Robotic Process Automation Analysis in the Financial and Insurance Industries

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Abstract

With the aim of understanding the total cost of ownership and implementation process of different process automation software, we surveyed and interviewed a representative sample of companies considering, using, and selling process automation software within the financial and insurance industries. After insubstantial cost data, the research was pivoted toward a more qualitative approach. This research allowed us to understand the obstacles and challenges companies may face when implementing different process automation software and how companies are most benefiting from them. Thus, giving way to increase accessibility to robotic process automation.

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Executive Summary

       There are currently three different types of automation that are used within the realm of Artificial Intelligence (AI): Robotic Process Automation (RPA), Intelligent Process Automation (IPA), and Cognitive Process Automation (CPA). The team is working with an InsurTech startup company that is trying to combine the cognition and intuition of a human with the speed of automation through Cognitive Process Automation (CPA). With CPA, bots can read, learn, think, and communicate with team and organization/enterprise as if they were a human. However, RPA is still questioned by many companies. The most common challenges found include:

1. RPA can only automate simple repetitive tasks that do not involve cognition.

2. RPA eliminates jobs.

3. RPA creates a strained relationship between employees and the employer because of the fear of potential job elimination.

4. In this InsurTech company's experience, customers are aware that the RPA licensing costs can range anywhere from $5,000 to $10,000.

5. The return on investment can take over a year.

Knowing these possible issues, the main objective of the team was to develop a holistic perspective on how RPA customers perceive RPA based on their current situations as well as how RPA vendors distribute their solutions to customers and the challenges they have faced. The team interviewed RPA companies trying to implement RPA themselves and conducted two surveys: one for RPA Do-it-yourself companies and one for RPA vendors. Once the surveys were conducted, the text data was compiled to identify common answers and provide key

takeaways for both groups. For the RPA DIY companies the following takeaways were found for expectations of RPA, challenges, and setbacks, and impact on employees:

Automation Expectations	Challenges and Setbacks	Employee Impacts
Increase efficiency and accuracy of basic tasks	New risks related to being dependent on bots for automated processes	Worry from employees that their jobs will be displaced
Increase employee engagement	Maintenance and improving existing bots requiring proactive plans and prioritization	Employees' skills will move away from basic tasks to more analytical, strategic, and interpersonal tasks
Free capacity from understaffed or overworked areas for more meaningful work	Adoption from employees and embedding into the current system	Current shortage of staff makes it difficult to have training, development, and redeployment of staff

Figure 1.0 Takeaways from RPA Vendors and RPA DIY Companies

The results of RPA vendors showed to be similar but reflect a small population of two companies. The RPA vendors indicate that the industries they tackle is not limited which is a very large undertaking considering the software needs to be adjusted for all of the different types of tasks. In addition, the major pushback from customers they received is that the deployment will be easy and that the bots would be very resilient and talented technically. Both of these reasons should be expected as they can be found in the digital co-worker or CPA bots, but the nature of the development did not allow the vendors to do this. Finally, the range of time it takes for an RPA solution to be developed ranged from a couple of minutes to 3-6 months depending on how complex the process was. Then even after the launch, there would be required post-implementation bug fixes and work as the bot was not accurate at launch. With this, the RPA vendors provided 24/7 support.

In conclusion, the results showed that RPA customers were not wary as seen in the common RPA challenges if their company was in a good position both in their culture and understanding while the more wary companies did not have the resources or culture to take it on. RPA vendor results showed that RPA vendors often did not meet the initial expectations of what RPA is said to do. However, CPA bots would be able to address these expectations. This analysis is done to show current businesses looking to implement RPA how they can approach purchase and understand how it fits into the FinTech ecosystem. The many different applications of RPA showed how its impact will be seen across the ecosystem, but it is important to note that the automation space is constantly changing with new solutions. To further enrich this analysis, the team would recommend continuing to gather data on how long RPA takes to launch, what types of tasks are being automated, and the post-implementation costs. These were the three aspects that affected decisions for companies looking to implement RPA and were the main factors asked of RPA vendors.

1.0 Introduction

The InsurTech company that sponsored this MQP has combined the cognition and intuition of a human with the speed of automation through Cognitive Process Automation (CPA). With CPA, bots can read, learn, think, and communicate with team and organization/enterprise as if they were a human. As of now, this InsurTech company has experience automating, underwriting processes, claims, finance, human resources, and combinations of those. This InsurTech company even allows its customers to assign the bot an avatar and name. With that being said, this InsurTech company has faced a multifaceted challenge while trying to get customers interested in their products- the confusion of Robotic Process Automation (RPA) with CPA.

The challenge that this InsurTech company faces is that RPA and CPA are often misguidedly bucketed together. With that comes all of the challenges that are typically associated with RPA, but some of which have been solved with CPA. The most common challenges are

1. RPA can only automate robust, simple, repetitive tasks that do not involve cognition. Meaning that tasks that are considered being automated must be broken down into simple, repetitive tasks. This limits the amount and types of tasks that can be automated. Further, since an RPA bot is limited to "if-then" statements, that is, they cannot deal with structured data, they cannot read, they cannot ask questions, nor can they do any of the learning CPA bots can. They are good at working in a process if the same type of information is in the same place every time throughout the process, otherwise, they break. If and when a bot was to break, the team utilizing the bot would have to go in and fix it. Whereas, with CPA, the bot may be able to figure out the problem, and after learning

how to deal with a problem, it will do that automatically the next time it faces that problem.

2. RPA eliminates jobs. This is sometimes a misguided generalization about automation as a whole, including but not limited to RPA and CPA. It is true, automation is eliminating the need for a human to do certain tasks-which in a quite literal sense, if a bot eliminates all of the tasks in one person's job, then the bot did eliminate the need for that job and that employee. Although the company does not have to get rid of the employee just because the company got rid of the tasks associated with that person's job, the company can upskill and/or repurpose the employee.

3. RPA creates a strained relationship between employees and the employer because of the fear of potential job elimination. Thus, companies fear to even pursue or consider RPA, because the company fears that their reputation for prospective employees will be tarnished and current employees will be skeptical about job security.

4. In this InsurTech company's experience, customers are aware that the RPA licensing costs can range anywhere from $5,000 to $10,000. However, what the customers are not aware of is that the bot requires much more than the license to operate it. One can consider the license as the platform for the bot, so it is like renting a piece of software. However, the bot still needs to be "built", that is, coded to do whatever process it is you are automating. The latter is considered the orchestrator of the bot. This InsurTech company claims that it takes almost hundreds of thousands of dollars to build a bot to completion and maintain it. They claim that the way RPA has historically been marketed and sold has been in a way that does not capture the total cost of ownership. That is, instead of selling everything that the bot needs to run in one package, the RPA vendors

only provide part of the package. This makes the execution somewhat more challenging. To remedy this, the InsurTech company is selling the whole package, licenses, orchestrators, and maintenance all tied to one cost.

5. It takes over a year to see a return on investment

These InsurTech companies' bots usually take 3-6 weeks to develop and break even on return on investment (ROI) within 3-5 months. Whereas they claim RPA development could last up to 6-9 months, to then not break even on ROI for another 6-9 months, even up to or more than a year. They claim that after a full implementation, RPA could cost a couple hundred thousand dollars.

1.1 Goals

One of the major goals of our research was to flesh out what the total cost of ownership (TCO) for the development, implementation, and maintenance of a bot really is. This required that we first understood the different cost data points that compromised the TCO of automation. We chose to focus on the financial and insurance industries because the InsurTech start-up we were working with, focused on deploying bots in those fields. Next, the TCO would require that we get some actual prices for these cost data points. We would then put these two pieces together and analyze them to come up with a true TCO for automation, both RPA, and CPA

More qualitatively, we were also interested in learning which of the five "challenges of RPA" listed in 1.1 above were true and experienced by companies. Simultaneously, we were also interested in the benefits that RPA brought to these companies. Overall, these two objectives would give us insight into the different attitudes there are regarding automation and if that has any correlation with how successful automation is at that particular place.

2.0 Background

2.1 Artificial Intelligence in Process Automation

Artificial Intelligence (AI) is the overarching topic involving the process automation types that are researched in this paper. AI is defined as the "ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings" (Copeland 2020). AI is widely used in process automation, with some examples including medical diagnoses, computer search engines, self-driving vehicles, and voice recognition. One of the setbacks with AI in process automation is that programs are able to reach proficiency in specific tasks over time but still lack the "human flexibility over wider domains," meaning that the programs typically cannot jump from one task to another without learning each one (Copeland 2020). It is important to note that Artificial Intelligence encompasses a large sector of technology, but this report will focus on the aspects associated with automation.

Automation is another broad category including any technology that "substitutes human labor in tasks" both physical and cognitive, the ladder of the two is the main focus with AI in automation here (Gaynor 2020). The automation aspect is attributed primarily to machine learning algorithms that improve over time typically through a trial-and-error process. A recent study done by Brookings in their January 2020 report found that the impacts of automation from AI will affect "lower-skilled workers" the most (Gaynor 2020). This starts to show that the impact of AI and automation is really starting to take shape and affect the human labor force. But it is still overall uncertain across the United States how and when this will happen as automation is changing just as quickly as it is being produced. From here, the focus turns to the digital setting of automation. The following sections will cover the three process automation types that

involve varying degrees of Artificial Intelligence and Machine Learning which include Robot

Process Automation, Intelligent Process Automation, and Cognitive Process Automation.

2.2 Robot Process Automation (RPA)

To first understand this project, it is important to define RPA in a structured way. RPA,

defined by IEEE Corporate Advisory Group, is the use of "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".
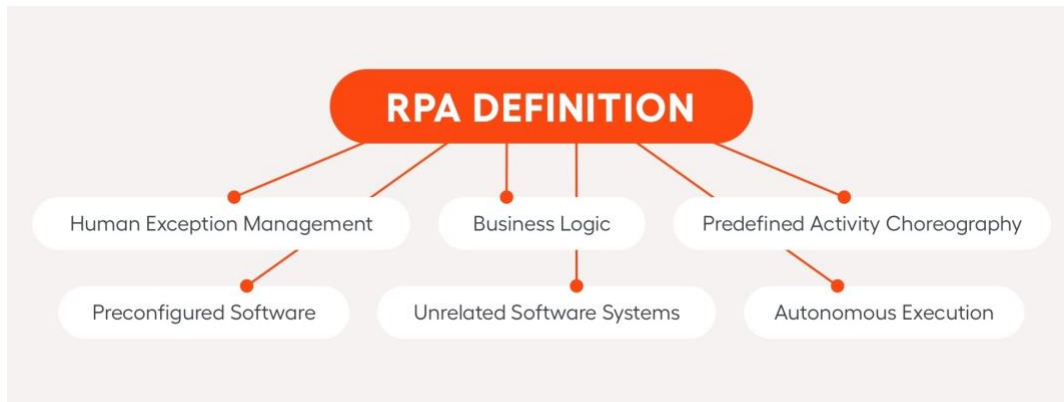
Figure 2.0 RPA Definition Structure

The definition of RPA can be broken down into a few key phrases: Human Exception

Management, Business Logic, Predefined Activity Choreography, Preconfigured Software,

Unrelated Software Systems, and Autonomous Execution (Work Fusion, 2020). Preconfigured

software is exactly what it sounds like, software that comes with out-of-the-box functionality that

does not need to be coded to be enabled and can be customized to a certain degree. Business

logic is the lingo that refers to all the algorithms and code needed to make a piece of software

work with a company's customers and servers. Essentially, business logic is all the algorithms

that perform the behind the scenes tasks that are invisible to the user but critical to the operations

of the company. Also included within RPA is predefined activity choreography which is a sequence of steps taken to complete actions across systems and applications. RPA also includes autonomous execution, meaning that tasks are completed independently by software bots. Once the software bots have rules that are predefined, each task is then executed automatically. RPA also has the ability to use front-end applications similar in ways that humans do, meaning that they can interact with Internet Explorer, Excel, and Outlook similar to humans. However, human exception management is still a part of the RPA process as sometimes employees are involved and tasked with resolving unpredicted events or performing cognitive actions. These actions can be as small as inputting data to as large as an employee taking over the entire process that would otherwise be automated (Work Fusion, 2020).

2.2.1 Applications

To provide an example of the RPA process is the automated retrieval of information from one system and entering the same information system or activating another system function (Huang et al., 2019). RPA differs from traditional IT implementation and business reengineering in the sense that RPA tries not to disturb underlying IT systems and only replaces the existing manual processes with the automated through a presentation layer (IRPA, 2016).

In terms of RPA in application to the real world, RPA tools help businesses improve the efficiency of processes and the effectiveness of services. First, replacing the human work workforce reduces the cost and the processing time for high-frequency tasks (Huang et al., 2019). It has been discovered that the running cost of RPA software is around one-ninth that of employing a human being, and RPA "robots" can work 24 hours a day, 7 days a week (Burgess, 2016). Along with cutting costs, RPA processes also improve the accuracy of the business

process. Furthermore, RPA offers flexibility and scalability. Once an RPA robot executes a process, this process can be executed at specific times.

2.3 Unattended vs. Attended Bots

The first decision that is made when planning bot structure is whether you want your solution to be executed in an attended or unattended context. This concept of attended vs. unattended is also commonly referred to as front-office automation vs. back-office automation. Both of these types of bots are intended to automate tasks that a human user would otherwise perform manually on their computer, however, the specific case uses differ between the two (UiPath, 2020).

2.3.1 Attended Bots

Attended bots are automations that run under human supervision, and due to this, they are best suited for smaller and fragmented tasks. To best demonstrate a type of task attended bots would be used for we can look at an expense report. The human user provides the credentials to log into the system and then the automation bot fills in the requisite information, attaches any needed item, and submits the report on the user's behalf (UiPath, 2020).

With a human always being present with attended automation, it is important that these automations are not created with or granted permission to perform tasks the user themselves could not. These reasons being that there is no way to ensure security isolation between a running automation and the machine user. If the automation itself performs actions the user does not have access to, it would allow the user access that they have not been granted (UiPath, 2020).

2.3.2 Unattended Bots

Unattended bots are different in that they are intended for more complex and repetitive tasks, that usually need to be performed in batches, that can be decided on by a predefined set of rules. Along with this, unattended bots perform operations that are privileged, which require elevated permissions and credentials (UiPath, 2020). Looking back at the expense report example, unattended bots would perform the approval process of each expense report (if they matched a defined rule), including logging into the necessary system and processing any submitted expense reports that the attended bots completed. In most cases, the credentials are configured by the administrator, which provides security isolation as the automation developers only reference credentials that are provided, and a clear audit chain of who obtains and manages the credentials used by the automation are always logged (UiPath, 2020).

2.4 Cognitive Process Automation (CPA)

CPA robots, also known as digital coworkers, perform several cognitive processes from data handling to performing data queries (Roots Automation, 2020). Like any other AI system, these CPA robots are exposed to large sets of training data, where these digital co-workers use federated learning to acquire the skill of performing tasks that require the interpretation of unstructured data. CPA robots use the "knowledge" acquired from training to make decisions with a high level of accuracy, in a manner just how humans are trained to understand data and make decisions on any job. This allows organizations to assign humans to tasks of higher priority that are less routine and predictable.

CPA has two main concepts that create the whole picture of digital coworkers: Machine Learning (ML) and Cognitive Computing (CC). ML is an AI function that allows machines, typically computers, to learn and improve over time automatically through initial and post-

launch data. The machine first receives a set of initial data known as training data that it uses to create the system. Then, the machine is tested on data called verification data where the answer is hidden, and the accuracy of the machine is measured. The machine then starts to make predictions on data. The machine does not stop learning from here and continues to adapt based on whether or not the answer was correct. ML also has the advantage of tackling large sets of data and identifying trends typically missed by humans. From here, the most important aspect is that the machine continues to learn over time based on how it predicts and the actual answer to adjust its algorithm to fit the task best (Roots Automation, 2020).

Cognitive Computing (CC) uses Machine Learning and other software to simulate human behavior (Roots Automation, 2020). The main difference from ML is that Cognitive Computing incorporates both the Computer Science elements of ML as well as Cognitive Science to develop an experience as close to human behavior as possible. Some common features in CC are that the process is iterative and interactive, it must interact with humans to mimic the human thought process, and it requires a lot of context similar to humans to replicate the process as close to a human as possible (Roots Automation, 2020). This can apply to many business areas that will be discussed below. This is the backbone of the digital coworker to provide an adaptive, human-like bot to help complete human tasks at a company.

2.4.2 Applications of CPA

CPA is applied largely across three main branches, i.e., natural language processing, computer vision, and error handling. According to Roots Automation (a startup that provides CPA services to organizations in the finance and insurance industry), CPA is being used by businesses in the areas such as imaging for data capture and analysis, insurance claims processing, public accounting, among others. CPAs have helped businesses to grow by allowing

human employees to work on more demanding and intensive tasks, and by speeding up repetitive

and predictive tasks. The application of CPA in businesses can be broken down as follows:

   I.   *Natural Language Processing*

         A. *Phone call transcription*

         B. *Virtual Assistants*

         C. *Report generation*

  II.   *Computer Vision*

         A. *Text recognition*

         B. *Image analysis*

 III.   *Error Handling*

         A. *Computational error detection*

         B. *Typographical error detection*

2.5 Comparison: Robotic Process Automation and Cognitive Process Automation

      Overall, the task at hand strongly determines whether a company requires RPA or not.

For some, RPA is sufficient to complete high-volume, repetitive tasks, but digital coworkers take

this a step further by interacting with the humans that complete the task. Typically, RPA requires

a developer to improve the system, but the developer does not know the task nearly as well as the

human who has done it for years. Digital coworkers create this environment by allowing

communication from the bot to human without a developer in between (Roots Automation 2020).

Another reason digital coworkers and RPA differ is the implementation of machine learning

techniques. RPA uses basic machine learning techniques to gradually improve over time using

beginning training data and stopping there, generating reasonable results. Digital coworkers go

further by being designed to learn how humans learn, "by asking for help if they are unsure of

answers and by learning from interactions that they have with humans" (Roots Automation 2020). This continuous improvement creates a more robust algorithm and develops a dynamic algorithm that adapts to how the company changes over time.

Finally, the digital coworker communicates to develop a dynamic system based on its original dataset and the current changes being made through interactions with humans. Once an RPA bot is launched, there are not many changes done afterward and the system remains static. The static aspect means that it will produce the same result from the task and if it runs into an issue, the bot will often just stop and wait for human intervention. The same report or SQL query is run and delivered to the inbox of workers which cannot be easily changed by humans without intervention from the developer. The digital coworker environment communicates in real-time with humans and asks for help when the system does not understand. Digital coworkers can also adjust their workflow based on human availability so they are not sitting static if other tasks can be completed. Digital coworkers offer a real-time experience that can be improved over time while the RPA system provides a specific time solution for high-volume repetitive tasks.

2.6 Total Cost of Ownership (TCO)

In considering the cost of a product, businesses sometimes fail to consider the total cost of ownership as being both the acquisition cost of the product and the additional support costs that come with it. HFS Research estimated that up to about 75% of all cost of a technology product is the support and maintenance costs nobody really talks about (Gupta, 2018). With the initial acquisition cost being just about 25%, it is necessary for businesses to identify all the other cost areas when acquiring business process automation (BPA) capabilities. The initial acquisition cost, in addition to all other support and maintenance costs, come together to be what is defined as the total cost of ownership (TCO) (Folger, 2019).

A 2019 HPA paper on calculating the TCO of business process automation categorizes the cost of BPA into two distinct components: one-time (acquisition) costs and ongoing (support and maintenance) costs (Folger, 2019). Listed below are HPA's recommendations of items to consider when calculating the TCO of business process automation.

2.6.1 One Time Costs

- License

- Training

- Infrastructure setup

- Third-party integration

- Hiring of technical staff (analysts, developers, engineers, etc.)

2.6.2 Ongoing Costs

- Annual license renewal

- Annual maintenance (software and hardware setup)

- Annual third-party integration license renewal

- Infrastructure maintenance and/or expansion

- Annual overhead of support personnel

- Ongoing training

- Process optimization and expansion

- Bot monitoring and maintenance

- Updates and scaling

In this research, cost information will be gathered from two broad groups, tech companies that sell/provide RPA bots and DIY businesses (finance and insurance) that build

their own BPA bots. This cost information will be used to determine what the actual TCO is for acquiring a BPA and compare the outcome with acquiring a cognitive process automation (CPA) bot, which may also be referred to as digital co-workers (DCWs).

2.7 RPA in the Insurance Industry

After discussing the general benefits and implementation issues of RPA, it is important to note that RPA is already an actuality for the insurance industry. As mentioned before, the technology exists right now to create intelligent, networked, customer-centric virtual agents for the insurance industry. "A 'virtual agent', with an intimate, pre-connected knowledge of a consumer's life, proactively manages insurance cover, sourcing the best deals, checking customer reviews, financial stability, and policy terms against the consumer needs...all while the consumer sleeps (Cranfield & White, 2016). In regard to development and innovation, the field of cognitive computing is heading on an open and collaborative path, which means insurance innovators have many options for testing and learning in this space (Cranfield & White, 2016). With the introduction to RPA, interactions between customer and insurer, insurer and 3rd-party insurer, and between insurer and supply chain, can all be targeted for dramatic streamlining, potentially eradicating the need to go to site for simple claims. The burden on the claims handler as an information conduit can be substantially reduced through RPA (Cranfield & White, 2016). The full potential of process automation within the insurance industry can be seen once these companies move to a model where automation handles almost the entire simple claim operation.

Cognitive computing or RPA can also be deployed in assistance with human customer service representatives. Natural language processing allows the system to interpret customer requests, and efficiently handle relatively simple and typical enquiries (Cranfield & White, 2016). The ability of AI and natural-language technology to make sense of both unstructured and

structured data makes it ideally suited to handling queries relating to multiple sources, from call center logs to large policy documents (Cranfield & White, 2016). In conclusion, the benefits of RPA can be seen on many levels throughout the insurance field, with many more opportunities to grow as advancement in technology continues.

2.8 RPA in the Financial Industry

RPA in the banking industry serves as a useful tool to address the pressing demands of the banking sector and help them maximize their efficiency by reducing costs with the services-through-software models (Maruti Techlabs, 2019). McKinsey sees a second wave of automation and AI in the next couple of years where machines and software bots will execute 10% to 15% of tasks across a myriad of bank functions, which in turn will enhance the overall capacity and give the workforce an opportunity to work on higher-level tasks (Maruti Techlabs, 2019). It is estimated that the industry will be worth $2.9 billion dollars by 2022, a sharp increase from $250 million in 2016. (Le Clair, 2017). To understand the power of automation in the financial industry, it is important to note that over the last decade, banks and financial institutions are reported to have spent more than $321 billion on compliance operations as well as fines. Banks are estimated to disburse nearly $270 billion yearly and 10% of banks operating costs are attributed to compliance operations. RPA enables the finance industry to reduce manual efforts, offer better compliance, mitigate risks, and enhance the overall customer experience (Maruti Techlabs, 2019).

RPA has the ability to be applied to many different business process automation projects, leaving room for many use-cases in this space. Customer onboarding in banks takes up to 3 months to complete, mainly due to manual verification of several documents. However, RPA can utilize optical character recognition techniques (OCR) and capture data from these documents

that can then be matched against the information on the customer form (Maruti Techlabs, 2019).

Customer onboarding is just one of the areas in which RPA can be implemented and provide

unrecognized benefits. Automation can also enhance automation report generation, account

openings, mortgage lending, and loan processing (Maruti Techlabs, 2019).

3.0 Methodology

This section of the report discusses the mission statement of our research and the objectives we achieved throughout our study. It also discusses how the interviews and surveys were conducted, and the industry and size (based on the employee population) of each company that was interviewed/surveyed.

3.1 Choosing a Methodology

Our team first used the interview method to try and collect cost-related data as it is the most widely employed tool for collecting information and data. In terms of an interview method, there are two different types of interview methods that we looked at, semi-structured and unstructured. Given that we had come up with a base question set for our interviews, we decided on the semi-structured approach. This type of interview allowed us to ask our written questions that were sent to the interviewee before the meeting, but we also gave the interviewee a chance to elaborate and explain during the interview. This method was also appropriate as we had an overview of the topic being discussed, but we preferred not to use a structured approach as we did not want to hinder the depth and quality of the responses.

After the first round of interviews, we came to the realization that much of the cost information that we were asking for was proprietary. Companies in both industries were reluctant to share the cost of their RPA implementation due to the competitive landscape of automation. If companies were to share their cost data with us, our team would then have to sign a non-disclosure agreement, which in turn would not let us share the information we sought to report on in the first place. This is where our team decided to pivot in our market research to a more qualitative approach of RPA with the financial and insurance industries.

Our team's second approach to finding qualitative data was to use a survey. The survey

was a more efficient way of connecting with more companies in a shorter period of time and with those that were not available to interview. We decided on the survey method because it was determined that this was the best way to follow up with interviews that were already completed. Companies were more probable to respond to a follow-up survey, rather than reconnecting for another interview discussing a whole new question set. Most importantly, the survey could be completed at the convenience of the company's time, increasing the likelihood of a response.

3.2 Mission Statement

The goal of this research was to assess the current usage of Robotic Process Automation (RPA) in the insurance and financial industries by developing a total cost of ownership analysis along with a qualitative approach to how RPA is currently being implemented and the attitude toward process automation within the company culture. The following objectives were considered to reach this goal:

Main Objectives:

- Understand what is necessary to develop a total cost of ownership analysis that is comprehensive for the customer while following the framework in Financial Technology
- Interview customers who utilize RPA or want to and those that are vendors of RPA to gather data on total costs as well as their experience with RPA
- Analyze data collected from interviews to develop a full story of the total cost of ownership for customers' RPA systems and compare to an alternative solution (CPA)
- Create qualitative insights as to the implementation process of RPA within the insurance and financial industries

3.3 Institutional Review Board (IRB)

The research method we used involved collecting company information/data from professionals in the financial and insurance industries. Therefore, we needed to secure the rights and privacy of the companies and the professionals we interviewed. This was done by de-identifying each company and also by providing each interview participant with a detailed consent form to review and sign. This consent form can be found in Appendix E.

3.4 Interview Plan

Prior to zoom and phone interviews, we sent the professionals from each company the question set that we planned to ask them along with the IRB consent form 3 days ahead of time. This allowed for any questions that the interviewees may have had about the research before the interview to be answered. Each interview was recorded for the purpose of analysis after the interview was completed.

3.4.1 Interview Participants

The WPI team's plan was to carry out a set of interviews with RPA customers from both the financial and insurance industries along with a set number of RPA vendors. The initial interview plan was to interview 30 different companies across the two aforementioned industries with an additional 5 RPA vendors. Within each industry, we planned on interviewing 5 companies with an advanced background in RPA, a beginner background in RPA, and companies that are close to buying RPA. The criteria for the company selection are broken down in the table below. The interview questions were separated into two different interviews, one for the financial and insurance industries and one for RPA vendors. Both interviews can be found in appendixes A and B.

Company	Type of Company	RPA Background	Size	Region
A	Insuranace	Advanced	8000	Mid-Atlantic
B	Insuranace	Advanced	3000	Southeast
C	Insuranace	Advanced	1850	Midwest
D	Insuranace	Advanced	11500	Midwest
E	Insuranace	Advanced	150	Mid-Atlantic
F	Insuranace	Beginner	3300	Midwest
G	Insuranace	Beginner	100	Mid-Atlantic
H	Insuranace	Beginner	30	Southeast
I	Insuranace	Beginner	N/A	Southwest
J	Insuranace	Beginner	3500	Midwest
K	Insuranace	Close to buying	1500	West
L	Insuranace	Close to buying	1200	West
M	Insuranace	Close to buying	400	Midwest
N	Insuranace	Close to buying	550	Northwest
O	Insuranace	Close to buying	1400	Norheast
P	Financial Services	Advanced	4700	Northeast
Q	Financial Services	Advanced	6700	Northeast
R	Financial Services	Advanced	15800	International
S	Financial Services	Advanced	N/A	Southeast
T	Financial Services	Advanced	48400	Mid-Atlantic
U	Financial Services	Beginner	1050	International
V	Financial Services	Beginner	1300	West
W	Financial Services	Beginner	3100	Southeast
X	Financial Services	Beginner	600	Mid-Atlantic
Y	Financial Services	Beginner	1150	West
Z	Financial Services	Close to buying	N/A	West
AA	Financial Services	Close to buying	100	West
BB	Financial Services	Close to buying	80	Mid-Atlantic
CC	Financial Services	Close to buying	180	West
DD	Financial Services	Close to buying	4000	Midwest
EE	RPA Vendor	N/A	3000	Mid-Atlantic
FF	RPA Vendor	N/A	5800	Northeast
GG	RPA Vendor	N/A	330	Mid-Atlantic
HH	RPA Vendor	N/A	2400	West
II	RPA Vendor	N/A	1000	International

Figure 3.0 RPA Company List

3.5 Survey Plan

After each interview was completed, a follow-up survey was sent out to the interviewee. The survey method was selected as the best way to obtain qualitative data that was not discussed during the interview. The survey method was also selected as another data hub for us to access, as we pivoted our research into more of a qualitative approach as cost data is confidential and kept private with most of the companies that we interviewed. Our survey questions were separated into two different surveys, one for the financial and insurance industry companies and one for RPA vendors. Both surveys can be found in Appendix () and ().

3.6 Data Analysis

After the completion of interviews and surveys, the team will compile the information and review. After the completion of the team's review, there will be a well-rounded robotic process automation analysis. This analysis will include insights that were gathered in each interview along with the TCO data that was discussed in each interview. Along with the TCO analysis, we will also include a qualitative data analysis that gives insights as to what the financial and insurance industry companies review before deciding on implementing RPA into their processes.

4.0 Analysis

The interview and survey results provided key insights into furthering understanding of the current Financial Technology market and their perspective of RPA. The interview results developed a general viewpoint of the challenges and mindset of companies looking to implement RPA and have already begun implementation. The survey results then provided additional reasons for setbacks or delays in implementation. These built upon each other to develop final conclusions on the FinTech ecosystem of Robotic Process Automation.

4.1 Interview Results

The team interviewed three classes of companies. These are vendor companies (companies that develop and sell automation tools), purchase companies (those that buy directly from vendors), and DIY companies (those that built and implemented their own automation tools). This section will attempt to summarize the learnings from these interviews. For the sake of confidentiality, all these companies will be anonymized.

4.1.1 Company G

Company Background and RPA Snapshot

They are an independent agency that resells insurance products of companies like Travelers, AIG, Progressive, Geico, etc. As a "business decision", they typically do not resell life and health insurance. As per their business model, they get paid a large commission on the first year they write a policy with a customer and get paid every year the customer continues to work with them. Since insurance is heavily backed by regulations, as well as government and corporate investments they are able to maintain steady growth in cash flow.

The company has a staff size of 70 employees, of which only six are salespeople. They make an average of $10 million in annual revenue, and a decent chunk of this revenue is spent on ensuring client retention. The company's target over the years has been to keep client retention at 88% or more, as compared to the industry average of 85%.

Company Culture

- Growth focused

- Employees are a priority

- Both employees and customers have a "family feeling

Expanding Automation

The company operates in an environment where they cannot afford to have any downtime, and for this fact, it is important for them to automate as much as possible in order to be functional in events like natural disasters or lockdowns. In addition to the need to stay in operation constantly, accuracy is highly important since they serve as "middlemen" between insurance providers and insurance users. It is essential that the information being communicated to the two ends is as accurate as possible.

The nature of work at this company requires employees to manually go through piles of paperwork daily to sort, organize, and extract data. These tasks are repetitive and mundane, and the organization believes these tasks do not add value to their staff. By introducing automation, they will be able to leave these mundane tasks to automated bots, and train employees to acquire skills/licenses that will allow them to take on more fulfilling tasks.

Identification of Implementation

Since they are still early in the process, they have not completely determined what to factor in the calculation of the return of investment (ROI). One important thing they considered

when choosing which automation product to go with was the number of activities the "robot" could perform in a given time.

The current software tool they use runs an activity-based system. Based on the activity codes generated for each started task, they are able to track the amount of work being done. After figuring out how many activities they typically perform for each process, and for each day, they had engineers shadow an employee for about an hour, to observe and record what the typical employee would do in a day.

The engineering consultants then came up with an approximation of what activities would be the best candidates for automation, and how much man-hours would be freed up, if they were to deploy the automated bots. The initial estimation suggested that one robot had a daily efficiency of seven full-time equivalents (FTE). This is to say, in a day, one robot would be able to complete the equal activities as seven human employees.

From the accounting point of view, this would typically cost them $70,000 in compensation and other benefits to getting a new employee to join the organization. This means, by assigning current staff to perform tasks that would require new hires, the organization is saving a large investment on onboarding more employees. With this, the company will be able to grow and expand faster without the worry about new staff onboarding and compensation costs.

Vendor Selection Process

Through the vendor selection process, the company found vendors that came with sizable discounts, however, the businesses decided to abstain from vendors who only worked with APIs. They also decided not to go with vendors whose robots required training, since there would be time spent on development and deployment. Another factor that heavily influenced their decision-making was for the provider to have a knowledgeable background in insurance.

The total cost of ownership was also mentioned as a factor for making the decision of which vendor to go with. By considering the acquisition, maintenance, and support costs of the automation tools, they were able to identify which vendor was providing the best value for their money.

Benefits of Automation

The company identified the following areas as benefits that will be derived after implementation:

- Job satisfaction

- Opportunity to retrain staff for better roles

- Higher data accuracy

- Reduced "downtime"

Challenges of Automation

Company G discussed some of the challenges they have encountered so far, most of these challenges had to do with the selection of the appropriate vendor for the implementation. Some of the challenges include:

- High maintenance and support cost

- Vendors still using old and ineffective technology

- Vendors not having enough domain knowledge/expertise in the work Company G does (insurance reselling)

Outcomes of Automation

Contrary to what has been observed from other companies, the company does not have to deal with the tough question of "letting people go" after they automate. They rather see this as an opportunity to assign employees to perform more meaningful tasks.

4.1.2 Company D

Company Background and RPA Snapshot

Company D is an insurance company that is advanced in developing and using automation. They are a private company located in the mid-Atlantic with about 8,000 employees. They built their first bot in 2013, which automated reporting processes. Now, the work of the eight automation teams is scattered across different business areas.

Expanding Automation

The first implementation of bots automated data flows. They would run a query, load data into Excel, manipulate the data, publish it to SharePoint, etc. Then, they began automating policy service work. Their first attempt at automating policy services work saved Company D a million dollars with about 300 hours of effort.

When Company D saved one million dollars, the use of RPA catapulted. The company formed an entire business dedicated to automating their business processes across all of the different business areas in the company. This experience clearly demonstrated that the ROI was significant. This encouraged Company D to devote more resources to automation, knowing the ROI was guaranteed with time. In our interviewee's words, "[automation is] self-funding, I can bring any developer in and they will pay for themselves five to 10 times over each year compared to the cost of their salary." This allowed Company D to expand the automation team from nothing to 15 developers.

Bot Characteristics

Company D runs their bots primarily on their own automation framework, but they do find themselves supplementing that with some vendor technology. Although, it is important to note that this is a very small amount, about 85-90% of their bots are on their own proprietary automation framework. To date, they have been able to automate about 200 different processes. Some of their bots are multifunctional. For example, one of their underwriting bots can automate about 30 to 40 processes currently. This is an attended solution that does a lot of work for the processors. On that note, approximately 50% of bots are unattended and 50% are attended.

They generally approach automation as "how can we make our lives easier, our employees' lives easier, and our customers' lives easier." Thus, the process usually looks like this:

1. Go into an operational area and ask for "pain points"

2. Design automation to eliminate those pain points

3. Reap the benefits: higher employee morale, lower turnover, and less burnout

Benefits of Automation

The company has observed the following benefits so far, since implementing automation:

● Employee engagement

● Level of job satisfaction

● Work-life balance

● Reduce the need for increased headcount

● Employee morale, accuracy, and service

● Efficient in driving down costs

● Automation pays for itself

Challenges of Automation

Company D noted that automation also came with a few notable challenges. These challenges are as follows:

- Maintaining the automation alongside having to build and maintain applications
  - New applications or a technology or system change means there is a new technology dependency for the bot, so the bot has to be reprogrammed whereas a human is more forgiving and reactive to such changes
- Cybersecurity
  - Making sure that they are appropriately managing credentials, and they are not creating vulnerabilities for the company, or hackers, etc.

Outcomes of Automation

- There have been cases where they have completely automated away the need to do certain types of work and displaced people.
- "In one case, it was in a call center that we took a significant chunk out of that call center, those staff were able to move over into an adjacent call center that had slightly different needs, so they got retrained. And now they are generating sales, as opposed to before they were a cost, not the cost centers. Now they are a profit center."
- Created opportunities for the business areas to better understand their processes.
- Cultivated new roles in the business areas around process ownership, process governance, and monitoring the box.
- People can now manage employees and bots, not just employees.

Future Possibilities for Automation

- Scaling cloud

- ○ Building common capabilities that are used throughout the enterprise.
- ● Increase in intelligent automation
  - ○ Blend AI and machine learning into bots.

Monetize Early Benefits

They have pieces to their approach and framework that they deem proprietary, which gives them a competitive advantage. They also estimated that if they took their automation in production and replaced them with vendor technology, they would spend $10-$20 million a year on licensing fees alone. Their current framework allows them to do automation with no license costs. They are pleased with the capabilities of their current framework and are not eager to let everybody have it. They view automation as a tool they want to use to its fullest potential internally.

Beginning Stages of Automation

One person on the company's team had worked within the automation field for about 15 years. When they identified opportunities to implement automation at Company D the employee went off with a member of his team who had a developer background and built some bots that wowed their colleagues. They were then able to supplement their team with a few developers that they hired externally and trained up people within RPA development. They eventually encompassed employees with data science and machine learning backgrounds into their RPA operations.

Identification of Implementation

If they had already automated in a specific operational area, it was evident that more requests began to filter in. However, if they had not worked in that operational area before, they

were going out of their way to do a job shadow and identify opportunities for automation. Focus group and other techniques were also used to identify opportunities.

Identifying an Opportunities

Company D noted that they use a triage approach to identify opportunities to implement RPA. The company first gathers information about the process, and then consider aspects in the process that are likely to change. How many people are involved? Is it rule-based? Or is there a lot of human judgment within the process? How many systems are touching it, etc. As opposed to when they first began to implement automation, they were primarily chasing productivity savings. However, as they stronger at building bots, and realized that the bots paid for themselves, the productivity savings became less important to their decision-making. They now look at service customer cycle times, accuracy, efficiency, software benefits, and employee experience. If employees dislike a particular process, they try to serve them by automating that process, whenever feasible to do so. Overall, they see that all of these benefits come from automation and aim to seek all of these benefits from their automation projects.

Design of Bots

The bots have the ability to be designed to perform any task that the company sees fit. Upfront they try to architect and carefully design the services the bots are going to perform and build them in a reusable way. Company D noted "We think of it as we're using Lego blocks in a sense. If I get a new process to automate, I may need to first build a block or two. Then once I build the block, I then plug it into its spot. The next time I encounter a process, I look at all the Lego blocks I've got on the shelf, and I pick the ones off that I need to use, and I assemble them into a bot." Since they do not have any licensing or external vendor technology constraints to deal with, they just build the bots in the way that makes the most sense for the company and for

scaling/reusing purposes.

Ramp Up Time/Deployment

Ramp up time/deployment depends on the process that they are automating. There have been times where they received a call at 9 A.M. for a request for a bot, and they are able to deliver the bot by noon of the same day. However, this is most common if the process is similar or includes a lot of the same tasks that they have automated in the past. In this case, they can make a few tweaks to the bot to make it fit the new process, which then makes the development easier to build. Although, there are cases where the process is very complex, crossing organizational boundaries, and they want to transform the business so they may spend a couple of months on such a project. They have not seen an automation project span beyond a year, and typically not beyond six months. The timeline is mostly in weeks to 1-2 months to deliver value.

Automating Processes Capabilities

They view automation as a tool, and do not pursue it just for the sake of doing automation. However, they do not see a practical limit to automation. They automate only what makes financial and business sense, and that might not be every function within a given business area. At the end of the day, they want to be the company that is involved in their communities and that treats their employees and customers the right way. The fact that they see no practical end in sight is more a reflection of some of the legacy systems and legacy processes that they see in their enterprise that need to be addressed. They also have a large number of opportunities after the acquisition of a variety of companies.

4.1.3 Company S

Company Background and RPA Snapshot

Company S is a financial services company that is advanced in developing and using automation. They are a private company located in the southeast.

Company S performs an ROI for any project they are considering, including automation. They perform their ROI by calculating the savings they would incur if they were to implement such a project. When considering a project through this lens, it eliminates the focus on cost and shifts it to savings. For example, if they were considering automation, they would consider how much time and money are they potentially saving if they were to implement automation. From there, the automation team would decide whether or not it is worth continuing to pursue the project.

To make the decision, Company S asks the following question:

- Is the process being fully eliminated?
    - If it is, they do not worry about the time it would take the bot to do it. They assume the bot is faster.
    - If not, and instead it still requires a human, they have to see where in the process is the human needed? The beginning, the middle, or the end? If it is in the middle, it is not ideal because if they have to start and restart, it may not be worth it because Company S has to consider the time in between the human restarting and stopping the bot, what are they doing? This is the time they are being paid for. All

in all, Company S believes splitting operational time is in most cases worse than continuous time, even if it is an additional step.

Company S was progressive in the way they approached automation. They wanted to eliminate mundane tasks and make their employees do higher-level tasks and were not worried about the details so much because they knew the task would still get done, and at the same time, their humans can do something that costs more cognitive ability.

4.1.4 Company CC

Company Background and RPA Snapshot

Company CC was selected as a wildcard company that provides assisted living to patients at a hospice facility. They were selected because their operations rely heavily on health insurance, and also their corporate level operations present a great opportunity for automation. Company CC does not use any form of automation yet (as of the time we last had a conversation). Given the nature of their business, they place a very high premium on patients and employee welfare. Since they provide "care" to patients, they are very much intentional about presenting patients with as much human interaction as possible.

Implementing and Expanding Automation

Although this company does not envisage implementing RPA, they see it as an opportunity for expansion, optimizing the revenue cycle. Company CC has already identified areas of opportunity and has been in touch with a few automation companies to explore some of these opportunities. Most of these engagements have been geared at tasks that will not eliminate the "care" and human interaction part of the work they do.

Opportunities and Expected Benefits

From the conversations with this company, we learned that the benefits they expected from automation are mainly eliminating rote and repeatable tasks. Another opportunity Company CC brought up during the discussion was the prospect of using automation to improve the billing system to make it more accurate and faster. Other processes that Company CC can potentially benefit from by automating them include:

- Patient background checks

- Onboarding and offboarding perspective with employees

- Provisioning and deprovisioning

Another area the company saw they could benefit from was. For instance, if Company CC wishes to expand and bring in more patients, they would need to employ a new billing specialist per every new 200 customers, which would cost them about $100,000 in salary and benefits.

Roadblock/Challenges

The primary challenge is of course the cost of implementation. The company after assessing various vendors noticed that it would cost them significantly in bringing automation on board, in the areas of acquisition, support, and maintenance of the automation solution. Another challenge is defining these processes in a way that can be automated. Some of these processes are very much "dialed in" and will be very hard to automate.

Another challenge that would be almost impossible to overcome is the effect automation will have on both staff and patients. Patients in the healthcare space require human presence to make sure the "care" factor is accomplished. Again, implementing automation and eliminating human employees will send a bad message to potential customers and employees since Company

CC will be seen as not putting humans first.

4.1.5 Company EE

Company Background

Our team interviewed Company EE, who builds, sells, and licenses RPA. They defined their robot as a piece of software that executes a sequence of actions or workflow. Their technology runs on an API-based architecture. Although this architecture comes with its own 'well-known' challenges, it has been an industry standard for many years, and is trusted for optimal performance.

Application Setup

Company EE produces a set of tools that their customers use to achieve automation. The first tool is the development area where the user/customer designs and develops their workflow based on activity. Along with this, they provide the actual robot that executes the pre-designed workflow. This robot is noticeably faster than humans, and its multi-threaded function allows it to perform parallel processes in a very efficient manner. One last member of the tool kit is an application that handles the scheduling of tasks and workflows to the robots and ensures these robots worked in an optimized manner.

Benefits Presented

One unique advantage the robots of Company EE presents is their ability to work on multiple workflows at the same time. Due to the application setup, the robots are equipped with technologies that make multitasking very seamless. Company EE also boasts of a very high return on investment (ROI) for their product, and ROI which can be infinite.

Another benefit that comes with the use of their product is the low annual flat fee they charge their customers. They also run a model where customers only pay for the number of

robots/bandwidth they need. Customers pay for exactly what they need and are able to save a lot of money planning and executing automation in a very cost-effective manner.

Challenges Presented

The solution they sell allows customers to customize their robots in any way they deem fit. Although this can be advantageous in the sense that it allows flexibility, the drawback to this is the robots do not learn and evolve from data and knowledge gathered from other robots being used by other companies. Also, the low licensing cost of the product may sound very appealing to potential customers, but when considering the total cost of ownership (TCO) including development, support, maintenance, and infrastructure upgrade, the numbers become significantly substantial.

More challenges that come with Company EE's technology stack include the implementation time, and the need to involve teams taking away from their typically daily tasks. This also drives up costs for a period of time which can go on to affect the customer's overall revenue cycle.

4.1.6 Company DD

Background and RPA Snapshot

Company DD is an insurance company that has implemented RPA across various business units within the organization. For the past few years, the management of this organization has put in efforts to automate repetitive processes in departments such as finance, claims and human resource. This has allowed the organization to grow, and as a result created new opportunities to hire more humans as well as increase automation efforts.

Implementing and Expanding Automation

One of the first steps they took in implementing automation was to identify which of the business areas would benefit the most from implementing RPA. They have 3 different variables for deciding what processes to automate. These variables are:

- Stable process or system.

- Mature business rules.

- Volume that supports a good ROI.

From their analysis, they identified areas like finance, claims, back office and human resource would benefit from automation since most of the tasks there were very repetitive. Their deployment typically happens in 2 phases: ramp-up time and process assessment.

The ramp-up time takes an average of 3 months to complete. During this time, they identify the tasks and activities they want to automate, assess the ROI, create deployment recipe, and develop the robots which will be ready to go into production. The process assessment phase is a series of tests and assessments to be sure the various use cases are feasible, data input sources are sufficient, and to determine whether the system can support scaling.

Opportunities and Expected Benefits

Some of the immediate benefits they realized after implementing RPA was the efficiency factor. They noticed that a robot on the average could match the efforts of 30-35 FTEs on an annual basis. That being said, the intent of implementing RPA was not to eliminate jobs, but to automate tasks of staff who were leaving, and also to redistribute staff into other high-growth areas.

For Company DD, cost was another benefit since they had significantly reduced the cost per transaction. Although they only mentioned the acquisition cost, they believed the overall cost

of owning these robots were reasonable, since they directly increased productivity and profitability.

Roadblocks/Challenges

Some of the initial roadblocks they faced had to do with identifying which tasks to automate, and how many of these robots will be required. The planning stage of the project takes a significant amount of time and effort. Also, the implementation and deployment process are not as short as they would want it to be.

Another challenge they foresaw was what this implementation would mean to the existing staff. They did not want to lay off people in order to make way for automation. They however found a solution to this by automating tasks of staff members who were exiting, and also re-assigning employees to perform 'higher-value' tasks.

Outcomes

Without having to make significant change in infrastructure, Company DD has deployed over 20 bots to handle close to 1000 tasks. Company DD has so far been able to deploy robots to work in these two umbrella categories:

- Virtual Customer Assistance.

- Intelligent capture (using AI cognitive capabilities to extract data from forms).

4.1.7 Company F

Background and RPA Snapshot

Company F is a financial company that offers services like insurance, retirement planning, and investment. They operate on 8 main lines of business, and they aim to automate as many processes as possible across these lines of business. For the past 3 years, they have been able to initiate and implement automation efforts, mainly in the area of customer service.

Implementing and Expanding RPA

About 3 years ago, Company F piloted RPA as a potential solution or an option for the organization, in their bid to optimize different business processes. The team that was in charge of delivering this project was a small team consisting of a product manager, a product owner, an offshore developer, an analyst, and other coordinators. They worked with other business partners and vendors in order to establish requirements and to make decisions on which technologies would work best for them. The first phase of the implementation was piloting, and the second stage had to do with lessons learned and potential improvements. They currently operate with no less than 10 licenses.

To date, they have focused on the customer service area. This is because the customer service area has over the years been very much intentional about process improvement and has

been dedicated to the six sigma approach. The end-to-end processes of the customer service area have been modeled for automation.

One way the project team identifies potential candidates for automation is an individual from a business unit sends candidates that they want to automate. In this process, candidates would go through an initial review of what the potential benefits are. They also assess the occurrence frequency of this process (i.e., daily, weekly, monthly), and the volume of work that needs to be automated. Once they identify these and make a decision, the project team's roadmap is updated accordingly.

Another way the project team identifies potential candidates is to nominate a team or department they believe is ripe for automation and shadow them for a period of time. They document the activities and tasks they perform. They then make a judgment together with the nominated team and select those tasks and activities that would be good candidates for automation.

Opportunities and Expected Benefits

In the area of customer service, the first opportunity they identified for automation was address change. The robots have been configured to pull customer information and make changes to the address fields once a request for change is received, and these requests are in line with the business rules.

The second biggest opportunity has to do with third-party lien changes. In this instance, a When a customer gets a mortgage or an auto loan, it is very much likely that the third-party lien holder may change several times during the life of that loan. Company F receives multiples of such requests daily and using robotic process automation makes it easier and quicker to receive these requests and make the required changes.

Other opportunities include email address change, policy renewal, and billing fee processing. Claims and underwriting is another opportunity company F is seeking to automate in the near future.

Roadblocks/Challenges

The roadblocks Company F faced when trying to implement automation included vendor selection, cost of implementation, and candidate process selection. Currently, they spend about $300,000 a year on licensing alone. For the vendor selection process, there were numerous candidates they could have used, but the main challenge they found here was selecting a vendor who would give them a product at a reasonable cost. And finally, the internal challenge faced was finding which departments or units were ready to automate their processes, as well as those departments that had opportunities that were viable for automation.

Outcomes

Company F has been successful with the piloting and the product analysis stages of automation implementation. Some of the outcomes of this implementation include speed and accuracy. Some processes such as address change, third-party lien holder change, etc. have become very quick with a high level of accuracy.

Regarding human resources, the organization is continuing to reduce the number of temporary and contract workers. This way, they are not directly causing people to lose their jobs. The plan is to re-assign permanent staff to take on tasks that do not require them to do repetitive and rote.

4.2 Survey Results

In addition to the interview insights, the team received seven responses from financial, insurance, and healthcare companies in one of the stages of RPA doing it on their own (denoted

as RPA DIY companies from here going forward) as well as two responses from RPA vendors. This pool was too small to make direct comparisons, but the detailed questions provided a large bank of challenges and approaches to implementing and creating RPA. The results will be presented here as aggregate results and the companies will be kept anonymous.

For the RPA DIY companies, there were some similarities across all three including that all had some awareness of RPA in their leadership team but not a deep understanding. The biggest difference arose between whether companies had a progressive culture or not where 4 out of 6 companies felt the culture was not progressive. For those companies that have already deployed RPA, they also plan to scale as they have all noticed increased customer satisfaction.

Three of the text entry questions provided a list of expectations with implementing RPA, a list of challenges, and a list of impacts that RPA would have on employees. Below are the results for both types.

Automation Expectations	Challenges and Setbacks	Employee Impacts
Increase efficiency and accuracy of basic tasks	New risks related to being dependent on bots for automated processes	Worry from employees that their jobs will be displaced
Increase employee engagement	Maintenance and improving existing bots requiring proactive plans and prioritization	Employees' skills will move away from basic tasks to more analytical, strategic, and interpersonal tasks
Free capacity from understaffed or overworked areas for more meaningful work	Adoption from employees and embedding into the current system	Current shortage of staff makes it difficult to have training, development, and redeployment of staff

Figure 4.0 Takeaways from RPA Vendors and RPA DIY Companies

For expectations of automation, all companies were optimistic in their reasons even if they have not implemented RPA yet. However, the companies that have already implemented

RPA provided the two reasons of employee engagement and freeing up capacity. For challenges and setbacks, new risks were noted once while maintenance on existing bots was mentioned by four of the six companies. The adoption and embedding were present for those companies who just started or have not yet implemented RPA. Finally, the impacts on employees showed to be similar to our thoughts with the first being worry that employees will be displaced from their current job. It is important to note that the companies with this worry also noted a culture that was not progressive. The third impact making training difficult was also present with these companies.

Overall, the companies that were in a better position to support RPA due to enough staff or a progressive mindset had more positive results with using RPA. The RPA DIY companies provided a diverse list of perspectives considering there were six results. It is important to note this encapsulates a better viewpoint of concerns and expectations for RPA but for a small sample size.

For the two RPA vendors surveyed, they provided a perspective on what industries RPA vendors are currently serving, their interactions with customers, and their details on how they deploy and maintain their RPA solutions for customers. It is important to indicate that both of these companies are very established and do not represent the entire RPA vendor sector, but still provide insights into the approaches of an RPA vendor. For the industries tackled, both vendors say they address processes in all industries. For the type of processes addressed, this is a large undertaking, but it is also noted that all customers have found similar value with the solutions. The two major pushbacks the vendors see from customers are the thought that RPA will be easy to deploy bots and have them be very resilient as well as technical talent. However, the first reason for easy deployment is realistic. The amount of time to deploy a bot for a customer also

had a very large range where "simple" tasks could have a bot done in minutes, while bots taking on many tasks took days to almost three months. This range was based directly on the task the bot was solving so it would vary. Finally, the main cost points after deployment were on bot breakage and maintenance both addressed by their IT department.

This shows how RPA solutions are still an ongoing improvement even after deployment, compared to CPA processing which has addressed this upfront before deployment. RPA solutions can address the mundane problems but still have a script and cannot adapt easily if the process changes even slightly. With that said, both of these companies provide service to a wide array of companies with enough success to sustain. The post-implementation costs show that the RPA vendor should have a 24/7 support system as it seems issues come up very often requiring the customer to communicate with the vendor.

4.3 RPA Vendor Analysis

After the completion of our interviews and survey responses it was evident as to what RPA vendor is leading the market for process automation within the financial and insurance industries. Company EE has invested heavily in its range of products to enable customers to maximize the possibilities with automation. In the most basic terms, this company is selling bot bandwidth as a service. This pricing scheme where customers pay on a bot by basis is not unique to the RPA market and is often competed with by RPA vendors that follow a process-by-process pricing scheme. However, with the purchase of a bot that typically falls between $8-$10 thousand dollars, the customer is only paying for the bot software itself. The customer is still responsible for the task of coding the bot with the necessary business rules for automation, a task that is completed by a developer and needs to be paid for. This is where the total cost of

ownership plays an important role in analyzing what type of process automation is right for the given company.
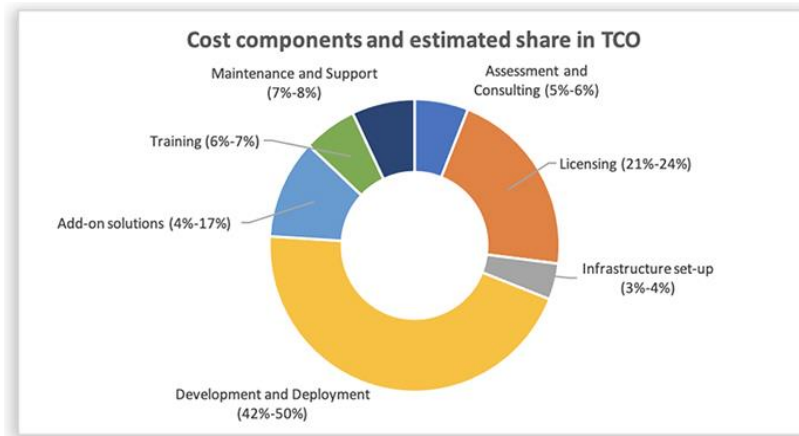

Figure 4.1 Estimated Costs of TCO for RPA

As you can see in Figure (4.0) licensing equates for only ¼ of the TCO for RPA. With that said, company EE is selling bot bandwidth, so if a company has processes that they want to simultaneously run, multiple bots will need to be purchased before development and development can begin. After discussions with company EE and market research, it was evident that development and deployment account for nearly half of the costs related to the TCO. This factor refers to the costs that are related to the developing, configuring, and moving of software bots from conception to production. However, the cost of development and deployment is going to depend on whether the company has in-house development resources or needs to purchase a third party service to develop the bots. Along with developing resources, companies need to take in consideration how easily their automation solution can be integrated with their existing solutions. In most cases, the solution will not come right out of the box, and the integration will need to be configured, inherently adding to the TCO of RPA.

One of the most important aspects of TCO is the training that comes along with the RPA

Vendor services. Company EE has built a community in which customers can connect and learn about the different tools that they offer. With that said, companies within the financial and insurance industries need to take in account what services are made readily available for their employees to be trained with the automation tools.

5.0 Project Management Environment

Our team's project required many different project management tools to organize both the team and the project. These tools were essential in the process of creating our project, allowing us to work more efficiently and effectively.

5.1 Project Management Tools

5.1.1 Google Drive

The Google Drive suite was utilized to organize and maintain all of our files throughout the entire project including google docs and google sheets. During the Coronavirus pandemic, our team was forced to work remotely, however, Google Drive Suite allowed our team to work concurrently with one another on different documents. The simple and familiar user interface of Google Drive compared to its competition led us to select it as our data drive.

5.1.2 Zoom

Zoom was used as the catalyst of our project, as it allowed our team to perform all of our interviews from a remote location. Zoom also allowed us to record all meetings for future transcription. In some instances, Zoom's chat box was also utilized to send links of possible data sources that proved to be useful in terms of data collection. The reason we chose zoom was that it became the backbone of the meeting industry once Covid-19 began.

5.1.3 Microsoft Suite Office

Microsoft Suite Office (MSO) was essential in the scheduling and communication of our project. Outlook was used to schedule all of our meetings with companies, sponsors, and advisors while also being the vehicle used to send out the surveys we created. Outlook Calendar

was useful to manage weekly zoom meetings with the different companies and our own team. The main reason we chose to use MSO was that it was already the main communication tool for the team before the project began.

5.1.4 Slack

Slack was used as the team's main way to communicate with our sponsors. Slack was a convenient way to message the whole sponsor team or to communicate individually with a member of the team to discuss different ideas and updates on the project. Slack was also selected because it was our sponsor's main way of communication internally.

5.1.5 Qualtrics

Qualtrics was used as the database for our survey creation and collection. Qualtrics allows for multiple question structures to be used, including open-ended responses which proved to be vital in our team's analysis. Qualtrics was also selected because it sends frequent updates as to when someone completes a survey and has a simple user interface to keep track of survey results.

5.1.6 Otter.ai

Otter.ai was essential to the analysis of the paper as it allowed our team to develop text to speech transcription for all of our meetings with RPA vendors and DIY companies. Otter was chosen by our team due to its popularity among the WPI community.

6.0 Business and Project Risk Management

6.1 Risk and Reward

With any process automation tool that is used to help the capabilities of companies comes great risk. Does the technology work? Will the return on investment be worth it? With automation making its way into the financial and insurance industries, there are just as many causes for concern, that there is for excitement. Automation also plays a role in the elimination of tasks within companies, causing worry for the future for many employees whose job may be eliminated in the next 5 years.

If this project was unsuccessful in interpreting how and what the financial and insurance industry was concerned about regarding process automation, the Insurtech company might then lack the knowledge to market towards these companies. They could continue to push marketing in ways yet to be determined as successful, however, they may be missing a certain element or data point in their current marketing efforts.

Ultimately, this project should produce a host of insightful data points that allow the Insurtech company to improve and target their marketing efforts. In turn, these data points could lead to the ability to attract more consumers to the company and create a larger market share in the automation field.

6.2 Team Risk and Reward

When creating this research team, there were some risks that were connected with the structure of the team. The team was made up of one senior working as the project manager of the team, two full-time grad students, and one PhD student. This research team would normally be made up of 3-4 seniors working in a full time capacity. However, due to the unprecedented times

going on in the outside environment this unique team was assembled. The major risk at play was the capacity at which each member of the team could perform at an acceptable standard. With graduate and Ph.D. classes, time management was critical to the success of the project. Each member had to be able to balance responsibilities while also contributing to a high-priority paper. However, with risk comes reward. The strength of the paper was due to the diversity of experience on the team, which in turn led to the different perspectives and takes throughout our interviews and discussions.

6.3 Data Collection Risk

Given the time-sensitivity of the project and the unique situation our team was in, there was a balance of risk in determining how much data is enough and having enough time to analyze said data. The team was performing interviews in the early stages of the project, however, after a pivot in data search, the team had to change methods of data collection. This pivot of data collection pressured us to collect a large enough sample size in a time-sensitive manner that would allow us to complete the research project.

6.4 COVID-19

The global pandemic was a direct risk to our project. All of the team's interviews had to be completed remotely, challenging us to schedule times that fit within all of our schedules and our interviewees. Along with scheduling interviews, the team also had the risk of companies not replying to our meeting requests, challenging us to get enough data collection for a strong enough population trend. The team also had to create this research project remotely, as we were not able to meet in person as a group on campus due to the given circumstances.

7.0 Conclusion

The purpose of this research was to understand how RPA and automation using AI is currently being implemented by Financial Technology companies and where this fits in the financial ecosystem. With many different opinions and perspectives on what RPA provides, the intention of this analysis was to develop a holistic perspective on how RPA systems are being created and offered to companies. Since there is much confusion on the exact meaning and use of RPA in the business world, the objective of the final analysis was to provide a broad point of view of what different levels of RPA can do and how companies can benefit. By doing this, companies can understand better which solution is best for them and whether to work with a vendor or to build the RPA system within their company from scratch.

Through initial background research, there are some worries of implementing automation into a business in regard to how it will displace employees. However, the different automation solutions illustrated have the opportunity to reduce basic task work to allow more time for strategic, interpersonal, and analytical tasks within the company. Through our analysis though, each RPA vendor has a different approach in how they provide solutions, and each RPA DIY company attempting to do this on their own has their own personalized approach.

This analysis has been done for companies looking to implement RPA and understand where their business fits within the ecosystem. This would allow companies to take their first steps in a direction for automation. However, this is also intended for the general academic audience interested in how RPA fits into the financial ecosystem right now and going into the future.

It is important to consider future perspectives in how this approach can be enhanced over time. The automation space is constantly changing where new solutions are arising and being

offered to companies. To enrich this analysis, the team would recommend continuing to gather data on how long RPA takes to launch, what types of tasks are being automated, and the post-implementation costs. These were the three aspects that affected decisions for companies looking to implement RPA and were the main factors asked of RPA vendors.

7.1 Future Work

Our team was not satisfied with the number of survey responses and interviews we were able to conduct. If we had the opportunity to spend more time on this project, we have liked to reach out to a larger population of RPA companies to get a better understanding of the emerging market. One limitation that we faced was that a lot of companies considered their information and processes as proprietary and would decline to survey and/or interview. For students doing future work we recommend keeping this in mind and trying to frame communications, research, and questions in a productive manner. Increasing the number of survey respondents and interviewees would allow for further analysis and would confirm our preliminary findings.

Our team also hoped to research more into the financials of the companies we set out to interview. However, what we found was that most of the companies are private and do not share their financial data publicly. Given this constraint, a good idea for future students would be to have a separate section for private and public companies. This would allow for students to analyze the different trends of implementing RPA based on the financials of each company while also separately analyzing private companies RPA trends.

Coinciding with the financials of companies, our team also discussed learning more about RPA implementation outside of the financial and insurance industries. This would allow for a more advanced research paper into the emerging market of RPA. Automation is now entering every industry, which creates many opportunities for students to research the market before and

after automation is implemented. Our team was taken back by the number of possibilities that RPA research has, as we were only to look at a small area of what automation is already doing.

Coinciding with the opportunities that RPA presents, we believe that a future project that analyzes the emerging markets of RPA within the fintech eco-system would be a worthwhile task. A history of the businesses that were utilizing RPA 15 years ago compared to the growth of RPA within companies right now would be interesting to look at, as well as projecting the growth of RPA in years to come. One last project our team would have liked to entertain within the fintech industry is the amount of accuracy that RPA is able to bring compared to the human side of business, and how this effects the future growth or decline of humans within the industry.

8.0 Fintech Ecosystem

The fintech ecosystem consists of five elements which include: FinTech startups, government, traditional finance institutions, financial customers, and technology developers (Castro 2020). The main purpose of the ecosystem is having the ability to stimulate the local economy as well as provide opportunities for growth in the future. RPA can be categorized as one of these catalysts that can fuel the future of how the ecosystem looks and functions. One example that is much closer to fruition is the autonomous electric vehicle (EV) industry.

The COVID-19 pandemic posed a threat to hamper progress for Research and Development to conserve cash and contain costs. However, the global crisis could instead be seen as a driver to adopt EV. European governments are "using economic stimulus to push for a more sustainable post pandemic world" while the Chinese government is extending incentives for automakers in making EVs. In addition, major ride-hauling companies have committed to "shifting to 100% EVs by 2030" (Stricker 2020). It is predicted that the turning point as technology improves will be by 2024 where autonomous electric vehicles can be rapidly scaled. This is done through a couple of different aspects: cost of manufacturing is rapidly decreasing, total cost of ownership (purchase and operation cost) is on par with gas vehicles, and the technology is being used to reduce need for drivers resulting in reduction in transportation cost (Krueger 2016). This example illustrates how a technology that started out extremely expensive is infiltrating the automotive market and completely changing the FinTech ecosystem. This type of exponential growth is expected to also occur with RPA. Coinciding the autonomous vehicle market, we have seen a push in the digitalization of the financial market.

In recent years we have seen the Fintech industry erupt in activity, as we have seen financial companies and startups begin to implement artificial intelligence and other technologies

in their day to day operations. As the consumer based market shifts to a digital system of managing their finances, tech-savvy startups and traditional financial institutions are diving into the shift. As the digital shift continues, we will start to see the Big Tech companies start to invest in wealth management. Companies like Amazon, Google, and Microsoft have already started to build the digital infrastructure that wealth managers would need. However, this realized growth is not just domestic, as the global market for Fintech is expected to reach around $305 billion by 2025.

With the digitalization of the financial market, we have simultaneously seen the emergence of blockchain cryptocurrencies. However, the opportunities in the crypto sector far surpass investing in Bitcoin (Srinivasan, 2019). The blockchain market has the ability to extend the Fintech ecosystem further with a new set of innovations and business models. Although the crypto currency buzz of 2018 dropped off, there is a variety of new use cases for distributed ledger technology opening the door for opportunities in the years to come.

With the culmination of a digital transformation within the financial technology world, an ecosystem is being built around us with technologies including artificial intelligence, cloud computing, big data, advanced analytics, internet of things, blockchain, and quantum computing.

9.0 Reflections

There will always be challenges in any project coming in different forms throughout the process and this project was no different. The first problem the team faced was grasping the background of the project. The project began due to the four students of us being enrolled in a class and our advisor coming with a solution by having a semester project involving Financial Technology. This was a daunting but very exciting opportunity as all four students had no experience in Financial Technology. With that said, each of us had a very unique background and we were at different levels in our educational experience. The first portion of this project was spent understanding the basics of Financial Technology and the main aspect of our project concerning Robotic Process Automation. Through this portion, our team met regularly to share findings from research and build a background as quickly as possible. The team also had opportunities from our advisor for guest speakers to discuss different areas of FinTech to build our confidence and broaden our perspective.

The next challenge the team faced was defining the problem. The first step was creating a full background of all possible Robotic Process Automation techniques to understand the different types. The team found that there were not concrete definitions for these techniques since the area of study is still evolving through advancements in AI. This required us to research from many different companies as well as discuss with stakeholders to get a full understanding of what basic RPA encompassed. From here, the different types of RPA including IPA and CPA were defined. This helped keep consistency for the remainder of the project. Finally, the scope of the project came as we discussed with stakeholders to understand that the key problem arose with adopting the technology. The team was then able to bring the scope in from initially

obtaining cost data to focusing on customer and vendor perspectives on their view of RPA in their business.

In doing this project, the team had diverse perspectives all having a different education level and field of study. Each team member brought different skills to provide a full conclusion on the impact of RPA right now and going forward in the future. Overall, the project was a great learning experience, given the opportunity to explore a field completely foreign at the start and to develop recommendations for future companies and experts to view and compare based on how RPA evolves going forward.

10.0 Learning Assessment in Business

Throughout this project, the team encountered many situations that challenged our current perspective and teamwork ability or provided an opportunity to shift to help the team grow. Through these challenges, the team might fail at some points but in order to reach success. The team learned lessons as a result that would be helpful in future group work and our careers going forward. Leadership was one of the first areas our group experienced right from the start. The structure of our group had Dakota as our project manager due to the difference in credit for the course. Even though this noted a difference in workload, it did not mean that the remaining three members did not need to have the same teamwork ability. The team was able to work efficiently throughout the time, but there were situations often where a couple of us may need to be absent from a meeting or could not put in the same level of work for one week. Through this, our team members were challenged to take the lead sometimes in the moment for last-minute emergencies. From this, our team realized we were not always on the same page and began to communicate more openly and ask any clarifying questions. This helped to ensure that anyone of us could take over at any point if need be. For the future, the team should establish a safe environment knowing that we are truly in this together and that communicating our thoughts and questions is important. This can be done through writing a brief team charter or having a discussion to get to know each other before diving deeper into the project. This is a crucial lesson for us in reducing the ambiguous time of wondering and to communicate instead to support each other and know that we can all lead this team no matter what role.

Diving into the project context more, the team learned how the industry where RPA is involved is crucial to how it operates. Starting from the ground up, the team researched the basics of RPA but would struggle with how to apply it to the context of the two main industries

of Insurance and Financial Services. The types of tasks being mostly mundane, repeatable ones were clear for RPA, but it required more of an understanding of the FinTech ecosystem to put everything into context. This was aided through guest speakers our advisor would host talking on different topics that were not directly related to RPA but provided context for where it can be applied and integrated. The team learned how the FinTech industries are intertwined and how our main topic of RPA can be applied to these fields. In the future, the main thing the team might do differently is to start with a general dive into the topic of FinTech before going into RPA especially since the team did not have a background in FinTech. This was difficult to see at the time since RPA processes were the main focus for the project but doing the general dive first would give a foundation when building into the project itself.

The team learned about the different cultures in how RPA is understood and how RPA is delivered depending on the vendor. The team spoke with the startup company initially and how they delivered RPA to their customers. However, the method of delivery for a much larger company showed stark differences. Through interviews and survey results of RPA vendors, the team found that the delivery of RPA seemed to also reflect in how customers perceived it. The team began with focusing on the total cost of ownership for RPA solutions but found that there were many opportunities in understanding how customers perceived the RPA solutions to understand the limitations and worries with it. Going forward, the team would focus on the qualitative aspect first to understand the perspective of the stakeholders in our project. This lesson is important for our team as we begin to enter the career world and understand how each company has a different perspective and to understand how to communicate our own perspective in helping to grow the company.

During this project, the team was entirely remote in most meetings until towards the end. Time management was difficult during this period of the pandemic as virtual courses were commonplace and the strain played a toll. Even though there was time available the lack of in-person interaction made it difficult to be very engaging. The team learned that even just doing work individually or having a meeting but while in the same room is much more effective than doing it virtually. The team was able to hold in-person meetings towards the end of the project and showed to be very helpful in completing the report and bringing all of our findings together. The team also learned that shorter virtual meetings were more beneficial and were used to bring all of us on the same page. Otherwise, talking through a group chat was the most efficient method as we could contact at all points of the day and the responsiveness was very good. This was important to better use the time we had as a group and use the time we had available efficiently.

Finally, the team learned that openness and effective communication were very important to the team management and resulting meetings with our sponsor. The concepts within this project were very new to all team members but we all had very different backgrounds. As we learned the material each had a different perspective. Because of that, it was valuable to have an open mind into providing a comprehensive understanding of RPA and the FinTech Ecosystem. The team learned that openness to new ideas or opinions and communicating was important to develop new ideas and directions especially as roadblocks emerged including a shift from the total cost of ownership, a very quantitative task, to the perception of customers and vendors, a more qualitative task. In the future, one thing to help this would be to have some brainstorming sessions as to how we each interpreted RPA as we learned about it, for example, each of us writing our own definition and why and where we think it is effective. Having a more structured

environment would allow for additional ideas and building upon them in a structured format and communicating them all in one place. This was important to how the team could approach the project in different lights and provide a holistic perspective on RPA in the FinTech ecosystem.

11.0 References

1. Burgess, A. (2016, February 24). Time to Talk - RPA and AI In Contact Centers. Retrieved February 25, 2021, from https://blog.symphonyhq.com/time-to-talk-robots-and-ai-in-contact-centres

2. Castro, Paola & Rodrigues, José & Teixeira, Jorge Grenha. (2020). Understanding FinTech Ecosystem Evolution Through Service Innovation and Socio-technical System Perspective. 10.1007/978-3-030-38724-2_14.

3. Copeland, B. (2020, August 11). Artificial intelligence. Encyclopedia Britannica. https://www.britannica.com/technology/artificial-intelligence

4. Cranfield, A., & White, D. (2016). The rise of the robo-insurer. *Ninety consulting papers*.

5. Folger, M. (2019, December 11). Calculating rpa's total cost of ownership. Retrieved February 17, 2021, from https://www.hpa.services/calculating-rpas-total-cost-of-ownership/

6. Gaynor, M. (2020, January 29). Automation and ai sound similar, but may have vastly different impacts on the future of work. Retrieved March 14, 2021, from https://www.brookings.edu/blog/the-avenue/2020/01/29/automation-and-artificial-intelligence-sound-similar-but-may-have-vastly-different-impacts-on-the-future-of-work/#:~:text=Artificial%20intelligence%20can%20be%20a,the%20automation%20report%20focused%20on.&text=In%20the%20more%20recent%20AI,in%20large%20quantities%20of%20data.

7. Gupta, S. (2018, September 17). Making sense of nonsensical rpa software pricing. Retrieved February 17, 2021, from https://www.hfsresearch.com/research/how-to-make-sense-of-nonsensical-rpa-software-pricing/

8. Hofmann, P., Samp, C., & Urbach, N. (2020). Robotic process automation. Electronic Markets, 30(1), 99-106.

9. Huang, F., & Vasarhelyi, M. A. (2019). Applying robotic process automation (RPA) in auditing: A framework. *International Journal of Accounting Information Systems*, *35*, 100433.

10. Institute for Robotic Processes Automation & Artificial Intelligence. (2016, January 1). What is Robotic Process Automation? Retrieved February 24, 2021, from https://irpaai.com/what-is-robotic-process-automation/

11. Krueger, C., & Johnson, T. (2016). Financing the Future of Mobility. Deloitte. https://www2.deloitte.com/content/dam/insights/us/articles/transportation-ecosystem-future-of-auto-finance/DUP%203137_Future%20of%20mobility_Financing_vFINAL.2.pdf.

12. Lamberton, C., Brigo, D., & Hoy, D. (2017). Impact of Robotics, RPA and AI on the insurance industry: challenges and opportunities. *Journal of Financial Perspectives*, *4*(1).

13. Le Clair, Craig. *The RPA Market Will Reach $2.9 Billion By 2021*, Forrester , 13 Feb. 2017, www.forrester.com/report/The RPA Market Will Reach 29 Billion By 2021/-/E-RES137229.

14. Maruti Techlabs. (2019, October 04). 8 Benefits of Implementing RPA in Banking and Finance. Retrieved April 22, 2021, from https://marutitech.com/rpa-in-banking-and-finance/#RPA_Use-Cases_in_Banking

15. Roots Automation. (2020, October 19). 4 things to know about CC - UNDERSTANDING key AUTOMATION technologies: ROOTS Automation. Retrieved March 20, 2021, from https://www.rootsautomation.com/blog/4-things-to-know-about-cc-understanding-key-automation-technologies

16. Roots Automation. (2020, October 19). 4 things to know about ML - UNDERSTANDING key AUTOMATION technologies: ROOTS Automation. Retrieved March 20, 2021, from https://www.rootsautomation.com/blog/4-things-to-know-about-ml-understanding-key-automation-technologies

17. Roots Automation. (n.d.). What's the Difference between RPA and Digital Coworkers? Retrieved March 20, 2021, from https://uploads-ssl.webflow.com/5fce5932bb2c6473ea642b6a/5fde6ba53ee7a05f76dce562_RPA%20v.%20Digital%20Coworkers.pdf?utm_source=ActiveCampaign&utm_medium=email&utm_content=Here+s+your+whitepaper&utm_campaign=Whitepaper+Auto-Responder%3A+RPA+v++Digital+Coworkers

18. Srinivasan, B. (2019, April 10). Building the Cryptocurrency Ecosystem. Retrieved May 3, 2021, from https://ecorner.stanford.edu/podcasts/balaji-srinivasan-coinbase-building-the-cryptocurrency-ecosystem/

19. Stricker, K., Wendt, T., Stark, W., Gottfredson, M., Tsang, R., & Schallehn, M. (2020, October 29). Electric and Autonomous Vehicles: The Future Is Now. Bain & Company. https://www.bain.com/insights/electric-and-autonomous-vehicles-the-future-is-now/.

20. UiPath. (2020, August 28). Attended vs. Unattended Automation. Retrieved March 31, 2021, from https://docs.uipath.com/orchestrator/docs/attended-vs-unattended-automation

21. Van der Aalst, W. M., Bichler, M., & Heinzl, A. (2018). Robotic Process Automation. *Business & Information Systems Engineering*, 60(4), 269-272. doi:10.1007/s12599-018-0542-4

22. Work Fusion. (2020, November 12). What is RPA and How Does it Work? Retrieved March 3, 2021, from https://www.workfusion.com/blog/what-is-rpa-and-how-does-it-work/

Appendix A: Interview Questions for RPA DIY Companies

1. Where did you first hear that RPA could help your business?
2. Where are you using RPA?
   a. Where do you attend to use RPA in the future?
   b. What benefits are you trying to generate by using RPA in your processes?
3. What is your strategy for using RPA?
4. What is the main process you were trying to address by implementing RPA into your business?
5. How do you plan on scaling your RPA processes?
6. Have you experienced unexpected benefits once you implemented RPA?
7. Why did you decide to create the RPA system on your own instead of finding a vendor?
8. Who has been added/shifted to different roles as a result of implementing RPA?
9. What is the budget allocated for the launch of implementing RPA?
10. What are some of the roadblocks you have faced so far in trying to implement and develop RPA?
11. What is the company culture like in accepting (being motivated?) to implement RPA?
12. At what point did you feel like the RPA journey hit a breakthrough?
13. If successful use so far, how have the tasks and responsibilities of your employees changed?
14. How much has been invested into implementing RPA?
    a. What are the labor costs for implementing RPA?
    b. How have profits changed when adding RPA?
    c. How long do you predict it will take to break even?
15. How did you decide that the TCO of implementing RPA was worth the investment?
16. Did you hire software and data engineers to develop and maintain the RPA?
17. Did your organization need to scale up the technical infrastructure to support the implementation of RPA (servers, cloud, etc.)?
18. Has the implementation of RPA brought up any new running and maintenance cost?
19. What are the-financial metrics that are important to the company?
20. What is your strategy to scale your RPA product once you are working with a customer? What do these scales look like?

Appendix B: Interview Questions for RPA Vendors

1. What is your role within the company?
    a. How long have you been there?
2. Please explain your product and its capabilities?
    a. Are your bots designed specifically for one task or can they perform multiple tasks?
    b. What distinguishes you from your competitors?
3. How long does it take to complete a proof of concept or proof of principle?
4. How do you measure the value of your RPA products?
5. What are the expectations of your customers?
    a. Are your customers' needs more targeted or more board?
6. How many people are on your team?
    a. What is the supply chain of your product?
    b. How many other teams interact with the product?
    c. What other resources are required?
7. On average, how many customers are using your products in a year?
    a. What is your target customer audience?
8. How much is the initial investment of one RPA bot?
    a. What goes into that cost?
    b. Is there a contract minimum for purchase orders?
    c. What is the yearly subscription cost of your services?
9. What do you leave for your customers to buy/source beyond the RPA software? Ex. Servers, OCR, AI
10. What are your costs related to labor?
11. What are your costs related to maintenance?
    a. Do you charge extra for enhancements made to the bots?
12. What are your costs related to enabling technologies?
    a. ML/AI?
    b. OCR?
    c. Workflow?
    d. Communication?
    e. Reporting?
13. What are your costs related to product development?
    a. Interactive/Runtime Resources?
    b. SQL Database Servers?
    c. Application Servers?
14. How much does a system integrator typically charge?
15. What are your costs related to production?
    a. Interactive/Runtime Resources?
    b. SQL Database Servers?

      c. Application Servers?

16. Does the total cost of ownership differ depending on the industry of your customer?

17. What is the average ramp up time for setting up the RPA bots?

      a. What goes into your ramp up time?

      b. How long does the RPA bot usually take to learn the system of the customer?

18. What is the average payback period for companies that have used your bots in the past?

19. What is your return on investment percentages?

20. How does a customer know that they will get a return on their investment?

Appendix C: Survey Questions for RPA DIY Companies

1. Is Robotic Process Automation (RPA) part of your operations?
    a. Yes, implemented and now scaling
    b. Yes, Implemented
    c. Testing, POC, Piloting
    d. Not yet, but planning
    e. Not now
2. The initial cost of acquisition was a factor in making this decision.
    a. Yes
    b. No
3. Additional costs (maintenance, support, upgrades) were considered when we made this decision.
    a. Yes
    b. No
4. How long have you been looking into process automation for?
    a. 0-1 years
    b. 1-3 years
    c. 3-5 years
    d. 5+ years

5. What expectations did you have for the automation? What problems did you think it would solve? Please explain.

6. What metrics would you measure the success of automation with?

7. Where was the pushback on implementing RPA coming from?
    a. Employees whose jobs included tasks that are being implemented
    b. Employees in general
    c. Senior management
    d. CEO/CFO
    e. Other [free text to explain]

8. Did the automation create any new problems? Please explain.

9. Did you scale down your FTE (full time equivalent) in the department where automation was implemented, after deploying the automation?
    a. Yes - Please explain
    b. no

11. How do your employees feel about automation? Please explain.
    a. Mostly in support
    b. Indifferent
    c. Mostly not in support
    d. [Free text for explanation]
12. Would you consider your company culture to be progressive? (maybe add definition or examples)
    a. Yes
    b. No
13. Is upskilling employees and providing professional development a big investment that your company makes regularly?
14. Have you noticed a change in customer satisfaction since deploying RPA? How was this quantified? Please explain.
15. Do you plan on scaling up RPA in the future? If yes, how far out is this effort?
16. What tasks are you currently automating? Which of the following areas will it or is it being used in? Please check all that apply.
    a. Budgets and analysis
    b. Credit and collections
    c. Financial Reporting
    d. General Accounting
    e. Internal Audit
    f. International Accounting
    g. Human Resources and Payroll
    h. Treasury
    i. Other (please specify)
17. Are changes to bots made internally or externally?
18. What do companies say about RPA impact on employees (by RPA maturity)
    a. Many employees are worried that their jobs will be displaced by automation
    b. Since RPA will handle basic activities, staff skills will become more analytical, interpersonal, and strategic
    c. Our organization works closely with employees to understand and address their concerns about RPA
    d. Our RPA implementation strategies include plans for training, developing, hiring, and redeploying staff
    e. Most employees working with RPA are happy that mundane tasks have been automated
    f. The use of RPA has or will eliminate a substantial number of jobs in our company
    g. We are facing a significant shortage of staff that can help implement and maintain RPA
20. How well does your leadership understand the strategic need for RPA?
    a. Never heard of it

b. Some awareness of RPA
c. Good understanding of the concept
d. Wants to understand more beyond base concepts
e. Deep understanding

Appendix D: Survey Questions for RPA Vendors

1. Which way do you get most of your clients?
   a. Marketing effort
   b. Client recommendation
   c. Client reaching out
   d. Other [free text to explain]
2. In the cases of marketing effort to convince clients, where do you typically get pushback from?
   a. Employees whose jobs included tasks that are being implemented
   b. Employees in general
   c. Senior management
   d. CEO/CFO
   e. Other [free text to explain]
3. Which industry typically finds the most value in process automation?
   a. Banking/Finance
   b. Insurance
   c. Healthcare
   d. Manufacturing
   e. Other [Free text to explain]
4. How often do clients make decisions based on upfront costs?
   a. Very often
   b. Sometimes
   c. Less often
5. In your experience, what are common roadblocks to a smooth deployment?
6. What are some areas of post-implementation costs?
   [free text to explain]
7. Who and what tools are used to maintain/repair the bots?
8. How is your support organization structured and managed?
9. On average, how much time does it take to create a bot? How much time does it take to repair a bot?
10. What is internally required by customers before RPA deployment?
11. What are the common themes among your customer profiles? In terms of company industry, size, culture, etc.?

Appendix E: IRB Consent Form

Informed Consent Agreement for Participation in a Research Study

Investigators: Brandon Fox, Stephen Frimpong-Manso, Kiara Sanchez, and Dakota Wheeler

Contact Information: djwheeler@wpi.edu and rsarnie@wpi.edu

Title of Research Study: Robotics Process Automation Analysis in the Financial and Insurance Industries

Introduction

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

Purpose of the study

The purpose of this research is to understand the different cost data points that comprise the total cost of ownership of robotic process automation processes (RPA) within the financial and insurance industry. From these data points our goal is to create a total cost of ownership analysis that compares the costs of RPA processes with cognitive process automation (CPA).

Procedures to be followed

In this specific study, our method of collecting data is by interviewing. You will be asked to answer questions that have to do with the processes that you use RPA for, or the RPA tools you have potentially researched for your company.

Risks

There are a few risks that we anticipate could occur during the study:

- There is a risk that you may feel uncomfortable with sharing company information
- There is a risk you may feel anxious or pressured to answer questions

Benefits

This study will help us analyze the different costs that are associated with robotic process automation and what different processes within the finance and insurance industries are able to

be automated. This study will also allow us to compare the differences in costs of robotic process automation and cognitive process automation.

Compensation for participation

Participants will not receive any compensation.

Audio/Video Recording

We will audio/video record the zoom interviews to ensure that no information is missed during the interview. The audio recordings will not be shared publicly and will only be used within this study and will be archived after transcription in a password protected folder for only the investigators involved in this study.

Please sign below if you are willing to have this interview audio recorded. You may still participate in this study if you are not willing to have the interview recorded.

 i. I do not want to have this interview recorded.
 ii. I am willing to have this interview recorded.

Signed:_____

Date:_____

Privacy/Confidentiality/Data Security

Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or it's designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you.

Sharing De-identified Data Collected in this Research

De-identified data from this study will not be shared with anyone outside the WPI community.

Future use of Identifiable Data or Specimens Collected in this Research

Identifiable information will not be used for future research.

Your participation in this research is voluntary

Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

If you have questions

If you have questions after the interview is completed, you may contact our team at djwheeler@wpi or rsarnie@wpi.edu. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the IRB Manager (Ruth McKeogh, Tel. 508 831-6699, Email: irb@wpi.edu and the Human Protection Administrator (Gabriel Johnson, Tel. 508-831-4989, Email: gjohnson@wpi.edu)

By signing below, you acknowledge that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

_____   Date:_____

Study Participant Signature

_____

Study Participant Name (Please print)

_____   Date:_____

Signature of Person who explained this study