

ROBOTIC PROCESS AUTOMATION AND ACCOUNTANTS

By

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1. GENERAL OVERVIEW

1.1 Background to the Paper:

The broad thematic topic of this MCPD session is Technology Innovation in Accounting and Internal control. Deriving from it, the focus of our attention in this training will be on the sub theme: Robotic Process Automation Process (RPA) and Accountants. I have gone further to simplified it as "Robotic Accounting" and would be using both words inter-changeably.

Accounting has always been a field that values precision and accuracy, timeliness, flexibility and accuracy. With the advent of Robotic Process Automation (RPA), achieving these important standards have been made possible and easy. In effect, deploying technologies such as RPA, in processing routine, repetitive and often time-consuming tasks such as processing invoices, input and retrieval of data, web scraping, management of accounts payable and receivable, reconciliation of accounts allows Accountants to focus their attention in developing strategic plans and other value-added decision-making tasks within their organizations which are not amenable to non-human control.

From the onset, it is essential to differentiate between RPA and Artificial Intelligent (AI) in order to understand their distinct features

and capabilities. RPA are virtual machine assistants designed to perform specific repetitive and routine tasks. However, AI stimulates human intelligence by acquiring, reasoning and handling complicated processes via natural speech processing and recognition. However, nowadays, organizations have started combining RPA and AI in an effective synergy in a new concept known as Intelligent Automation (IA) to further transform their processes for greater efficiency.

1.2 Learning Objectives:

The overall objective of this paper is to familiarize participants with general knowledge about Robotic technology as a relevant tool, technique and strategy that can be used by Accountants for effective and efficient performance of their functions.

At the end of this training, participants should be able to:

- Demonstrate better understanding of what Robots are all about and learn both the conceptual framework and its current relevance in the practice of their profession as Accountants.
- Comprehend the historical evolution of Robotic science, the development of Robotic Process Automation (RPA) and contributions of some Nigerians in this area of knowledge.

- Appraise the benefits and limitations of adopting RPA in their professional practice and in other fields of human endeavors and how to overcome the challenges posed by RPA.
- Discuss the relationship between RPA and other emerging technologies in fields of Artificial Intelligence (AI) and Machine Learning (ML).
- Articulate and predict the future impact of RPA on the Accounting Profession and in solving other emerging real - life challenges.

1.3. Contents of the Paper include:

- Meaning, the evolution of Robotic Science and the development of RPA technology (including roles and contributions of some Nigerian scientists in this area of knowledge)
- Types, key features and tools of RPA
- RPA cycles(including step by Step Approaches on how it works in accounting)
- Application of RPA in the Accounting Process
- Other areas of application of RPA
- Benefits and Success Stories of RPA
- Challenges of Implementing RPA and how to overcome the limitations
- The impact of RPA on the Accounting Profession
- Critical Questions Concerning RPA
- Final Thought.

2. Definition, Evolution and the Development of RPA

2.1 Definition of RPA

Robotic Process Automation (RPA) is a form of business process automation technology that uses software robots or (bots for short) to perform routine tasks traditionally done by humans. These bots can be programmed to follow rules - based procedures and they are capable of interacting with digital systems in the same manner a human user would.

Also, commonly referred as robotic accounting, RPA in accounting is changing the entire professional landscape, allowing for more efficiency, consistency and accuracy in the performance of accounting tasks.

In essence, robotic accounting is the application of RPA technology to automate the repetitive, time consuming and rule-based tasks that are prevalent in accounting by using software robots to replicate the actions of a human user and in the process automate many manual and routine processes. This ensures that Accountants focus their valuable time and energy on strategic planning and value-added decision-making to enhance efficiency and increase productivity.

2.2 Evolution and Development of RPA

Although, the history of Robotic science dates back to about 2000 year ago and has undergone several evolutionary transformations, however, the term RPA was first coined by Phil Fersht (Founder and CEO of Hierarchical File System, HFS) in 2012. But it was in 2018 that the technology gained popularity as many organizations undertook digital transformation causing massive improvement in RPA platforms. Of particular interests in this presentation, also are the significant contributions of our own Nigerian scientists in the field of Robotics that have attracted global attention and acclaim but with little or no recognition locally. Proudly mentioned here are:

Chuks Ekwueme, Chairman/CEO, Unicorn Group (a Nigerian firm founded in 2020) that created the first Humanoid Robot named **Omeife**, a female Igbo character that is well versed in African culture and behavioral pattern that is capable of speaking several languages including English, French, Arabic, Pidgin, Kiswahili etc. Omeife also has the capacity to add value to security according to the company depending on how it is deployed whether it is surveillance, intelligence gathering, profiling, Robo - Army and lie detection;

Silas Adekunle, renowned, globally recognized and described as the smartest Robotics Engineer in the world is a Nigerian. At the age of 31 he became the world's highest paid in the industry for his extraordinary skills and exceptional talent. Founder of Reach Robotics, a company that specializes in the development of advanced robotic technology for

gaming and entertainment. He is credited for building the world first intelligent gaming robot named **Mekamon** in 2016.

Dr Olusola Ayoola is another Robotics Engineer and founder of Robotics and Artificial Intelligence research based advanced Control and Systems Engineering from Nigeria who has caught global attention and doing great exploits all over the world.

(To display short interesting video clips during presentation if time permits).

3. TYPES, KEY FEATURES AND TOOLS OF RPA

3.1 There are three basic types of RPA:

- Attended RPA which resides in the user's machine and is usually invoked by the user whenever it is needed.
- Unattended RPA: These are like batch processes on the cloud. Data processing tasks are carried out in the background.
- Hybrid RPA is a blend of the two for improved efficiency by combining the merits of both attended and unattended RPA.

3.2 The key features of RPA include:

- Perform tasks based on predefined rules and instructions.
- Ability to interact with any software or system, just as a human would.
- Seamless integration without requiring changes to existing systems or infrastructure.
- High speed and accuracy in executing tasks, reducing errors and increasing productivity.

3.3 RPA (Software) Tools and Language:

There are currently about 31 software in the market but some of the notable ones include:

- Zaptest Enterprise
- Uiopath Business
- Automation Anywhere
- SS&C Blue Prism
- Kofax RPA
- Pega platform
- Microsoft Power

Generally, Python is the commonly used language for AI and ML which is also applicable to RPA.

4. RPA Life Cycle and How it Works:

4.1 The following five stages underpin the process of initiation and implementation of RPA and these include:

- Planning
- Development
- Testing
- Deployment
- Monitor and Maintenance

4.2 Robotic process automation (RPA) employs programmable software bots to automate repetitive financial tasks efficiently. Unlike a Microsoft Excel that is limited to one system, robotic process automation in accounting operates with enhanced power and reach, *streamlining processes across multiple systems* for increased efficiency and accuracy. If you have ever written scripts in Excel to automate certain repetitive tasks, then you have already got a taste of what robotic accounting can do.

In robotic accounting, software robots or 'bots' are programmed to perform tasks traditionally done manually by accountants. These can include anything from data entry and accounts payable management to performing audit tests and generating financial reports. Like your scripts, these bots follow predefined rules and procedures, but unlike Excel, RPA tools can interact with multiple

software systems and complete complex tasks in a fraction of the time.

4.3 A step-by-step breakdown of how robotic accounting works:

- **Identify tasks for automation:** The first step is identifying the tasks that are suitable for automation. These are typically high-volume, rule-based tasks that don't require complex decision-making. This step also requires the engagement of stakeholders and proper analysis of tasks.
- **Develop the Instruments and Process Models:** Once the tasks have been identified, the next step is to configure the instruments (bots) and develop the process models for the automation. This involves programming them with the rules and instructions to perform the tasks.
- **Test Run the Instruments (bots):** The configured bots are then run on the accounting software or systems. They perform the tasks just as a human being would interact with the software, entering data, and generating reports.
- **Monitor and maintain the bots:** The final step is monitoring the bots to ensure they are performing their tasks accurately as envisaged. This can involve regular checks and updates to the bots as required.

5. Application of RPA in the Accounting Process:

- 5.1 Invoice processing: RPA can be used to automate the process of sorting and processing invoices. The bot can scan incoming invoices, extract the relevant data, match invoices with purchase orders, and even initiate payments. This not only speeds up the process but also eliminates the risk of human error.
- 5.2 Payroll processing: RPA can also be employed in payroll processing. The bot can calculate salaries based on attendance and other set parameters, generate pay slips, and transfer payments to employees' bank accounts. This ensures that everyone is paid correctly and on time.
- 5.3 Financial reporting: Financial reporting is a time-consuming and error-prone process. But with RPA, all the data required for financial reports can be collected, organized, and presented in a streamlined manner. The bot can pull data from various sources, perform the necessary calculations, and generate reports, reducing the time taken and ensuring accuracy.
- 5.4 Bank reconciliation: The bot can match entries from the bank statement with the company's internal financial records, quickly identifying any discrepancies and alerting the relevant staff. This

process, which could take hours if done manually, can be completed in a matter of minutes with RPA.

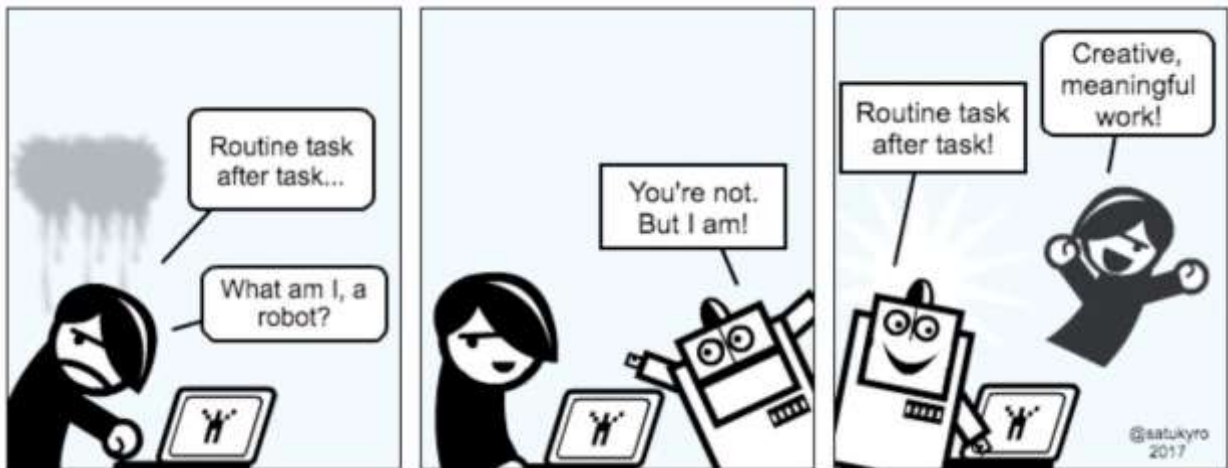
- 5.5 Audit processes: The bot can access and analyze large volumes of data from multiple sources, identify anomalies or irregularities, and create detailed audit reports. This enhances the efficiency and accuracy of the audit process, and allows auditors to focus on higher-level tasks that require professional judgment and decision making.

6. Other Sectoral Application of RPA

- 6.1 **Education**: To automate the process of collecting, processing and analyzing students' data and feedbacks.
- 6.2 **Aviation**: Ticketing, check in, boarding, etc. to streamline operations and enhance passengers' experience and for airlines to remain competitive in an industry operating in very dynamic environment.
- 6.3 **Health**: Collection of patients' data and scheduling of appointments in the hospital.
- 6.4 **Government**: RPA bots can be used by government agencies to process citizens inquiries about services, validation of application data, verify identities and personal information, approve applications

or to route them to appropriate agencies for processing or approval
e.g., driver's license, passports (both for new application or renewal).

7. Benefits of RPA (Robotic Accounting)



Are we as Accountants all not a little tired of tedious, repetitive tasks that consume valuable time? Think of all the spreadsheets you have had to manually update, the invoices you have had to painstakingly process, and the countless reports you have had to generate.

Robotic accounting can take over these routine and repetitive tasks, freeing up your time to focus on more strategic, creative and customer - centric decision-making responsibilities.

Here are some of the key advantages of using RPA:

7.1 Cost efficiency

Accounting automation through RPA can significantly reduce the labor costs associated with these tasks. For instance, a bot can handle invoice and payroll processing, allowing your staff to focus on more strategic tasks like resource allocation.

This not only reduces the need for additional hires but also decreases the likelihood of costly errors that can occur with manual processing.

7.2 Increased accuracy

Most times repetitive tasks are mind-numbing. When performed manually, they are prone to human errors. Bots, on the other hand, are highly accurate. Once programmed with the correct rules and procedures, they can execute tasks without errors, ensuring data accuracy and reliability.

For example, a bot performing bank reconciliation will not miss any discrepancies between the bank statement and the company's records which ensure processing accuracy.

7.3 Fast Implementation and Enhanced productivity

Your staff would no longer be bogged down by mundane and repetitive tasks, which means they can focus on more significant, value-adding functions. This can lead to an increase in productivity, improved efficiency in the workplace, greater employees' satisfaction and overall higher return on investment.

For instance, while the bot takes care of the financial reporting, your team can analyze the reports and devise strategic financial plans.

7.4 Improved compliance

Bots can be programmed to log in to different systems and update and maintain records as and when required. This ensures all records and transactions are up-to-date with necessary regulations and compliance standards. For instance, a bot can be designed to create purchase orders every time a request for goods or services is approved.

7.5 Enhanced data security

RPA can be programmed to adhere strictly to internal access controls, reducing the risk of data breaches. For instance, when processing payroll, the bot can securely handle employees' sensitive information and ensure it is not exposed to unauthorized access.

7.6 Scalability

RPA easily adapts to changing workloads without significant additional infrastructure investments. Bots can easily scale up or down to meet demands, without any compromise on speed or accuracy. This flexibility means that you can handle growth or sudden spikes in demand without needing to recruit more staff or invest additional resources.

7.7 Round-the-clock operation

Bots can work 24/7 without breaks. This means that tasks can be performed outside of NORMAL working hours, ensuring smooth operations and faster turnaround times. For instance, a bot can process invoices or reconcile bank transactions during off-peak hours, reducing the workload during the day and accelerating the processes and enhancing overall productivity.

8. **The Challenges of Implementing RPA:**

Think about the time your vacuum cleaner got stuck on a rug. It is a simple reminder that not all tasks can be fully automated without human intervention. Similarly, introducing robotic accounting into your business operations will also have its own set of challenges.

Here are the main challenges that organizations might face when implementing robotic accounting:

8.1 Technical Glitches

Just like any other technology, RPA can have technical glitches that is capable of disrupting the automation flow. Let us say the Google Workspace account connected to your RPA bot gets logged out, the bot will not be able to perform its tasks unless it gets logged back in. This requires human intervention and monitoring to ensure the bot operates smoothly.

8.2 Complexity of Tasks

While RPA is great at handling repetitive and rule-based tasks, it might struggle with complex tasks that require judgment or decision-making. For instance, while a bot can collect your invoice data and process it, it might not be able to recognize when an invoice contains unusual charges or discrepancies that require further investigation.

8.3 Dependency on existing systems

RPA rely heavily on existing software and systems to perform their tasks. If these systems are updated or go through any major changes, the bots might not be able to perform their tasks efficiently without being reprogrammed or updated. This can introduce inefficiencies in the system and potential downtime.

8.4 Data Privacy and Security Concerns

While bots can be programmed to adhere to data security protocols, there are still potential risks. If a bot is hacked for example, it can compromise sensitive data and potentially lead to a data breach. Moreover, if a bot is not programmed correctly, it might accidentally violate data privacy laws.

8.5 Lack of Human Touch

Although robots can perform many tasks more efficiently than humans, there are still some tasks that require the human touch. For instance, customer service interactions or decision-making needs

empathy and understanding of nuanced contexts, which robots might not be equipped to handle.

8.6 Staff Resistance Lack of Buy-In from Other Stakeholders

If the employees are not trained properly, they may resist the change leading to underutilization of the technology. There may also be fear or apprehension about job security resulting to resistance. Therefore, it is essential to communicate the benefits of RPA clearly to the staff and provide adequate training and support to ensure smooth adoption.

8.7 Inadequate Integrations

While bots can be programmed to work with various systems, they might not seamlessly integrate with all types of software or platforms. If such incompatibilities exist, it could lead to inefficiencies and require additional human intervention.

For instance, if a bot is designed to pull data from a specific accounting software, but the software is replaced with a different one, the bot will need to be reprogrammed to work with the new platform.

9. **The impact of RPA (Robotic Accounting) on the Accounting Profession:**

According to Grand View Research carried out in 2019, the global RPA market size was predicted to increase from \$1.40 billion to \$11

billion by 2027. This indicates a growing acceptance of RPA (Robotic Accounting) in modern workplaces. However, it is essential to understand that the increase in automation does not necessarily mean a decrease in the need for human. Instead, change in the nature and roles of Accountants are inevitable:

- 9.1 Shift in Roles: With the implementation of robotic accounting, the role of Accountants is shifting from manual data entry and report generation to more strategic functions. They are now required to interpret and analyze the data provided by the bots and make informed business decisions based on these insights.
- 9.2 Increased demand for tech-savvy Accountants: As businesses increasingly adopt automation, there is a growing demand for Accountants with technology orientation. These Accountants need to understand how to use RPA tools effectively, how to troubleshoot issues and can adapt to the changing technological landscape. Skills that will be critical for emerging Professional Accountants include: General AI literacy, Critical Thinking, Communication, Emotional Intelligence, Domain Expertise, Creative Problem - Solving and above all the need for continuous learning. Talking about upskilling, the pace at which AI is moving at very fast pace, we are required to learn all the time about new developments in this area. In fact, we are expected to study harder than we did in the school to be able to keep pace.

- 9.3 Emphasis on strategic decision-making: The integration of RPA in the accounting process places a greater emphasis on strategic decision-making. Accountants are now less burdened by mundane tasks and can focus more on providing strategic insights and advice. They are expected to interpret the data generated by the bots and use this to guide business strategy and decisions.
- 9.4 Higher efficiency and accuracy: The use of RPA in accounting increases the efficiency and accuracy of financial processes. By automating repetitive tasks, Accountants can focus more on tasks that require human intelligence and expertise, leading to more accurate outcomes and improved productivity.
- 9.5 Greater compliance and control: With bots handling the data, there is a reduced risk of human error and increased adherence to compliance regulations. Moreover, the use of RPA can provide greater control over financial processes as bots can be programmed to follow specific rules and protocols. This also ensures consistency in the process and helps in maintaining audit trails.
- 9.6 Risk management: RPA also aids in risk management by providing real-time data and insights. This allows Accountants to identify potential risks and take prompt actions to avoid or mitigate them by embarking on proactive risk management.

10. How to Manage the Limitations of RPA (Robotic Accounting)

10.1 The Use of Intelligent Automation Intelligent automation combines RPA with artificial intelligence (AI), Optical Character Recognition (OCR), and machine learning (ML) to overcome some of the limitations of robotic accounting. For instance, Nanonets intelligent automation can help automate the entire invoice processing workflow, from receipt to payment. It can extract data from invoices, validate it against purchase orders, identify discrepancies, and even make payment decisions based on predefined rules. It can also be used to digitize documents and extract relevant data, which can then be processed by AI and ML algorithms for intelligent decision-making. This helps in automating complex accounting tasks that require an understanding of context and rules. This significantly reduces manual intervention, eliminates errors and accelerates the entire process. Moreover, the AI and ML components enable the system to learn and improve over time handling exceptions and unusual cases more efficiently.

10.2 Role-based security capabilities can be assigned to RPA tools to ensure action-specific permissions. Additionally, all automated data, audits, and instructions that robots may access are encrypted to prevent malicious manipulation. There is no risk of data leaking from

one side to another since RPA works on a granular level. All data accesses are recorded and vigorously regulated.

10.3 Advanced-Data Analytics RPA enables businesses to collect important data to make better decisions through Real-time processing and high-volume workflow leading to simplification of organization's operations for maximum effectiveness.

10.4 Non-Disruptive Integration most business owners are hesitant to change or upgrade their current systems for a variety of reasons, including the cost of replacing the legacy systems, the potential risks for temporary business downtime, or the complexity of IT infrastructures. These fears are mostly unfounded and are to be allay. The advantages of Implementing RPA extend to legacy systems as well and extend their lifespan even without introducing complication or disruption. RPA bots interact with legacy systems at the presentation layer's end, similar to humans. Therefore, core technology program of the organization is unaffected.

11. The Relationship Between RPA and AI

While RPA can mimic humans and interact with digital systems, it however does not possess the ability to learn, adapt or make decisions on its own which is a key characteristic of AI. However, RPA and AI can be combined in certain applications to enhance automation and decision-making capabilities of systems.

12. Critical Questions About RPA

12.1 Is RPA the future?

Infact, there is no gain saying that AI, RPA and ML are fast becoming integral part of our digital life already. An AI powered RPA can do more than just execute pre-defined tasks. They can adapt and learn from data and continuously improve their performance and decision-making abilities. For example, KPMG, one of the global big four recently launched its custom - built generative AI tool called "KymTax" that act as a research assistant to help draft client advice for the company's tax professionals.

Some of the recently launched AI tools in current use by individuals and organizations within the digital space to make workflow easier include: OpenAI ChatGPT, Otter.ai and Canva Pro.

12.2 Can RPA Replace Human?

RPA is designed to automate routine tasks that used to consume employees' time. While it helps to free up time on human daily work schedule, it cannot replace the human himself but enhance it. It only helps to focus human attention on innovation and growth functions.

Contrary to the common misconception that AI will simply displace human beings in the workplace, AI will replace people with people according to Deloitte's AI Executive Rohit Tandon. He emphasized that the future belongs to AI - Human collaboration not replacement.

What he envisions is a revolutionary era where technology empowers, rather than replaces, the workforce.

AI will not snatch jobs, but will simply do away with some of the easier jobs, and create new roles. There is no doubt that humans are still very important in the loop.

This is not the first time that new technology has come with a threat of job losses. It happened before with past automation. Let us recall that the same kind of fear and apprehension of jobs getting wiped out existed when computers came into the scenario at the start of ICT revolution. But look at how many jobs have been created today globally because of IT. The same thing is going to happen with AI. What it will leave behind is tougher problems for human to solve. Looking at the pyramid of jobs, AI is starting with automating more of the easier jobs while AI will be used to supplement human knowledge and the ability to find information that can be shared back to serve people more effectively. When we consider how those huge supercomputers that existed long ago are now available today in our phones, some of the most powerful AI algorithms will be at our disposal in our purses, wallets and pockets as times goes on.

12.3 How successful has the use of RPA been?

The good success metric is about 80% with possible accuracy rate of 99% predicted. However, organizations need to weigh the cost of developing and implementing RPA against the actual business gain coming from the increased success rate.

According to the Institute for RPA, it is estimated that RPA systems save between 25% to 40% on labor expenses alone. Furthermore, McKinsey Digital discovered that using RPA business automation activities could yield a return on investment of 30% to 200% in the first year. According to the Deloitte Global RPA Survey, 85% of respondents say RPA met or exceeded their expectations in terms of benefits, such as accuracy, timeliness, and flexibility.

13. Final Thoughts

13.1 While robotic accounting has its limitations, the combination of RPA with AI, OCR, and ML offers promising solutions. It can automate complex tasks while improving accuracy and efficiency. Furthermore, it allows Accountants to focus more on strategic roles, increasing their value within organizations. There are many excellent RPA tools like Nanonets Intelligent Automation for organizations looking to automate their repetitive and rule-based activities. With their advanced features and easy-to-use interface, they can significantly streamline such processes and improve productivity.

13.2 It is important to set up dynamic guardrails and point-in-time regulations through collaborative efforts of government and enterprises because of the fast pace of development in the field of AI. There should be active forums that would continuously evaluate what has been built and to develop necessary regulatory frameworks for

adoption and implementation of AI. Government should act only as a catalyst and regulator not the owner.

13.3 In conclusion, adopting RPA technology not only offers immediate benefits but also prepares businesses for future challenges and advancements. As AI and ML continue to evolve, they will offer even more sophisticated solutions to improve business operations.

THANKS FOR YOUR ATTENTION
