Techno-empowerment of Process Automation: Understanding Employee Acceptance of Autonomous AI in Business Processes

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Abstract. Research in domains such as the car industry and banking has shown people's acceptance of *techno-empowerment*, the phenomenon of entrusting technologies with autonomous decision making. An open question is whether process participants are inclined to transfer their decision-making autonomy to software that they are already familiar with yet is extended with AI capabilities. This paper reports on a study carried out to investigate this question by emulating the imminent organizational introduction of techno-empowered, AI-enhanced Robotic Process Automation (RPA). It involved 126 employees within four international companies residing in Poland that had already been routinely applying RPA for the automation of parts of their business processes. Our findings demonstrate the moderating role of (1) workplace perceptions and (2) gender on the effect that perceptions participants on currently used RPA software has on shaping their intentions to techno-empower an AI-enhanced RPA system. A follow-up study with managers within these companies shows that these insights are both new and actionable. As such, our findings help managers to improve their understanding of techno-empowerment dynamics, which is conducive to better predict employees' reactions to techno-empowered RPA and to plan process change more effectively.

This work has been partially supported by grant PID2021-126227NB-C21 funded by MCIN/AEI /10.13039/501100011033/FEDER, EU, by grant TED2021-131023B-C22 funded by MCIN/AEI/10.13039/501100011033 and by the European Union "NextGenerationEU"/PRTR.

A. Marrella et al. (Eds.): BPM 2024, LNCS 14940, pp. 511–527, 2024.
https://doi.org/10.1007/978-3-031-70396-6_29

Keywords: Robotic process automation · hyperautomation · autonomous artificial intelligence · techno-empowerment · digital transformation · technology acceptance

1 Introduction

Over the last decade, there has been consistent advancement towards the automation of business processes under the umbrella of Robotic Process Automation (RPA) [7]. Organizations that have effectively implemented RPA and streamlined business processes have witnessed favorable effects on their strategic objectives, workforce efficiency, and customer service [42]. The convergence of AI, process automation, and customer data has given rise to the concept of *intelligent process automation*, as officially coined in 2017 by IEEE [4], which is alternatively referred to as *hyperautomation* [27]. Intelligent process automation *combines RPA and AI to deliver powerful tools that can mimic human interaction and make advanced decisions based on the outputs of those robotic inputs* [44]. This development has brought about further benefits such as improved productivity, enhanced decision-making through data-driven insights, and cost reduction [30].

All benefits mentioned so far may be extended further by the transformation of business processes through the incorporation of autonomous software. Autonomous software is the driving engine of the transition from the internet-based stage of AI into the autonomous stage of AI, cf. [31]. The primary distinction between internet-based and autonomous stages of AI lies in the level of independence in decision-making that is attributed to the intelligent artificial agent. While in the internet-based stage of AI, the artificial and intelligent agent used in the business process is reproducing a decision-making path designed by humans, in the autonomous stage of AI it learns from real-time data and adapts decisions to a changing environment. By doing so, it may react faster to changes occurring in the business environment.

Entrusting decision-making autonomy to technology is associated with the phenomenon of techno-empowerment. In the current literature, techno-empowerment is defined as "*the process of transferring autonomy in decision-making to intelligent machines*" [36]. To reap the benefits of adopting autonomous AI in business processes, it is crucial for employees managing and participating in these processes to accept and adopt this technology. This is not straightforward. Employee responses within organizations to automation differ: some perceive it as a beneficial instrument or catalyst for innovation, while others see it as a challenge or risk [46]. Filgueiras et al. [15] state that although employees may initially appreciate the decrease in monotonous tasks, they can also be expected to voice worries regarding their job stability in the future. Furthermore, the incorporation of AI amplifies employee concerns because of its capacity for expanded automation [25]. Earlier research on techno-empowerment showed that, among others, gender [26], trust, perceived risk, usefulness, ease of use [37], awareness about the strengths and weaknesses, skills to interact with technology [19], and previous

exposure to and positive experience with AI [5,18] influence the attitudes and intentions towards autonomous technologies. Furthermore, Grisold and Schneider [22] examine how human-AI delegation dynamically changes when it occurs in organizational routines.

However, it remains unknown what factors may motivate employees to delegate autonomy in decision-making to the process-aware systems they already use in their workspace.

By our focus on RPA in this regard, we tie to the ongoing discussion as initiated by Haase et al. on perceptions and attitudes towards this technology in organizational contexts (see [23]). With our research we follow their call for *examining AI integration in routine tasks and RPA tools, and its influence on organizational routines and culture to better understand and enhance human-automation collaboration.*

Our motivation to analyse the factors that stand behind employees' intentions to grant autonomy in decision-making to the software already used by companies in their business processes is twofold. First, it seems reasonable to expect employees to simply adopt further use of technology they already have seen working. However, this could lead managers to make wrong assumptions, and therefore decisions, since, to the best of our knowledge, there is neither evidence that proves this nor prior research that studies these factors, hindering the possibilities of success. Secondly, while collaborating with business practitioners, we observed a keen interest among certain managers in integrating autonomous artificial agents into business processes (or techno-empowering existing RPA solutions). We also noted reservations among these managers regarding employees' willingness to grant autonomy to such agents in decision-making processes. Therefore, the following exploratory research question was asked:

RQ: What factors influence employee's intentions to techno-empower an RPA-solution in use?

To address the aforementioned question, we queried, under an experimental condition, 126 employees of four international companies residing in Poland using RPA solutions. The condition involved the imminent yet fictive adoption of AI-enhanced RPA technology to replace the decision-making role of employees. We measured workplace perceptions, perceptions of currently used RPA solutions, and intentions to techno-empower an RPA software solution among the participants.

Based on this research, we derived two significant findings. First, there is no direct relation between perceptions of existing RPA solutions and intentions to techno-empower their AI-enhanced version.

Second, the study demonstrated the moderating role of workplace perceptions and gender on the effect that perceptions of currently used RPA software has on intentions to techno-empower the AI-enhanced version of the RPA software. This constitutes the theoretical contribution of our study.

A follow-up study showed that although companies monitor workplace perceptions regularly, they do not measure how much employees are satisfied with the RPA software (and other technologies) used in their workspace. Our research suggests that such information on employees' perceptions, as well as employees'

gender, may play an important role when introducing autonomous AI agents into business processes. Thus, it seems wise that managers monitor and consider this employee information when planning organizational transformations involving the techno-empowerment of autonomous, AI-enhanced versions of existing technologies. This constitutes the practical contribution of our research.

The remainder of this article is organised as follows. Section 2 introduces the theoretical background of our work. The research design is described in Sect. 3. The findings of our research are presented in Sect. 4, and further discussed in Sect. 5, while reflecting on the main limitations of our approach. Section 6 details the implications for practice. Finally, Sect. 7 concludes the paper and proposes some future research directions.

2 Theoretical Background

2.1 Robotic Process Automation and Artificial Intelligence

RPA is one of the technological trends in organizations undergoing digital transformation. Adopting such low-code information systems [13] to perform mundane and routine tasks allows organizations to reduce costs [11], enhance work quality [14], maintain stable performance [2], while also achieving a faster return on investment [47]. Aside from RPA bots handling routine tasks, organizations are integrating AI solutions into their process landscape that are capable of learning from past data and making decisions [34]. AI enables the digital workforce to transition from automation to autonomy in decision-making. While automation implies adhering to a pre-designed schema, autonomy involves real-time data access and the ability to redesign the decision-making schema to adopt to changing decision context [36]. Therefore, the decision made by autonomous software may change depending on the environmental context (as a result of learning and adaptation), while automatic software makes decisions regardless of the changing environmental context (according to the pattern created in the past).

Autonomy in decision-making is associated with *reward function engineering* that refers to a process of designing and adjusting the reward function in the context of machine learning, particularly in reinforcement learning. In reinforcement learning, the algorithm (agent) makes decisions in interaction with the environment to maximize received rewards, enabling it to make future decisions based on the learning derived from previous penalties and rewards [1]. The increased autonomy of technology in decision-making and actions is associated with the phenomenon called *techno-empowerment* [36].

2.2 Techno-empowerment in the Business Workspace

Techno-empowerment is based on the business concept of *employee empowerment*, which is conceptualized as the process of transferring power, responsibility, and autonomy to employees in decision-making and task execution within

their work [39]. Techno-empowerment is also linked to the transfer of power, responsibility, and autonomy, but it concerns intelligent technologies rather than people [36]. The traditional research models explored the relation of role transfers but emphasized the need for strengthening the trust to automation by extending human reliance on automating things (e.g. Parasurmana's and Riley's use/misuse/disuse/abuse model) [40], as trust is supposed to mediate a human supervisor's reliance on an automation subordinate. The umbrella of *supervisory arrangement* theories, where human-automation relation at workspace depends on automation reliability, the human operator's ability to assess the automation's reliability, and to appropriately rely on, or comply with, the automation, studied the *productive delegation* constructs [19]. While some frameworks tend to ignore the relationship between the trustor and trustee [20], there were limited attempts to study that more from the relational dynamics [22]. Yet, the interactions between human employees and robotized or automated systems are developing into a multi-disciplinary field of research [32]. Consequently, introducing an autonomous agent into a business process allows for greater access to current information and potentially a more effective response to changes in the environment.

2.3 Intentions Toward Techno-empowered Artificial Agents

One of the main challenges in the context of transferring a certain degree of autonomy in decision-making technology lies in the acceptance of such phenomenon by the human workforce. Previous research on attitudes and intentions towards new technologies resulted in the construction of two well-known models that help understand when users are willing to use technology. According to the TAM model, individuals who have the opportunity to test a particular technology form attitudes about it by assessing its ease of use and perceived usefulness [12]. The more positive attitudes toward technology, the greater the intention to adopt it. The UTAUT model assumes that the intention to use technology is determined by performance and effort expectancy, social influence, and facilitating conditions [45].

The current stream of research on responsible automation goes even further suggesting that employees' emotions and imprinted perceptions of technology can play a substantial role when it comes to forming their attitudes and intention to use it [38]. Office workers are open to use more automation when they perceive it positively [21] and when automation increases their well-being [9]. For this reason, it is suspected that earlier positive experiences with RPA software will encourage employees to give such software more autonomy in decision-making. Therefore, the following hypothesis is proposed:

H1: Positive perceptions by employees on RPA influence their intentions to allow AI-enhanced RPA technology to make decisions.

Researchers use TAM and UTAUT models to discover additional factors that can help better understand and predict intentions to use new technologies, also in the context of business processes management and automation. Previous studies on techno-empowerment have indicated that factors such as gender [26], trust,

perceived risk, usefulness, ease of use [37], awareness about the strengths and weaknesses, skills to interact with technology [19], and previous exposure to and positive experience with AI [5,18] influence individuals' attitudes and intentions to transfer the autonomy in decision-making to a technology. However, there is still limited understanding of the factors that may drive employees to entrust decision-making autonomy to the systems they use in their workspace.

The employee's perception of the workplace may influence their intentions to introduce new technologies into business processes. If an employee positively assesses their workplace, they engage in their tasks [3], thereby showing a willingness to further develop the work environment. When an employee perceives having control and influence over their workplace, job satisfaction increases, and turnover intentions decrease [6]. Job satisfaction has an impact on job involvement and organizational commitment [10] while organizational commitment is linked to pro-activity [43], characterized by a readiness to create and sustain a friendly work environment. These relationships allow us to assume that people with a positive workplace perception will take care of their workplace, which may manifest itself in greater attentiveness and prudence in accepting technological changes in their work environment. Therefore, it can be expected that the more positive the workplace perceptions, the greater the employee's willingness to empower technology, depending on how well they perceive the RPA-based technology. Thus, the following hypothesis is proposed:

H2: Workplace perception moderates the relationship between employees' perceptions of RPA and their intentions to allow AI-enhanced RPA technology to make decisions.

Previous research indicates also significant differences between women and men in terms of their intentions to transfer decision-making autonomy to machines. In an experiment on the acceptance of an autonomous office assistant, notable distinctions were observed between women and men regarding their intentions to grant autonomy to the assistant, depending on its possession of a safety certificate and knowledge of its country of origin [33]. Other research showed further differences between men and women when it comes to acceptance [26], and concerns about autonomous technologies [8]. Earlier studies on the adoption of new technologies in general suggested that men tend to take greater risks associated with the use of new technologies [17]. This may be related to their desire to impress others [17]. The status argument is further supported by research indicating that men have more negative attitudes toward autonomous technology when it deprives them of their status in a given community [35]. Therefore, the differences between women and men in their attitudes and intentions towards new technologies are related to the gender construct - rather than the biological difference between men and women, what is important here are the gender roles that particular societies assign to and expect from them.

In a patriarchal society, men are taught to show courage and strength, while women are taught to show restraint and caution [28]. Although these may be not their natural characteristics determined by biology, men and women accept them as a result of education and social control.

Based on the above research findings, it is reasonable to expect differences between men and women when making decisions about techno-empowering AI-enhanced versions of RPA systems.

Therefore, the following hypothesis is formulated:

H3: Gender moderates the relationship between employees' positive perceptions of RPA and their intentions to allow AI-enhanced RPA technology to make decisions.

3 Research Design

The research process was aimed at providing both theoretical and practical contributions and, thus, consisted of two stages. Within the first stage, the purpose of our study was to explore the relationship between the perception of RPA and their intention to allow an AI-enhanced RPA agent make autonomous process decisions (techno-empowerment). As shown in the theoretical background, we were interested in studying the moderating influence of workplace perception (Relationship 1 - R1) and gender (Relationship 2 - R2) in this relationship. To explore these relationships, we conducted a study in four companies under the following experimental condition: Employees were informed that their companies consider introducing techno-empowered IT software. They were subsequently asked to express their opinions on this development and decide whether they have the intention to allow such software to make autonomous decision. The detailed procedure is described in Sect. 3.2. The model tested in the study is presented in Fig. 1.

During the second stage, a follow-up study was conducted with 20 managers from the same companies where the previously mentioned participants are employed. Its goal was to find out whether these managers are aware that the perception of employees' regarding RPA, workplace perceptions, and gender may influence the employees' intention to techno-empower the IT systems.

By conducting a two-stage research process, it was possible to achieve two goals. Firstly, expanding the theoretical framework of the studied phenomenon which were factors influencing employees' intentions to techno-empower the software used in business process automation. Secondly, the two-stage research process made it possible to compare the results of experimental research with current managerial practice. Only by making that comparison, it is possible to develop recommendations regarding what factors managers should take into consideration when adopting techno-empowered RPA technology into business processes.

3.1 Participants

A total of 165 employees from four companies using RPA were invited to take part in our study. Of these, 126 delivered semi-valid data. Out of 126 participants, 68 (54%) were women, 51 (40%) were men and 7 (6%) did not disclose their gender. The mean age of participants was M_{age}= 35,17 (SD_{age} = 8,12). The youngest person was 24 years while the oldest was 55 years of age. Regarding

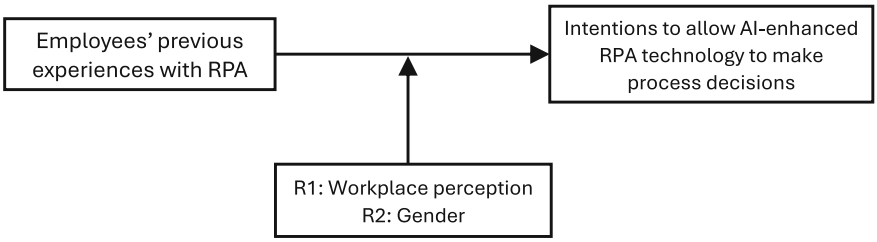

Fig. 1. Research model

their positions, 17 participants (14%) were working as lower-rank managers, 16 (12%) as middle-line managers, 7 (6%) as higher-rank managers, and 86 (68%) were non-managerial workers. Two companies belonged to the banking sector, one company dealt with accounting, one offered consulting and outsourcing services. Because of internal procedures, data about the experience and educational background of participants could not be collected.

3.2 Procedure

A set-up with an experimental condition was designed to check whether earlier use of RPA software is linked with employees intention to techno-empower the AI-enhanced version of this technology. Nine international companies residing in Poland and using RPA were invited to take part in research, four of which accepted the proposal. In each company, a gatekeeper designated by their company was asked to send the information to employees claiming that there is a new program called 'Future Craft' based on RPA and autonomous AI. The announced, innovative side of this software is its ability to make decisions on its own, i.e. buying some product when AI detects some shortage after the process analysis, but only if the employee gives their consent for such autonomy. All employees received a description of the program from the gatekeeper (borrowed from a vendor's description of the RPA software) extended by an autonomous function[1], and a set of questions in the form of an online questionnaire. Research participants were informed that their employer is considering buying such a software and wanted to learn their employees' position on such an innovation. The researchers obtained consent to conduct the experiment from company managers. Since the actual purpose of the study was hidden from participants before it was conducted, after the study was completed, all participants were informed about its actual purpose.

3.3 Measurements

Research participants were asked whether they use RPA in their work (one-item with nominal scale points), how they perceive the RPA software being

[1] The scenario presented to the participants is shown in Appendix 1 published in the form of a permanent link: https://tinyurl.com/jmpshc7f.

already in use in their workplace (one-item, seven-point scale), how they perceive their workplace (one-item, seven-point scale), and whether they would agree that the 'Future Craft' to make independent decision (one-item, ten-point scale). Moreover, participants were asked for gender, age, and their position in the company. To avoid the respondent bias, the real purpose of the experiment, research participants were asked for their attitudes towards 'Future Craft'. The list of variables and questions as used in the final analysis is presented in Table 1.

Table 1. Variables measured in the study

Variable	Question	Possible Answers
Actual use of RPA	Do you work with RPA-based solutions?	Yes, No
Perception of RPA software used in company	How do you perceive the RPA-based software used in your workplace?	1-very negative perception 7-very positive perception
Perception of the workplace	How do you perceive your workplace?	1-very negative perception 7-very positive perception
Intention to techno-empower the RPA software	Would you agree to let Future Craft to make autonomous decisions?	1-definitely no 10-definitely yes
Gender	What is your gender?	Male, Female, Non-binary person, I don't want to declare
Position in the company	What position do you occupy in the company?	Lower-rank manager, Middle-line manager, Higher-rank manager, Non-managerial worker

4 Results

The presentation of the results is divided into two parts. In Sect. 4.1 we present the results of the experimental study. In Sect. 4.2, we describe the results of the follow-up study.

4.1 Results of the Experimental Study

To explore R1, a moderation analysis with Hayes (2022) PROCESS Model 1 was conducted. The PROCESS Model 1 allows researchers to test how the relationship between an independent variable (X) and a dependent variable (Y) varies depending on the levels of a moderator variable (W). PROCESS Model 1 estimates the interaction effect between X and W on Y (XW), along with main

effects of X and W on Y [24]. Model 1 was selected in our analysis as it fits the assumptions of our study presented in Fig. 1. Perception of RPA software used in the company was inserted as an independent variable, while the intention to techno-empower the new software was a dependent variable. Workplace perception was inserted as a moderating variable.

No significant effect of perception of RPA software used in a company was found on the intention to techno-empower the new software (ns), which falls short of supporting H1, but a positive effect of workplace perception exists on the intention to techno-empower the AI-enhanced RPA technology ($\beta = 1.62$, SE=0.67, t= -2.45, $\rho < 0.01$). Moreover, a significant interaction effect was found of workplace perception and perception of RPA software used in the company on the intention to transfer autonomy in decision-making to AI-enhanced RPA technology ($\beta = .27$, SE = 0.12, t = 2.19, $\rho < 0.05$). The model summary was F (3, 122) = 7.19, Rsq = 0.15, $\rho < 0.01$). This provides support for H2.

A further analysis identified Johnson-Neyman points indicating that those participants who perceived their workplace at or above a level of 3.70 have a higher intention to techno-empower the new system when they more positively assess the current RPA software in use within their companies.

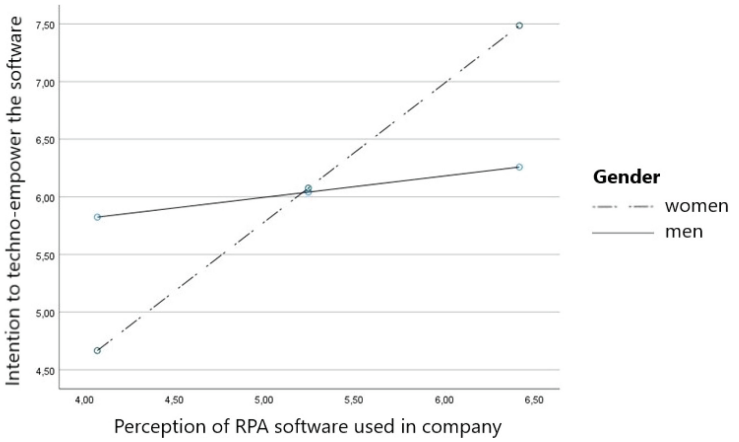

Fig. 2. The moderating effect of gender on the relationship between the perception of RPA software used in a company and the intention to techno-empower the new software

To explore R2, a moderation analysis with Hayes (2022) PROCESS Model 1 was conducted as well. Perception of RPA software used in company was inserted as independent variable, while intention to techno-empower the AI-enhanced RPA technology was the dependent variable. In this model, gender was a moderating variable. As with the earlier model, there was no significant effect of perception of RPA software used in the company on the intention to techno-empower the new software (ns), in defiance of H1. Nevertheless, a negative effect

was found of gender on intentions to techno-empower the AI-enhanced RPA technology, i.e. women declared significantly lower intentions to empower the system than men ($\beta = -5.31$, $\rho < 0.01$). Additionally, a significant interaction effect was found of gender and perception of RPA software used in company on intention to techno-empower the new software ($\beta = 1.02$, SE =0.37, t = 2.73). The model summary was F (3, 115) = 6.45, $\rho < 0.01$, Rsq = .14. Among women, a more positive perception of RPA software being used in their company was positively and significantly associated with their intention to techno-empower the new software. Such a relationship was not found among men (Fig. 2). These results provide support for H3.

The main effects and the interaction effects concerning R1 and R2 are presented in Table 2.

Table 2. The main effects and interaction effects concerning R1 and R2

Relationship 1					Relationship 2				
	β	SE	t	ρ		β	SE	t	ρ
Constant	5.09	1.34	3.79	0.001	Constant	10.01	3.28	3.05	0.001
Experience with RPA	0.185	0.249	0.741	0.46	Experience with RPA	−0.575	0.606	−0.949	0.34
Gender	−5.305	2.007	−2.643	0.001	Workplace perception	−1.622	0.669	−2.43	0.011
Experience with RPA × gender	1.018	0.373	2.725	0.001	Experience with RPA × workplace perception	0.270	0.123	2.192	0.02

4.2 Results of the Follow-up Study

After establishing the relationships we described, our interest turned to their actionability. For this purpose, we contacted 20 managers (11 women and 9 men) of these companies to find out which data they need to assess the intentions of their employees to techno-empower the RPA technologies in use. We invited them to take part in short interviews. Each interview was made online (by Teams and Google Meets) and recorded. The interviews started with general questions regarding the company, work performance, and perceptions of techno-empowerment. Next, the participants were asked about their current strategies to measure workplace perceptions among their employees, perception of RPA, as well as their approaches towards adoption strategy of techno-empowered systems among women and men. The interview ended with a debriefing, as well as information on the purpose of the study and its finalization.

A table summarizing the responses of the managerial participants can be found at https://tinyurl.com/jmpshc7f. Of all 20 involved, 19 people claimed that data regarding workplace perceptions are collected in their teams, while

one person stated that this is not done. Those people where data regarding workplace perceptions are collected indicated that it is done by annual survey (18 people) or quarterly survey (1 person). The surveys are followed by team meetings (6 people), individual meetings (1 person), or they are not followed up by any meeting with employees (12 people). Importantly, 17 participants overall stated that action plans are made according to the results of the surveys and/or the employee meetings. Finally, none of the interviewees reported that employees' perceptions regarding RPA solutions currently in use by their teams are collected.

Regarding the participants' approaches to the adoption of techno-empowered RPA-solutions, 19 participants did not consider to analyze the differences in needs of men and women when it comes to the standards and positive perception of similar software. Only one person could see the point in doing so claiming that 'men are more tech-savvy than women' (which, interestingly, is not the pattern that is identified in the first study).

In summary, the vast majority of managers interviewed are measuring workplace perceptions among their employees by annual or quarterly survey. However, these questions do not cover the perceptions of RPA software already used in their teams. Taking into account the research results of the first study, collecting such data could actually help them to predict intentions to adopt techno-empowered solutions. Therefore, it seems to make sense to include such a question in surveys when techno-empowered software is meant to be adopted. Moreover, the interviewed managers did not consider to analyze the differences between the needs of men and women, although the results of our previous analysis shows that for women an earlier positive perception of RPA solutions is crucial to increase their intention to accept techno-empowered software. For men, such perceptions do not play a role.

5 Discussion and Limitations

There is no direct relationship between employees' perceptions of RPA currently used in a company to intentions to give decision-making autonomy to AI-enhanced RPA technology. However, our study identifies two moderating variables for this relationship: workplace perceptions and gender.

Our research shows that when employees have negative perceptions of the workplace, their intention to empower the software does not change. If the perceptions of the workplace are high, it is true that the more positive the employees' perception of the current RPA software used in the company are, the more positive their intentions to empower AI-enhanced RPA technology will be. These results are consistent with earlier research showing that employees who are satisfied with their work are characterized by greater organizational commitment and proactivity [10,43]. Positive perception of the workplace may be associated with greater responsibility for technological changes, as well as a willingness to further improve the workplace. For workers who have negative workplace perceptions, increasing the decision-making autonomy of technology in the process is not

important. Negative workplace perceptions may result from working in stressful conditions, experiencing injustice, and experiencing negative emotions at work. Their occurrence is associated with a higher tendency to counterproductive work behavior, the symptoms of which may be reduced commitment and indifference [16,41]. Therefore, the potential negative consequences of such implementations may not matter to them, because even before the implementation they evaluate their workplace negatively and do not feel attached to it.

Our research shows that women and men differ when it comes to intentions to techno-empower AI-enhanced RPA technology depending on how well they perceive the RPA software that is already used in their company. For men, such perceptions do not influence the intention to techno-empower new software. For women, however, the more positive the perceptions are of RPA software that is already in use, the higher their intention to techno-empower a new AI-enhanced version thereof. These findings extend the state-of-the-art as previous research examined gender differences in the acceptance of autonomous technologies (cars or autonomous assistants) outside the area of business process management. Our research shows that these differences also occur in terms of intentions toward artificial, autonomous agents used in business processes. All these results are consistent with previous research suggesting differences between women and men in the acceptance of autonomous technologies [8,26]. Unfortunately, current theories do not deliver the answers why such changes occur, which identifies an important research gap for future research.

On a more abstract level, our findings can be seen as contributions to a part of the knowledge repository within the BPM discipline that needs updating. *Process automation* is an explicit part of the implementation phase of the BPM lifecylce, but our fundamental understanding of good practices is restricted to traditional process technologies, such as BPM and workflow management systems (cf. [42]). With the advent of RPA, it is important to study this popular process-aware technology to arrive at generic recommendations and insights that benefit its successful adoption and implementation in practice.

Our study has its limitations. The study's dependent variables have limited internal validity. This is because they were measured on single-item scales due to the nature of the field experiment, with the aim to create a realistic experimental environment and minimize questionnaire length. This approach was necessary to meet managers' requirements and ensure corporate employees' participation. Future research should include multi-item scales for more reliable data, even if it reduces participant numbers or creates a more artificial environment.

Additionally, our study focused on employees using RPA-based technology while working for large organizations in Poland in banking, accounting, consulting, and outsourcing sectors. This limits its applicability to other sectors or countries. Cultural factors, such as gender expectations in Poland, also influence the results. This effect may be different in countries with smaller gender disparities. To be able to generalize these findings with respect to the moderating effects found on employees' intentions toward techno-empowered RPA technology, it is essential to replicate the research outside Europe and in other sectors.

Furthermore, we cannot exclude the option that more important moderating factors are in play than the ones we were able to identify on the basis of our understanding of the literature.

Finally, the experimental condition we used for our investigation was realistic to the participants involved. Yet, at best, it still represents an early stage of a techno-empowerment initiative. It seems fair to expect that perceptions and attitudes may change when the actual implementation of AI-enhanced RPA technology becomes more concrete, which we cannot account for in this study.

6 Implications for Practice

Managers who want to effectively introduce new technologies into business processes should take into account the needs, experience, and perceptions of their employees. According to the bottom-up approach cf. [29], employee acceptance of new technological solutions along with the introduction of technology into business processes leads to a greater willingness to use it. This approach also applies to techno-empowered software.

Our study, conducted in two phases, suggests the value for managers of monitoring how their employees perceive RPA technology currently used in the company, but it could be relevant to do so for information technology in general. Therefore, it is our recommendation to include questions on this topic in regular surveys measuring job satisfaction and employee perceptions of the organization. Perceptions on technology may be relevant for managers who want to introduce techno-empowered software into their business processes. To increase intentions to use such technology, managers can take action in two areas. First, the results of our study suggest that managers need to ensure that software currently used is positively perceived by employees. If employee perceptions are negative, a further analysis is called for to establish the reasons for this and take actions accordingly.

Secondly, managers would be advised to monitor how employees perceive their workplace. If their perceptions are negative, it is important to understand the underlying causes and, where possible, intervene for the better. The results of our study suggest that the more positively employees perceive their workplace and the RPA systems currently used in business processes, the more positive their intention are to use techno-empowered RPA software. Therefore, a key factor in the process of introducing techno-empowered systems into business processes is to situate such initiatives within a workplace where employees derive satisfaction in their job and embrace the technologies currently in use.

The results of our study also showed that positive perceptions of current systems in the intention to use techno-empowered systems is more important for women than for men. Even though it is not entirely clear why this is the case, managers are advised to take into account that a workforce is a diverse, heterogeneous community. This insight may help them to select a variety intervention tools in such a way as to maximize their satisfaction with work and the technologies currently used. Specifically, while generally information on productivity

improvement due to technology may be important to persuade men, sharing peer opinions on a certain technology can be more important to women in shaping their opinion, cf. [45].

7 Conclusions and Future Work

Our study shows that it is risky to assume that techno-empowering of technology that is already in use within an organization is straightforward, even if perceptions towards the use of the existing technology is positive. In fact, the relationship appears to be more complex, as is demonstrated in our study that considered the intention to adopt AI-enhanced RPA technology for decision-making by employees already familiar with the use of RPA software. Two important moderating factors were investigated, as motivated by earlier research strands: workplace satisfaction and gender. Our recommendations for practice suggest how these findings can be incorporated into managerial approaches towards the introduction of techno-empowerment.

Our study opens various directions for future research. We already mentioned that there is a need for replication of this study within other organizations. Furthermore, our study focused specifically on RPA and its techno-empowerment through the use of AI. It is an open question whether the established relationships and moderating effects apply in the case of other technologies. Finally, the identified difference between women and men is salient. While in line with earlier findings, further research is required to develop a better understanding of the reasons behind gender-related differences in the broader discourse on technology adoption.

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