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Robotic Process Automation: a Case Study of the Impacts on Employee Skills

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THE IMPACTS OF ROBOTIC PROCESS AUTOMATION TOWARDS EMPLOYEE SKILLS

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ABSTRACT

Organizations use a variety of automation tools to simplify their tasks. One of the most popular automation tools in the world today is Robotic Process Automation (RPA). RPA is defined as a business process automation system that uses software tools to interact with existing applications and replace people to simplify and increase the productivity of their jobs. RPA is gaining popularity by large organizations, especially in the finance and accounting sectors. This is because RPA has the potential to boost the productivity of the organization, reduce costs in terms of reducing the workforce involved, improving the accuracy and speed of the work process, reducing human negligence issues and enhancing organizational competitiveness. This paper is intended to understand the impacts of RPA towards the employee skills in finance and accounting unit. To achieve this objective, this study was conducted using semi-structured interviews in the world largest oil and gas company that has been implementing and using the RPA technology for four years. The result of the study showed that there are five main skills that are crucial after the implementation of RPA which are value-added skills, analytical skills, interpersonal skills, computer and IT skills, and also finance and accounting skills. The study suggested that it is important for the employees to upskill themselves in order to keep up with the new technology and to excel in the finance and accounting profession.

Purpose – The purpose of this paper is to understand the impacts of RPA towards the employee skills in finance and accounting unit.

Methodology – This study uses an in-depth case study approach in one of the largest oil and gas company.

Findings – The result of the study showed that there are five main skills that are crucial after the implementation of RPA which are value-added skills, analytical skills, interpersonal skills, computer and IT skills, and also finance and accounting skills.

Significance – This paper provides insight into the impact of RPA towards the employee skills. The results of this study can help to improve the assessment of current finance and accounting services processes and the new skills required after the implementation of the robotics technology in their profession.

Keywords: Robotic Process Automation, Skills, Finance, Accounting, Case Study

INTRODUCTION

There are various organizations that have automated the technology used in finance and accounting services to increase productivity and optimize operating costs. Among the transformations of automation technology used in finance and accounting services is Robotic Process Automation (RPA). This technology comes with a variety of specialized features or generic programs that can be customized to fit the current business operations. RPA is defined by the Institute for Robotic Process Automation (IRPA 2014) as the use of technology that enables employees of a company to configure computer or 'robot' software to capture and interpret existing applications to process transactions, manipulate data, and communicate with other digital systems.

The implementation of RPA has many impacts towards the employee skills especially in the finance and accounting profession. This profession is often related to as a profession that full of a tedious, mundane and repetitive tasks. By applying the robotic system in this profession, it has the potential to give impacts towards the way the tasks is processed and therefore are able to transform the skills in this profession. Hence, this leads to the purpose for this study which is to understand the impacts of RPA towards the employee skills in finance and accounting unit. To achieve this objective, this study was conducted using semi-structured interviews in the world largest oil and gas company that has been implementing and using the RPA technology for four years.

The remainder of the paper is structured as follows. The next section of this paper which is literature review will give the overview of RPA and is followed with the impacts of RPA on employee skills based on previous studies. Next, the research methodology is presented, followed by the findings of the study with evidence from the extract of the interview transcript. The final section of this paper provides the conclusion of the study.

LITERATURE REVIEW

According to a study conducted by Fortune Business Insights (2020), the global RPA market size is estimated at USD 6.81 billion by 2026 and the technology is expected to have an Annual Compound Growth Rate of 22.3%. The growth of this market was driven mainly by the ease of business processes provided by RPA, and the ease of integrating RPA with existing technologies. The RPA market in the financial process services industry holds the largest market share among all Fortune Business Insights (2020) industries. This shows that RPA is gaining attention by large organizations especially in the finance and accounting sectors. This is because RPA offers enhancement of productivity to the organization, minimizing the costs in terms of reducing employee engagement, improving the accuracy and speed of work processes, reducing human negligence issues and increasing organizational competitiveness (Lacity & Willcocks 2015a; Lacity, Willcocks & Craig 2016d).

Besides that, among the implications of RPA is that it can eliminate repetitive tasks, processes and sub-processes, and in turn it can make workers less burdened by less work. It allows workers to eliminate simple tasks such as filling out forms, entering data, sending emails to customer, finance and accounting mundane calculation and looking up information from websites. Furthermore, when RPA is used to automate routine tasks, employees can focus on higher value work (Anagnoste 2017; Boulton 2017; Deloitte 2017; Lacity & Willcocks 2015c).

The analysis conducted by Syed et al. (2020) found that the RPA has the ability to change features or types of work. As such, it creates a need for different skills as workers now have to work with robots and they may have additional tasks or job changes. For example, a study conducted by Castelluccio (2017) illustrates the implementation of APRs that lead to changes in tasks. Implementing RPA in 'puchase-to-pay' software has

automated various processes that have transformed the work process from routine and manual to monitoring activities that require only human involvement in decision making. This activity requires the employee to have a different set of analytical skills and they need to have a higher level of knowledge than managing manual and repetitive tasks.

Moreover, the implementation of RPA will create new roles for employees. For example, a number of new jobs have emerged such as the RPA Centers of Excellence (Anagnoste 2017) as well as new types of jobs related to robot management, consulting and data analysis (Asatiani & Penttinen 2016). Interestingly, according to a survey conducted by Deliotte (2017), there are some organizations that consider their own RPA robot as a new workforce. This is because, they refer to RPAs as new digital workers designed to work with humans (Lacity & Willcocks 2015b).

In addition, the current value-added tasks that employees can perform require a variety of other new skills such as problem solving skills (GEP 2018; Slaby 2012). These include tasks that require different cognitive functions and analysis (Rutaganda et al. 2017; Slaby 2012). In addition, other studies have found that the best skill required by employees is creativity (Britton & Atkinson 2017). There are also studies that show the importance of new skills, such as critical thinking skills and communication skills (Cooper et al. 2018). Besides that, improvement in soft skills and social skills should also be given priority over technical skills such as programming (Britton & Atkinson 2017).

METHODOLOGY

In accordance with the objective of the study of understanding the challenges of implementing RPA in accounting and financial services processes, this study has selected a single case study methodology, since it provides a detailed and in-depth understanding of the topics under investigation (Yin, 2013). This study uses a single case study methodology to investigate case-based research because RPA is relatively new and is still not widely used in Malaysia. One of the world largest oil and gas organization was selected for this study. Qualitative data is gathered through semi-structured interviews with various respondents that are involved in the implementation process of RPA system in finance and accounting unit. Table 1 shows the details of interviews.

Table 1. Details of Interviews

	Name and Position	**Interview Session**	
		Frequency	**Duration (Hour)**
1	Vice President of Finance and Accounting Unit	1	1
2	Vice President of Revenue Unit	2	3
3	Human Resource Manager	1	2
4	Operational Manager	2	4
5	Team Manager 1	1	1
6	Team Manager 2	1	2
7	Finance Operation Specialist 1	1	2
8	Continuous Improvement Manager 1	1	1.5
9	Continuous Improvement Manager 2	1	1
10	Continuous Improvement Manager 3	1	1
11	Finance Operation Specialist 2	1	1.5
12	System Control Manager	1	1.5
13	Finance Operation Specialist 3		
	TOTAL		**21.5 HOURS**

RESULTS

There are five main skills that have been found to be affected in this study which are value-added skills, analytical skills, interpersonal skills, computer and IT skills, and also finance and accounting skills. The details of the results are explained as below.

Value-Added Skills

RPA is a solution to automate repetitive tasks and processes, thereby reducing the time required for the process and allowing employees to focus more on value-added activities. Workers now have more time to do value-added work (Lacity & Willcocks 2016; Kumar & Balaramachandran 2018). According to Team Manager 2,

> *"… That's why I think we need automation to do all the basic work or repetition work so if we want to take the time to do the analysis, we have time for that. Otherwise, everyone says that they are busy because from the morning they have been tied to various tasks. They don't have time for other tasks they want to do but then, if we automate their work and we save their time, then they can actually do more value-added tasks..."*
>
> *(Team Manager 2)*

Therefore, with the help of robotics, employees in finance and accounting unit are now able to do more intelligent work that adds value. This not only benefits the organization but also enriches the work that this profession does. This is explained by Continuous Improvement Manager 1,

> *"… So when we deploy robots, it frees our employees from doing regular, repetitive tasks and it actually allows them to do more value-based assessments or assignments. This is best for them as they do not spend time at their desks doing data entry all day. This robot was able to complete the time-consuming tasks we had always wanted to accomplish but could not perform due to resource constraints…"*
>
> *(Continuous Improvement Manager 1)*

Analytical Skills

Finance and accounting related job roles involve several manually driven tasks which can be successfully carried out by RPA tools. The highlight of the integration of RPA in organizations is enabling workforce to engage and focus more on analytical tasks. According to System Control Manager,

> *"... the point is that it saves individuals time on assignments and redirects their time to a more analytical type of job. Their job is to no longer simply attach supporting documents and print out a PDF invoice. However, what this team can do now is actually is to focus on the front process and review the quality of the requests they receive before processing them. This is really a necessary step in the process and now they have more time to do it because parts of those steps are now being done by robots… "*
>
> *(System Control Manager)*

Employees will have to imbibe skills in terms of the tools and workflows of RPA, thereby building strong problem solving and analytical skills. Besides that, it is acknowledged by Finance Operation Specialist 1 that RPA technology has made her to be more analytical because her work has shifted to tasks that do not involve mere calculations.

"... we really need to be more analytical. My job now is all about numbers and also not about numbers. So if I was just doing a book-based assignment or just looking at their cash flow, then I might lose other information..."

(Finance Operation Specialist 1)

Interpersonal Skills

RPA enables humans to focus on work that requires judgment, creativity and interpersonal skills rather than on routine processes. According to Finance Operation Specialist 1,

"...you need to have really good interpersonal skills because you'll be talking to customers, you'll be talking to other stakeholders... "

(Finance Operation Specialist 1)

Thanks to the success of RPA-led task automation, workers are now given more challenging tasks that require them to have higher skills. New tasks due to the RPA implementation are now making the finance and accounting profession not only need accounting skills, but they are now expected to have other interpersonal skills. This is explained by Finance Operation Specialist 1,

"Skill-wise you also need non-technical skills like, you know, interpersonal skills, all those skills that are not obtained in degree. So, that's like, book-smart and street-smart, so you must also have a bit of both as a balance, yeah."

(Finance Operation Specialist 1)

However, to the preference of Continuous Improvement Manager 2, there are some tasks that actually required more interpersonal skills rather than accounting skills.

"I would say people skills, managing expectation of your customers, managing expectation of your credit managers, your business stakeholder. For example, the sales team. If they have found a new customer, they will be chasing after you to approve the customer's application, right? So, it's a lot of like managing people and people's expectation. Not so much on the detailed accounting standards or accounting knowledge here."

(Continuous Improvement Manager 2)

Computer and IT Skills

Computer and IT skills are vital due to the task shifting in the finance and accounting profession. Finance and accounting work is no longer performed manually. Whether they like it or not, they have to work together with computers and technology. Humans are needed for data analysis and it requires them to be able to work well with the robots. Hence, it is important for them to have a good computer and IT skills. As stated by Finance Operation Specialist 1,

"...You need to have really good computer skills in order for you to work along with the robots and to manage the data..."

(Finance Operation Specialist 1)

Besides that, computer and IT skills are need in order for them to control the robots. As explained by the Operational Manager,

> *"…we then expect this person to understand a bit more technology if the robot stops working for any reason, this person needs to understand what happened and how to mitigate it..."*
>
> *(Operational Manager)*

Finance and Accounting Skills

With this advancement of automation and emphasis on digitization taking over, there have been mixed reactions among professionals about whether this development will replace the human workforce or will create more jobs for people with relevant skillsets According to Finance Operation Specialist 1, robots still cannot replace the needs of human resources completely. Humans are still needed for tasks that require human judgment and more complex, and hence it is vital for them to still have the finance and accounting skills.

> *"Yes, you still need it, yes, because automation can only do so much. You will still need to implement or apply all this knowledge for the higher level tasks that robots won't be able to do for you."*
>
> *(Finance Operation Specialist 1)*

It shows that organizations are never going to get a full, 100 percent automated process. Finance and accounting skillsets are still needed for these roles. This is also acknowledge by the Continues Improvement Manager 1,

> *"So, I still think that it's very important that people have the relevant finance and accounting skillsets and I still think that in the majority of roles that we have within Finance Operations that people do their professional accounting qualifications. That is absolutely not going to change as a result of RPA."*
>
> *(Continuous Improvement Manager 1)*

CONCLUSION

Today, businesses across sectors are experiencing and acknowledging the benefits which automation brings to the table. Businesses are taking the plunge and integrating RPA tools into the work system, thereby catalyzing the digitization of the business and the growth of employees. This study showed that the employees in the finance and accounting unit will need to focus on value-added tasks such as strategy development, new service design, and rich social interaction with internal and external customers.

Besides that, RPA management and governance requires different thinking skills (Deloitte, 2017; Seasongood, 2016; Willcocks, Lacity & Craig, 2015a). Therefore, it also shows how important it is for employees to have information technology knowledge for their involvement in the RPA implementation process (Asatiani & Penttinen 2016). In addition, RPA themselves can create jobs such as robot management and consulting in the long run (Asatiani & Penttinen 2016). If they do not have these skills, it is a good time for management to rethink strategies for talent development (Lacity & Willcocks 2016).

Hence, due to the vast and impactful benefits of RPA, this is also suggestive of the forthcoming demand for the software, as well as skilled professionals for related job roles and thereby emphasizing the necessity to upskill. Going forward, professionals who are equipped with the right skills at the right time are going to stay relevant in this age of digitization and RPA is surely on the top when it comes to skilling for the future. This

study shows that although the RPA technology could solve issues involving humans such as disciplinary problems, employee productivity, and human resource shortages, high level of works such as analytical aspect could not be completely replaced by robots and can only be done by humans. This study also found that RPA could change the finance and accounting profession stigma when it helps to make the work in this profession becomes more interesting and provide the worker with a more enriching experience.

REFERENCES

Anagnoste, S. (2017, July). Robotic Automation Process-The next major revolution in terms of back office operations improvement. In *Proceedings of the International Conference on Business Excellence, 11(1), 676-686.*

Asatiani, A., & Penttinen, E. (2016). Turning robotic process automation into commercial success–Case OpusCapita. *Journal of Information Technology Teaching Cases*, *6*(2), 67-74.

Boulton, C. (2017). What is RPA? A revolution in business process automation. *Computer World Hong Kong.*

Castelluccio, M., (2017). Artificial intelligence in business. Strategic Finance 98 (10),55–57.

Deloitte, (2017) The Robots are Ready. Are You? Untapped Advantage in Your DigitalWorkforce.

Fortune Business Insights. (Feb, 2020). Robotic Process Automation (RPA) Market Analysis – 2026. Access at https://www.fortunebusinessinsights.com/robotic-process-automation-rpa-market-102042

GEP (2018) Artificial intelligence and its impact on procurement and supply chain – A comprehensive study [www document]. [Accessed 04.04.2020]. Available: https://www.smartbygep.com/insight/white-papers/artificial-intelligence-impact-onprocurement-supply-chain

Institute for Robotic Process Automation - IRPA (2014) Introduction To Robotic Process Automation. Sumber: http://irpaai.com/what-is-robotic-process-automation/

Kumar, K. N., & Balaramachandran, P. R. (2018). Robotic Process Automation-A Study of the Impact on Customer Experience in Retail Banking Industry. *Journal of Internet Banking and Commerce*, *23*(3), 1-27.

Lacity, M. C., & Willcocks, L. P. (2016). Robotic Process Automation: The Next Transformation Lever for Shared Services (The Outsourcing Unit Research Paper Series Paper 16/01). *Hentet fra https://www. blueprism. com/wpapers/robotic-processautomation-next-transformation-lever-shared-services-blue-prism*.

Lacity, M., & Willcocks, L. (2015a). Robotic Process Automation: The Next Transformation Lever for Shared Services. *London School of Economics Outsourcing Unit Working Papers*, (7).

Lacity, M., & Willcocks, L. (2015b). What knowledge workers stand to gain from automation. *Harvard Business Review*, *19*(6).

Lacity, M., & Willcocks, L. (2015c). Robotic Process Automation: Mature Capabilities in the Energy Sector (The Outsourcing Unit Research Paper Series Paper 15/06). *Hentet fra https://irpaai.com/robotic-process-automation-mature-capabilities-in-the-energysector*.

Lacity, M., Willcocks, L. P., & Craig, A. (2016d). Robotizing global financial shared services at royal DSM. *The Outsourcing Unit Working Research Paper Series*.

Rutaganda, L., Bergstrom, R., Jayashekhar, A., Jayasinghe, D., & Ahmed, J. (2017). Avoiding pitfalls and unlocking real business value with RPA. *Journal of Financial Transformation*, *46*, 104-115.

Seasongood, S. 2016. Not just for the Assembly Line: A Case for Robotics in Accounting and Finance. Financial Executive 2016, 31-39.

Slaby, J. R. (2012). Robotic automation emerges as a threat to traditional low-cost outsourcing. *HfS Research Ltd*, *1*(1), 3-3.

Syed, R., Suriadi, S., Adams, M., Bandara, W., Leemans, S. J., Ouyang, C.,& Reijers, H. A. (2020). Robotic Process Automation: Contemporary themes and challenges. *Computers in Industry*, *115*, 103162.

Willcocks, L. P., Lacity, M., & Craig, A. (2015a). The IT function and robotic process automation. *The Outsourcing Unit Working Research Paper Series, 1–38.*

Yin, R. K. (2013). Case study research: Design and methods. Sage publication.