Research Paper

Evaluating Workflow Automation Efficiency in A Government Agency in the Philippines

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Received : October 12, 2024	Revised : December 23, 2024	Accepted : December 24, 2024	Online : December 31, 2024

Abstract

Workflow automation plays a vital role in developing efficient government operations. Anchored on the Technology Acceptance Model, this descriptive-correlational study evaluated the efficiency of using automation tools in key work processes of a Philippine government agency. A census of the population was used to gather data from the 31 employees directly involved in the subject agency's automation processes. Data were collected through a researcher-structured, validated questionnaire via Google Forms. These data were analyzed using frequency, percentage, weighted mean, multiple linear regression, ANOVA and Pearson r correlation analysis. The findings indicated that automation tools significantly enhanced the efficacy of key work processes in terms of speed, accuracy, and collaboration. Moreover, the study also revealed that employees are generally satisfied with performing routine and repetitive tasks because of the benefits of automation tools. However, the efficacy of key work processes is not significantly related to their overall job satisfaction. The study also revealed that the perceived impact of automation tools on key work processes is not affected by the demographic profile of the employees. This study also revealed that staff resistance and system integration issues are major barriers to the adoption of workflow automation. Furthermore, the study confirmed that there was no statistically significant correlation between perceived ease of use and problems encountered with automation tools. A strategic roadmap is proposed to improve workflow automation efficiency and address adoption-related challenges. This study also offers valuable insights for other government agencies seeking to introduce and assess similar technologies to enhance workflow and operational efficiency.

Keywords: *Collaboration; Job Satisfaction; System Integration; Task Efficiency; Technology Acceptance Model; Workflow Automation*

INTRODUCTION

Automation has reshaped organizational processes worldwide, streamlining operations and enhance efficiency across sectors, including government agencies. Through the aggregation and generalization of studies based on data collected worldwide by Aldoseri et al. (2023) and Ng et al. (2021), it has been established that, indeed, an automated workflow system has a positive effect on the efficiency, reliability, and transparency of organizations' management systems. Outgoing studies have found that workflow automation makes complicated processes easy and free of human errors due to effortless collaboration, thereby enabling the fastest and most reliable services with optimal resource utilization. These findings demonstrate that, in the present world, workflow automation is no longer an affordable option for a state organization; rather, it is an inevitable necessity. However, many other demographic factors, such as age, gender, type of employment, and service period, have been linked to differences in the adoption and usage of workflow automation systems among various organizations. Studies conducted among Australian and Southeast Asian organizations have highlighted the pivotal role of staff perceptions on the importance and ease of using technology in terms of uptake and successful usage (Jackson & Allen, 2024). No study has been conducted locally in the Philippines to investigate the specific population and organizational problems affecting the adoption of automation in government offices.

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The agency involved in this study plays a crucial role in managing financial services in a province of the Philippines. Nevertheless, it faces inefficiencies in handling large volumes of documents and communication between departments. These inefficiencies, often resulting in delays, data management errors, and miscommunication, hinder decision-making processes, as Muñoz et al. (2020) noted. International studies like those by Bademosi and Issa (2021) and Shahin et al. (2015) have highlighted the benefits of workflow automation in terms of improving efficiency, accuracy, and collaboration. Despite these developments, a significant research gap remains in the Philippine context, particularly within government agencies. To the researchers' knowledge, no similar study has been conducted locally to address these specific challenges within provincial government bodies. This study probes how workflow automation can address the problems associated with document management and inter-departmental communication within an agency.

Given the above challenges, the current study is crucial because it seeks to demystify the factors influencing workflow automation adoption within this governmental agency. It has been reported that Saghafian et al. (2021) stated that if employees find the tools challenging, resistance will ensue. However, leadership can mitigate this through proper training and a supportive culture. Quaye (2024) asserted that the importance of tailoring interventions such as training, participatory involvement, and clear communication are strategies that could help integrate new technologies into organizational workflows. Hence, by identifying the specific demographic influences and technical barriers that hinder the successful implementation of automation tools, this research aims to provide actionable recommendations to improve the efficiency of agencies' operations.

The study measured the demographic influences on the adoption and use of workflow automation systems within a government agency in the Philippines. The study examined the patterns of workflow automation tools, including management software, document management systems, and communication platforms. The Technology Acceptance Model (TAM) was used to assess the participants' perceptions of the tools' impact on task completion speed, accuracy of work, collaboration with colleagues, and overall job satisfaction, and identified technical issues, staff resistance, and system integration-related problems. The relationship between workflow automation efficacy and overall job satisfaction was also examined. This study explored whether significant differences existed in perceptions based on demographic factors and examined the relationship between ease of use and problems encountered. The findings provide the basis for a strategy roadmap to address barriers, improve adoption success, and enhance workflow automation functionality.

LITERATURE REVIEW

This section presents related literature from published and scientific papers that align with our research objectives.

Technology Acceptance Model (TAM) Framework

The TAM framework, first proposed by Fred Davis in 1986 and later refined by Richard Bagozzi in 1989, attempts to understand how users accept and adopt new technologies (Schorr, 2023). Theoretically, it was conceptualized to understand the acceptance and adoption of new technologies. According to the TAM model, each user desires to use any technology. This desire is driven by his attitude toward technology, which is molded by two key factors: perceived usefulness and ease of use (Aboalsamh et al., 2023; Prabowo & Putro, 2023). Perceived usefulness, that is, the degree to which a user believes it would benefit their job performance, is considered a major determinant of information technology intention (Ambalov, 2021). On the other hand, perceived ease of use refers to how easy it is to operate the technology (Bravo et al., 2021). As TAM posits, Figure 1 presents how the perceived usefulness and ease of use directly affect users' characteristics

regarding their intent to use the technology. External factors, such as organizational culture, social influence, and user characteristics, also shape these perceptions.

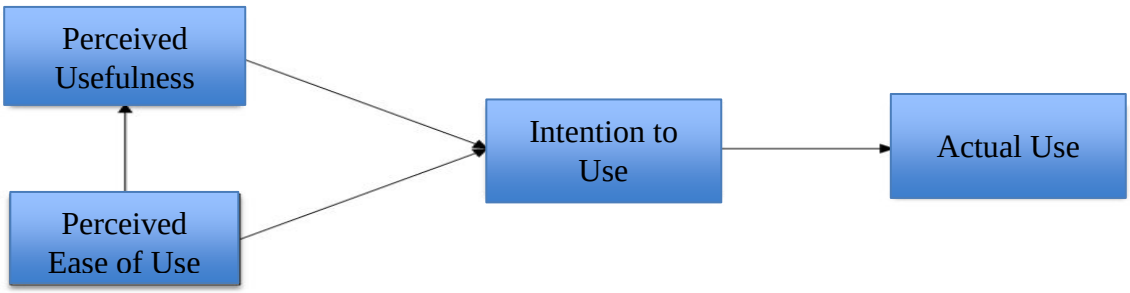

Figure 1. Technology Acceptance Model
(Marikyan & Papagiannidis, 2023)

The present study is anchored on TAM framework considering the assessment of the impact of workflow automation tools on key work processes of a subject government agency. In the context of the present study, the TAM framework becomes useful in the assessment of employee perceptions of how digital tools that facilitate work and increase efficiency affect their job satisfaction relative to the completion of assigned tasks.

Perceived Impact of Workflow Automation Tools

Automation technologies can greatly benefit various work activities in terms of improving operational quality and productivity. According to Bataev and Davydov (2020), automation reduces the time and energy required to perform repetitive tasks, thus increasing the efficiency of the process.

In such industries like accounting for example, the integration of automation tools has been proven to enhance performance, communication, and job satisfaction among workers (Kokina & Blanchette, 2019). These findings support the TAM theory, where users are more inclined to use technology that is perceived to be useful and easy to use. However, regarding satisfied employees' adoption of technology, Schwabe and Castellacci (2020) indicated that automation in industrial firms in recent years has induced 40% of workers performing routine-based tasks fear that their work might be replaced by smart machines in the future. Such fear of future replacement negatively affects workers' job satisfaction. Corollary to this, the researchers proposed the following null hypothesis:

Ho_1: There is no significant relationship between workflow automation efficiency and satisfaction with the occupational development.

In Bugh (2024) opinion to improve the automation implementation in an organization, he opined that it is necessary to focus not only on technology but also on people. The success of automation is not only the elimination of manual activities but also the satisfaction and appreciation of employees. This entails issues of communication, orientation, and training, and above all, the possible technological impact on employment security. Therefore, it is necessary that the perceptions of employees regarding the use of automation tools should also be given equal importance despite the perceived usefulness of these tools in their key work processes. In a study conducted by Piercy and Gist-Mackey (2021) on the technological automation of pharmacy work activities, they found that demographic indicators such as income and education of employees are insufficient to determine their perceptions of automation. Based on this previous finding, the researchers formulated the following null hypothesis:

Ho_2: There are no significant differences in the perceived ease of use of automation tools according to the demographic profile of the employees.

Problems Encountered in Workflow Automation

Organizations face many problems when implementing workflow automation despite the obvious benefits. Changes are often opposed by system users who are used to manual work. Technical problems also act as barriers to workflow automation, including system integration issues and data inaccuracies that may impair workflow automation and effectiveness. According to Hampel (2023), employees show resistance if they feel they are not good enough due to a lack of appropriate training or if their job security is being threatened by the advent of technological tools.

The changes that organization experience due to the use of automation tools are perceived in different ways. While some might design it as easy and efficient, it might seem even stressful for some learners because of the extra levels of difficulty or uncertainty it brings. Thus, psychological and emotional effects when accepting automation also cannot be neglected because these are important components of user acceptance. In the case of Pegasus, the system's abstract representations of the workflow can sometimes lead to a mismatch between the formal. Workflow that the user submitted and the actual workflow that was executed can frustrate or confuse the user (Deelman et al., 2015). This underscores the importance of effective communication and user assistance during migration to an automated environment.

Challenges encountered when using automated evidence synthesis tools are evident in different industry sectors. For example, in public health settings, these challenges include: bias, reproducibility, and performance; trust and transparency; time, skills, and capacity; funding and costs; and shared learning and collaboration (Hocking et al., 2023).

The perceived impact of automation tools varies widely among users. Although it may be simple and save many times for others, adding complexity or stress in accepting automation is difficult for some. One cannot overlook the psychological and emotional impacts of adopting automation because it is necessary for acceptance, making all the difference between successful technology integration. The proper identification and confrontation of such challenges would indeed require strategies to promote user acceptance and optimize the reaping of benefits from automation. Pressure from such effects may be eased by affecting the transition by providing intervention by offering on-the-job training, promoting innovation cultures, and then accommodating or mitigating resistance to a smooth transition toward the automated workflow.

In summary, workflow automation displays promising features for transforming business by improving efficiency, accuracy, and co-operation. Therefore, careful consideration of technological and human factors is required in the proposed approach. Perceptions of ease of use, usefulness, and other factors, such as organizational readiness and social support, drive the adoption of automation technologies in organizations despite the possible problems users may encounter (Jadhav, 2021). In this regard, the researchers arrived at the following null hypothesis:

Ho_3: There was no significant relationship between the perceived ease of use of automation tools and the problems encountered by users.

RESEARCH METHOD

Employing descriptive correlational research, this study explored how demographic factors may affect the adoption and usage of automation workflow tools as perceived by respondents while examining their influence on work processes and identifying the challenges they face. This research design suited the study because it enabled researchers to collect information about respondents' behavior and attitude, which will become the basis of finding the relationship between variables

(IvyPanda, 2023). The participants comprised all 31 regular employees from a specific department within a province-based government agency under a key bureau of the Department of Finance, representing a complete census of the department's workforce. These employees were chosen because they work directly in the daily, process-oriented operations of the agency; mainly, those workflow automation tools are used in day-to-day work, like documentation management, communication, and task coordination. As the primary users of these tools, they have direct experience and play a critical role in the agency's automation efforts. Because they work with tools daily, no group is better positioned to answer questions and provide insightful answers as to how well workflow automation has been implemented, the challenges encountered, and the effectiveness of such in their department.

A researcher-structured questionnaire, validated by three information technology professionals with expertise in system implementation and optimization, was used to evaluate the efficiency of workflow automation tools for employees at work. The questionnaire was pilot-tested on ten (10) operations employees from another organization with similar experiences in the use of automation tools. This process ensured instrument reliability. After confirming the questionnaire's validity and reliability, the researchers distributed the final questionnaire to the total population of employees via Google Forms to assess the impact of workflow automation tools on the number of employees. The core of the questionnaire focused on evaluating the perceived effects of workflow automation tools and the challenges and obstacles participants had encountered while using these tools, using a five-point Likert scale as follows: 1 = 1.00-1.49 (strongly disagree, SD), 2 = 1.50-2.49 (disagree, D), 3 = 2.50-3.49 (neutral, N), 4 = 3.50-4.49 (agree, A), and 5 = 4.50-5.00 (strongly agree, SA). Respondents' personal information was protected to ensure anonymity and to safeguard the data.

The data were analyzed using the Statistical Package for Social Sciences (SPSS) software, which includes methods such as frequency, percentage, weighted mean, ANOVA, multiple linear regression, and Pearson r correlation analysis.

FINDINGS AND DISCUSSION

The data collected using the survey questionnaire were presented, analyzed, and interpreted to support the study objectives.

Reliability Statistics

To ensure the validity of the measures used in this study, the internal consistency of the questionnaire items for each indicator was evaluated. The reliability measures are listed in Table 1.

Table 1. Reliability Statistics

	Indicators	Cronbach's Alpha	No. of Items
1	Task Completion Speed	0.821	5
2	Accuracy of Work	0.864	5
3	Collaboration with Colleagues	0.880	5
4	Overall Job Satisfaction	0.817	5
5	Technical Issues	0.748	5
6	Resistance from the Staff	0.892	5
7	Integration With Other Systems	0.827	5

As can be seen from the table, the computed Cronbach's Alpha values range from 0.748–0.892. These values confirm the internal reliability of the scales used to measure task completion speed, work accuracy, collaboration among peers, job satisfaction, technical merits, staff resistance, and interactions with other systems. According to Frost (2024), a Cronbach's Alpha of 0.70 or

greater is sufficient to determine reliability.

Demographic Profile

Table 2 presents the demographic characteristics of the respondents in terms of age, gender, position in the organization, and years of experience.

Table 2. Profile of Respondents

Indicator	Frequency	Percentage
Age		
25-34	11	35.5
35-44	5	25.8
45-54	8	16.1
55 and above	7	22.6
Total	31	100.0
Gender		
Male	8	25.8
Female	23	74.2
Total	31	100.0
Position in the Organization		
Entry Level	12	38.7
Mid-Level	13	41.9
Senior Level	4	12.9
Management	2	6.5
Total	31	100.0
Years of Experience		
Less Than 1 Year	3	9.7
1-3 Years	8	25.8
4-6 Years	5	16.1
7-10 Years	3	9.7
More Than 10 Years	12	38.7
Total	31	100.0

The findings revealed that the majority of the employees are female, from the entry and middle organizational hierarchy levels. This implies that the department of the subject government agency has the majority of its employees who are in functional positions where process automation tools used in a company affect their tasks. This supports Ngo-Ye and Choi (2021) opinion that employees in those positions are most impacted by technological changes. It can also be noted from the data that the respondents also come from diverse organizational levels, with most of them at the entry and mid-lever levels, who are presumed to be generally affected by automation. Their roles are generally mundane and involve repetitive chores that can be performed in a faster and more efficient manner with the aid of technology (Holzer, 2022).

A majority of the respondents were females, which is a trend reflected in most industries where females dominate administrative positions. Ahlers (2016) stated that organizations anticipate automation tools in such roles to reduce administrative pressures and increase work productivity, which may improve work-life balance for women, especially when working in arduous tasks. With regard to years of experience, one-third of the respondents claimed to have over 10 years of experience, and these respondents were more likely to resist automation due to the creation of a work culture. According to Ivaldi et al. (2022), long-serving employees are likely to resist change because they regard change as an interruption of their normal operations. On the other hand, the younger generation, who have relatively less experience in their interactions with

technologies, can easily embrace the emerging technologies required for automation easier (Kamalov et al, 2023). The researchers believe that any organization's automation strategy can be effective for both experienced and newcomers depending on the perceived strengths and weaknesses of automation and how this can affect the decision-making process within the organization.

In summary, the diversity of gender, position, and experience among respondent-employees provides a comprehensive view of how automation tools can be perceived and adopted within an organization. The predominance of female employees and their representation across different experience levels provide valuable insights into how automation impacts various segments of the workforce. These factors are essential for understanding both the opportunities and challenges that an organization faces in the implementation of workflow automation.

Impact of Workflow Automation Tools on Key Work Processes

The following sections focus on the effects of automation tools on several critical work areas: the speed with which tasks are completed, the accuracy of performance, teamwork, and general job satisfaction.

Task Completion Speed

The speed at which tasks are completed refers to the efficiency at which tasks are completed within a specific timeframe; thus, the proposed method emphasizes the capability of reducing delay and streamlining operations. Table 3 presents the impact of workflow automation tools in terms of task completion speed.

Table 3. Task Completion Speed

	Statement	Mean	S. Dev	Descriptive
1	Automation tools help me complete tasks faster.	4.65	.551	SA
2	They save me time by reducing repetitive tasks.	4.81	.402	SA
3	My job completion time has improved with automation.	4.58	.720	SA
4	These tools deliver quick and efficient results for me.	4.55	.506	SA
5	They help me shorten overall project timelines.	4.65	.661	SA
	Average Weighted Mean	4.65		SA

From the collected data, the responses from the survey reflect an overwhelming consensus among the respondents that workflow automation tools influence task completion in terms of speed. Respondents strongly agreed that these tools significantly reduce the time spent on repetitive tasks and shorten overall project timelines. This high level of agreement suggests that automation helps increase productivity, making it easier to accomplish tasks faster and more precisely. The average weighted mean from the responses further reinforces this view, where the benefits of automation in executing tasks and projects can be observed. Such findings also resonate with the literature, for example, Eulerich et al. (2022), who stressed the role of automation in speeding up workflows. This improvement would eventually lead to several benefits, including increased productivity and efficiency and improved work quality (Rivera et al., 2023). In addition, Coman et al. (2022) further emphasized that automation increased productivity in various industries, such as remote accounting, and other fields, which validated the positive outcomes of this research.

Accuracy of Work

The accuracy of work refers to the correctness and dependability of the output products obtained by the process, where minimal mistakes and acceptable consistency in all those jobs are desired. Table 4 shows the impact of workflow automation tools in terms of work accuracy.

Table 4. Accuracy of Work

	Statement	Mean	S. Dev	Descriptive
1	Automation tools made output more consistent.	4.65	.486	SA
2	They have improved the accuracy of my work.	4.58	.564	SA
3	I make fewer mistakes when using automation tools.	4.48	.508	SA
4	Automation tools produce reliable results.	4.52	.508	SA
5	I trust the results provided by automation tools.	4.52	.508	SA
	Average Weighted Mean	4.55		SA

As can be gleaned from the table, regarding the responses obtained based on the three stated characteristics of work, it can be noted that respondents were highly convinced that automation tools improve accuracy, reduce the chance of error, and make results consistent and reliable. The high average weighted mean indicates a positive perception toward automation, which improves work quality and reduces errors. This finding aligns with Kohn et al. (2021), who found increased precision and accuracy in workplaces when processes are streamlined and human errors are removed. In addition, the reliability of automation tools increases work consistency and boosts confidence in the quality of outputs. Kaber (2018) stated that automation provides adequate accuracy for the outcomes of various tasks and functionalities.

Collaboration with Colleagues

Collaboration with colleagues means efficient teamwork, easy information flow, and task coordination within an organization. According to Laco et al. (2023), when collaboration exists in an organization, this indicates that employees are committed to working together to achieve common goals. Table 5 details the impact of workflow automation tools on collaboration with colleagues.

Table 5. Collaboration with Colleagues

	Statement	Mean	S. Dev	Descriptive
1	These tools simplify information team sharing.	4.90	.301	SA
2	Automation has improved team communication	4.84	.374	SA
3	Automation enhances collaboration with colleagues.	4.81	.402	SA
4	They make task coordination easier.	4.87	.341	SA
5	Automation tools have strengthened teamwork.	4.77	.497	SA
	Average Weighted Mean	4.84		SA

The data in the table show that respondents strongly agreed that automation tools significantly improve collaboration, making working together and communicating more accessible and hassle-free. Among the five statements, the one with the highest average weighted mean underscored the ease of information sharing, which is a positive output from automation regarding coordinating tasks. These tools help teams focus more on higher-level collaboration and decision-making by automating repetitive tasks and simplifying communication channels. The finding is in agreement with Ajiva et al. (2024) that automation improves communication infrastructure by equipping teams with the proper tools to collaborate more effectively and increase overall organizational productivity. Therefore, with an improved communication system, collaboration efforts in an organization are heightened (Shofiyyah & Novani, 2023).

Overall Job Satisfaction

Overall job satisfaction is the extent to which employees are satisfied with their work in that it encompasses all aspects of work, like motivation, stress, and productivity. Table 6 presents the impact of workflow automation tools on the overall job satisfaction of employees.

Table 6. Overall Job Satisfaction

	Statement	Mean	S. Dev	Descriptive
1	Automation tools boost my job motivation.	4.65	.486	SA
2	Positively impact my work ethic and performance.	4.65	.486	SA
3	Automation tools have reduced my stress.	4.45	.568	SA
4	I accomplish more with the help of automation.	4.65	.486	SA
5	Workflow automation increased my job satisfaction.	4.61	.558	SA
	Average Weighted Mean	4.60		SA

The result of the survey reflects excellent favorable agreement among the respondents that automation tools positively impact job satisfaction by boosting motivation, reducing stress, and increasing productivity. Such a high average weighted mean reflects respondents' belief that automation makes their work more manageable and fulfilling, as they accomplish more in less time. This finding supports Schwabe and Castellacci (2020) and Nazareno and Schiff (2021), who reported that automation positively affects job performance and employee welfare. In a similar perspective, as further emphasized by Pabelic et al. (2023), when the welfare of government employees is considered, job satisfaction tends to improve. This confirms automation's crucial role in enhancing overall job satisfaction.

Significant Relationship between Workflow Automation Efficacy and Overall Job Satisfaction

In order to further examine the causal relationship regarding the efficacy of workflow automation in terms of task completion speed, accuracy of work, collaboration of colleagues, and overall job satisfaction of employees, multiple linear regression analysis was employed. The null hypothesis that there is no significant relationship between workflow automation efficacy and overall job satisfaction (Ho_1) was tested by multiple regression analysis. Table 7 presents the regression coefficients for predicting the overall job satisfaction.

Table 7. Regression Coefficients for Predicting Overall Job Satisfaction

Factors	Unstandardized Coefficients	Standardized Coefficients	Sig	Conclusion
Task Completion Speed	0.197	0.192	1.024	NS
Accuracy of Work	0.123	0.237	0.521	NS
Collaboration w/Colleagues	0.376	0.231	1.626	NS

NS = Not Significant

The results of the regression analysis to determine the ability to predict overall job satisfaction indicate that the independent variables, namely task completion speed, work accuracy, and collaboration with colleagues, are not significant at the $p < 0.05$ level. Therefore, the null hypothesis is accepted. This implies that the variables employed in the study are not determinants of job satisfaction, and this result indicates that there might be other work-related factors that can significantly contribute to the satisfaction of employees in the workplace. This supports earlier findings indicating that dissatisfaction at work is a result of several factors (Lu et al., 2016), where the performance indicators employed in the study are just a part of the big picture. Other constructs, such as organizational culture, leadership, and employee well-being, may offer a better explanation for factors affecting job satisfaction, according to Inceoglu et al. (2018).

Significant Differences between Perceived Ease of Use and Demographic Profile

The null hypothesis stating that there is no significant difference in the perceived ease of use of automation tools when respondent-employees are grouped according to their demographic profile (Ho_2) was tested using ANOVA. Table 8 presents the results of the statistical analysis.

Table 8. Significant Differences in the Perceived Ease of Use According to the Demographics

Age	**p-value**	**Decision**	**Conclusion***
Task Completion Speed	0.475	Accept Ho	**NS**
Accuracy of Work	0.186	Accept Ho	**NS**
Collaboration with Colleagues	0.644	Accept Ho	**NS**
Overall Job Satisfaction	0.944	Accept Ho	**NS**
Gender	**p-value**	**Decision**	**Conclusion**
Task Completion Speed	0.410	Accept Ho	**NS**
Accuracy of Work	0.330	Accept Ho	**NS**
Collaboration with Colleagues	0.539	Accept Ho	**NS**
Overall Job Satisfaction	0.800	Accept Ho	**NS**
Position in the Organization	**p-value**	**Decision)**	**Conclusion**
Task Completion Speed	0.967	Accept Ho	**NS**
Accuracy of Work	0.524	Accept Ho	**NS**
Collaboration with Colleagues	0.535	Accept Ho	**NS**
Overall Job Satisfaction	0.884	Accept Ho	**NS**
Years of Experience	**p-value**	**Decision**	**Conclusion**
Task Completion Speed	0.462	Accept Ho	**NS**
Accuracy of Work	0.220	Accept Ho	**NS**
Collaboration with Colleagues	0.349	Accept Ho	**NS**
Overall Job Satisfaction	0.345	Accept Ho	**NS**

NS = Not Significant

As can be gleaned from the table, all the results of the statistical analysis reveal no statistically significant differences across various age groups, gender groups, positions, or years of experience regarding the perceived ease of use of the automation tool. Therefore, the null hypothesis is accepted. It can be noted that all p-values were comfortably above the threshold of significance. This means that users of different demographics can find the tool equally accessible and beneficial. As pointed out by Gödöllei and Beck (2023), many organizations endure and adapt to incorporate automation into their key work processes, which significantly impacts their organizational outcomes. Thus, employees regardless of demographics are expected to fully utilize the benefits of automation tools for them to effectively perform their roles and responsibilities. In agreement with Cruz-Cardenas et al. (2019), well-designed automation systems can help overcome demographic barriers.

Problems Related to the Adoption of Workflow Automation Tool

Table 9 presents the problems related to the adoption of workflow automation tools as perceived by the employees.

Table 9. Problems Related to the Adoption of Workflow Automation Tools

	Problems	**Mean**	**S. Dev**	**Descriptive**
1	Technical Issues	3.39	0.627	N
2	Staff Resistance	3.76	0.260	A
3	Integration with Existing Systems	4.21	0.419	A
	Average Weighted Mean	3.79		A

The data in the table indicate that although technical problems elicited a neutral response and did not appear to pose a major barrier to the adoption of workflow automation, the other problems identified as significant were staff resistance and system integration. However, the primary issues that need to be addressed in overcoming the technical and resistance barriers lie along the pathway to adoption, as Saghafian et al. (2021) asserted. This represents a consensus that

such issues regarding staff resistance and system integration must be addressed for automation tools to succeed. As pointed out by De Ramos and Briones (2024), addressing these issues requires improving the communication system within an organization during infrastructure enhancements.

The result of the study also agrees with the finding of Psico-Smart.com (2024), which asserted that technological problems are controllable, but staff resistance and smooth integration of systems are critical determinants of automation success. Proper training and compatibility measures with the systems would, therefore, mean optimizing workflow automation to its entire degree.

Significant Relationship Between Ease of Use and Problems Encountered

The null hypothesis that there is no significant relationship between the perceived ease of use of automation tools and the problems encountered by users (Ho_3) was tested using Pearson's r correlation analysis. Table 10 presents the results of the analysis.

Table 10. Significant Relationship Between Perceived Ease of Use and Problems Encountered

Correlations	p-value	Decision (Alpha = 0.05)	Conclusion
Perceived Ease of Use and Problems Encountered	0.103	Accept Ho	**NS**

NS = Not Significant

It can be surmised from Table 9 that the p-value was >0.05. This indicates that there is no statistically significant relationship between user ease of use of automation tools and the problems they face. Therefore, the null hypothesis is accepted. In other words, users face technical problems or system integration difficulties; however, this does not carry significant weight in making any value judgment regarding how easy or difficult it is to use automation tools. In summary, users still view the tools as accessible and workable despite these challenges. This is consistent with the findings of Farhan et al. (2019), who noted that even if technical problems are experienced, the ability of well-designed tools to facilitate ease of use means that the negative impact arising from such challenges would be kept at bay from the overall user experience. This also fits the TAM framework, which argues that perceived ease of use and usefulness are central determinants of the adoption of technology, and the removal of low-level technical barriers may not reduce positive perception if the tools provide obvious functional benefits (Almaiah & Al Mulhem, 2019). This, therefore, supports the sentiment that design user-friendliness and functionality can quickly neutralize operational issues from affecting users' satisfaction.

Proposed Strategy Roadmap for Enhancing Workflow Automation Efficiency and Overcoming Adoption-related Problems

The strategy roadmap presented in Table 11 outlines the improvement of workflow automation efficiency by highlighting the weaknesses identified by the results of the study. Similarly, Briones et al. (2023) also stressed the observation that advocacy for the support and recommendations for the automation of specific tasks can promote the development and improvement of task performance.

Table 11. Proposed Strategy Roadmap

Indicators	Weaknesses	Proposed Strategies
Task Completion	Automation tools may not always significantly shorten overall project timelines.	Conduct more training sessions to encourage the use of automation features that minimize human involvement and accelerate project delivery.

Indicators	Weaknesses	Proposed Strategies
Accuracy of Work	Automation is always prone to error; thus, stress cannot be avoided altogether in the workplace.	Adopt best practices or guidelines about how each job role consistently applies the tools used in automation
Overall Job Satisfaction	Automation tools sometimes face limitations while functioning without a consistent internet connection.	Periodically check on the staff to monitor their stress levels and reconfigure their workflow settings so that automation reduction does not add to their workload
Technical Issues	Automation tools might not wholly eliminate workplace stress.	Roll out training sessions for staff on how to best handle automation tools when internet connections are inconsistent.
Technical Issues	Some automation tools can experience performance issues during work tasks.	Implement a proactive monitoring system to detect and resolve performance issues before they affect staff workflows.

Relative to the findings of the study, the parameter that can be identified as a rather weak link is the speed of task completion. with relation to this, the proposed strategy is to organize more training sessions to ensure that employees can learn about automation features to reduce employee interaction and speed project delivery. In support of this, Acemoglu and Restrepo (2018) noted that only training can increase productivity improvement through automation.

Regarding the accuracy of work, it is advisable to follow best practices and guidelines for each role to reduce the divergence in the methods employed for the automation of specific processes. As argued by Hoff and Bashir (2015), it is essential to consider both technical and human factors when determining the optimal effectiveness of automation. On the other hand, in terms of overall job satisfaction, automatic mechanisms are confronted with the instability of the internet connection, which has an effect on general work performance. As the strategy is decoded, it is suggested to control the stress levels of the employees and avoid adding automated processes to the employees' work schedule in case of internet breakdowns. For instance, Kyriakidis et al. (2019) showed that for automation to be effective, there is a need to address both the technical side of automation and the human perspective.

Another important area of research is technical support problems, especially with regard to how bad connections can affect results. The strategy involves an orientation program on how to address these issues and the establishment of a preventive performance monitoring system designed to tackle performance problems as soon as they are detected so as not to interfere with ongoing processes. Brocke et al. (2018) pointed out that other practices, such as system updates and adaptive strategies, are relevant in a bid to maintain an organization's functions while incurring few hitches.

Overall, these strategies are based on improving the operating performance and eliminating the technical and organizational constraints that hamper the adoption of automation. Training the workforce, early screening, and constant tracking of well-being will help considerably enhance the use of work flow automation.

CONCLUSION

The results indicate that automation tools enhance the efficacy of key work processes in the subject government agency. This implies that employees can complete their jobs faster, accurately, and with more confidence. Considering the benefits of using automation tools, employees are generally satisfied with performing routine and repetitive tasks. However, the efficacy of key work processes in terms of task completion speed, work accuracy, and collaboration with colleagues is not significantly related to job satisfaction. This implies that work-related factors other than those

employed in this study are possible determinants of job satisfaction. The study also revealed that the perceived impact of automation tools on key work processes is not affected by the demographic profile of the employees. This connotes that employees regardless of status and experience generally utilize the benefits of automation tools to effectively perform their roles and responsibilities.

The study also revealed that staff resistance and system integration issues are major barriers to the adoption of workflow automation. On the other hand, technical problems are not a pressing issue, as they may be considered controllable by the information technology experts of the agency. Further, the study also found no statistically significant correlation between perceived ease of use and problems encountered with automation tools. This finding implies that probable causes are more likely to involve technical limitations or a lack of relevant training rather than usability. The researchers proposed a strategy roadmap to overcome organizational weaknesses in the implementation of workflow automation, as well as the problems encountered by employees when using automation tools.

Overall, the results of the study suggest that any organization should implement a more tailored approach to automation that takes into consideration its work environment and employees' work-life balance so that job satisfaction and productivity can be further enhanced. This study can serve as a model for the effective implementation of automation in the workplace, which can promote individual and organizational performance.

LIMITATIONS AND FURTHER RESEARCH

The present study has several limitations that should be acknowledged. The number of participants was small and focused only on one department of a government agency, thus limiting the generalizability of the findings. The study also relied heavily on employee perceptions that, although valuable, did not provide objective performance data. Furthermore, the study only considered a cross-sectional design that only captured data at a single point and may not account for changes in the effectiveness and efficiency of the use of digital tools over time.

The next generation of research should include a broader, more diverse sample. For example, participants in future research should represent different job positions and departments and, ideally, government agencies in the country. Objective performance measures such as task completion times and success rates would be added to complement the perception-based data to provide a more balanced view of the effects of automation. Furthermore, a longitudinal study design can be employed to provide deeper insights into the implementation of automation practices.

The researchers recommend that further studies be conducted on specific impacts of automation on well-being, job satisfaction, stress, and resistance among workers. This will provide insights into the possible challenges facing automation technologies that may hinder the optimization of the benefits of automation processes.

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