workplace context magnifies this need, as employees yearn to meet and excel in their job requirements and challenges. This research mainly focuses on competence given the unique inflection point provided by the integration of AI in IT design work. As AI technologies assume roles traditionally filled by humans, they redefine the landscape of tasks and, subsequently, the avenues through which employees experience mastery and effectiveness. This shift harbors profound implications for work engagement, hinging on the perceived competence of employees. Exploring how AI integration impacts this psychological need is poised to uncover insights into maintaining and fostering engagement in the evolving workplace.

Relatedness involves feeling connected to others and having a sense of belonging. In the workplace, relatedness refers to the quality of relationships with colleagues, managers, and the organization. When employees experience high levels of relatedness they are more likely to be engaged, as they feel supported, valued, and part of a community.

According to SDT, fulfilling the needs for autonomy, competence, and relatedness fosters intrinsic motivation, a key driver of engagement. Intrinsic motivation occurs when individuals engage in an activity for the inherent satisfaction and enjoyment it brings rather than for some separable consequence.

4. Method

This paper delivers initial findings from a qualitative investigation focusing on work engagement among IT professionals within AI-integrated environments. Although the broader study is expected to encompass at least 60 participants, this report focuses on four exploratory interviews. These conversations shed light on how artificial intelligence shapes work engagement dynamics in professional settings.

As detailed in Table 1, the participants were selected through purposeful sampling [21]. They are IT professionals working in environments where AI tools are in active use. The semi-structured interviews, guided by an interview guide, explored various topics. These topics ranged from the participants' daily work routines and the degree of AI integration in their tasks to the perceived shifts in work engagement attributable to AI and the associated challenges and opportunities for fostering meaningful engagement.

Each interview lasted 30 to 60 minutes and was conducted via videoconferencing. With the participants' consent, the interviews were recorded and later transcribed. A phenomenological analysis [15], informed by Self-Determination Theory (SDT) [5, 6, 8], was employed to deepen our understanding of AI's impact on IT professionals' perceived competence. For clarity, quotes from these interviews have been edited and included in this paper. Importantly, this study has been approved by the Swedish National Ethical Authority (2023-06103-01), ensuring compliance with ethical standards.

Table 1. Overview of demographic data of interviewees

Participant ID	Age	Gender	Years working in IT	Type of organization
P1	45	M	5	Consulting organisation >250
P2	35	M	8	Consulting organisation >250
P3	49	M	27	Consulting organisation >250
P4	36	F	1	Consulting organisation >250

5. Results

Reflecting the predefined themes based on SDT, our analysis targeted the impact of artificial intelligence (AI) on work engagement among IT professionals. The themes—Perceived Competence in AI-enhanced Tasks, Learning and Competence Development and Implications for Work Engagement—were chosen to explore how AI integration aligns with or challenges the SDT competence component.

Perceived Competence in AI-Enhanced Tasks

This theme relates to understanding AI's impact on IT professionals' sense of competence, skill and mastery. AI tools, especially automation technologies like UiPath and GitHub Copilot, are frequently mentioned as augmenting work efficiency by automating routine tasks. These tools allow professionals to focus on more complex aspects of their work, potentially enhancing their perceived competence and efficiency. This quote highlights how UiPath, as a robust RPA tool, has evolved to include AI functionalities, improving the automation of simple, rule-based processes. Thus, IT professionals can focus on more complex tasks and enhance their perceived effectiveness and competence: *"UiPath is the most robust and largest RPA tool. Initially, RPA was about automating simple, rule-driven processes. Over time, RPA tools like UiPath have evolved significantly, incorporating AI to enhance their capabilities."*

IT professionals are increasingly integrating AI into their workflows, utilizing these technologies for various tasks, from debugging and code suggestions to automating video editing and documentation. These AI tools are generally perceived as valuable assistants that enhance efficiency by handling time-consuming tasks. For instance, one professional describes their use of AI technology: *'I use a tool called Descript which allows you to do video and sound editing with transcript. You upload a video and transcript and then you can remove O, A, Us and so on and it is removed from the video.'* This example illustrates how AI tools simplify complex editing processes, enabling professionals to focus on more strategic aspects of their work.

However, others do not see themselves as experts and do not see their skills beyond what AI can automate. They see their current implementation of AI in companies as a minor part of their work, as a tool in their toolbox, suggesting a nuanced impact on self-perception of competence. *"So far, not many companies are far ahead in their digital journey, which makes it a little difficult to start introducing complex AI models. I am not some kind of AI expert in my field, but I work largely with automation, where AI is just a tool in the box."*

In today's landscape, where AI is a buzzword that resonates across various media, there is significant pressure on professionals to deepen their understanding of AI technologies. This necessity stems from the need to stay informed due to AI's immense hype and because many clients and even colleagues within their own organizations may need a deeper understanding of the technology. Professionals are responsible for bridging this knowledge gap, ensuring that AI implementations are effective and appropriately leveraged within their projects. This ongoing learning is crucial, as it allows them to provide accurate insights and guidance in an environment where misconceptions about AI capabilities and applications are expected, which is illustrated in this quote: *"AI is something you hear about every day, whether you watch TV or read newspapers or articles. AI is a term that is used so frequently. So, for our part, we need to be well-read about the area in all our internal and external relationships."*

Learning and Competence Development

The integration of AI requires ongoing learning and adaptation. Several respondents discussed the importance of continuously updating their skills to keep pace with new

technologies. This constant need to learn new tools can be both an opportunity and a challenge, affecting their engagement and sense of mastery over their work. This quote reflects the ongoing process of learning and adapting to new AI technologies, which is both a challenge and an opportunity for personal and professional development: *"I learn about them by reading different things on the internet. In our community, on Slack or on Mastodon or Hacker News, different websites or podcasts, people talk about different things and then just go ahead and try it out."*

Since formal training on AI discussed in the interviews is minimal, it is often on the IT professionals to stay informed and adapt to AI technologies through self-driven learning and practical application. This approach reflects a broader trend in the interviews where professionals must often take the initiative to keep their skills relevant in a rapidly advancing technological landscape, as in this quote and that they learn through using the technology: *"I have had some internal training. It wasn't very big. How do I keep up? I am interested. I read on my own. Then there's a lot of using products and solutions"*

Implications for Work Engagement

Integrating artificial intelligence (AI) in IT work influences professionals' perceptions of competence and overall work engagement. This multifaceted impact presents opportunities for enhanced efficiency and challenges related to personal interaction and technological dependency. The findings suggest that the balance between these factors is critical in shaping the overall engagement of IT professionals in their work environments.

Many respondents report increased satisfaction and motivation due to the efficiency gains provided by AI tools. The ability to stay at the forefront of technological advancement is a significant benefit. The following sentiment underscores the positive impact of AI on work engagement, where the adoption of advanced tools is not only a matter of enhancing capabilities but also a source of professional pride and motivation: *"It feels like being at the cutting edge and having an advantage. I am very motivated by this."*

The overall sentiment regarding the integration of AI in their roles seemed neutral to positive, with individuals focusing more on the benefits of AI, such as enhanced efficiency and the ability to focus on more complex tasks. For instance, one respondent mentioned:

"I don't think it has affected my engagement at all. I am rather driven by the idea of helping businesses have a smoother everyday life, enabling people to perform more value-creating tasks. That is what has driven me in this."

Conversely, while AI facilitates efficiency and supports innovation, it poses challenges, such as reduced human interaction and the danger of becoming too dependent on automated processes. The concern is that while AI can handle more tasks, it might lead to a workplace where personal connections and hands-on skills are undervalued. However, in these interviews, no one mentioned this aspect.

6. Discussion

Integrating artificial intelligence (AI) in IT professionals' work influences their engagement and perceptions of competence, which we analyzed through Self-Determination Theory (SDT). Our study identified several themes.

Efficiency and Competence Enhancement through AI. AI tools such as UiPath and GitHub Copilot enhance work efficiency by automating routine tasks, aligning with the historical evolution of AI integration in the workplace, which began with developments in artificial neural networks and has now become fundamental in transforming job roles and tasks [2]. This automation allows IT professionals to engage more deeply with complex challenges, enhancing their perceived competence. This finding aligns with SDT's emphasis on feeling effective and capable within one's environment and reflects historical shifts from manual tasks to more strategic and creative roles facilitated by AI [7, 11].

Continuous Learning and Professional Adaptation As AI technologies evolve rapidly, IT professionals face the dual challenge and opportunity of continuous skill updating. This dual aspect resonates with SDT's principles, which highlight integrating new experiences into one's competency framework. The dynamic pace of technological advancements thus represents a significant professional growth opportunity, even as it poses challenges in maintaining current competencies. Our findings align with Ebert and Louridas' observations [7] regarding the need for new competencies among software developers in the age of generative AI. Moreover, participants expressed a need to enhance their competencies, which echoes Ebert and Louridas' caution against marketing hype that may oversimplify the capabilities of generative AI [7], suggesting that a deeper, more critical understanding of AI technologies is essential.

Work Engagement and Motivational Implications. Automating routine tasks boosts efficiency and affects IT professionals' work engagement. In the context of work engagement and motivation, Roto et al. [16] emphasize the diversity in defining engagement, highlighting a spectrum from short-term, task-focused absorption to long-term attributes like vigor and dedication. This framework is relevant to our findings where IT professionals report varying impacts of AI on their work engagement. For example, the automation of routine tasks by AI technologies such as UiPath and GitHub Copilot enhances professionals' absorption by freeing them up to concentrate on more complex and engaging tasks. This shift fosters short-term absorption and supports long-term vigor and dedication by enabling professionals to tackle more challenging and meaningful work, enhancing their sense of significance, enthusiasm, and pride in their roles.

Furthermore, as discussed by Sharp et al. [20], the concept of motivation in the software engineering context points out that motivation is heavily influenced by context, including individual personality and the environment. Our study extends this notion by illustrating how the integration of AI reshapes the professional environment, thereby influencing motivation. AI tools modify the context in which IT professionals operate by changing the nature of their tasks and altering the skills required and how these professionals engage with their work.

Our results indicate that while AI can enhance competence and efficiency, IT professionals must also engage in continuous learning and adaptation, impacting both their motivation and engagement. This is consistent with Sharp et al.'s emphasis on the

complex interplay between individual characteristics and environmental changes [20]. As AI technologies evolve, so does the context in which these professionals work, demanding a dynamic response to maintain high levels of motivation and engagement.

Navigating AI Paradoxes and Enhancing Professional Competence. Navigating the paradoxes of AI in competence development requires an understanding of the complex interplay between technology and human skill. Drawing on the insights provided by Bainbridge's "Ironies of Automation," [1] professionals and organizations can begin to address the challenges of AI integration in a manner that enhances, rather than undermines, professional competence and knowledge. As the field of IT continues to evolve in response to advancements in AI, embracing the lessons learned from these paradoxes will be crucial for fostering a resilient, adaptable, and equipped workforce to leverage AI's potential responsibly and effectively.

Study Limitations. While this study provides insights into AI's impact on work engagement among IT professionals through the lens of SDT, it is subject to several limitations. First, the exploratory nature and the small sample size of four interviews limit the transferability. This constraint also impacts the depth and variety of perspectives on how AI influences perceived competence and engagement. Additionally, the study's focus on perceived competence within SDT, while offering a targeted exploration of this critical aspect, leaves other components of SDT, such as autonomy and relatedness, less examined in the context of AI integration. Finally, using a theory-driven design introduces specific limitations. The reliance on SDT might lead to theoretical bias, potentially overlooking insights beyond the theory's scope. Acknowledging these constraints is essential for understanding the study's scope and guiding future research to address these gaps.

Future Work. As noted previously, this study has reported the preliminary findings of a subset of participants in a more extensive qualitative study aimed at exploring work engagement among IT professionals in AI-integrated workplaces. The overall international study will employ an extensive interview study, where purposeful sampling [14], with criterion sampling, will be used to select participants, identified based on their grouped or specific ICT professional roles as classified within the Skills Framework for the Information Age (SFIA, 2023) [19] and in addition based on their appropriateness for the research question, such as people who have used AI in their work.

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