DECISION SUPPORT SYSTEM FOR ASSESSING BUSINESS PROCESSES TRANSFORMATION TO ROBOTIC PROCESS AUTOMATION

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DECLARATION

I declare that this is my own work and this thesis/dissertation does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other University or Institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books).

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Signature: Date:

The above candidate has carried out research for the Masters thesis/dissertation under my supervision. I confirm that the declaration made above by the student is true and correct.

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23/07/2023

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Signature of the Main Supervisor Date

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Signature of the Co-Supervisor Date

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ABSTRACT

Robotic process automation (RPA) technology is used for business process automation. Actions are developed to mimic the user who performs the activity in the application's Graphical User Interface (GUI), and repeating the activities directly in the GUI.

The focus of this study is building a decision support system for RPA transformation by identifying the factors impacting the business process suitability for RPA projects. Business process automation in an organization is incredibly beneficial and allow organizations to reduce cost while doubling efficiency. Though the selected business process is feasible to be automated, it might not bring the expected Return on Investment (ROI) due to incorrect evaluation of costs and benefits. Many organizations are reluctant to go for RPA transformation because identifying the business process suitability for RPA transformation is critical. We found little research conducted on business process suitability analysis for RPA transformation, although there are research papers and whitepapers on identifying the feasibility of automation. Therefore, we focused on developing a tool to decide the business process suitability in RPA transformation.

We conducted an extensive study and identified the factors that are considered for suitable business process selection within the literature and in the industry practice. Then a Machine Learning (ML) model was developed to identify the business process suitability for RPA transformation. We used cloud hosted digital tool for easy access.

The tool achieved 83% accuracy in identifying the business process suitability for RPA transformation for a given business process. In continuation of this project work, we hope in further improve the user-friendliness and accuracy level of the decision support system in future work.

Keywords: digital tool, feasibility, return on investment, robotic process automation, software robot, suitability.

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LIST OF ABBREVIATIONS

Abbreviation	Description
AC	Automation Cost
EC	Employee Cost
FTE	Full-time Equivalent
GUI	Graphical User Interface
ICR	Intelligent Character Recognition
IEEE	Institute of Electrical and Electronic Engineers
IT	Information Technology
KNN	K-Nearest Neighbors
Misc.	Miscellaneous
ML	Machine Learning
OCR	Optical Character Recognition
OOP	Object Oriented Programing
PC	Personal Computers
ROI	Return on Investment
RPA	Robotic Process Automation
SLA	Service Level Agreement
SVM	Support Vector Machine
UI	User Interface
VER	Value of error reduction
VM	Virtual Machine
VPA	Value of process acceleration
VTG	Value of Time Gains

LIST OF APPENDICES