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“You have no idea how much we love Casper” – Developing configurations of employees’ RPA implementation experiences

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Abstract

Robotic process automation (RPA) is gaining popularity in the industry and is leveraged to improve operational efficiency, quality of work, risk management, and compliance. Despite the increasing adoption of RPA in industry, academic research is lagging. In particular, despite the often drastic changes in employees' work tasks and processes, there is a lack of research that explores how human employees experience the implementation of RPA. This is important to understand as their experiences affect their interaction with the technology and, ultimately, their adoption and use, which is crucial to realise the benefits of RPA. To address this research gap, we conducted a case study in a financial institution in New Zealand and interviewed 18 employees to develop configurations of employees' RPA implementation experiences. Our findings may inform implementation and change management strategies but also line-managers to accommodate employees' needs better and to leverage the potentials of true human-robot collaboration.

Keywords case study, configurational approach, financial institution, Robotic Process Automation (RPA), RPA implementation

1 Introduction

In the wake of the digitalisation trend that is observed globally, Robotic Process Automation (RPA) has gained increasing popularity as one of the least invasive, easiest, and fastest automation approaches. Organisations jump on the RPA bandwagon in order to cut costs while expecting to improve the efficiency and quality of their processes (Cewe et al. 2018; Hofmann et al. 2020). In fact, in 2019, 49% of large companies worldwide have invested in, and 24% have adopted RPA in their work processes. For example, Telefonica O2, one of the frontrunners in service automation has automated over 35% of their transactions (Lacity et al. 2015). Also small and midsized companies show increasing interest in RPA, with 14% small-sized and 17% mid-sized companies having invested in RPA and 9% of small and 9 % of mid-sized companies having adopted RPA (Statista 2020).

RPA is an automation technology that can execute tasks operating on the user interface of other information systems in the same way a human would do. In contrast to other automation techniques, RPA is often regarded as a lightweight solution where an underlying information system remains unchanged (Santos et al. 2019; van der Aalst et al. 2018). RPA is frequently used to automate rule-based, well-structured, and repetitive tasks such as extracting structured data from documents, transferring data between applications through screen scraping, accounting reconciliation, automated email query processing, and many more (Syed et al. 2020).

RPA has the potential to reduce mundane and repetitive tasks allowing employees to work on more value-adding tasks that require social skills, problem-solving capabilities, and decision-making (IRPA 2015; Santos et al. 2019). However, it is common and natural that employees feel apprehensive and concerned about automation and its effects on their employment (Lacity and Willcocks 2017). Employees might also be more reluctant to change as they enjoy their work tasks, don't have the required skill set, or do not want to learn a new role.

While RPA has received a lot of attention in the industry due to the increasing trend of digitalisation, academic research is lagging behind and missing an opportunity to provide theoretical insights that are important to inform the development, implementation, and adoption of RPA (Hofmann et al. 2020; Ivančić et al. 2019; Syed et al. 2020). In this paper, we respond to Syed's et al. (2020) call for future research on the socio-technical implications of RPA to better understand the changes and effects on the human workforce. A better understanding of these implications helps to inform technology and human resources policies as well as the design of more effective change management strategies that are crucial for successful RPA implementations (Kyheröinen 2018), especially against the backdrop that 30-50% of RPA projects fail (Lamberton et al. 2016).

Therefore, the goal of this research is to explore how employees make sense of RPA technology through their implementation experiences. Drawing on a configurational approach (Meyer et al. 1993), we develop distinct configurations of employee RPA implementation experiences that reflect their perceived consequences of software robots, cooperation with an automation team, attitude toward change in work practices, and view of software robots and performance. These configurations reflect different employees' perspectives on RPA, which may help change managers to better accommodate the needs of employees but also help team leaders to better support their employees to maintain job satisfaction and avoid turnover. Therefore, we investigate the following research question:

"What are the distinct configurations of employees' experiences of RPA implementations, and how do these experiences reflect their perspective of RPA?"

In order to address our research question, we adopt a qualitative research approach (Sarker et al. 2018) and explore employees' experiences in the implementation and post-implementation phases of RPA at a financial institution based in New Zealand.

2 Theoretical Background

2.1 Robotic Process automation

The globalisation and the increasingly competitive markets force companies to become more agile, (cost-) effective, productive, and customer-focused to maintain or increase market share. Organisations have started to turn towards RPA to automate their processes in order to cut costs, become more productive and to provide a better customer experience (Ivančić et al. 2019). In this study, we adopt the definition of RPA from the IEEE Corporate Advisory Group (2017) as "a preconfigured software instance that uses business rules and predefined activity choreography to

complete the autonomous execution of a combination of processes, activities, transactions, and tasks in one or more unrelated software systems to deliver a result or service with human exception management." (p. 11)

RPA is a particularly attractive automation approach due to its various benefits for organisations that include increased operational efficiency, improved quality of service or work, scalability, easier and faster implementation and integration with other systems, and improved risk management and compliance (Alberth and Mattern 2017; Syed et al. 2020). RPA can reduce manual operation costs by 25-50% by replacing the number of full-time equivalent employees through software robots, which typically provides a return on investment in less than a year (Lamberton et al. 2017). Aguirre and Rodriguez (2017) explored the performance effects of RPA in the context of a payment receipt process. They found that the team consisting of front office agents and software robots could process 21% more cases than the team consisting of front and back-office agents, which indicates a large productivity gain. Although the team with software robots was only 9 seconds faster than the other team as they had skilled back-office workers, the software robots could perform several cases simultaneously, which results in the increased productivity.

Despite its non-invasiveness and relatively simple implementation compared to other IT projects, many RPA projects fail (Lamberton et al. 2016). Some of the reasons are: the non-consideration of RPA as a business-led as opposed to IT-led, an application of traditional delivery methodologies, and failure to develop a sound people strategy to determine training needs, and redeployment and team development (Lamberton et al. 2016; Muraleedharan et al. 2016). Another challenge is an upgrade of underlying systems that RPA is interfacing with. If these systems change, software robots often "break" and stop working. Therefore, RPA works best if the velocity of business change is low with a less frequent change to the underlying systems (Rutaganda et al. 2017; Vishnu et al. 2017). One of the important factors to a successful implementation of RPA is to include employees and other stakeholders early in the communication and to explain the motivation behind the introduction and the effects on their work (Plattfaut 2019). Lacking transparency about the RPA implementation strategy can lead to fear and concerns about employment in the human workforce.

The literature on the experiences and effects of RPA on employees shows paradoxical results. On the one hand, RPA reduces repetitive and mundane tasks and allows employees to take on more complex tasks that require decision-making and human judgment, which may have a positive effect on job satisfaction (Castelluccio 2017; Noppen 2019). On the other hand, RPA creates distress due to the increased concerns about job insecurity and the necessity to learn new skills (Fernandez and Aman 2018). This paradox is also reported in a case study conducted in a company in the oil and gas sector. The results show that RPA implementation led to time savings that are made through the automation of mundane and repetitive tasks that can now be utilised by workers to take on more challenging tasks such as data analysis. Also, the error rate could be drastically reduced. On the other hand, the study also points out that workers fear losing their jobs to RPA and the changes to their work practices that force them to learn new skills. Additionally, the reduction of employees does not only intensify the competition among employees but also the competition among employees and robots (Fernandez and Aman 2018). Studies suggest that the differences in employee perceptions largely depend on the tech-affinity and the actual effects of RPA on their work tasks and roles (Holmberg and Härning-Nilsson 2020; Noppen 2019).

However, despite the insights into the experiences and effects of RPA implementation on employees, these studies and the academic literature on RPA, in general, lack the theoretical foundation and synoptic analysis, which does not allow for actionable insights to improve RPA implementation experiences for the human workforce (Hofmann et al. 2020; Syed et al. 2020). The dearth of research literature on RPA is emphasised by Syed et al. (2020). Their structured literature review highlights that only 36% of the identified research articles are peer-reviewed, confirming the predominance of grey literature in this field of study. Against the backdrop of the increasing adoption of RPA in organisations and the lack of peer-reviewed academic literature that provides a theoretical explanation, it is important that we develop a more nuanced understanding of how employees experience RPA implementation. This allows us to explain how those experiences affect their interactions with RPA in order to design more customised change management approaches and allow managers to accommodate better the needs of the employees in the post-implementation of RPA.

2.2 Configurational approach

As novel and advanced applications of information technology (IT) such as RPA have been increasingly integrated into individuals' work practices, how individuals interact with ITs and their relationships with ITs have become increasingly complex (Hofmann et al. 2020). Consequently, some IS research

has begun to use configurational concepts to theorise the relationship between users and IT. For example, Ortiz de Guinea and Webster (2013) suggest that individuals engage in different patterns of IT use in organisations depending on whether they experience problems with an IT or they find new opportunities to interact with IT. These patterns of use encompass individuals' emotions, cognitions, and behaviours while employing an IT to accomplish a work task. In another study, Wanchai et al. (2019) identify four distinct individual adaptation patterns to enterprise systems in organisations. These patterns represent different configurations of attitudes towards the system, approach to learning how to use the system, level of interaction with the system, exploration of system features, and stance towards changing work practices. Rich insights from these studies suggest that configurational concepts are useful for researchers to present a complex picture of various manifestations of user-technology relationships as well as detailed characterisation of these relationships, which contributes to a deeper understanding of the role of IT and its effects on employees in organisations.

Configurational theories embrace the notion that a phenomenon (i.e., employees' RPA implementation experiences in this study) depends on a complex arrangement of multiple attributes interacting in a non-linear fashion (Fiss 2007; Meyer et al. 1993). At a conceptual level, a configuration is a "constellation of conceptually distinct characteristics that commonly occur together" (Meyer et al. 1993, p. 1175). Underlying the configurational concept is a configurational approach, which aims to identify distinct patterns composing of interdependent attributes. A configurational perspective is theoretically attractive because it enables researchers to organise complex cause-effect relationships into typologies that constitute causal relationships of various factors that make up different configurations (Fiss 2011). Unlike other approaches (e.g., linear regression), a configurational perspective stresses that complex causality is often characterised by *nonlinearity*, *synergistic effects*, and *equifinality* (Fiss 2007; Meyer et al. 1993; Misangyi et al. 2017). Nonlinearity suggests that relationships among attributes are reciprocal and attributes "found to be causally related in one configuration may be unrelated or even inversely related in another" (Meyer et al. 1993, p. 1178). Synergistic effects mean that outcomes are the result from the interdependence of multiple conditions. The principle of equifinality is the idea that different configurations may lead to the same outcome. In this study, we apply a configurational approach to identify distinct configurations of employees' RPA implementation experiences in an organisation.

3 Methodology

In order to achieve our research objective, we conducted a case study building on the philosophical underpinnings of interpretivism (Levers 2013; Myers and Walsham 1998). In contrast to positivism, interpretivism assumes that knowledge is socially constructed by human actors (Walsham 1995). We chose a financial institution as these institutions are known for being early adopters of new technologies (Syed et al. 2020), and engaging in process improvement to harness the economies of scale (Vishnu et al. 2017). With the widespread adoption of virtual banking, banks and financial institutions find themselves in an increasingly competitive market not only with other financial institutions but also with highly innovative and efficient Fintech companies. To stay competitive, banks and financial institutions need to innovate to provide the best customer experience while minimising their costs, adhering to security standards and following the regulatory and compliance requirements (Rutaganda et al. 2017; Vishnu et al. 2017). Financial institutions usually produce vast amounts of documents across their operations, often managed through a mix of legacy systems, manual processes, and emerging technologies. Such practice creates various adoption, integration, and information retrieval challenges (Vishnu et al. 2017). RPA is regarded as a powerful and effective technology that can address these challenges and might transform the customer service model and internal operation processes, which makes the financial industry particularly interesting to study (Met et al. 2020).

The financial institution we chose for our study has a frontrunner role in RPA implementation in New Zealand. The organisation started its RPA journey in 2016 and has ever since implemented 60 software robots across various business areas and processes, including customer address changes, security alteration approvals, and payments and anti-money laundering management, among others. While the first software robots were implemented in cooperation with an automation consultancy, they now have their own dedicated automation team within the organisation.

3.1 Data collection

We conducted 18 semi-structured interviews (Wengraf 2001) from August to December 2019. Our participants included the head of the intelligent automation team, business analysts, risk and project

managers, change managers, process controllers as well as employees from the business units such as team managers, bankers, operations officers, and back office clerks, who have direct experiences with software robots and changes in their work processes. The participant profiles are shown in Table 1.

Pseudonym	Role	Team	Gender
Interviewee A	Head of Intelligent Automation (IA) team	IA team	male
Interviewee B	Member of the IA team	IA team	male
Interviewee C	Member of the IA team	IA team	female
Interviewee D	Risk manager	Risk team	male
Interviewee E	Member of the IA team	IA team	female
Interviewee F	Member of the IA team	IA team	female
Interviewee G	Change manager	Business team	female
Interviewee H	Change manager	IA team	female
Interviewee I	Member of the IA team	IA team	female
Interviewee J	Member of the IA team	IA team	female
Interviewee K	Manager of RPA users	Business team	male
Interviewee L	RPA user	Business team	male
Interviewee M	RPA user	Business team	female
Interviewee N	RPA user	Business team	female
Interviewee O	Member of the IA team	IA team	male
Interviewee P	Risk analyst	Risk team	female
Interviewee Q	RPA user	Business team	female
Interviewee R	RPA user	Business team	female

Table 1. Participant profiles

Conducting interviews with the automation team and the business units allowed us to get a holistic picture of how employees in the business units perceive and use software robots. We achieved demographic diversity by interviewing six men and 12 women from different age cohorts ranging from 25 – 55 and various educational and cultural backgrounds. We followed the dramaturgical model of qualitative interviews (Myers and Newman 2007) and asked questions about a) the implementation process of RPA in the organisation and how employees perceived software robots and b) how RPA affected the work processes and practices of employees. The interviews took between 30 – 110 minutes and were conducted face-to-face at the organisation. The interviews were recorded, notes were taken, and the audio recordings were professionally transcribed.

3.2 Data analysis

The data analysis took place in two phases. In the first phase, we conducted a thematic analysis according to the process proposed by Braun and Clark (2006). We first familiarised ourselves with the data again by reading the transcripts and listening to the audio files. We then generated initial codes without any preconceived theoretical lens in mind but led the patterns to emerge from the data in an inductive manner (Thomas 2003). After this initial coding step, we grouped the initial codes into themes, reviewed the themes, and named them in several iterative cycles in order to achieve a shared understanding of the patterns that have emerged and to start the theorising process. During the coding process, both authors wrote memos and summarised the key insights which helped us in determining the overarching themes.

In the second phase, we capitalised on the first phase's insights where we identified the different patterns associated with the RPA implementation experiences of employees. Applying a configurational approach (Meyer et al. 1993), we iteratively developed a set of employee perceptions, attitudes, views of software robots, and cooperation with the automation team throughout the RPA implementation process. These attributes coherently constitute a configuration, and analysed codes and themes as well as evidence from the interview data, are used to elaborate on these attributes that underlie each configuration. These emerging configurations consisting of the identified attributes that differ across several dimensions are introduced in the findings section.

4 Findings

Based on our analysis, we identified four distinct configurations of employees' RPA implementation experiences. We name these four configurations as '*software robots as a burden and threat*,' '*software robots as tools*,' '*software robots as teammates,*' and '*software robots as innovative enablers*.' These

names reflect the disparate perspectives that employees attribute to software robots and the RPA implementation process. Each of these configurations constitutes employees' perceived consequences of software robots on their jobs, their cooperation with the automation team, attitude towards changes in work processes and practices, view of software robots' role in the work process, level and nature of interactions with software robots, and evaluation of software robot performance. Table 2 presents a summary of these configurations and a description of their attributes. Next, we present each configuration and its constitutive attributes, along with evidence from the interview data.

4.1 Software robots as a burden and threat

The 'software robots as a burden and threat' configuration largely describes a somewhat negative stance towards software robots by some employees due to concerns over their job security and negative reactions to additional responsibility on their work and software robots' performance. In particular, some employees are concerned that software robots will replace their jobs, which manifests in their resistance to cooperate with the automation team throughout the implementation process: *"There would be a lot of resistance there, especially the fear of the robots, all of those movies that we've seen where the robots take over... so they're like I'm going to lose my job over this, you know? It's always that fear."* (Interviewee J, Member of the IA team)

Consequently, these employees are unwilling to share information about their work tasks during the requirement gathering phase or intentionally leave out information about how they perform their work tasks to maintain their edge over software robots: *"It was interesting also in that when we went back to the business, and it's like, oh well we can do it quicker. We can submit it quicker because we have shortcuts... and it's like shortcuts? Well why didn't you tell us about these? You know, suddenly there was more information coming up."* (Interviewee H, Change Manager)

After the introduction of software robots, these employees tend to reject the changes introduced to their work processes: *"But I would also be honest and say there were some people, maybe just kind of one particular person that really did struggle with the new way of working*." (Interviewee D, Risk Manager)

In addition, they regard software robots as a burden because the introduction of software robots creates more work or responsibility for them, as explained by one participant whose work tasks are located after a task that is now performed by software robots in the workflow: *"It's good that we've got the system working, but more responsibility lies on us if we don't actually check the memo and something goes wrong, I get the blame too for not rechecking everything. So more responsibility means that we have to go and check each and everything."* (Interviewee N, RPA user)

Perhaps, not surprisingly, these employees do not want to use software robots or, in some cases, only use them when they are told to do so: *"Like we've got data that says these people aren't using that one even though we've made all the benefits and the changes, and every month it's the same users that don't use it and they just refuse to use it."* (Interviewee B, Member of the IA team)

When it comes to their evaluation of software robot performance, these employees maintain their distrust of software robots' work and often question their reliability: *"There was definitely a little bit of, is the robot calculating it correctly? I'm concerned, you know?* (Interviewee G, Change manager)

4.2 Software robots as tools

The 'software robots as tools' configuration mainly describes a yielding stance towards software robots by some employees while maintaining some scepticisms over changes to their work and software robot performance. At the beginning of the implementation process, these employees see some potential benefits of software robots and anticipate that software robots will help them save time and reduce mundane tasks:

"So I think it was an interesting mix between excitement and fear from some of the workers. Like some of them thought oh well this is what I do, what am I going to do now? Whereas others were thinking along the lines of well at least now I don't have to do this really boring thing, because some of those tasks were really, really repetitive." (Interviewee L, RPA user)

However, due to potential changes to their work tasks, they are reluctant to fully cooperate with the automation team during the automation process: *"That's part of the agreement that you have a regular kind of meetings that you can voice any kind of frustrations. But sometimes what can happen is that people don't feel comfortable for whatever reason in kind of voicing that and they'll sit on it. And then when you find out that it's a problem, it's grown to a bigger problem."* (Interviewee B, Member of the IA team)

Dimensions	Software robots as a burden and threat	Software robots as tools	Software robots as teammates	Software robots as innovative enablers
Perceived consequences of software robots on their jobs	Employees are concerned that the introduction of software robots will lead to uncertainty about their jobs and job loss.	Employees anticipate that software robots will help them save time and reduce mundane tasks.	Employees expect that software robots will reduce their workload.	Employees trust that software robots will help improve work performance.
Cooperation with the automation team	Employees are not willing to share information about their work tasks.	Employees are reluctant to share information about their work tasks.	Employees closely collaborate with the automation team to improve or fix their "teammate".	Employees proactively suggest how best to incorporate software robots into work processes.
Attitude towards changes in work processes and practices	Employees reject changes to their work processes.	Employees reluctantly accept changes in their work processes.	Employees adapt to new tasks and responsibilities.	Employees enthusiastically take on new roles with more responsibility.
View of software robots' role in the work process	Software robots are regarded as a burden because they create more work or responsibility.	Software robots are regarded as additional resources to partially support work.	Software robots are regarded as super users to help manage workload.	Software robots are regarded as enablers to improve work quality.
Level and nature of interactions with software robots	Employees do not use software robots or only use them when they are told to.	Employees accept software robots as a solution.	Employees consider software robots as members of their team.	Employees embrace software robots and proactively seek out ways to enhance software robot use.
Evaluation of robot performance	Employees do not trust software robots' work and question their reliability.	Employees focus on KPIs to evaluate software robots' performance.	Employees attribute software robots' performance in a similar fashion as they would to a human colleague.	Employees view software robots as highly compliant and high-performing to support their tasks.

Table 2. Configurations of employees' RPA implementation experiences

Over time after seeing some initial benefits, these employees hesitantly accept the changes in their work processes after the introduction of software robots: *"The approval officer double-checks the information that the robots put in. They do not fully trust the robots because robots do not get it right every time. It's assisting us to some degree… But what I'm saying is we can't rely on the robot for any overdraft account that he's giving us the full picture."* (Interviewee K, Manager of RPA user)

Once they start working with software robots, these employees take a pragmatic stance and view software robots as additional resources to partially support their work as explained by a manager whose team members have been working with software robots: *"The robot is assisting us in our process of making a decision. So when I talk about robotics, I refer to it as assisted automation, because it's automation that's assisting us to do our job."* (Interviewee K, Manager of RPA user)

Eventually, these employees accept software robots as a solution or a new tool in their work process: *"The robots are live, they're BAU [Business as Usual]. People have accepted it as a solution. We have a usage of at around 60 per cent… the total volume of [Process A] that we do [here], 60 per cent of that gets done by robot."* (Interviewee O, Member of the IA team)

But they remain vigilant of software robot performance and use various key performance indicators (KPIs) as evaluation metrics such as the number of exceptions or errors that software robots make: *"This is why I refer to it as assisted automation. It's assisting us to some degree. Every week I would say at least - my staff will escalate at least two to three to me to go back to that team, to say why did the robot do this? Why did the robot do that? Robot didn't put this in, robot didn't put that in."* (Interviewee K, Manager of RPA user)

4.3 Software robots as teammates

The 'software robots as teammates' configuration mostly describes an eager stance by some employees in relation to how software robots as their new team members can support their work. At the beginning of the implementation process, these employees enthusiastically expect that software robots will help them reduce their workload: *"We had so much work on, we knew, yeah, we've got other work to do. We knew it wouldn't take our jobs… …that it would help us." (*Interviewee Q, RPA user*)*

As a result, these employees work closely in a collaborative fashion with the automation team to continuously improve their teammates: *"I'm always like guys, Roby's feeling sick. Please just be mindful, I've contacted Roby's dad and… I just say hi guys, Roby's broken down. I think he needs some medicine and been overworked. Can you please assist?"* (Interviewee M, RPA user)

In general, these employees willingly adapt to new tasks and responsibilities after the introduction of software robots as explained by one employee who works closely with the software robot in her team: *"I mean they might just move us to a different team or something, but I'm happy with that. I'm happy to learn something new."* (Interviewee M, RPA user)

In addition, they view software robots positively as super users to help them better manage their workload: *"Our Roby memos out faster to the approvals team and I can continue working, whereas before I'd be stuck on it, finishing that off and then I'd - it wasn't until I completed that, then I was able to move on with the rest of the requests in my inbox. Whereas now quickly fill out Roby, send it off. Okay, move on to my next request. Oh yeah, Roby's come back, forward it, send to approvals, wait for them to send it back."* (Interviewee M, RPA user)

They also consider software robots as members of their team, similar to the way they think of new human colleagues: *"We need Roby to wake up earlier, 'cause we've got some staff that start at six in the morning. So I've got one approval officer that comes in at six o'clock, so if she wanted to send a Smart Form to Roby but Roby only wakes up at eight, she's going to sit for two hours before she can do anything."* (Interviewee K, Manager of RPA user)

Likewise, they describe software robots' performance similar to the way they talk about their human teammates' performance. That is, software robots may have some good days and bad days: "*Roby's on fire today… …'cause they're [memos] coming back within five minutes! Yeah. I know one of the other teams calls it Roby… and they're like oh Roby's having a few troubles this morning*." (Interviewee D, Risk Manager)

4.4 Software robots as innovative enablers

The 'software robots as innovative enablers' configuration typically describes a forward-looking perspective taken by some employees in relation to the role of software robots, their innovativeness,

and benefits to enhance work performance. At the beginning of the implementation process, these employees overwhelmingly trust that software robots will help improve their work performance: *"The other one, like when we explained here's the solution, this is what we're going to do, the room - like there was a standing ovation in the room, 'cause people were so happy that...they'd get their lives back."* (Interviewee B, Member of the IA team)

Therefore, these employees proactively collaborate with the automation team and suggest how best to incorporate software robots into work processes: *"He was very, very good - and maybe that is part of his attitude or his competence in his existing role. He knew the existing process very well as well, that he - he didn't challenge us, but he worked with us to say okay, well what about this, what about this and what about this, what about this."* (Interviewee B, Member of the IA team)

With regards to changes to their work, these employees enthusiastically take on new roles with more responsibility as described by the risk manager: *"But I would say majority, like 95 per cent of people embraced their new role and just went with it and they were very, very successful at it too."* (Interviewee D, Risk Manager)

Unlike those in the previous configuration who put an emphasis on how software robots can help them with work volume, these employees view robots as enablers to help them improve work quality: *"So if you think of an operations team at the bank, the highest risk an operations team would have is processing error; it's basically we use lots of people, people make mistakes. So one thing that I've seen from that point of view is there's a real - like when robotics is built correctly, there's a really, really reduced amount of risk in processing error."* (Interviewee D, Risk Manager)

Therefore, these employees embrace software robots and proactively seek out ways to employ more of them or expand their use, if possible: *"They're like okay, can we have one more robot please? Because they know that robots are there to actually help assist them."* (Interviewee C, Member of the IA team)

Overall, they appreciate software robots as high-performing partners to support their tasks and allow them to do more meaningful work: *"So in this particular instance and the team were delighted with this process right, because they don't want to sit round doing these transactions anyways... and they also don't want to sit round fixing up mistakes. So having such a repetitive manual task taken away from you they thought was really cool, 'cause then they can get on and do much more human add value work." (*Interviewee E, Member of the IA team*)*

5 Discussion

RPA literature mostly ascribes this technology with its paradoxical effects on employees. On the one hand, the majority of the existing studies highlight the positive effects of RPA implementation for employees, which are the reduction of mundane and repetitive tasks, the reduced workload and the focus on more value-adding tasks that require human-judgement and decision-making (IRPA 2015; Santos et al. 2019). On the other hand, other studies point out the concerns and fears that some employees experience due to the uncertainty regarding their job security and the change of their work tasks and processes (Fernandez and Aman 2018; Lacity and Willcocks 2017). However, this effect paradox seems to present an overly simplistic view of RPA and therefore is not sufficient to comprehensively explain the experiences of employees during an RPA implementation initiative.

With the development of our configurations, we contribute new insights to RPA implementation by providing a more nuanced picture that shows diverse experiences with RPA implementation and perspectives on software robots. These distinct configurations along with their constitutive attributes allow us to better explain why and how employees interact with the technology the way they do, which is important to harvest the benefits of RPA.

Based on our analysis, it becomes clear that the initial perceived consequences of software robots affect the extent of employees' cooperation with the automation team and whether they accept the changes to their work processes and practices. For example, employees who perceive software robots as a burden and threat are concerned about the changes RPA will have on their work practices and their job security, which is in line with the findings of Fernandez and Aman (2018). These concerns have repercussions on the way they cooperate with the automation team. In particular, they often hold back important information, which prevents the automation team to implement the most effective solution such that the robots often take longer than the employees to complete a task or generate too many exceptions. This unsatisfactory software robot performance provides these employees who perceive robots as a burden and threat a compelling reason not to use the robots and to reject the changes to their work processes. On the contrary, employees who perceive robots as innovative

enablers are enthusiastic about robots as they are convinced that robots will improve their work performance and lead to the various positive effects that are often highlighted in literature such as reduced error rate, reduction of mundane and repetitive tasks, increased speed and productivity improvements (Aguirre and Rodriguez 2017). This enthusiasm about the technology explains their proactive collaboration with the automation team and their embracement of new work tasks and responsibilities.

We observe that employees who see robots as teammates anthropomorphise the technology and accept them as true members of their team. Anthropomorphism is described as the tendency of humans to associate human-like characteristics, properties or mental states with non-human artefacts such as IT systems (Epley et al. 2007). Prior research has also found that technologies with anthropomorphic cues foster trust with the technology and increase the likelihood of adoption (Qiu and Benbasat 2005). Our findings reflect a positive relationship between anthropomorphism and increased interaction with technology among some employees as well. Since employees who perceive robots as their teammates expect the robots to reduce their workload, they are likely to closely collaborate with the automation team. When talking about the interactions with robots or their performance, these employees always use terminology that is commonly ascribed to human colleagues such as robots being sick.

Employees who perceive robots as tools that automate their manual tasks is similar to the way ACCA (2015) describes the technology. They anticipate that robots will help them to save time, which they can use for other tasks. However, they have similar concerns like the employees who perceive robots as a burden and threat with regards to their future employment and drastic changes in their job. These concerns have implications on their collaboration with the automation team as they only reluctantly share information about their tasks and only accept changes to their work tasks after initial hesitations. They ultimately accept RPA as a means to increase their productivity and in line with their perception of being a tool they evaluate its performance according to common key performance indicators such as number of exceptions (Syed et al. 2020), processing time and number of cases processed (Aguirre and Rodriguez 2017).

Besides our theoretical contributions, our findings may inform RPA implementation and change management strategies, which is one of the avenues for future research that Syed et al. (2020) pointed out. Knowing about the different configurations of employees' RPA implementation experiences allows change managers and line managers to better respond to the needs and concerns of employees especially those who see software robots as a burden and threat or those that see them as tools. In particular, organisations should proactively address the myths around RPA and explain the consequences of RPA for employees' work and how the technology either allows them to do their work faster and better or to discuss possible avenues for re-and up-skilling to move into jobs that require more decision-making, human judgement and empathy (IRPA 2015; Santos et al. 2019). Bringing employees on the RPA journey early on allows change managers and business analysts to establish a better collaboration between employees and the automation teams, which ultimately leads to a faster and smoother implementation process as well as more accurate processing of the robots and a higher straight through processing rate which reduces the amount of exceptions and therefore the workload of employees. The insights from our findings also allow line managers to better support their employees on the job as they are aware of how the employees perceive robots, the effects on their work processes and how they rate robots' performance, which determines the extent to which they interact with the robots. Supporting employees on their needs especially those who see robots as a burden and threat and those who perceive them as tools can lead to increased interactions with the robots and subsequently the realisations of the benefits of RPA.

6 Conclusion

We addressed our research question by developing the configurations of different employees' RPA implementation experiences that differ across six dimensions. We hereby contribute to the body of knowledge on RPA implementation and the effects on the human workforce based on the narratives of employee experiences in the RPA implementation process.

Our research has two limitations that need to be acknowledged. First, when developing the configurations, we had to rely on the perspectives of the automation team members and not only on the opinions of employees. This, however, allowed us to get a holistic perspective and access to data logs which triangulate if the employees use the robots or not. Second, in two interviews with three employees from the business units, a member from the automation team was present, which might have biased their responses. However, despite the presence of the member of the automation team, the interviewees also talked about their negative experiences and one dramatic incidence which allows us

to conclude that they didn't feel pressured to alter their responses to please the automation team member.

As stated above, the field of RPA is still widely under-researched (Hofmann et al. 2020; Syed et al. 2020); we still know particularly little about the implications of RPA implementations on the human workforce. Our study was a first attempt to address this gap however we encourage further research on: a) if and how the different configurations that we developed evolve over time, b) the effects of RPA implementation on employees' work processes and practices, and c) the effects of anthropomorphism on RPA adoption and use. Future studies that follow a configurational approach may want to consider Qualitative Comparative Analysis (QCA), which is a set-theoretic approach that uses Boolean algebra to evaluate which combinations of attributes combine to result in an interested outcome (Fiss 2007; Misangyi et al. 2017; Ragin 1987; Ragin 2008).

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