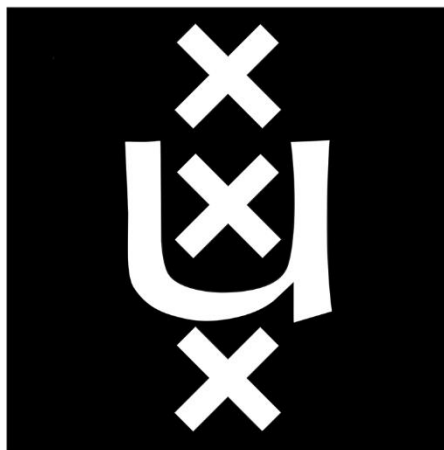


**The Prospect of Artificial Intelligence
Implementation at the Workspace concerning
Turnover Intentions and Locus of Control; is
Implementing AI worth it?**

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Abstract

It is likely that artificial intelligence will be implemented in many jobs, which is the reason why research into the consequences of artificial intelligence implementation at the workspace is important. The goal of this research is to uncover whether the prospect of artificial intelligence implementation at the workspace causes employee turnover intentions. Furthermore, the causal effect of the prospect of AI implementation at the workspace on employee locus of control will be researched. Lastly, the role of perceived organisational support on these relationships will be examined. 247 participants were used to compare experimental conditions, 125 participants were used in exploratory analysis. Results indicate no causal effects between prospect of artificial intelligence implementation, turnover intentions, locus of control and perceived organisational support. However, exploratory analyses indicate that there is a positive relationship between prospect of artificial intelligence implementation at the workspace and turnover intentions and external locus of control. No effect of perceived organisational support on the positive relationship between prospect of AI implementation and turnover intentions or external locus of control were found. Implications, limitations and suggestions for future research are being discussed.

Introduction

“Thou aimest high, Master Lee. Consider thou what the invention could do to my poor subjects. It would assuredly bring to them ruin by depriving them of employment, thus making them beggars.” was said to the inventor of the knitting machine, William Lee, by Queen Elizabeth I in 1589 (Acemoglu & Robinson, 2013). She denied William Lee a patent for his invention, because of fear of putting knitting employees out of work (Federico, 1929; Ip, 2017). What this example shows, is that fear for automation is centuries-old. Conclusions from a recent paper suggest that, due to the increase of computing power, automation of jobs is different at current times; the capability of today’s technology makes it possible for many more human activities to be automated due to artificial intelligence (AI) (Parasuraman, Sheridan & Wickens, 2008). This raises the question how employees react to impending implementation of artificial intelligence at the workspace?

Automation is an umbrella term which captures all the new technologies which take over certain aspects of jobs, or make certain jobs redundant. Automation makes processes more efficient, easier and often cheaper (Perkins, 2015). Research which estimated the probability of jobs being automated by machines in the next 10 to 20 years concluded that 47% of total US employment is at risk of being automated (Frey & Osborne, 2016). One form of automation is the implementation of AI to aid the employee (Liebowitz, 2001). It is widely believed that AI will be a big part of the working life in the form of support systems helping employees (Syam & Sharma, 2018 & Huang & Rust, 2018). Experts state that the fourth industrial revolution is here; the rise of artificial intelligence (Syam & Sharma, 2018). Following from this, it is important to look at the psychological effects on employees with the prospect that their job will be aided by AI.

Research shows that employees reacted positively to the implementation of a computer system to assist at the job (Hardin, 1960). As current AI systems are making major leaps in performance of image recognition (Krizhevsky & Sutskever, 2012), language processing (Cambria & White, 2014) and numerous other fields (Ghahramani, 2015), AI becomes more widely employed to work alongside employees (Meister, 2017). Yet, as this is the case, the question as to what possible implementation of AI systems to aid employees does with the attitudes and behaviours of employees hasn't been answered. What happens to the turnover intentions and locus of control of employees? Current research will answer this question.

Turnover intentions are defined as “a conscious and deliberate willingness to leave the organization” (Tett & Meyer, 1993). Employers want their employees' turnover intentions to be as low as possible, as turnover intentions are one of the best predictions of turnover within an organisation (Podsakoff, LePine & LePine, 2007, Tett, & Meyer, 1993, Zimmerman & Darnold, 2009). Furthermore, turnover intentions are negatively related to job satisfaction and organisational commitment (McNall, Masuda & Nicklin, 2009, Zimmerman & Darnold, 2009). Thus, it is important to assess the effects of having the prospect of implementing AI at the workspace on employee turnover intentions. Following this question, it is important to investigate factors which influence the relationship between implementing AI at the workspace and employee turnover intentions.

Furthermore, meta-analytical research shows that locus of control is strongly related to job satisfaction and job performance (Judge & Bono, 2001; Wang, Bowling & Eschleman, 2010; Ng, Sorensen & Eby, 2006). Locus of control is being described as people's belief that they can control a broad array of factors in their lives. It is possible that if employees come to know (part of) their job is going to be automated by AI systems, their locus of control will become lower. As a result of this lower locus of control, this could result in higher turnover

intentions. Thus, this research will assess whether employee locus of control explains the relationship between having the prospect of AI being implemented at the workspace and employee turnover intentions.

Furthermore, current research will investigate whether perceived organisational support of the employee mitigates the negative effects from prospect of AI implementation on both turnover intentions and locus of control. Earlier research shows a direct relationship from perceived organisational support to commitment to the organisation (Allen, Shore & Griffeth, 2003). Furthermore, perceived organisational support is related to lower withdrawal behaviour, higher job satisfaction and many other positive effects for employees (Rhoades & Eisenberger, 2002). Because of the positive effects of perceived organisational support, it could very well be that this factor mitigates the negative effects of having the prospect of AI implementation for the employee. This research will try to uncover the role of perceived organisational support on the expected positive relationship between the prospect of AI implementation on turnover intentions and the role of perceived organisational support on the expected negative relationship between the prospect of AI implementation and locus of control.

The research question of this research is whether the prospect of implementing AI systems at the workspace influences employee turnover intentions, and what the roles of locus of control and organisational support are on this relationship. When there's a positive relationship between the prospect of AI implementation at the workspace and employee turnover intentions, this will give employers insight as to the effects of their plans to implement AI. When employers have insight into this, they can take adequate action towards mitigating negative impact. When it turns out locus of control explains the relationship between the prospect of AI implementation and turnover intentions, employers will know why employees' turnover intentions rise and can anticipate how to keep locus of control high and

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thus turnover intentions low. When the mitigating effects of perceived organisational support has been shown, employers have one line of approach with which they are able to counter the negative consequences of employees who have the prospect of AI implementation.

Literature review

Automation has been around for many decades; manufacturing jobs were replaced or complemented by machines, telephone operators were made redundant by computers, and through the 1980's and 90's, financial institutions adopted software to automate many processes (Frey & Osborne, 2016). In current times, new business models and technologies are being implemented such as AI, which (partially) automate a lot of jobs (Loebbecke & Picot, 2015). "Artificial intelligence is the name for computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages" (Oxford Dictionaries, 2018). One of the earliest and most known forms of AI is ELIZA from 1966 (McNeal & Newyear, 2013), a chatbot which was programmed as a therapist. Nowadays, chatbots are assisting teachers (Kerly, Hall & Bull, 2007), enabling people to learn new languages (Zakos & Capper, 2008), and helping out in libraries (McNeal & Newyear, 2013). It is widely believed that AI will be implemented at the workspace, a survey of 2571 executives in 36 economies, 56% of firms are either already automating or may do so over the next 12 months (Perkins, 2015). Thus, many employees are being expected to work alongside AI software in the future. As AI will be widely introduced and implemented at the workspace in the future, it is important to investigate how employees react to it. Will employees leave organisations which use more artificial intelligence?

Turnover intentions are defined as "a conscious and deliberate willingness to leave the organization" (Tett & Meyer, 1993). Turnover intentions relate to job satisfaction and organisational commitment of an employee (McNall, Masuda & Nicklin, 2009, Zimmerman & Darnold, 2009). To add to this, meta-analytical research suggests that turnover intentions are one of the best predictors of actual turnover of employees (Podsakoff, LePine & LePine,

2007, Tett, & Meyer, 1993, Zimmerman & Darnold, 2009). Thus, it can be assumed that high turnover intentions will indeed predict actual turnover behaviour. High turnover of employees in companies cost a lot of money. Reasons for the costs are that employers have to attract, select and train new employees, new employees are less productive, experienced employees can help competition and high turnover damages a company's public image (Ongori, 2007). Furthermore, meta-analytical research using 48 independent samples with 24,943 participants reported a relationship between turnover and an organisations financial performance (Hancock, Allen, Bosco, McDaniel & Pierce, 2013). Therefore, turnover intentions within companies should be reduced to a minimum.

The Job Characteristics Model (JCM) (Hackman & Oldham, 1976), seems to provide theoretical grounds which may explain a positive relationship between prospect of AI implementation and turnover intentions. Earlier meta-analytical research shows that the design of the work explains 43% of employees attitudes and behaviours (Humphrey, Nahrgang and Morgeson, 2007). It is likely that when artificial intelligence takes over certain parts of the job, this will reduce the autonomy an employee has to perform his or her job. Furthermore, the task variety of the job is being reduced, because certain tasks will be performed by artificial intelligence systems. The JCM states that higher autonomy and task variety are contributing to lower turnover. The negative relationship between experiencing autonomy and task variety on the job, and turnover have been shown in research (Humphrey, Nahrgang and Morgeson, 2007). It is possible that having the prospect of artificial intelligence programs being implemented at the workspace will lead to higher turnover intentions.

Research into organisational change and especially automation and technology adoption has been conducted. Yet there has been no research into the topic of artificial intelligence adoption in the workspace and its consequences for turnover intentions of employees. A survey conducted by Majchrzak (1988) reported that the failure rate when

implementing advanced manufacturing technology for US firms is about 50%, resistance of employees is one of the reasons for this (Cho & Chang, 2008). A survey of 4135 US adults found that 72% are somewhat or very worried about “a future where robots and computers can do many human jobs” (Pew Research Center, 2017). This suggests that a lot of employees would react negatively to artificial intelligence programs being implemented at their job. Research shows that when adoption of technologies is forced upon users, there is a high probability they resist (Cho & Chang, 2008). Furthermore, research shows that threat of expected career paths heighten negative emotions following a change (Kiefer, 2005). Concluding, it can be stated that technology adoption by employees can be a challenge. Many employees feel threatened by new technologies and implementation often fails. It is likely that employees who have the prospect that AI systems will be implemented in their job, will have heightened turnover intentions. When this research shows that the prospect of AI implementation heightens turnover intentions, employers will be aware of this consequence and implement countermeasures against high turnover resulting from the implementation of AI systems.

An experimental design is chosen with the purpose of proving a causal relationship between prospect of AI implementation and turnover intentions. In this design, participants were misdirected into thinking the probability of artificial intelligence at their current workplace was calculated using an AI program. Thus, participants think they get a personalised likelihood that AI will be implemented at their workspace based upon the characteristics of their current job. This design was chosen because it is of the utmost importance to give employees the feeling that their job will have AI implemented in the near future. When participants do not think the likelihood of their job specifically was calculated, they would think the likelihood of AI implementation for any job would be calculated.

Thus, leaving the job for another job would not make sense, as AI would be implemented in the other job as well.

Based on previous research and theoretical substantiation, we expect that having a higher prospect of artificial intelligence implementation will lead to higher turnover intentions. Thus hypothesis one states:

H1: Higher prospect of artificial intelligence implementation at the workspace is related to higher turnover intentions

Locus of control

Apart from expecting the direct positive relationship between prospect of AI implementation and turnover intentions, following from the social learning theory (Rotter, 1954), locus of control could be a mediating factor between prospect of AI implementation and turnover intentions. Locus of control is being defined as “a generalized expectancy that rewards, reinforcements or outcomes in life are controlled either by one’s own action (internality) or other forces (externality)” (Spector, 1988). In short, locus of control refers to the extent to which one generally attributes rewards to one’s own behaviour rather than to external causes, higher locus of control thus means more internal locus of control and lower external locus of control. Locus of control is embedded within Rotter’s (1954) social learning theory of personality (Igbeneghu, Popoola, 2011). This theory states that behaviour is a function of expectancy and reinforcement in a specific situation. Thus, certain behaviour is more likely to occur if it is being associated with high reinforcement value and expectancy. Reinforcement value is the degree of preference for a particular reinforcement if various alternative reinforcements are available. Expectancy is the probability that the particular reinforcement will occur as a result of an individual’s behaviour. As AI program implementation puts part of the outcomes in their lives into the hands of a program, it is likely

that the expectancy that the particular reinforcement will occur will become lower. Following this lower expectancy, it is likely that when AI programs are being implemented at the workspace, employees feel less control over their environment, which results in a lower locus of control.

Earlier research shows that potential loss of control due to a change heightens negative emotions for employees (Cawsey & Deszca, 2008; Kiefer, 2005). Meta-analytical research shows a positive relationship between locus of control and work satisfaction, commitment, organisational satisfaction, burnout, job-induced tension, salary, work-family conflict, life satisfaction and problem-focused coping (Wang, Bowling & Eschleman, 2010). Furthermore, the same research suggested that locus of control is negatively related to turnover intentions, role conflict, role overload, psychological strain and physical strain. Other meta-analytical research shows relationships between locus of control and general well-being, job satisfaction, commitment, job motivation, job performance, career success and positive task experiences whereas negative relationships with negative task experiences were found (Ng, Sorensen & Eby, 2006). Lastly, research from Ng and Butts (2009) found a negative relationship between locus of control and turnover intentions. Thus, overall it seems like having higher locus of control mostly has positive effects, which are desirable for both employees and employers alike.

Following from the social learning theory (Rotter, 1954), it is expected that the prospect of artificial intelligence implementation will lower employee locus of control. In turn, following from previous research we expect that locus of control will have a negative relationship with turnover intentions. Thus hypothesis 2 states:

H2: Locus of control will mediate the positive relationship between the prospect of AI implementation and increased turnover intentions.

Perceived organisational support and turnover intentions

Apart from expecting a direct positive effect between prospect of AI implementation and turnover intentions with locus of control mediating this relationship, it is expected that the positive relationship between prospect of artificial intelligence implementation and turnover intentions will be moderated by perceived organisational support. Organisational support refers to the perception that one is valued and treated well by the organisation (Eisenberger, Huntington, Hutchison & Sowa, 1986). According to the perceived organisational support theory, the development of perceived organisational support is encouraged by the employees tendency to assign the organisation humanlike characteristics (Eisenberger et al., 1986). Levinson (1965) found that the actions taken by agents of the organisation are often viewed as indications of the organisation's intent rather than attributed solely to the agents' personal motives. Based upon the organisational support theory, it is likely that employees who have a higher perceived organisational support have the perception that the implementation of AI systems will most likely not negatively affect them very much, as these employees have positive attitudes regarding their organisation. Thus for employees who perceive high organisational support, the negative effect of having the prospect of AI implementation will be (partially) mitigated. In contrast, when employees perceive low organisational support, it is likely that they the prospect of AI systems at the workspace will have higher turnover intentions as a consequence, as they believe the organisation is not very supportive of them.

Research shows that human resources practises contribute to higher perceived organisational support, which in turn leads to higher commitment to the organisation and lower turnover intentions (Allen, Shore & Griffeth, 2003). To add to this, meta-analytical research shows that perceived organisational support is positively related to a positive mood, job satisfaction, affective commitment, performance and lower withdrawal behaviour (Rhoades & Eisenberger, 2002). Moderating effects of perceived organisational support have

also been found. Research from Djurkovic & McCormack (2008) shows that perceived organisational support mitigated the positive relationship between workplace bullying and victims' turnover intentions. Thus, regarding its positive direct effects on employee attitudes and behaviour, it seems likely that perceived organisational support will (partially) mitigate the negative effect of having the prospect of AI implementation on turnover intentions.

Based on previous research and theoretical substantiation, we expect that perceived organisational support will moderate the positive relationship between prospect of AI implementation and turnover intentions. Such that, when employees perceive high organisational support, the positive relationship between prospect of AI implementation and turnover intentions will be (partially) mitigated. In contrast, when participants perceive low organisational support, the positive relationship between prospect of AI implementation and turnover intentions will be strengthened.

H3: The positive relationship between the prospect of AI implementation and turnover intentions will be moderated by perceived organisational support. Thus, when perceived organisational support is high, the relationship between prospect of AI implementation and turnover intentions will be weaker. In contrast, when perceived organisational support is lower the relationship between prospect of AI implementation and turnover intentions will be stronger.

Perceived organisational support and locus of control

Based on previous research and theoretical substantiation, we expect that perceived organisational support will moderate the positive relationship between prospect of AI implementation and turnover intentions. Such that, when employees perceive high organisational support, the positive relationship between prospect of AI implementation and turnover intentions will be (partially) mitigated. In contrast, when participants perceive low

organisational support, the positive relationship between prospect of AI implementation and turnover intentions will be strengthened.

Furthermore, based on previous research and theoretical substantiation we expect that the negative relationship between prospect of artificial intelligence implementation and locus of control will be moderated by perceived organisational support. Such that, when employees perceive high organisational support, the negative relationship between prospect of AI implementation and locus of control will be (partially) mitigated. In contrast, when participants perceive low organisational support, the negative relationship between prospect of AI implementation and locus of control will be strengthened.

H4: The negative relationship between the prospect of AI implementation and locus of control will be moderated by perceived organisational support. Thus, when perceived organisational support is high, the relationship between prospect of AI implementation and locus of control will be weaker. In contrast, when perceived organisational support is lower the relationship between prospect of AI implementation and locus of control will be stronger.

This research

This research will try to find an answer to the question whether the prospect of artificial intelligence implementation at the workspace is positively related to employee turnover intentions. Furthermore, the effect of the prospect of AI implementation at the workspace on the locus of control will be researched. To add to this, the influence of perceived organisational support on the positive relationships between the prospect of AI implementation on employee turnover intentions will be investigated. Lastly, the influence of perceived organisational support on the negative relationship between the prospect of AI implementation at the workspace on employee locus of control will be investigated. All

hypothesis are summarised in figure 1. This quantitative research will be conducted via an between-subjects experimental design.

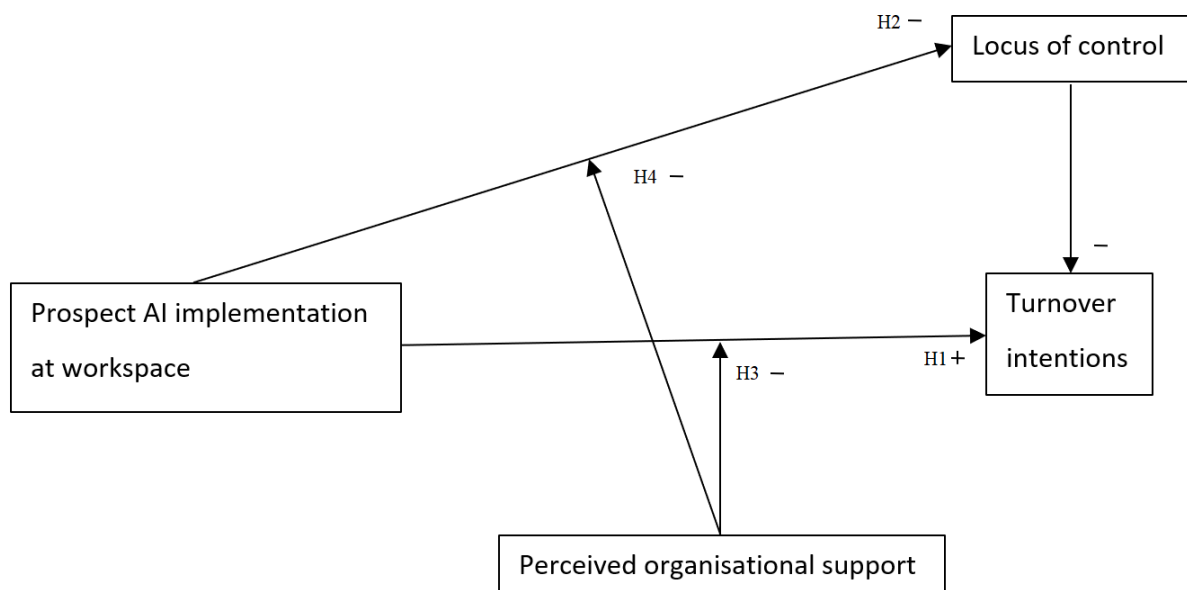


Figure 1: Model including hypotheses 1, 2, 3 and 4.

The importance of this research is threefold. The most important attribution will be that this research will answer the question what happens to employee turnover intentions when artificial intelligence programs will be implemented at the workspace. No research has been done towards answering this question, thus this research will add a lot to the research field of artificial intelligence at the workspace. Furthermore, if the expected positive relationship between prospect of AI implementation and turnover intentions has been found, employers and managers will know what effects it will have on employee turnover intentions when they want to implement artificial intelligence at the workspace. This will allow employers and managers to anticipate higher on a turnover rate in their organisation, or try to mitigate this effect. Secondly, the impact from prospect of artificial intelligence on the locus of control of employees will be revealed. As stated earlier, having employees with high locus of control is very important for both the employee as well as the employers. Knowing what the effect of implementing AI systems at the workspace on locus of control will prepare

employers and managers for the impact of implementing AI systems and will allow them to prepare, in case they want to mitigate this impact. Lastly, the moderating factor of perceived organisational support on the relationship between prospect of AI implementation and turnover intentions and the relationship between prospect of AI implementation and locus of control will be researched. Will high perceived organisational support be a buffering factor for the negative effects as a consequence of employees with the prospect that artificial intelligence programs will be implemented at the workspace? If the expected mitigating effect of perceived organisational support has been found, employers and managers can heighten perceived organisational support, if they want to counteract the negative effects on employees who have the prospect of AI implementation.

In the remainder of this article the methods used, results and discussion can be found.

Method

Participants

518 participants took part in the survey. From these participants, 41 participants were removed because the participant had already completed the questionnaire before, only the first entry was kept. People were temporarily able to fill in the questionnaire a second time, which was made impossible by the researcher after discovery. Another 96 were removed because they didn't complete the full questionnaire. 10 participants were removed because they worked 0 hours a week. Another 14 were removed because they only worked 8 hours a week. Thus, all participants worked a minimum of 16 hours a week or more, which was necessary to guarantee a dataset which would be representative for a working population.

In the final dataset, 357 (48.5% male, 50.7% female, .6% rather not tell and .3% other) participants were used. 125 participants were in the control condition, 122 in the low AI condition and 110 in the high AI condition. Average age was 37.06 ($SD = 11.28$). Participants worked on average 2.84 years in their current job ($SD = 1.00$). Most participants worked 40 hours a week (64.4%), after which 17.9% worked 48 hours per week or more, 8.7% worked 32 hours per week, 7.3% 24 hours per week and 1.7% 16 hours per week. On average, participants worked 39.90 hours per week. Within the sample 45.4% had a college degree, 29.7% had a university degree, 21.6% was a high school graduate and 3.4% had some other form of education.

409 participants were paid for their participation. Information about the description on Amazon Mechanical Turk can be found in appendix 1.

Procedure

Data were gathered using online questionnaires, the program used was Qualtrics. The respondents were gathered using Amazon Mechanical Turk. Via this platform, every participant who completed the questionnaire was paid via the Amazon Mechanical Turk platform. Participation was fully voluntarily, which was also explained in the informed consent which could be accepted or rejected. The informed consent explained that participants could stop at any moment and that data would be gathered anonymously. After participants accepted the informed consent, participants were asked for their demographics and perceived organisational support, after which participants were randomly allocated in the control condition or one of the two experimental conditions (low AI and high AI condition). Participants in the experimental conditions completed the manipulation before continuing. Participants in the control condition did not complete the manipulation part, thus continued with the locus of control.

Manipulation

The low AI and high AI were told that the likelihood that artificial intelligence would be implemented in their job would now be calculated. To facilitate this, participants were asked to rate their to what extent certain behaviour was needed for their job. Participants rated their current job upon 8 factors, after which they were told to wait until the likelihood that artificial intelligence programs may be implemented in their job in the coming 1 to 5 years was calculated. The goal of this manipulation was to make participants believe that the likelihood that artificial intelligence would be implemented in their job was being calculated. In reality, participants in the low AI condition got a set percentage of 19% as a result, whereas participants in the high AI condition got 83% as a result.

All participants completed questions about their locus of control, turnover intentions and whether they thought artificial intelligence would become part of their job. Lastly, all participants were asked whether they wanted to receive an email with the results. After completing the survey, participants were paid via the Amazon Mechanical Turk website. The first 5 participants were paid \$.60, the next 55 \$.48 and the other 349 were paid \$.24 per participant.

Measures

The questions in the questionnaires about perceived organisational support, locus of control, turnover intentions, job characteristics and the manipulation check were randomly offered to participants.

Turnover intentions

Turnover intentions were measured using Kelloway, Gottlieb, and Barham's (1999) 4-item measure and one item from Jenkins' (1993) 3-item measure. The decision to combining two different measures was made to avoid common-method bias (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). These items were taken from the respective questionnaires in order to create a measure which only asked about turnover intentions for the future, and excluded questions related to behaviour looking for a new job. The 5-point answer scale ranges from “strongly disagree” to “strongly agree”. An example of an item to measure turnover intentions is: “I intend to leave the organisation in the near future”. Internal reliability for this scale was high ($\alpha = .95$). When participants scored higher on this scale this indicated higher intentions to leave the organisation in the future.

Internal and external locus of control

Internal and external locus of control were each measured using eight items from Spector's (1988) scale. The 5-point answer scale ranges from “strongly disagree” to “strongly

agree”. An example of an item to measure internal locus of control is: “On most jobs, people can pretty much accomplish whatever they set out to accomplish”. An example of an item to measure external locus of control is: “Promotions are usually a matter of good fortune”. Internal reliability for internal locus of control was high ($\alpha = .84$). Internal reliability for external locus of control was high ($\alpha = .91$). When participants scored higher on the internal locus of control scale this indicated a higher internal locus of control. When participants scored higher on the external locus of control scale this indicated a higher external locus of control.

Perceived organisational support

Perceived organisational support was measured using eight items adapted from Eisenberger et al. (1986), as was done in research from Zampetakis, Beldekos & Moustakis (2009). The 5-point answer scale ranged from “strongly disagree” to “strongly agree”. An example of an item is: “The organisation values my contribution to its well-being”. Internal reliability of this questionnaire was high ($\alpha = .93$). When participants scored higher on this scale this indicated higher perceived support from the organisation.

Prospect of AI implementation

Because there was no scale which measured the extent to which participants felt AI would be implemented, a 4-item scale was developed to measure the prospect of AI implementation. Four items were offered using a 5-point answer scale ranging from “strongly disagree” to “strongly agree”. An example of an item to measure to what extent participants believe artificial intelligence will be implemented at their job is: “In the future, artificial intelligence will assist me at my job”. Internal reliability for this scale was high ($\alpha = .89$). When participants scored higher on this scale this indicated they believed the likelihood that artificial intelligence would be implemented at their job was higher.

Job characteristics

Job characteristics were used for the manipulation. Eight characteristics adapted from Frey & Osborne (2013) were used. The characteristics were “assisting and caring for others”, “persuasion”, “negotiation”, “social perceptiveness”, “fine arts”, “originality”, “manual dexterity” and “finger dexterity”. Participants rated the extent they need every behaviour for their job on a 6-point scale ranging from “Never” to “Always”.

Manipulation check

The manipulation check was performed using one question “To what extent do you believe artificial intelligence will be implemented in your work?” This item was offered using a 6-point answer scale ranging from “definitely” to “definitely not”.

Control variables

This research has included several control variables to check for unforeseen effects, these are only included in the results if they had any correlations with important variables for this research project.

Age

A factor which could influence the relationship between the prospect of implementing AI at the workspace and satisfaction could be age. Research shows that there is an interaction between an employee’s age, their attitude towards a certain technology and their decisions concerning this technology (Morris & Venkatesh, 2000). Their research shows that younger employee’s decisions are more influenced by their attitude towards the technology than older employees. Additionally, older employees are more influenced by the subjective norm and perceived behavioural control. It is interesting to assess whether the age of employees

influences the relationship between the prospect of implementing AI at the workspace and an employee's motivation.

Education

Earlier research states that low-skilled work will be replaced earlier than high-skilled work (Frey & Osborne, 2013). It is interesting to see whether employees effects on motivation are being moderated by their skill level. It could be that highly-skilled workers tend to think AI systems will benefit their work and decrease job demand, thus having higher motivation as a result of the prospect of implementing AI systems at the workspace. In contrast, low-skilled workers may worry their whole job will be replaced by the AI implementation, thus resulting in low motivation. This also aligns with Vakola & Nikolaou's research (2005) which finds that people with higher education are more positive towards change.

Results

Manipulation check

A one-way ANOVA was conducted to check whether the manipulation regarding the prospect of AI implementation worked. The second 1-item questionnaire turned out to find a significant difference between the low AI and control condition $F(2, 354) = 3.86, p < .05$. Tukey post-hoc test revealed that the extent participants believed AI was going to be implemented at their job was higher in the low AI group compared to the control group ($p = .04$). There was no significant difference between the high AI group and the control group ($p = .99$) and the low AI group ($p = .06$). Thus, for this study the low AI and control condition will be compared to assess the hypothesis.

Correlations and descriptive statistics

The means, standard deviations, Chronbach's α and correlations between variables are shown in table 1. It was remarkable that prospect of artificial intelligence implementation was not related to internal locus of control ($r = .02, p = .73$).

Two control variables, being age and years in current job, turned out to have significant correlations with important variables for this research. Age was negatively related to turnover intentions ($r = -.12, p < .05$), which means that people who are older have lower turnover intentions. Age was positively related to perceived organisational support ($r = .12, p < .05$), which means that older people experience higher perceived organisational support. Years in current job was negatively related to turnover intentions ($r = -.19, p < .001$), which means that participants who worked longer in their current job had lower turnover intentions. Years in current job was positively related to perceived organisational support ($r = .16, p < .01$) which means that people who worked longer in their current job experienced higher perceived

organisational support. As age and years in current job were related to important variables in this research, they were included as control variables where possible. In contrast, as it turned out that gender, education and number of workdays were not related to any important variables for this research, they were not included as control variables in further analysis.

Tabel 1

Means, standard deviations, Cronbach's α and correlations between variables

Variables	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6	7	8	9
Control variables												
1. Gender	0.49	0.50	-									
2. Age	37.06	11.28	-	-.08								
3. Education	3.07	0.73	-	.08	-.01							
4. Years in current job	2.84	.99	-	.03	.25***	-.04						
5. Number of workdays	4.90	.84	-	.12*	-.09	.09	.08					
General variables												
6. PAI	3.00	1.03	.89	.07	-.03	-.07	.02	.00				
7. Turnover intentions	2.52	1.14	.95	.05	-.12*	-.04	-.19***	-.05	.21**			
8. Internal locus of control	3.62	0.65	.84	-.03	.07	.05	.10	.03	.02	-.32***		
9. External locus of control	2.98	.91	.91	.04	-.05	.01	-.09	.07	.21**	.37***	-.30***	
10. POS	3.56	.96	.93	-.02	.12*	.05	.16**	.10	-.11*	-.69***	.51***	-.31***

*N=357. Data shown in diagonal indicate correlations between variables. Scores on prospect of artificial intelligence implementation (PAI), turnover intentions, internal locus of control, external locus of control and perceived organizational support (POS) range from 1 to 5. Age and number of years in current job are shown in years. Within the gender variable, 0 is female and 1 is male. Within education, 1 is primary education, 2 is high school graduate, 3 is college degree and 4 is university degree. Amount of workdays ranged from 2 to 6 or more. * $p < .05$, ** $p < .01$, *** $p < .001$.*

Tests of hypotheses

Hypothesis 1: Hypothesis 1 states that a higher prospect of AI implementation relates positively to turnover intentions. To test the first hypothesis, the mean turnover intentions for the low AI implementation condition and the control condition were compared using an one-way ANOVA. There was no statistically significant effect of prospect of AI implementation on turnover intentions, $F(1, 245) = .12, p = .73$. Tukey post-hoc test revealed no statistical difference between any of the groups. No support for hypothesis 1 has been found.

Hypothesis 2: Hypothesis 2 states that the positive relationship between prospect of AI implementation and increased turnover intentions is being mediated by locus of control. As there is no significant effect of higher prospect of AI implementation and turnover intentions, a mediation analysis is not executable and thus there is no support for hypothesis 2.

Hypothesis 3: Hypothesis 3 states that the positive relationship between the prospect of AI implementation and turnover intentions will be moderated by perceived organisational support. Thus, when perceived organisational support is high, the relationship between prospect of AI implementation and turnover intentions will be weaker. In contrast, when perceived organisational support is lower the relationship between prospect of AI implementation and turnover intentions will be stronger. To test hypothesis 3, a factorial ANOVA was conducted. There was no significant main effect of prospect of AI implementation on levels of turnover intentions, $F(1, 185) = .15, p = .70, \eta^2 = .00$. There was a significant effect of perceived organisational support on turnover intentions $F(1, 185) = 9.33, p < .001, \eta^2 = .62$. This effect size was high, as $\eta^2 > .14$. There was a non-significant interaction effect between prospect of AI implementation and perceived organisational support on turnover intentions $F(1, 185) = 1.23, p = .21, \eta^2 = .16$. Due to the fact that there was no interaction, no support for hypothesis 3 was found.

Hypothesis 4: Hypothesis 4 states that the negative relationship between the prospect of AI implementation and locus of control will be moderated by perceived organisational support. Thus, when perceived organisational support is high, the relationship between prospect of AI implementation and locus of control will be weaker. In contrast, when perceived organisational support is lower the relationship between prospect of AI implementation and locus of control will be stronger. As locus of control in this study was operationalized by measuring both internal locus of control and external locus of control, the effect of the prospect of AI implementation on the internal and external locus of control will be analysed separately.

To test hypothesis 4, a factorial ANOVA was conducted. There was no significant main effect of prospect of AI implementation on levels of internal locus of control, $F(1, 185) = 2.00, p = .16, \eta^2 = .01$. There was a significant effect of perceived organisational support on internal locus of control $F(1, 185) = 4.20, p < .001, \eta^2 = .42$. This effect size was high, as $\eta^2 > .14$. There was a non-significant interaction effect between prospect of AI implementation and perceived organisational support on internal locus of control $F(1, 185) = 1.23, p = .21, \eta^2 = .16$. Due to the fact that there was no interaction, no support for hypothesis 4 was found.

There was no significant main effect of prospect of AI implementation on levels of external locus of control, $F(1, 185) = .45, p = .50, \eta^2 = .00$. There was a significant effect of perceived organisational support on external locus of control $F(1, 185) = 2.82, p < .001, \eta^2 = .33$. This effect size was high, as $\eta^2 > .14$. There was a non-significant interaction effect between prospect of AI implementation and perceived organisational support on external locus of control $F(1, 185) = 1.41, p = .10, \eta^2 = .18$. Due to the fact that there was no interaction, no support for hypothesis 4 was found.

Exploratory analyses

This research was weak in manipulating the prospect of AI implementation in participants. Therefore, in exploratory analysis, we will test the same model as tested before, but with a correlational approach. This means no causal explanations can be found, yet it may be an indication whether indications of the effects of prospect of AI implementation can be found. For these analyses only the 125 participants in the control condition were used, because they were not experimentally influenced. Furthermore, the measure for prospect of AI implementation will be used as dependent variable.

Relationship between prospect of AI implementation and turnover intentions.

Hierarchical multiple regression was performed to investigate the ability of prospect of AI implementation to predict levels of turnover intentions, after controlling for age and years in current job.

In the first step of hierarchical multiple regression, two predictors were entered: age and years in current job. This model was statistically significant $F(2, 122) = 4.20; p < .05$ and explained 6.4% of variance in turnover intentions. After prospect of AI implementation was introduced at step 2 the total variance explained by the model as a whole was 14.9% $F(2, 121) = 7.06; p < .001$. The introduction of prospect of AI implementation explained additional 12.8% variance in turnover intentions, after controlling for gender and age (R2 Change = .08; $F(2, 121) = 12.01; p < .01$). In the final model only the prospect of AI implementation was statistically significant ($\beta = .29, p < .01$) apart from age ($\beta = -.12, p = .15$) and years in current job ($\beta = -.17, p = .06$). In other words, if the prospect of AI implementation increases for one, a participants' turnover intentions increases for .29.

Mediation of locus of control between prospect of AI implementation and turnover intentions.

A simple mediation analysis was conducted using ordinary least squares path analysis to investigate the whether prospect of AI implementation indirectly influenced turnover intentions through its effect on locus of control. As locus of control in this study was operationalized by measuring both internal locus of control and external locus of control, the effect of the prospect of AI implementation on the internal and external locus of control will be analysed separately.

Starting with internal locus of control, results show that prospect of AI implementation did not influence turnover intentions through its effect on internal locus of control. Participants relatively higher in prospect of AI implementation do not have lower internal locus of control ($a_1; \beta = -.02, p = .65$). Participants with higher internal locus of control are estimated to have lower turnover intentions ($b_1; \beta = -.62, p < .001$). A bias-corrected bootstrap confidence interval for the indirect effect ($ab; \beta = .02$) based on 5,000 bootstrap samples contained zero (-.0508 to .0882). There was evidence that prospect of AI implementation positively influenced the turnover intentions ($c' \beta = .32, p < .001$).

Conducting the same analysis with external locus of control, results show that prospect of AI implementation influenced turnover intentions through its effect on external locus of control. Participants relatively higher in prospect of AI implementation had higher external locus of control ($a_1; \beta = .21, p < .01$). Participants with higher external locus of control are estimated to have higher turnover intentions ($b_1; \beta = .41, p < .001$). A bias-corrected bootstrap confidence interval for the indirect effect ($ab; \beta = .09$) based on 5,000 bootstrap samples was entirely above zero (.0094 to .1933), indicating a tendency for those who perceive higher prospect of AI to have higher external locus of control, which in turn translates into higher turnover intentions.

There was evidence that prospect of AI implementation positively influenced the turnover intentions independent of its effects on external locus of control ($c' \beta = .24, p < .01$).

Moderating effect of perceived organizational support on the negative relationship between prospect of AI implementation and turnover intentions.

To assess the effects of organizational support on the negative relationship between prospect of AI implementation and turnover intentions, a simple moderation analysis was conducted. There is no significant interaction between prospect of AI implementation and perceived organizational support ($c3 \beta = -.06, p = .38$). Thus, the effect of prospect of AI implementation on employee turnover intentions did not depend on an employees' perceived organizational support.

Moderating effect of POS on the negative relationship on prospect of AI implementation and locus of control.

Because external locus of control was mediating the relationship between prospect of AI implementation and turnover intentions, the effect of perceived organisational support on this relationship will be examined. The results indicate that the effect of prospect of AI implementation on the turnover intentions is not conditioned by the employees' perceived organisational support, as evidenced by a non-significant interaction ($c'4 \beta = -.11, p = .14$). In other words, experiencing higher prospect of AI implementation significantly effects turnover intentions though lower external locus of control, but this is not only for people who have low perceived organisational support.

Direct effect POS on turnover intentions.

Earlier research shows mostly direct effects from perceived organisational support (Allen, Shore & Griffeth, 2003; Rhoades & Eisenberger, 2002) in contrast to moderating effects (Djurkovic & McCormack, 2008; Rhoades & Eisenberger, 2002). Because this is the

case, and no moderating effects of perceived organisational support were found in this research, exploratory analysis into the direct effect of perceived organisational support on turnover intentions was conducted. To assess this effect, hierarchical multiple regression was conducted. In the first step of hierarchical multiple regression, two predictors were entered: age and years in current job. This model was statistically significant $F(2, 122) = 4.20; p < .05$ and explained 6.4% of variance in turnover intentions. After perceived organizational support was introduced at step 2 the total variance explained by the model as a whole was 49.8% $F(2, 121) = 39.95; p < .001$. The introduction of perceived organizational support explained additional 43.3% variance in turnover intentions, after controlling for gender and age (R^2 Change = .43; $F(2, 121) = 104.32; p < .01$). In the final model only the perceived organizational support was statistically significant ($\beta = -.68, p < .001$) apart from age ($\beta = -.03, p = .65$) and years in current job ($\beta = -.10, p = .10$). In other words, if the perceived organizational support increases for one, a participant's turnover intentions lowered for .68.

Discussion

The goal of this research was to research whether employees who had the prospect of artificial intelligence implementation at the workspace had higher turnover intentions and lower locus of control. Furthermore, the mediating effect of locus of control between the relationship between prospect of AI implementation and turnover intentions was studied. Lastly, the moderating effect of perceived organisational support on the relationship between prospect of AI implementation and turnover intentions, and the relationship between prospect of AI implementation and locus of control was studied. In this chapter, the results will be discussed and related to literature. This will be followed by discussing possible explanations for the findings, limitations of this research being discussed, followed by recommendations for following research. Lastly, practical implications will be discussed.

Prospect of artificial intelligence implementation at the workspace and turnover intentions

No positive relationship between prospect of artificial intelligence implementation at the workspace and turnover intentions were found in the experimental part of this research, thus no causal relationship can be inferred. In contrast, exploratory analyses showed that there was a positive relationship between artificial intelligence implementation at the workspace and turnover intentions of employees. It was expected in this research that artificial intelligence would take over certain parts of the job, which would reduce the autonomy an employee had to perform his or her job. Furthermore, the task variety of the job would be reduced, because certain tasks would be performed by artificial intelligence systems. The found results are in accordance with Majchrzak (1988) who found that the failure rate when implementing advanced manufacturing technology is about 50%, and Cho and Chang's (2008) research which found that resistance of employees is one of the reasons for this.

Furthermore, this result found in this research is in accordance with a survey of 4135 adults in the US which found that 72% are “somewhat or very worried about “a future where robots and computers can do many human jobs” (Pew Research Center, 2017). The findings of exploratory analyses are congruent with findings from Kiefer (2005) which showed that threats of expected career paths heighten negative emotions following a change. Lastly, it was expected from a theoretical point of view that as a consequence of lowered autonomy and task variety, in accordance with the JCM (Hackman & Oldham, 1976), prospect of AI implementation would have a positive relationship with turnover intentions. This research found support in exploratory analysis for this theoretical relationship, but not in analysis of the hypothesis. Now, possible explanations for these results will be discussed.

No causal relationship of artificial intelligence implementation on the turnover intentions of employees was found in this research. One reason for this result could be the weak experimental manipulation in this research. It was expected that there would be three levels of prospect artificial intelligence implementation at the workspace; low, control and high. Yet only a difference between the low and the control group was found. Exploratory research which found a positive relationship between the prospect of AI implementation and turnover intentions suggests that the causal relationship could be existent, but that current research design was not able to find it.

Another reason for the found effects is that it could be that the recruited participants were not engaged enough in the research for the manipulation to have the desired effect. Because Amazon’s Mechanical Turk platform was used to recruit participants it is unclear how engaged participants were in this research. Although control questions are randomly implemented to check whether participants have answered properly, it may still be possible that participants haven’t actively read the questions and texts. Thus, it could be that they were

not influenced by the low or high percentage for prospect of AI implementation. As a consequence, only a difference between the low AI and control group were found.

Lastly, it could be that prospect of AI implementation is not part of work design for employees. As meta-analytical research shows that 43% of employees' attitudes and behaviours is explained by work design (Humphrey, Nahrgang and Morgeson, 2007), it is likely that an effect for turnover intentions would have been found if prospect of AI implementation affected employees' work design. Yet no result was found when analysing the hypothesis of this research, which suggests that prospect of AI implementation does not contribute to work design. In contrast to this, a positive relationship between prospect of AI implementation and turnover intentions was found when analysing them via correlational analysis in exploratory research. Thus, exploratory research suggests that prospect of AI implementation is in fact part of work design of employees.

The role of locus of control with regard to the relationship between prospect of artificial intelligence implementation and turnover intentions

It was expected in this research that the positive relationship between prospect of AI implementation and turnover intentions was mediated by locus of control. No role of internal nor external locus of control was found with regard to the relationship between prospect of AI implementation and turnover intentions in the external part of this research. Reasons for the fact that no results were found for the experimental part of this research have previously been discussed, and will not be discussed here. In exploratory analysis it was found that external locus of control was partially responsible for the positive effect of prospect of AI implementation on turnover intentions. It was expected that prospect of AI implementation would result in a lower locus of control because when AI programs would be implemented in the workspace, it would be likely that employees feel less in control of their lives because they feel less control over the environment. Thus it was expected that prospect of AI

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implementation would lead to a lower measure of internal locus of control, and a higher measure of external locus of control. The result from this research gives partial support to the social learning theory (Rotter, 1954) as only external locus of control and not internal locus of control mediated the relationship between prospect of AI implementation and turnover intentions. As earlier research showed that potential loss of control due to a change heighten negative emotions for employees (Cawsey & Deszca, 2008; Kiefer, 2005) and meta-analytical research showed that locus of control was positively related to work satisfaction, commitment, organisational satisfaction, burnout, job-induced tension, salary, work-family conflict, life satisfaction and other positive work factors (Wang, Bowling & Eschleman, 2010; Ng, Sorensen & Eby, 2006), this result is partially in accordance with earlier research.

A possible explanation for the result that internal locus of control did not mediate the positive relationship between prospect of AI implementation and turnover intentions could be that only having the prospect of AI implementation, in contrast to measuring the effects of actual artificial intelligence implementation, does not affect internal locus of control. It was found that when participants experienced higher internal locus of control, their turnover intentions were weaker. The fact that no effect from prospect of artificial intelligence implementation on internal locus of control was found suggests that prospect of artificial intelligence implementation did not have an effect on internal locus of control. As artificial intelligence was not really implemented in this research, it could be that having only the prospect did not influence a participants internal locus of control, whereas real implementation would possibly influence their locus of control. The finding that prospect of artificial intelligence implementation did heighten external locus of control, which in turn heightened turnover intentions, suggests that locus of control plays an important role in the positive effect from prospect of artificial intelligence implementation and turnover intentions.

Another reason for the finding of the mediating effect of external locus of control between prospect of AI implementation and turnover intentions is that it is possible that the relationship between prospect of AI implementation and external locus of control is strong in comparison to the internal locus of control. In other words, it could be possible that prospect of AI implementation has a stronger relationship with external locus of control whereas prospect of AI implementation does not relate to internal locus of control. The explanation for this could be found in the meaning of internal and external locus of control. Internal locus of control is being defined as “the extent to which one generally attributes rewards to one’s own behaviour rather than to external causes” (Spector, 1988). Whereas external locus of control is “the extent to which one generally attributes rewards to external causes”. As having the prospect of AI implementation, this is more related to something external in comparison to something internal, which could be the reason why prospect of AI implementation is related to external locus of control whereas it is not related to internal locus of control.

Lastly, only participants in the control group were used for the exploratory analysis, as these participants were not influenced by any experimental manipulation. As the control group containing 125 participants was relatively small, it could be that the power to find any results was too low to find minor relationships between factors (Field, 2013). This could be the reason why no effect from prospect of AI implementation on internal locus of control was found, as shows that to find a small effect 281 participants were needed. Furthermore, power analysis shows that with 125 participants only an effect size f of 0.46 could be found (Field, 2013). This is considered to be medium, whereas the actual relationship between prospect of AI implementation and internal locus of control could be low.

The role of perceived organisational support with regard to the relationship between prospect of artificial intelligence implementation and turnover intentions

It was expected in this research that the positive relationship between prospect of AI implementation and turnover intentions would be weakened or negated by perceived organisational support. No influence from perceived organisational support on the relationship between prospect of AI implementation and turnover intentions was found, both in the experimental part of this research as in exploratory analyses. These results are not in accordance with the perceived organisational support theory (Eisenberger et al., 1986), as this theory suggested that perceived organisational support would weaken or negate the positive relationship between prospect of AI implementation and turnover intentions. Furthermore, it is not in accordance with earlier research which found higher perceived organisational support leads to higher commitment to the organisation and lower turnover intentions (Allen, Shore & Griffeth, 2003), and meta-analytical research which showed that perceived organisational support is positively related to a positive mood, job satisfaction, affective commitment, performance and lower withdrawal behaviour (Rhoades & Eisenberger, 2002). The result that no moderating effect was found is not congruent with research which shows that perceived organisational support mitigated the positive relationship between workplace bullying and victims' turnover intentions (Djurkovic & McCormack, 2008), thus the expectation that perceived organisational support would counteract negative effects from prospect of AI implementation was not fulfilled.

A possible explanation for this result could be found in the low number of participants in the control group (125) which means that only a moderate to strong effect can be found. If perceived organisational support only had a small effect, this could not be found with such a small number of participants as the power is too low (Field, 2013).

Another reason why perceived organisational support did not have an effect on the positive relationship between prospect of AI implementation and turnover intentions could be that prospect of AI implementation is not a factor which is influenced by perceived organisational support. As discussed earlier, prospect of AI implementation is a factor which is related towards intelligent programs assisting at the workspace. As earlier research shows that organisational support practises are mostly effective with interventions related to human resources and mitigating negative effects from human behaviour, it could be that employees feel they are not helped by organisational support when they experience negative feelings due to technical differences in their environment.

Lastly, it could be that due to the fact that the prospect of artificial intelligence is being investigated, rather than the effect of actual implementation, that perceived organisational support has no influence on this relationship yet. In other words, it could be that the negative feelings due to only having the prospect of artificial intelligence implementation is not being nullified by perceived organisational support. In contrast, it could be that employees feel supported by perceived organisational support when an actual artificial intelligence program is being implemented or has been implemented at the workspace.

The role of perceived organisational support with regard to the relationship between prospect of artificial intelligence implementation and locus of control

It was expected in this research that the positive relationship between prospect of AI implementation and locus of control would be weakened or negated by perceived organisational support. No influence from perceived organisational support on the relationship between prospect of AI implementation and internal nor external locus of control was found, both in the experimental part of this research as in exploratory analyses. These results are not in accordance with Eisenberger et al's (1986) theory, as this theory suggested that perceived organisational support would weaken or negate the positive relationship between prospect of

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AI implementation and locus of control. Furthermore, this result is not in accordance with research which found perceived organisational support to be related to higher commitment to the organisation, lower turnover intentions (Allen, Shore & Griffeth, 2003), positive mood, job satisfaction, affective commitment, performance and lower withdrawal behaviour (Rhoades & Eisenberger, 2002) and moderating effects of perceived organisational support (Djurkovic & McCormack, 2008).

As discussed before, the low amount of participants could be a reason that no moderating effect was found for perceived organisational support on the relationship between prospect of AI implementation and locus of control due to the low power that such a small sample has (Field, 2013). To add to this, the direction of the effect of perceived organisational support on the relationship between prospect of AI implementation and external locus of control shows that perceived organisational support could indeed weaken the positive relationship between prospect of AI implementation and external locus of control. Yet, the effect is close to significance but not significant, which could suggest that the effect of perceived organisational support on the positive relationship of prospect of AI implementation and external locus of control is small and with the sample size of 125 only a medium to large effect size can be discovered.

Another possibility for not finding a moderating effect of perceived organisational support could be that perceived organisational support only has a direct effect on internal and external locus of control. Support for this is found as exploratory research shows that there was a positive relationship between perceived organisational support and internal locus of control whereas perceived organisational support does not moderate any relationship in this research. As earlier research shows mostly direct effects from perceived organisational support (Allen, Shore & Griffeth, 2003; Rhoades & Eisenberger, 2002) in contrast to moderating effects (Djurkovic & McCormack, 2008; Rhoades & Eisenberger, 2002) this

supports the possibility that perceived organisational support provides especially direct benefits instead of moderating effects. Exploratory research showed that there was a strong negative relationship between perceived organizational support on turnover intentions. This supports the explanation that perceived organizational is a factor which mostly directly influences factors instead of acting as a moderating factor.

Limitations this research and recommendations future research

The main limitation of current research was that the experimental manipulation was weaker than expected. As a consequence, the desired three groups with different prospects of artificial intelligence implementation at the workspace (low, control and high) were not created. Only a difference between the low AI and control group was found regarding prospect of AI implementation, thus only these groups could be compared to each other experimentally. It could be a consequence of the small difference on the prospect of AI implementation which was the reason for finding no results in the analysis of the experimental groups. There could be several causes which are responsible for this weak manipulation. The first reason would be the research design. In this research, participants were manipulated by asking them about their current job characteristics followed by a high or low percentage of which they thought it was calculated but was in reality randomly allocated. It is highly likely that the form of deceit used in this research was not effective, with the consequence of the weak manipulation. In future research, a more traditional manipulation technique, such as vignettes (Atzmüller & Steiner, 2010), could be used to manipulate the participants. Participants could be offered a newspaper article stating that their job is highly likely to have artificial intelligence programs implemented to assist them and comparing these people to employees who got the message that it was very unlikely that artificial intelligence programs will be implemented at their job. Another option would be to conduct a quasi-experiment by

comparing employees from a company which recently implemented artificial intelligence systems with a similar company which recently implemented a neutral (non-AI) change.

Another reason for the weak manipulation could have to do with low motivation of participants. It may be possible that participants weren't very motivated due to the pay which is low compared to jobs in the US, and thus were not very engaged in the research. Yet, earlier research shows that typical participants on Amazon Mechanical Turk are willing to complete HITs for \$1.40/hour. As for current research the pay was considerably higher (7 minutes for \$.24 or \$2.06/hour), the pay shouldn't have been an issue for workers. To add to this, there seemed to be no issue with motivation because all HITs were completed within two weeks. In future research, participants could be recruited in another way to overcome this problem of motivation. One example of this would be by recruiting participants directly from companies with one department which will implement AI programs in the near future and comparing these to a department where no AI programs will be implemented. If participants are being asked by their company to fill in the questionnaire, the motivation is likely higher.

Due to the fact that no experimental results were found, correlational analysis was conducted to see whether the expected relationships between factors were found in correlational analysis. Only the participants in the control group were used for these exploratory analyses, because the experimental manipulation could have influenced these results. Yet, as this was correlational analysis, no causal relationships between factors can be inferred, as the independent variables were not experimentally manipulated. Only a relationship between factors can be discovered, but the direction of this relationship can be both ways. For example, it could be that turnover intentions in employees lead to higher prospect of AI implementation, instead of the other way around which was expected in this research. Future research can overcome this shortcoming by experimentally influencing the

participants' prospect of AI implementation, for example with vignettes (Atzmüller & Steiner, 2010).

A third limitation of this research would be that only the effects of prospect of AI implementation and its effects on the individual level have been researched, whereas it could be that the prospect of AI implementation has effects on the groups of employees including interactions between members. Earlier research identified group resistance to IT solutions as an important factor (Lapointe & Rivard, 2005). Because this research assessed the effects of an IT solution at the individual level, this meant that no assessment of the group effect of prospect of AI implementation was investigated. Future research should consider this shortcoming, and investigate the group turnover intentions and the effects on locus of control resulting from having the prospect of artificial intelligence programs implemented at the workspace. One way to do this could be to create focus groups of employees working at the same company, and investigating the effects and interactions after announcing that artificial intelligence programs will be implemented at their company.

Another limitation of this research is that only the prospect of artificial intelligence implementation at the workspace was researched, rather than actually implementing artificial intelligence at the workspace and investigate its effects. Thus the results of this research only uncover consequences due to announcing the implementation of artificial intelligence at the workspace, rather than the actual implementation of the artificial intelligence. As announcing that artificial intelligence programs are going to be implemented at the workspace will always be the first step of implementing artificial intelligence at the workspace, this research is still relevant to employees. Future research should investigate whether there are any negative effects on employees' turnover intentions and locus of control of implementing artificial intelligence at the workspace. This could be done by conducting a pre-test of turnover intentions and locus of control just before the artificial intelligence programs are being

implemented and comparing this pre-test with the same variables. If multiple companies are participating in that research, the effects of having different levels of perceived organisational support on the relationship between artificial intelligence implementation and turnover intentions and locus of control can be assessed to identify any moderating effects of perceived organisational support.

Current research didn't assess whether it differed for the context of the work what the effect was from people's beliefs whether their job would be automated. As Huang & Rust (2018) suggest, it is likely that first mechanical tasks will be automated, followed by analytical intuitive and empathetic tasks. This is shown in figure 2. Frey and Osborne (2013) also conclude that there is difference regarding the content of the job and the likeliness that it will be automated, and how quickly. They conclude that jobs requiring empathy and high-level human interaction are among the last to be automated. Future research should investigate whether this different timeline regarding the automation of jobs will matter for the implementation of artificial intelligence and if effects are different for employees who perform different tasks.

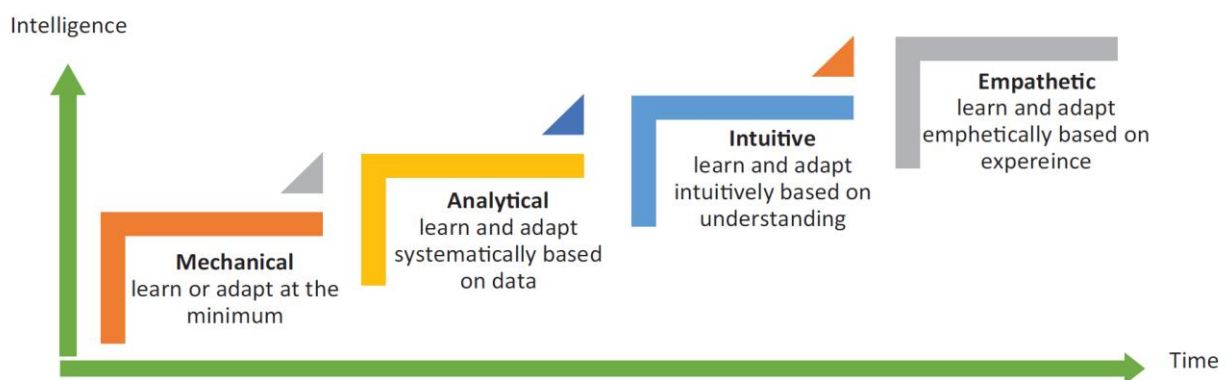


Figure 2: artificial intelligence and which tasks will be automated first.

Lastly, current research has focused on employee turnover intentions due to artificial intelligence implementation at the workspace, thus on individual effects due to artificial intelligence implementation. Yet AI implementation can lead to employee turnover because

the employee will be replaced by artificial intelligence programs in the near future. Literature states that about 47% of US employment is at risk of being automated in the near future (Frey & Osborne, 2013). Furthermore, Parasuraman and Wickens (2008) state that today's technology makes it possible for many more of human activities to be automated. The current research has investigated the effects of employees who have the prospect of AI implementation at the workspace and its effects on turnover intentions and locus of control. Future research should include a thorough research summary into the likeliness that jobs will be replaced due to AI programs.

Theoretical and practical implications

This research expected a positive causal relationship between prospect of artificial intelligence implementation at the workspace and turnover intentions. The results are partially in accordance with the Job Characteristics Model (JCM) (Hackman & Oldham, 1976). As no causal relation between prospect of artificial intelligence implementation at the workspace and turnover intentions was found, this was not in accordance with the JCM. Yet, as discussed before, it may be due to the design of this research that no causal effect was found from prospect of AI implementation rather than that this causal relationship does not exist. Exploratory analysis showed a positive relationship between prospect of artificial intelligence implementation at the workspace and turnover intentions, which is in accordance with the JCM. Furthermore, this research shows partial support for the social learning theory (Rotter, 1954) as only external locus of control and not internal locus of control mediated the relationship between prospect of AI implementation and turnover intentions in exploratory research. Lastly, these results are not in accordance with Eisenberger et al's (1986) perceived organisational support theory, as no influence of perceived organisational support on the relationship between prospect of AI implementation and turnover intentions was found.

Another theoretical implication of this research is the implementation and testing of an experimental manipulation using participants' work characteristics. The goal of using this experimental manipulation was to provide participants with the feeling that a calculation was made as to the probability that AI would be implemented at their job. This was necessary, as when the participants would have a general feeling that all jobs would see AI implementation, it would not make sense for them to have higher turnover intentions in their current job as they would face AI implementation in different jobs as well. This research showed that the manipulation used in current research was not effective, thus helping future experiments from refraining from the technique used in this research.

Apart from these theoretical implications, this research has several practical implications. The first practical implication is related to the result from exploratory analyses that prospect of AI implementation and turnover intentions are positively related. This shows that when employees have the feeling that AI will be implemented at the workspace, employees also feel high turnover intentions. This is an important fact for employers to realise, as it might be that when they announce that AI programs will be implemented at the workspace, this leads to higher turnover intentions in employees. Employers who value their current workforce and don't want higher turnover in their organisation should seek for ways to mitigate these higher turnover intentions. Earlier research suggests that information sharing and job significance lower turnover intentions in employees (Ng & Butts, 2009), thus heightening information sharing with employees and increasing job significance might be ways to counteract the negative effect of employees with a high prospect of AI implementation. Announcing that AI systems will be implemented at an organisation might also be used as a form of strategic HR-management. As turnover intentions are being heightened due to higher prospect of AI implementation, more employees will leave the organisation, which might be in line with the organisation's goals.

A second practical implication comes from the result that prospect of AI implementation has a positive relationship with external locus of control. As external locus of control is related to the extent that someone believes that rewards, reinforcements or outcomes in life are controlled by other factors, this result shows that employees who have higher prospect of AI implementation is related to this negative trait. As external locus of control heightens turnover intentions (Wang, Bowling & Eschleman, 2010; Reed, Kratchman & Strawser, 1994) and negative emotions for employees (Cawsey & Deszca, 2008; Kiefer, 2005; Ng, Sorensen & Eby, 2006) it is considered that higher external locus of control in employees should always be avoided, as it has negative effects for both the employee and the organisation alike. Due to this research, organisations can create interventions when implementing AI programs to mitigate the possible negative effects of the heightened prospect of AI implementation on external locus of control.

Lastly, current research found no mitigating effect of perceived organisational support of the employee on the positive relationship between prospect of AI implementation and turnover intentions and the positive relationship between prospect of AI implementation and external locus of control. Thus, it is clear for practitioners in organisations that heightening perceived organisational support is not an effective way to lower the negative effects due to prospect of AI implementation on turnover intentions and external locus of control. Yet, current research found a direct negative relationship between perceived organisational support and turnover intentions, thus heightening perceived organisational support can be used an effective strategy of lowering turnover intentions in organisations, in accordance with earlier research (Allen, Shore & Griffeth, 2003).

Concluding, this research found a positive relationship between prospect of AI implementation and turnover intentions. No causal relation can be inferred, as there were no results from the experimental part of this research. Furthermore, a positive relationship

between prospect of AI implementation and external locus of control was found. Lastly, no effect of perceived organisational support on the positive relationship between prospect of AI implementation and both turnover intentions and external locus of control were found. As prospect of AI implementation seems to have negative effects on employees, it might be necessary to reconsider the implementation of AI programs. Regardless, it is likely that attempts at delaying the implementation of AI programs will prove fruitless, as history shows that progress is inevitable. The event of Queen Elizabeth I denying a patent for William Lee's knitting machine (Acemoglu & Robinson, 2013) prove this point. As a world without a knitting machine is impossible to imagine nowadays, it is likely that a world without artificial intelligence will be impossible to imagine in the near future.

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Appendix 1: Information & description on Amazon Mechanical Turk

0-5 participants:

Title: 10 minute survey about work and artificial intelligence

Qualification requirement: HIT Approval Rate (%) for all Requesters' HITs greater than or equal to 98, location in US, Number of HITs Approved greater than or equal to 5000

Payment: \$0.50

5-60 participants:

Title: 7 minute survey about work and artificial intelligence

Qualification requirement: HIT Approval Rate (%) for all Requesters' HITs greater than or equal to 98, location in US, Number of HITs Approved greater than or equal to 5000

Payment: \$0.40

60-298 participants:

Title: 7 minute survey about work and artificial intelligence

Qualification requirement: HIT Approval Rate (%) for all Requesters' HITs greater than or equal to 98, location in US, Number of HITs Approved greater than or equal to 5000

Payment: \$.20

298-518 participants:

Title: 7 minute survey about work and artificial intelligence

Qualification requirement: HIT Approval Rate (%) for all Requesters' HITs greater than or equal to 98, location in US, Number of HITs Approved greater than or equal to 5000,

Study 1 has not been granted

Payment: \$.20

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