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Automation in the Workplace: The Role of Mindset

Ada Maria Barone

Goldsmiths, University of London

Dimitrios Batolas

University of Exeter

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Abstract

Artificial Intelligence (AI) has transformed the nature and texture of work. However, the fear of being replaced by AI is an important factor negatively influencing employees' acceptance of technologies in the workplace. Indeed, the adoption of AI requires employees to upskill and to engage in increasingly complex tasks, which could further exacerbate their fear of being replaced.

Nevertheless, individuals' beliefs about their skills and abilities (i.e., mindset) is an important antecedent of employees' perceived ability of improving their skillset, ultimately affecting their engagement in automation initiatives undertaken within the organisation. The objective of this work is to explore whether employees' mindset (growth vs. fixed) influences their fear of being replaced by and in turn their acceptance of AI in the workplace. Specifically, we argue that people with a growth (vs. fixed) mindset are more likely to accept AI initiatives. We propose that this effect is driven by reduced fear of replacement.

Keywords: *artificial intelligence, mindsets, fear of replacement*

Introduction

The integration of algorithms and AI-powered tools in everyday operations is expected to be the “new normal” in the workplace and is at the core of debates about what the future of work will look like (e.g., Huang & Rust, 2018; Jarrahi, 2018). More importantly, the successful incorporation of these technologies in organisations is largely dependent on employees embracing and accepting these new systems (Makarius et al., 2020). However, despite the benefits associated with the effective collaboration between algorithms and human workers, a significant number of organisations find it difficult to fully exploit the potential of these technologies (Davenport et al., 2017).

Against this backdrop, it is worth noting that employees often lack the necessary skills to successfully engage with algorithm-based technologies (Chowdhury et al., 2022) and are therefore demanded to make considerable investments to learn the new skills needed to understand and utilise these systems, execute increasingly complex tasks (Rust and Huang, 2021), and ultimately stay employable in the future (Jaiswal et al., 2022). This, coupled with workers’ uncertainty about the effect that AI will have on their job (Chowdhury et al., 2022), is likely to trigger a generalised fear of being replaced (Tabrizi et al., 2019).

However, recent research suggests that an important driver of employees’ perceived ability of improving their skillset is their *mindset* (Athota, 2021; Neeley & Leonardi, 2022), which enables individuals to see how data, algorithms, and AI can benefit their work, with positive effects on acceptance and attitude (Dang & Liu, 2022; Farrow, 2021). More specifically, scholars and practitioners alike agree that what significantly impact employees’ engagement with new technologies is whether employees have a *fixed* or *growth* mindset (Angevine et al., 2021; Dweck, 2016; Solberg et al., 2020). Individuals with a *growth* mindset perceive their abilities as malleable and as something that can be further developed through effort and perseverance; individuals with a *fixed* mindset instead see their abilities as

fixed, stable, and as something that cannot be changed (Dweck & Leggett, 1988; Mrazek et al., 2018). Recent research shows that individuals with a growth mindset tend to see AI tools more as allies that can help them further develop their minds and abilities rather than enemies; individuals with a fixed mindset instead tend to see AI more as enemies rather than allies, and therefore tend to respond more negatively (Dang & Liu, 2022). Furthermore, there is evidence that fostering a growth (vs. fixed) mindset could be helpful in mitigating the fear of being replaced triggered by the employment of AI in the workplace (Farrow, 2021).

Building on this evidence, this work is aimed at investigating the effect that employee's mindset has on fear of replacement and, consequently, on their attitudes towards the AI used in the workplace.

Theoretical framework

Artificial intelligence (AI), comprising advanced computerised systems and machines that exhibit aspects of human intelligence such as learning and reasoning (Huang & Rust, 2018; Pereira et al., 2023), is largely acknowledged by researchers and practitioners alike as the key innovation that will revolutionise the way organisations work and jobs are executed (West & Allen, 2018). More specifically, AI has resulted in changes in the way information is processed (Liu et al., 2020; Trocin et al., 2021) and operations are executed (Weichert et al., 2019), which has generated substantial benefits for organisations, such as reducing costs and streamlining processes (Durgampudi, 2022).

However, prior research has long debated about employees' response to the adoption of new technologies in the workplace and has shown that there is a dark side of technology-induced changes (e.g., Ragu-Nathan et al., 2008; Wang & Zhao, 2023). For example, when introducing new technologies, individuals may experience stress, known as technostress, due to their inability to cope with them (Brod, 1984; Ragu-Nathan et al., 2008). Given that

technology acceptance by users is essential for technology implementation in the workplace (Meske & Junglas, 2020; Venkatesh et al., 2003), technostress can influence the attitudes towards a digitally transformed workplace (Batolas & White, 2022). Furthermore, technological changes often lead to feelings of insecurity about one's job, that is feelings that the current employment might not persist in the future and might result in job loss (Nam, 2019). Specifically, this perception has been conceptualised as *techno-insecurity* when it is associated to changes in the work environment due to new technological advancements (Wang & Zhao, 2023) and has been shown to play an important role in defining employees' perceptions of AI in the workplace (Koo et al., 2021).

Therefore, AI requires a rethinking of the role of the workforce and raises questions about labour displacement and job loss (Belloc et al., 2022; Jaiswal et al., 2022). More specifically, AI is expected to replace human workers in tasks it can perform better (Huang & Rust, 2018), leaving to them more complex ones (Rust & Huang, 2021) and thereby “augmenting” employees' work (Davenport & Kirby, 2015). This new landscape highlights the need to redesign jobs and to reskill and upskill – i.e., develop new skills to improve employees' abilities to understand and operate AI-based systems – the human workforce as a pre-requisite for the successful implementation of AI in the workplace (Chiu, 2017; Chowdhury et al., 2023; Jaiswal et al., 2022). In other words, the successful collaboration between employees and AI lies on employees' acceptance and on their willingness to make the necessary investments required to effectively use these new systems. However, the pressure put on employees resulting from the introduction of technology in their job can lead to techno-overload and to feelings of not being able to keep up with the demands of the new technology-led workplace (Gaudio et al., 2017; Karr-Wisniewski & Lu, 2010). This pressure might have an impact on the extent to which employees find it easy to adapt to the new systems (Venkatesh, 2003). This is likely to be exacerbated when AI starts to get

extensively employed in the workplace as the disruption in the world of work caused by these latest technological developments has been deemed “akin to the shift from agricultural work to manufacturing that occurred in the early 20th century” (Illanes et al., 2018, p. 1). Taken together, and considering that AI is often perceived by human workers as threatening their jobs (Tabrizi et al., 2019), it is often the case that the introduction of AI is met with resistance. Therefore, it is paramount to identify and investigate the drivers of employees’ fear of being replaced by AI when devising strategies aimed at fostering acceptance of automation and AI in the workplace.

Against this backdrop, it is worth noting that individual differences have been shown to be an important determinant of employees’ reactions to technological changes within the workplace (e.g., Lee et al., 2018). In particular, literature on mindsets can prove useful as it directly taps into the mechanisms explaining individuals’ perceived ability to develop new skills (Dweck, 2016). Therefore, it can shed new light on the reasons why employees might be reluctant to engage with AI in the workplace and can help understand the key question about who will be more likely to adapt successfully to the changes brought about by AI and who instead will be more likely to resist (Nam, 2019). Specifically, theories on mindset posit that beliefs about one’s abilities and attributes can be seen as either malleable or not (Dweck & Leggett, 1988). In particular, literature suggests that mindsets range on a fixed-growth continuum (Yeager & Dweck, 2020), with individuals on the fixed end of the continuum believing that human characteristics are relatively stable over time, and nothing can be done to change them, whereas individuals on the growth end of the continuum believe that not only they can change their characteristics but can also develop new ones.

Prior literature argues that individuals’ beliefs about the malleability of human abilities and skills influences their learning attitudes, with growth-mindset individuals being more

open to learning new skills (Dweck & Molden, 2017). In addition, meta-analytic research (Burnett et al., 2020) shows that growth, relative to fixed, mindsets are negatively related to psychological distress symptoms such as anxiety, depression, or stress, emotions often arising after negative career shocks. Furthermore, recent literature provides support to the key role played by mindsets in facilitating employees' acceptance and engagement with digital technologies and artificial intelligence (Dang & Liu, 2022; Neeley & Leonardi, 2022), with a growth mindset associated with reduced negative feelings towards and greater willingness to interact with robots (Dang & Liu, 2022). More importantly, fostering a growth mindset leads to individuals' perceiving artificial intelligence more as an ally rather than an enemy (Dang & Liu, 2022). This finding, coupled with qualitative evidence showing that mindsets could help reducing the fear of being replaced activated by the use of AI in the workplace (Farrow, 2021) and considering that mindsets are an important factor in addressing challenges (Dweck et al., 1995) such as career shocks (Seibert et al., 2016), suggests that having a growth or fixed mindset could be an important determinant of employees' acceptance of AI in the workplace.

Building on this evidence, we argue that a growth (vs. fixed) mindset is associated with higher (vs. lower) acceptance of AI in the workplace and that this effect is driven by the perceived threat and fear of replacement activated by AI employment in the workplace.

Formally, we hypothesise:

Hypothesis 1: Individuals with a growth (fixed) mindset are more (less) likely to accept AI in the workplace.

Hypothesis 2: The effect of mindset on AI acceptance is mediated by the fear of replacement, such that a growth (fixed) mindset is associated with lower (higher) fear of being replacement which in turn positively affects AI acceptance.

Overview of the studies

We aim to conduct four studies to test the hypotheses. In all studies, we will conduct the data collection on the online platform Prolific, where we will recruit full time employees resident in the US. To ensure that the sample recruited fits with the criteria for our studies, we will use the pre-screening criteria available on Prolific and we will further check through ad hoc questions included in our studies. Respondents whose characteristics are not in line with the criteria for the studies will be excluded from the analyses. In each study, and following the procedure from Giroux et al. (2022), participants will be shown the definition of AI from the Oxford dictionary and will be asked to complete a series of measures relevant to test our conceptualisation.

Specifically, Study 1 is a correlational study in which we measure mindset, fear of being replaced, and acceptance of AI to obtain initial evidence of our hypotheses. Study 2 aims to test the effect of mindset on acceptance of AI by manipulating the mindset (growth vs. fixed). Study 3 aims to provide evidence for the effect of mindset (growth vs. fixed) on our proposed mediator, i.e., fear of replacement. Finally, Study 4 aims to test for the hypothesized underlying mechanism, thus testing the mediating role of fear of replacement explaining the effect of mindset on acceptance of AI.

Studies will be designed to have adequate statistical power to detect even small effects, with sample sizes determined a priori, considering possible exclusions. Following recent calls for greater transparency, openness, and reproducibility (Cofounders of RRBM, 2017, revised 2020), studies will be pre-registered on AsPredicted.org and plans for analysis will be

decided before data is collected. All materials will be made available online, alongside datasets used for analysis.

Theoretical and practical contributions

The rapid increase of digital technologies such as the widespread use of AI has transformed not only organizations but also the employment landscape, requiring individuals to adapt to the new reality by learning new skills and entering new roles (Parket et al., 2021). As a result, employees often might be reluctant to engage with AI initiatives in the workplace because of their perceived fear of being replaced by the technology. This often makes organisations unable to fully reap the benefits associated to AI implementation in the workplace. Against this backdrop, this research aims to uncover the psychological drivers of consumers' perceived fear of being replaced by AI, ultimately providing insights on how to better prepare organisations for the future of work and to help practitioners develop growth mindset interventional strategies.

From a theoretical point of view, this work contributes to recent research on the role on mindsets and how these can be fostered to increase employees' engagement and commitment in the workplace (Dweck, 2016; Han & Stieha, 2020; Keating & Heslin, 2015). More specifically, by shedding light on the underlying mechanism explaining employees' acceptance of AI, it adds to research discussing how mindsets are a key determinant of organisation's successful deployment of digital technologies in the workplace (Neeley & Leonardi, 2022; Solberg et al., 2020).

Furthermore, this research builds and extends literature on the effect that automation and artificial intelligence will have on the future of employment and work (Wajcam, 2017; West, 2018). Therefore, it contributes to recent research focused on developing theoretically-driven

solutions for fostering the success of AI initiative in organisational contexts (e.g., Belloc et al., 2022; Parker & Grote, 2019).

From a practical point of view, this research provides useful insights for the development of interventions aimed at promoting the acceptance of artificial intelligence in the workplace.

This is important for two reasons. First, by helping employees accept AI in the workplace, it will be easier for them to adapt to the new reality of work (Seibert et al., 2016). Second, prior literature has shown that the fear of a future replacement by technology affects employee outcomes at present such as job satisfaction (Schwabe & Castellacci, 2020). Therefore, failing to support employees would have detrimental effects not only on employee's performance but also on the organization's productivity.

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