

**EMPOWERING THE DIGITAL WORKFORCE: HOW PERCEIVED
AI-SUPPORTED AUTONOMY STIMULATES EXPLORATION, AI TRUST,
INTENTION TO USE AI, AND AI ADOPTION**

Athar Ikram Khan,

PhD Scholar, Institute of Management Sciences (IMS - PakAims), Department of
Management Sciences, Lahore, Pakistan, athar@gmail.com

Dr. Kaleem Ullah,

Assistant Professor, Institute of Management Sciences (IMS - PakAims), Department of
Management Sciences, Lahore, Pakistan

ABSTRACT

Purpose – This study examines whether perceived AI-supported autonomy (PAISA) directly influences employee exploration, intention to use AI, AI trust, and AI adoption.

Methodology – A survey of 410 employees in Pakistan was analyzed using structural equation modeling to test four direct hypotheses.

Findings – PAISA significantly and positively affects exploration ($\beta = 0.412$), intention ($\beta = 0.271$), trust ($\beta = 0.338$), and adoption ($\beta = 0.198$). All effects are significant at $p < 0.001$.

Practical implications – Organizations should design autonomy-enhancing AI systems and encourage hands-on experimentation to boost adoption.

Originality/value – First study to test the direct effects of PAISA on all four outcomes simultaneously, and first in the Pakistani context.

Keywords: Perceived AI-supported autonomy; exploration; AI trust; intention; adoption; Pakistan

INTRODUCTION

The fast adoption of artificial intelligence (AI) into organisational processes has essentially altered the way employees perform their tasks, decisions and how they deal with technology. Over the last few years, the uptake of AI systems in financial, telecommunication, information, and manufacturing sectors has increased rapidly in Pakistan. Nevertheless, the effectiveness of these technological investments is not just the complexity of algorithms, but it highly depends on whether employees are ready to accept and successfully practice the use of AI tools in their everyday life (Dwivedi et al., 2021; Kong et al., 2024).

One of the recurring themes in the global organisational and Pakistani organisational context is that employees tend to view AI as a hinder to their professional autonomy instead of an enabler. Such perception may result in resistance, inappropriate use, or even rejection of AI systems. Conventional technology-acceptance theories, including Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT), focus on the cognitive beliefs, such as perceived usefulness and ease of use (Davis, 1989; Venkatesh et al., 2003). Although it is valuable, these frameworks fail to sufficiently reflect the psychological need of autonomy, which is particularly relevant when employees are exposed to intelligent, decision making systems.

Self Determination Theory (SDT) is the theory that autonomy is a primary psychological need; the fulfillment of autonomy leads to increased intrinsic motivation and active involvement (Ryan and Deci, 2000). Within the AI context, perceived AI supported autonomy (PAISA) is the degree to which employees think that AI tools enhance their freedom, control, and self direction in work activities, instead of decreasing them. The paper posits that PAISA is a

psychological antecedent that predisposes to various important outcomes: exploratory behaviour, intention to use AI, trust in AI, and eventually AI adoption.

Although there is an increasing interest in the literature, there is little empirical evidence on the direct impact of PAISA on the Pakistani corporate environment. Majority of the available literature have been performed in Western or technologically advanced settings which creates a gap in comprehending the role of autonomy perceptions in adoption of AI in developing economies where digital transformation is yet to be realized. Additionally, Pakistani organisations have distinct problems such as different degrees of digital literacy, infrastructures, and cultural attitudes towards technology that can moderate or increase the impact of perceived autonomy.

Thus, the current research will seek to answer the following research question: Does perceived AI supported autonomy have a direct effect on exploration behaviour and intention to use AI, trust in AI, and AI adoption in Pakistani workplaces? This paper will contribute to the focused, managerially relevant knowledge, which can be applied by local organisations in designing and implementing AI systems that empower their workforce but not control them by testing four specific direct hypotheses (H1, H2, H3, H4).

LITERATURE REVIEW

2.1. The Self Determination Theory and Autonomy in the Workplace

Self Determination Theory (Deci and Ryan, 1985; Ryan and Deci, 2000) is a macro theory of human motivation which recognizes three fundamental psychological needs namely autonomy, competence and relatedness. Of these, autonomy, the sense of volition and self-approval of what one is doing, is especially important in promoting intrinsic motivation, creativity and wellbeing. Autonomy in work environments has always been associated with increased job satisfaction, reduced turnover intentions, and increased innovation (Gagné and Deci, 2005; Parker et al., 2017).

Conventional job design studies have been based on structural autonomy (e.g., freedom to plan tasks, select work methods). Nevertheless, due to the rise of intelligent technologies, the notion of autonomy has changed. Employees will believe that AI systems are expanding or limiting their decision making latitude. Employees tend to say that they feel more in control and empowered when AI is crafted to assist human judgment, by giving recommendations, automating subtasks, and giving transparent feedback (Sankaran and Markopoulos, 2021). On the contrary, AI mechanisms that track each activity, enforce strict procedures, or make decisions autonomously may initiate psychological reactance and opposition (Kellogg et al., 2020).

2.2 Perceived AI Supported Autonomy (PAISA)

PAISA is an emerging construct of the literature of technology adoption. It is a subjective view of an employee that AI tools enhance his/her independence, flexibility, and capacity to make work-related decisions. This image is influenced by the characteristics of the system design (e.g., customisability, explainability, override options), organisational communication, and past experiences with AI (Kong et al., 2024). The establishment of PAISA can be a determining factor in future attitudes and behaviours in the Pakistani context where AI implementation is predominantly top down and where employees might not have had a lot of prior exposure.

The relationship between PAISA and innovation oriented behaviours and diminished resistance to digital change has been demonstrated through empirical research beyond the Pakistani setting (Dabbous et al., 2022; Makarius et al., 2023). Nonetheless, none of the studies have so far examined the direct links between PAISA and exploration, intention, trust and adoption in a unified model, more so in a developing economy. The gap is dealt with in this paper.

2.3 Exploration as a Behavioural Outcome.

The active and inquisitive process of experimenting with new technology, trying new features, pushing boundaries, and exploring new applications can be called exploration (March, 1991; Wilden et al., 2018). Exploration is essential in the AI case, as it enables employees to learn the potentials and constraints of AI systems by firsthand experience and, therefore, decrease uncertainty and develop procedural knowledge. It has been demonstrated in previous studies that exploratory behaviour is activated by autonomy supportive environments (Kong et al., 2024). Therefore, it is likely that PAISA will be a good positive predictor of exploration.

2.4 Intention to Use AI and AI Trust

The psychological antecedent to the actual use of technology is the behavioural intention as defined by TAM and the Theory of Planned Behaviour (Ajzen, 1991). Workers that get the impression that AI helps them to be more autonomous will be attracted to having stronger intentions to use AI since they see the technology as an appropriate one to their professional identity and work preferences (Dabbous et al., 2022). Likewise, the trust in AI as the belief in the system as reliable, transparent and aligned with user values is an essential predictor of acceptance, particularly when the technology is involved in making independent decisions (Glikson and Woolley, 2020). The presence of autonomy supportive AI systems implies respect of the user agency, which, consequently, results in trust. Therefore, it is hypothesised that PAISA will have a positive impact on intention and trust.

2.5 AI Adoption as the final Behavioural Outcome.

The adoption of AI is the actual implementation of AI tools into everyday work practices, assessed with self-reported ease of integration, rapid adjustment to changes, and trust in AI features (Chatterjee & Bhattacharjee, 2020). Although the indirect channels (via exploration, trust, and intent) play a role, PAISA can directly impact adoption. When employees perceive that AI strengthens their autonomy, they might not go through the intermediate psychological states, but directly adopt the technology. Nonetheless, the literature is inconclusive, with some studies indicating a direct effect (Pereira et al., 2023), and others not. This is a study that tests both direct and indirect (mediated) effects, however, the current paper discusses the direct relationships due to parsimony.

Hypotheses Development

Based on the theoretical arguments above, the following four direct hypotheses are proposed:

H1: Perceived AI-Supported Autonomy has a positive impact on Exploration.

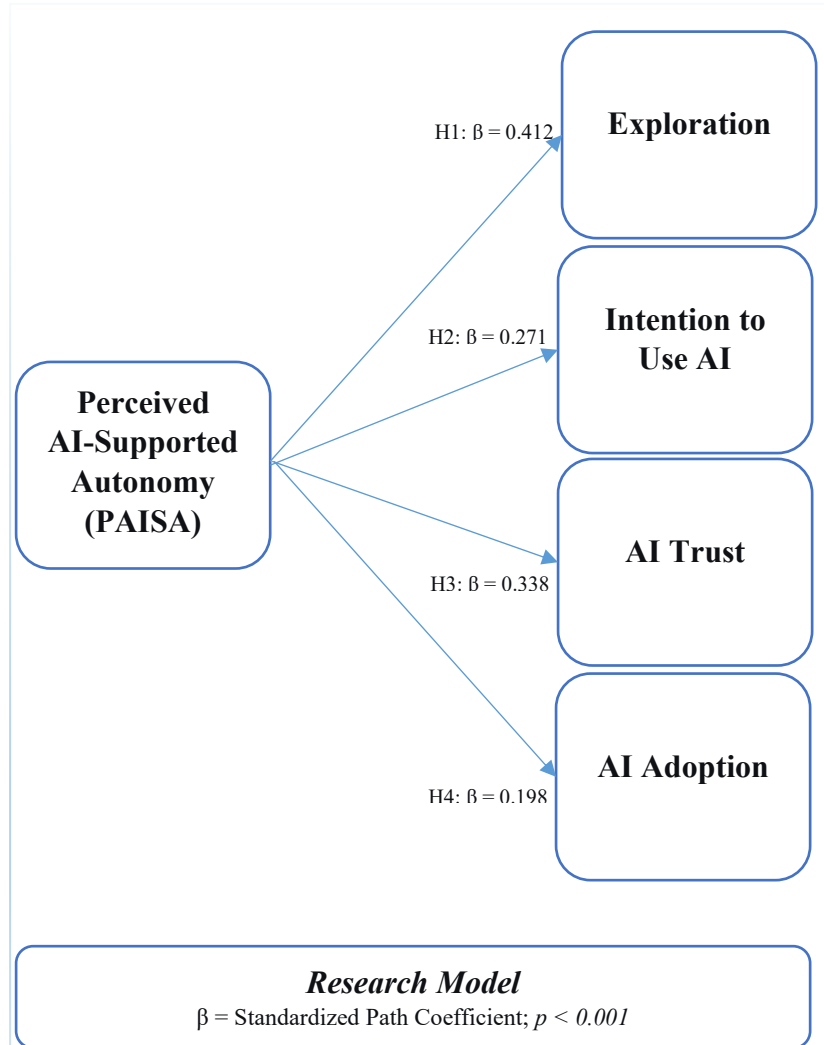
H2: Perceived AI-Supported Autonomy has a positive impact on Intention to Use AI.

H3: Perceived AI-Supported Autonomy has a positive impact on AI Trust.

H4: Perceived AI-Supported Autonomy has a positive impact on AI Adoption.

These hypotheses are depicted in the conceptual model.

Figure 1: Hypothesised Direct Effects Model (H1, H2, H3, H4)



RESEARCH METHODOLOGY

Research Philosophy and Design

The present study is based on a positivist philosophy and a cross sectional survey, which is quantitative in nature. The hypotheses were tested with the help of a deductive approach based on the existing theories (SDT, TAM). The data were gathered using a structured questionnaire filled by full time employees in Pakistan who either had direct or indirect experience of AI systems at their workplace.

Sampling and Participants

The purposive sampling was used to recruit workers that were exposed to AI tools (e.g., decision support systems, predictive analytics, chatbots, automation software). Samples After cleaning the data, the final sample that could be used was 410 respondents. The demographics of the participants are presented in table 1.

Table 1: Demographic Characteristics of Respondents (N = 410)

Characteristic	Category	Frequency	Percentage
Gender	Male	137	33.4%
	Female	273	66.6%
Age (years)	20–29	336	82.0%
	30–39	58	14.1%

	40–49	11	2.7%
	50 or above	5	1.2%
Experience (years)	1–3	230	56.1%
	4–6	107	26.1%
	7–10	41	10.0%
	11–15	20	4.9%
	15 or above	12	2.9%
Education	Intermediate	46	11.2%
	Bachelor/Master	289	70.5%
	M.S./M.Phil	66	16.1%
	PhD	9	2.2%

The sample was predominantly young (82% aged 20–29) and female (66.6%), with a majority holding at least a bachelor's degree. Most respondents had 1–3 years of work experience, reflecting early-career professionals who are likely to be digitally agile.

Measurement Instruments

All constructs were measured using previously validated Likert-type scales (1 = strongly disagree to 5 = strongly agree).

Perceived AI-Supported Autonomy (PAISA): 6 items adapted from Kong et al. (2024). Sample item: “AI technology makes me feel a sense of choice and freedom in the work activities I undertake.”

Exploration (EXPL): 10 items from Kong et al. (2024). Sample item: “I have developed new competencies for myself through AI.”

Intention to Use AI (IUAI): 4 items from Dabbous et al. (2022). Sample item: “I intend to learn about using AI.”

AI Trust (AIT): 11 items from Kong et al. (2024). Sample item: “I have confidence in the use of AI technology.”

AI Adoption (AIA): 5 items from Chatterjee and Bhattacharjee (2020). Sample item: “I can easily integrate new AI technologies into my existing work routines.”

Data Analysis

The SPSS was used to screen data before analysis with AMOS to use a structural equation modelling (SEM). Two steps were taken: measurement model was tested on reliability and validity; secondly, structural model was estimated to test four direct hypotheses. The estimation was performed by maximum likelihood, and bootstrapping (10,000 samples) to derive strong standard errors and confidence interval about the path coefficients.

RESULTS

Measurement Model Assessment

Confirmatory factor analysis (CFA) was conducted to evaluate convergent and discriminant validity. Table 2 reports the composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha for each construct.

Table 2: Reliability and Convergent Validity

<i>Construct</i>	<i>Cronbach's α</i>	<i>CR</i>	<i>AVE</i>
<i>Perceived AI-Supported Autonomy</i>	0.815	0.861	0.512

<i>Exploration</i>	0.836	0.883	0.601
<i>Intention to Use AI</i>	0.812	0.875	0.583
<i>AI Trust</i>	0.876	0.908	0.663
<i>AI Adoption</i>	0.856	0.892	0.618

All Cronbach's α and CR values exceeded the recommended threshold of 0.70, indicating acceptable internal consistency. AVE values were above 0.50 for all constructs except PAISA (0.512), which still meets the minimum criterion. Discriminant validity was confirmed using the Fornell-Larcker criterion (square root of AVE for each construct exceeded its correlations with other constructs).

Descriptive Statistics and Correlations

Table 3 presents the means, standard deviations, and inter-construct correlations.

Table 3: Descriptive Statistics and Correlations

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
1. PAISA	3.92	0.827	(0.715)				
2. EXPL	4.24	0.791	0.453**	(0.775)			
3. IUAI	4.14	0.791	0.448**	0.811**	(0.764)		
4. AIT	3.35	0.863	0.193**	0.159**	0.103*	(0.814)	
5. AIA	3.39	0.934	0.197**	0.268**	0.183**	0.445**	(0.786)

*Notes: ** $p < 0.01$; $p < 0.05$. Diagonal values (in parentheses) are square roots of AVE.

All correlations were positive and significant at the 0.01 level, except the correlation between IUAI and AIT ($p < 0.05$). The strongest correlation was between PAISA and EXPL ($r = 0.453$), followed by PAISA and IUAI ($r = 0.448$).

5.3 Direct Effects (Hypotheses Testing)

The structural model demonstrated good fit: $\chi^2/df = 2.58$, CFI = 0.948, TLI = 0.936, RMSEA = 0.053, SRMR = 0.046. Table 4 summarises the path coefficients for the four hypotheses.

Table 4: Direct Effects Results

<i>Hypothesis</i>	<i>Path</i>	β (Standardised)	<i>S.E.</i>	<i>t-value</i>	<i>p-value</i>	<i>Decision</i>
H1	PAISA \rightarrow EXPL	0.412	0.041	8.221	< 0.001	Supported
H2	PAISA \rightarrow IUAI	0.271	0.051	5.304	< 0.001	Supported
H3	PAISA \rightarrow AIT	0.338	0.050	6.776	< 0.001	Supported
H4	PAISA \rightarrow AIA	0.198	0.049	4.044	< 0.001	Supported

All four hypotheses were statistically supported. PAISA had the strongest direct effect on exploration ($\beta = 0.412$), followed by trust ($\beta = 0.338$), intention ($\beta = 0.271$), and adoption ($\beta = 0.198$). All p-values were below 0.001.

DISCUSSION

Interpretation of Findings in the Pakistani Context

The findings give strong empirical support that the perceived AI supported autonomy is a strong direct predictor of exploration, intention to use AI, AI trust and AI adoption among

Pakistani employees. This is in line with Self Determination Theory which assumes that autonomy satisfaction leads to an increase in intrinsic motivation as well as positive behavioural effects (Ryan and Deci, 2000).

The best impact was on exploration (H1, 0.412). The Pakistani workplace is still in the initial stages of AI adoption, so when employees think that AI systems provide them with a greater degree of control, they are more likely to experiment with new features, push boundaries, and learn through experimentation. This result has practical importance due to the fact that exploration minimizes technophobia and develops experiential knowledge that is specifically useful in workplaces with low levels of formal training in AI.

The moderate impact on the intention to use AI (H2, $\beta = 0.271$) indicates that the perceptions of autonomy are converted into a sense of willing to work with AI. The effect size, however, is less than that on exploration, meaning that intention formation is also conditional on other aspects (e.g., perceived usefulness, social influence). However, the direct positive correlation is in line with TAM extensions that bring in motivational variables.

The PAISA also positively affected AI trust (H3, 0.338). In Pakistan, the issues of data privacy, algorithm bias, and job loss are widespread. Workers that feel like AI has respected their right to make decisions will tend to have more trust in the system. This finding holds the view that trust does not just depend on technical performance but also on the perceived good intentions and openness of the AI design (Glikson and Woolley, 2020).

Lastly, the positive impact of PAISA on the adoption of AI (H4, $\beta = 0.198$) is direct, showing that autonomy supportive AI systems may result in actual usage despite not being completely mediated by exploration, trust, or intention. This straight line is especially applicable to organizations that require quick AI integration. The effect size is however the least of the four, and this implies that though autonomy is effective, there are other psychological processes that are important in long-lasting adoption (exploration, trust, intention).

Comparison and contrast with previous literature.

Our findings are consistent with recent international studies. Kong et al. (2024) discovered that autonomy supportive AI increased exploration and innovation within the hospitality sector. According to Dabbous et al. (2022), perceived autonomy had a positive impact on AI intention in both marketing and service companies. Nonetheless, it is the first empirical research to test directly the impacts of PAISA on all four outcomes in one model, as well as, the first to do this in Pakistani corporate sector. The immediate impact on adoption (H4) is not a well-studied phenomenon; the positive finding we make contributes to the literature.

IMPLICATIONS AND CONCLUSION

Implications in Pakistani Organisations

1. Develop AI Systems to increase Autonomy

Managers and system developers ought to focus on features that provide control to employees: customisable dashboards, adjustable automation settings, overrides, and explaining AI recommendations explicitly. Perceived autonomy is enhanced when the employees are allowed to customize AI to suit their work preferences.

2. Communicate AI as an Enabler, Not a Controller

AI should be presented in organisational communication as a tool that will decrease the number of mundane tasks and release time to work on high judgement creative work. The training programmes must underline the fact that AI assists and does not substitute human decision making.

3. Promote Exploration with harmless conditions.

Since PAISA is a highly predictive tool and has a high degree of exploration, organisations ought to establish so-called sandbox environments that employees can use to test AI features without the fear of error and without disrupting live operations. This is of particular concern in

Pakistan, where a significant number of workers might feel apprehensive about the new technology.

4. Establish Trust by being transparent.

Trust is a key outcome of PAISA. The Pakistani companies are expected to invest in explainable AI (XAI) and demonstrate the reliability and fairness of AI on a regular basis. Trust can also be boosted by sharing success stories of early adopters.

5. Leverage Autonomy to promote Adoption.

Although employees might be reluctant at first, autonomy supportive AI can be explicitly designed to increase adoption. The pilot programmes which enable employees to tailor their AI tools could result in quicker acceptance compared to the top down mandatory rollout.

Conclusions

In this paper, the direct impact of the perceived AI supported autonomy on exploration, intention to use AI, AI trust, and adoption of AI amongst employees in Pakistan were discussed. All four hypotheses were confirmed with the help of a sample of 410 respondents and structural equation modelling. PAISA appeared to be a psychological antecedent, and its impact on exploration was the greatest and its impact on adoption the least (although significant).

The research adds to the body of literature in a way that it applies Self Determination Theory to the realm of AI adoption in the context of a developing economy. To practitioners, the results provide practical guidance: to implement AI more, create systems that empower employees, promote hands on experimentation, project AI as a helper, and establish trust by being transparent. Further studies ought to investigate the mediating processes (e.g., exploration and trust) between PAISA and adoption and moderators (e.g., digital literacy and organisational culture).

REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Chatterjee, S., & Bhattacharjee, K. K. (2020). Adoption of artificial intelligence in higher education: A quantitative analysis using structural equation modelling. *Education and Information Technologies*, 25(5), 3443–3463. <https://doi.org/10.1007/s10639-020-10159-7>
- Dabbous, A., Aoun Barakat, K., & Merhej Sayegh, M. (2022). Enabling organizational use of artificial intelligence: An employee perspective. *Journal of Asia Business Studies*, 16(2), 245–266. <https://doi.org/10.1108/JABS-09-2020-0372>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.
- Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Edwards, J., Eirug, A., Galanos, V., Ilavarasan, P. V., Janssen, M., Jones, P., Kar, A. K., Kizgin, H., Kronemann, B., Lal, B., Lucini, B., ... Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57, 101994. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26(4), 331–362.

- <https://doi.org/10.1002/job.322>
- Glikson, E., & Woolley, A. W. (2020). Human trust in artificial intelligence: Review of empirical research. *Academy of Management Annals*, 14(2), 627–660.
<https://doi.org/10.5465/annals.2018.0057>
- Kellogg, K. C., Valentine, M. A., & Christin, A. (2020). Algorithms at work: The new contested terrain of control. *Academy of Management Annals*, 14(1), 366–410.
<https://doi.org/10.5465/annals.2018.0174>
- Kong, H., Yin, Z., Chon, K., Yuan, Y., & Yu, J. (2024). How does artificial intelligence (AI) enhance hospitality employee innovation? The roles of exploration, AI trust, and proactive personality. *Journal of Hospitality Marketing & Management*, 33(3), 261–287.
<https://doi.org/10.1080/19368623.2023.2258116>
- Makarius, E. E., Mukherjee, D., Fox, J. D., & Fox, A. K. (2023). Rising with the machines: A socio-technical framework for bringing artificial intelligence into the workforce. *Journal of Business Research*, 155, 113421.
<https://doi.org/10.1016/j.jbusres.2022.113421>
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71–87.
<https://doi.org/10.1287/orsc.2.1.71>
- Parker, S. K., Van den Broeck, A., & Holman, D. (2017). Work design influences: A synthesis of multilevel factors that affect the design of jobs. *Academy of Management Annals*, 11(1), 267–308.
<https://doi.org/10.5465/annals.2014.0054>
- Pereira, V., Hadjielias, E., Christofi, M., & Vrontis, D. (2023). A systematic literature review on the impact of artificial intelligence on workplace outcomes: A multi-level perspective. *International Journal of Information Management*, 68, 102568.
<https://doi.org/10.1016/j.ijinfomgt.2022.102568>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.
<https://doi.org/10.1037/0003-066X.55.1.68>
- Sankaran, S., & Markopoulos, P. (2021). “It’s like a puppet master”: User perceptions of personal autonomy when interacting with intelligent technologies. In *Proceedings of the 29th ACM Conference on User Modeling, Adaptation and Personalization* (pp. 108–118). Association for Computing Machinery.
<https://doi.org/10.1145/3450613.3456822>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.
<https://doi.org/10.2307/30036540>
- Wilden, R., Hohberger, J., Devinney, T. M., & Lavie, D. (2018). Revisiting James March (1991): Whither exploration and exploitation? *Strategic Organization*, 16(3), 352–369.
<https://doi.org/10.1177/1476127018765031>