British Journal of Computer, Networking and Information Technology
ISSN: 2689-5315
Volume 7, Issue 1, 2024 (pp. 108-114)
www.abjournals.org

AUTOMATION OF A COMPLAINT MANAGEMENT SYSTEM USING RPA

Oni Oluwabunmi Ayankemi[1*], Kabir Uthman Opeyemi[2], Bassir Abdullai Abiye[3], and Lawrence Adeolu Sunday[4]

[1-4] Department of Computer Studies, Faculty of Science, The Polytechnic Ibadan, Ibadan.

[*]Corresponding Author's Email: onioluwabunmia@gmail.com

Cite this article:

Oluwabunmi O. A., Uthman K. O., Abdullai B. A., Adeolu L. S. (2024), Automation of a Complaint Management System Using RPA. British Journal of Computer, Networking and Information Technology 7(1), 108-114. DOI: 10.52589/BJCNIT-2XZTFRUI

Manuscript History

Received: 22 Jan 2024

Accepted: 23 Apr 2024

Published: 17 May 2024

ABSTRACT: *The aim of this research work is to design and implement an improved system which will contribute greatly in providing solutions to evaluate the impact of RPA on the complaint-handling process in a school complaint portal. The proposed Robotic Process Automation for a complaint management system and student registration system can help in saving time and automating repetitive tasks. The complaint management system can instantly allow the admin to create different categories instead of doing it manually which takes a lot of time, compared to the automated process which will get the total number of students and complete it within a few minutes. The student registration system saves the admin the stress of opening the browser and typing the login credentials every time a task needs to be done. The 200 students' details were generated and turned into an Excel file within 4 minutes compared to the manual method which takes hours to complete.*

KEYWORDS: Robotic, Automation, Processing, Rule Based, RPA.

Article DOI: 10.52589/BJCNIT-2XZTFRUI
DOI URL: https://doi.org/10.52589/BJCNIT-2XZTFRUI

British Journal of Computer, Networking and Information Technology
ISSN: 2689-5315
Volume 7, Issue 1, 2024 (pp. 108-114)

www.abjournals.org

INTRODUCTION

Traditional manual complaint handling processes often suffer from delays, errors, and lack of transparency. The emergence of Robotic Process Automation (RPA) presents an opportunity to address these challenges and streamline the complaint resolution process. Robotic Process Automation (RPA) is a technology that employs software robots or "bots" to automate repetitive and rule-based tasks, mimicking human actions within a digital system. By implementing RPA in educational institutions' complaint resolution processes, administrators can leverage its capabilities to optimize efficiency, accuracy, and transparency, ultimately enhancing staff experiences.

In general, RPA is a system aimed at automating business processes through business logic and user inputs. RPA applications provide tools for users to define robots (or bots) that can mimic their interactions with applications processing a transaction, manipulating data, triggering responses and communicating with other digital systems. (Boulton, 2018). The first idea of how to automate processes using software came in 1935, when the computer scientist Alan Turing described how a systematic algorithm could work processes more effectively just like with all automation. RPA means replacing processes previously done by humans, but this time done by configuring a robotic software to perform the tasks, interacting between different systems such as spreadsheets, Customer Relationship Management (CRM) systems or Enterprise Resource Planning (ERP) software (Willcocks P. L., 2016).

This research study focuses specifically on the application of Robotic Process Automation (RPA) on the complaint handling process of a school complaint portal. The current complaint handling system in the educational institutions relies heavily on manual processes, resulting in delays, inefficiencies, and inconsistent resolution outcomes. Robotic Processing Automation System not only improves efficiency and eliminates unnecessary paperwork, implementing RPA in a school complaint portal has the potential to significantly improve the efficiency and effectiveness of the complaint resolution process. By automating repetitive and rule-based tasks, RPA can reduce the workload of the administrative staff and enable faster response times.

RELATED WORKS

Van der Aalst et al. (2018) worked on robotic process automation and its role in improving business processes using Artificial Intelligence (AI) and Machine Learning (ML), and in the process encountering the Process Complexity and Suitability. Nunik Afriliana & Arief Ramadhan (2022) studied to provide an overview of the latest trends and advancements in the field of RPA with Cognitive Automation. Brown, M. (2021) published research on the application of robotic process automation and control in various domains in order to provide a platform for the exchange of ideas and experiences related to the use of robotic process automation and control in various applications. Gami, Manishkumar et al. (2019) reviewed the current state of Robotic Process Automation (RPA) and its potential impact on business. Aguirre et al. (2017) developed a RPA software solution to automate rules based business processes that involve routine tasks.

Article DOI: 10.52589/BJCNIT-2XZTFRUI
DOI URL: https://doi.org/10.52589/BJCNIT-2XZTFRUI

British Journal of Computer, Networking and Information Technology
ISSN: 2689-5315
Volume 7, Issue 1, 2024 (pp. 108-114)
www.abjournals.org

METHODOLOGY

UiPath, an Artificial Intelligence application, was utilized to automate the process in two developed websites: Student registration system and Complaint management system. UiPath was used in automating the extracting of student details and turning it into an excel file in the student registration system; it was also used to automate and create categories, automating the admin login and registering large data of students in the complaint management system.

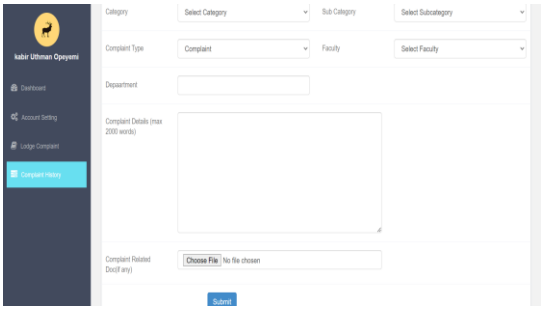
In essence, UiPath's capabilities were utilized to seamlessly connect to the website, automate login procedures, interact with the website's components, register a large number of students, extract targeted data using data scraping, and efficiently populate an Excel file with the extracted information.

Bootstrap was used to streamline the development process and enhance the overall user experience of the web application. JavaScript plays a central role in the projects; it is used to create interactive, feature-rich, and dynamic web applications that provide a seamless and enjoyable user experience. PHP (Hypertext Preprocessor) as a server-side scripting language to handle various server-side tasks and facilitate dynamic web development.

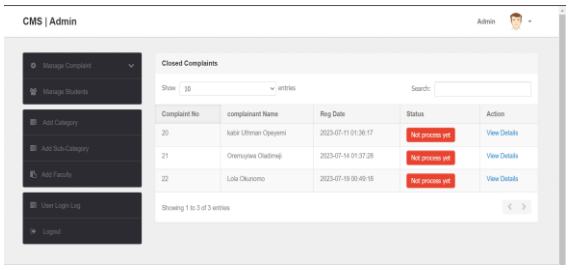
RESULT

The following are the snapshots of interfaces from the developed RPA system:

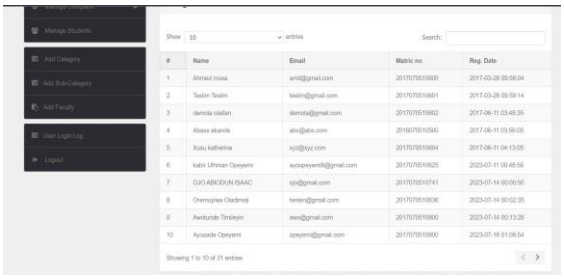
Student Login Interface



Complaint Interface



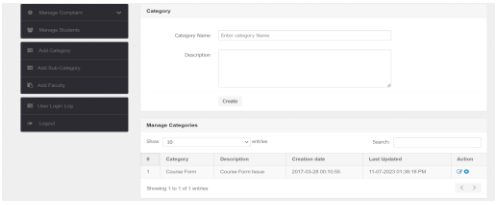
Admin Dashboard



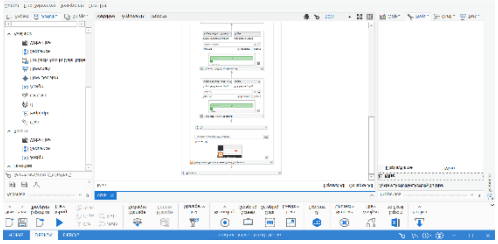
Students' List Interface

Article DOI: 10.52589/BJCNIT-2XZTFRUI
DOI URL: https://doi.org/10.52589/BJCNIT-2XZTFRUI

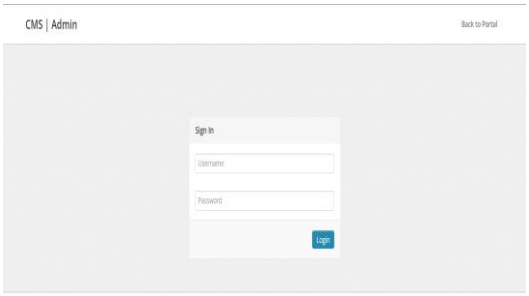
British Journal of Computer, Networking and Information Technology
ISSN: 2689-5315
Volume 7, Issue 1, 2024 (pp. 108-114)
www.abjournals.org



Add Category Interface

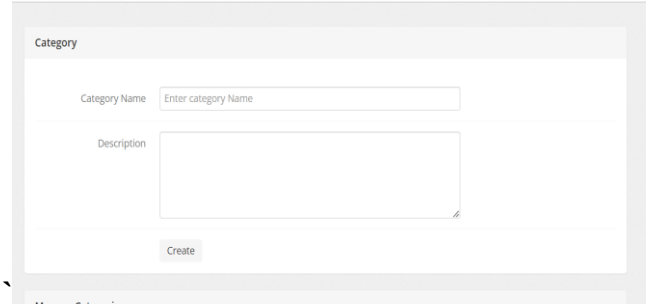


UIPATH Files for the Student Details Automation

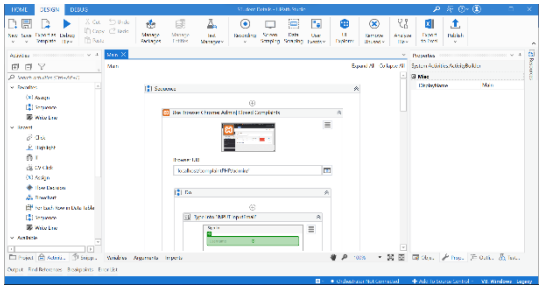


Website to Automate

Process of Extracting Student Details Interface



Automating Creating of Categories



Uipath File

RECOMMENDATIONS

Based on the achieved objective of this project and the experiences gained during its design and implementation, we wish to make the following recommendations for future improvement. Organizations should consider implementing Robotic Process Automation (RPA) within their complaint management systems to enhance efficiency, accuracy, and dependability. This proactive step will significantly alleviate the challenges faced by both students and staff when navigating through the complaint resolution process.

By automating various aspects of complaint management, RPA can streamline workflows and ensure consistent data validation. This not only reduces the burden on both students and staff but also enhances overall satisfaction. Integrating RPA into complaint management aligns with the pursuit of operational excellence, offering a tailored and robust solution that optimizes time and resources. This approach empowers the organization to address complaints efficiently. As

Article DOI: 10.52589/BJCNIT-2XZTFRUI
DOI URL: https://doi.org/10.52589/BJCNIT-2XZTFRUI

a result, the utilization of RPA in complaint management can lead to enhanced outcomes, reduced complexities, and elevated stakeholder satisfaction.

REFERENCES

1. Nunik Afriliana & Arief Ramadhan 2022. "The Trends and Roles of Robotic Process Automation Technology in Digital Transformation: A Literature Review, 51–73. Journal of System and Management Sciences.
2. Anderson, M., & Davis, S. (2020). Enhancing Complaint Handling Efficiency in Educational Institutions through Robotic Process Automation. Educational Administration Quarterly, 46(4), 567-584.
3. Aguirre Santiago 2017. "Automation of a Business Process Using Robotic Process Automation (RPA): A Case Study." Workshop on Engineering Applications.
4. Asquith, Alisha, and Graeme Horsman. 2019. "Let the robots do it! - Taking a look at Robotic Process Automation and its potential application in digital forensics." Forensic Science International: Reports 1.
5. Auth, Gunnar, and Frank Bensberg. 2019. "Impact of Robotic Process Automation on Enterprise Architectures." In INFORMATIK 2019: 50 Jahre Gesellschaft f¨ur Informatik Informatik f¨ur Gesellschaft (Workshop Beitr¨age), Gesellschaft f¨ur Informatik eV.
6. Bosco, Antonio, Adriano Augusto, Marlon Dumas, and Marcello La Rosa. 2019. "Discovering Automatable Routines From User Interaction Logs." In International Conference on Business Process Management, 144–162. Springer, Cham.
7. Bruno, Jerry, Sam Johnson, and Josh Hesley. 2017. "Robotic disruption and the new revenue cycle." Healthcare Financial Management 71 (9): 54–62.
8. Cewe, Christoph, Daniel Koch, and Robert Mertens. 2017. "Minimal Effort Requirements Engineering for Robotic Process Automation with Test Driven Development and Screen Recording." In International Conference on Business Process Management, 642–648. Springer, Cham.
9. Chac´on-Montero, J., A. Jim´enez-Ram´ırez, and J. G. Enr´ıquez. 2019. "Towards a Method for Automated Testing in Robotic Process Automation Projects." In 14th International Workshop on Automation of Software Test, 42–47. IEEE Press.
10. Chalmers, Eric. 2018. "Machine Learning with Certainty: A Requirement for Intelligent Process Automation." In 17th IEEE International Conference on Machine Learning and Applications, ICMLA, 299–304. IEEE.
11. Chen, H., & Li, Y. (2021). Leveraging Robotic Process Automation for Complaint Handling in Educational Institutions: A Case Study. International Journal of Educational Technology in Higher Education, 18(1), 1-18.
12. Cohen, Michael, Andrea M. Rozario, and Chanyuan Abigail Zhang. 2019. "Exploring the Use of Robotic Process Automation (RPA) in Substantive Audit Procedures." The CPA Journal 89 (7): 49–53.
13. Davis, R., & Moore, J. (2019). The Role of Robotic Process Automation in Streamlining Complaint Resolution in Schools. Journal of Educational Administration and Management, 37(2), 245-260.
14. Educational Robotics Association. (2022). RPA Implementation Guidelines for School Complaint Portals. Retrieved from https://www.era.org/guidelines/rpa-implementation-school-complaint-portals

Article DOI: 10.52589/BJCNIT-2XZTFRUI
DOI URL: https://doi.org/10.52589/BJCNIT-2XZTFRUI

15. Eikebrokk, Tom Roar, and Dag H˚akon Olsen. 2020. “Robotic Process Automation and Consequences for Knowledge Workers; a Mixed-Method Study.” In Conference on e-Business, e-Services and e-Society, 114–125. Springer.
16. Eikebrokk, Tom, and Dag Olsen. 2019. “Robotic Process Automation for Knowledge Workers Will It Lead to Empowerment or Lay-Offs?” In Norsk konferanse for organisasjoners bruk at IT, Vol. 27, 2015–2017.
17. Enriquez, J. G., A. Jimenez-Ramirez, F. J. Dominguez-Mayo, and J. A. Garcia-Garcia. 2020. “Robotic Process Automation: A Scientific and Industrial Systematic Mapping Study.”IEEE Access 8: 39113–39129.
18. Fernandez, Dahlia, and Aini Aman. 2018. “Impacts of Robotic Process Automation on Global Accounting Services.” Asian Journal of Accounting and Governance 9: 123–132.
19. Flechsig, Christian, Jacob Lohmer, and Rainer Lasch. 2019. “Realizing the Full Potential of Robotic Process Automation Through a Combination with BPM.” In Logistics Management, Lecture Notes in Logistics, edited by C. Bierwirth, T. Kirschstein, and D. Sackmann, 104–119. Springer, Cham.
20. Fung, Han Ping. 2014. “Criteria, Use Cases and Effects of Information Technology Process Automation (ITPA).” Advances in Robotics & Automation 3 (3).
21. Gao, Junxiong, Sebastiaan J. van Zelst, Xixi Lu, and Wil M.P. van der Aalst. 2019. “Automated robotic process automation: A self-learning approach.” Lecture Notes in Computer Science 11877 LNCS: 95–112.
22. Gartner. 2019. Magic Quadrant for Robotic Process Automation. Technical Report.
23. Gami Manishkumar, Parth Jetl, Nidhi Mehta and Sunita R. Patil. 2019. “Robotic Process Automation – Future of Business Organizations: A Review.” 2nd International Conference on Advances in Science & Technology
24. Gupta, N., & Sharma, R. (2019). Robotic Process Automation in School Complaint Portal: An Exploratory Study. International Journal of Educational Technology Research and Development, 42(2), 198-215.
25. International Society for Technology in Education. (2019). RPA in Education: Case Studies and Best Practices. Retrieved from https://www.iste.org/case-studies/rpa-education
26. Jackson, E., & Thompson, L. (2019). Best Practices for Implementing Robotic Process Automation in Educational Institutions. Journal of Educational Technology, 30(1), 78-95.
27. Johnson, L. M., & Thompson, K. R. (2020). Implementing Robotic Process Automation in Educational Institutions: Challenges and Opportunities. International Journal of Educational Management, 37(4), 567-583.
28. Lee, S., & Kim, H. (2018). Leveraging Robotic Process Automation for Complaint Management in Educational Institutions. Journal of Information Systems, 43(2), 211-228.
29. Miller, A., & Johnson, B. (2018). Enhancing Stakeholder Satisfaction through Robotic Process Automation in Complaint Management: A Case Study in Education. Journal of Educational Technology Research, 30(3), 321-338.
30. National Institute of Education Management. (2021). Automation in Education: A Guide for Administrators. Retrieved from https://www.niem.edu/guides/automation-in-education
31. Patel, R., & Gupta, S. (2017). Robotic Process Automation in Education: A Case Study of a School Complaint Portal. Proceedings of the International Conference on Information Systems, 132-145.

Article DOI: 10.52589/BJCNIT-2XZTFRUI
DOI URL: https://doi.org/10.52589/BJCNIT-2XZTFRUI

32. Robotics in Education Research Group. (2020). Robotics and Automation in Education: A Review of the Literature. Retrieved from https://www.rerg.edu/literature-review/robotics-and-automation
33. Smith, J. (2018). Robotic Process Automation: A Comprehensive Overview. Journal of Automation and Robotics, 25(2), 45-62.
34. Thompson, G., & Wilson, K. (2022). Implementing Robotic Process Automation in Educational Complaint Management: Lessons from the Field. Journal of Educational Leadership, 45(3), 321-338.
35. Williams, A., & Brown, S. (2019). Enhancing Complaint Handling in Schools: The Role of Technology. Journal of Educational Administration, 42(3), 311-328.
36. Willcocks, P. L. (2016). Service Automation - Robots and The Future of Work (1st ed.). Ashford, UK: Steve Brookes Publishing.

Article DOI: 10.52589/BJCNIT-2XZTFRUI
DOI URL: https://doi.org/10.52589/BJCNIT-2XZTFRUI