Workflow Automation of Content Management System with Power Automate

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Abstract—*This research contributes to the growing body of knowledge in digital transformation, business process management, and provides practical insights for organizations seeking to modernize their process of Content Management System (CMS). The solution of Robotic Process Automation (RPA) is adopted to improve the current manual processes. Microsoft Power Automate is chosen for the workflow implementation to address critical challenges in the current manual CMS operations, including time-extended processes, human error, and inefficient resource utilization. The implementation integrates Power Automate with SharePoint, Microsoft Teams and webhook to streamline a CMS process in the banking domain. The results show significant improvements in operational efficiency, with less human error and enhanced resource utilization.*

Keywords— *Content management system: digital transformation: process improvement: robotic process automation: workflow automation.*

I. INTRODUCTION

In the era of digital landscape, the Content Management Systems (CMS) [1] serve as critical tools for organizations to manage diverse content across online platforms. While these systems facilitate content organization and distribution, many organizations face significant challenges with manual processes in their Content Management Systems. Manual processes in content validation, updates, and team coordination lead to inefficiencies in workflows, increased error, and inefficient resource utilization.

The limitations of current CMS implementation, specifically regarding manual workflow, create several operational challenges. Organizations frequently encounter time-extended processes, accuracy concerns, and resource utilization. These challenges particularly impact content validation, data alignment, and Cross-functional teamwork, resulting in increased operational costs and reduced organizational agility.

The paper presents an approach of workflow automation using Robotic Process Automation (RPA) technology to improve the current manual process of CMS. Microsoft Power Automate is selected for streamlining the CMS process to automate repetitive tasks, improve collaboration and communication between team members, visualize processes and track tasks. The workflow automation aims to enhance efficiency, reduce errors, and lower operational costs in CMS usage [2]. It takes into account the capabilities of digital transformation [3] and the need for efficient data management in today highly competitive business environment.

II. BACKGROUND

A. Digital Transformation

The adoption of digital technologies by organizations to enhance operational efficiency is a key aspect of Digital Transformation [4]. One essential tool supporting this shift is Low-Code/No-Code Automation [5], which allows non-programmers to easily develop applications or automate processes through user-friendly interfaces, such as drag-and-drop. This approach reduces the burden on IT teams, improves productivity, and accelerates solution development.

Low-Code/No-Code platforms, such as Power Automate, enable the creation of automated workflows for routine tasks, including data extraction, notifications, and document verification, without requiring complex coding. These tools empower users to design and configure processes quickly, streamlining operations and enhancing organizational responsiveness to change.

B. Workflow Automation [6]

The implementation of Workflow Automation facilitates smooth and consistent operational processes, serving as a crucial tool that enables organizations to enhance their operational procedures for improved efficiency, reduced errors, time savings, and cost reduction. It automates repetitive or structured operations through systematic management and execution.

C. Business Process Management [7]

Business Process Management (BPM) represents a methodological framework that organizations employ to analyze, enhance, and govern business processes in alignment with organizational objectives. This systematic approach aims to optimize operational efficiency while fostering comprehensive understanding of internal organizational processes, ultimately facilitating continuous improvement initiatives.

D. Robotic Process Automation [8]

Robotic Process Automation (RPA) encompasses technological advancement that transforms repetitive manual business processes into automated workflows through software robots. These digital agents execute sequential tasks with human-like precision and speed, substantially reducing manual workload requirements. Moreover, RPA systems demonstrate significant capability in background operations, collaborating with IT teams and other organizational units to

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perform data verification, troubleshooting, and automated help desk responses. Some popular RPA tools include:

- *Microsoft Power Automate* [9] presents an accessible Low-Code/No-Code platform featuring intuitive interface design for automation processes. Users create workflows rapidly through drag-and-drop functionality without requiring programming expertise. The platform supports comprehensive Microsoft ecosystem integration, including Office Suite, Teams, SharePoint, and Dynamics 365, while maintaining compatibility with third-party tools such as Salesforce and Google Drive. Moreover, it can operate with AI Builder to enable advanced data analysis capabilities, such as image text recognition and complex document processing. The platform supports both cloud-based and on-premise deployment models.
- *UiPath* [10] establishes itself as a leading enterprise-grade RPA platform serving both business and large organizational requirements. The platform offers comprehensive toolsets, including Studio, Orchestrator, and robot development environments. Seamless integration capabilities with ERP and CRM systems, particularly SAP and Salesforce, enhance its enterprise applicability. The platform maintains an extensive user community and educational resources through UiPath Academy.
- *Blue Prism* [11] emphasizes enterprise-level implementations with robust security features, particularly in access control mechanisms. The platform demonstrates superior scalability characteristics for large organizations and integration capabilities with legacy systems, making it optimal for organizations prioritizing security and stability.

These platforms enable organizations to achieve significant operational improvements through automated processing, enhanced accuracy, and resource optimization.

In literature, Diksha and Sandhu [12] applied the RPA technology to automate the refund processes for Online Travel Agencies. The system was built using Microsoft Power Apps and Power Automate to handle automatic email processing and manage refund requests, and using SharePoint for listing data storage. The result showed significant improvements, that is, 50% reduction in processing time, reduced manpower needs, and fewer manual errors.

Hafenscherer et al. [13] proposed using RPA for investment calculation projects at Energie Steiermark AG, an Austrian energy company. Using Microsoft Power Apps and Power Automate, they created a low-code solution to replace traditional Excel-based calculations, specifically focusing on photovoltaic and optical fiber projects.

Lubis and Sembiring [14] focused on developing a methodology for evaluating and selecting suitable processes for RPA implementation in the Global Distribution System ticketing process. They created a comprehensive framework for assessing processes that would benefit most from automation, particularly focusing on repetitive, rule-based tasks.

III. METHODOLOGY

The workflow automation in this research is implemented with Microsoft Power Automate based on several compelling factors:

- *Implementation Accessibility*− The platform design enables automation implementation without extensive IT expertise. This approach democratizes process automation across organizational roles and technical proficiency levels.
- *Cost Effectiveness*− Organizations utilizing Microsoft environments benefit from integrated deployment capabilities, eliminating additional integration expenses. This cost optimization supports efficient resource allocation within existing technological frameworks.
- *Organizational Scalability*− The platform demonstrates adaptability across diverse organizational scales, from small business operations to enterprise-level implementations. This flexibility ensures solution viability regardless of organizational scope or complexity [15].

Starting from investigating the current manual CMS process reveals several primary operational stages, as illustrated in the Activity diagram shown in Fig. 1.
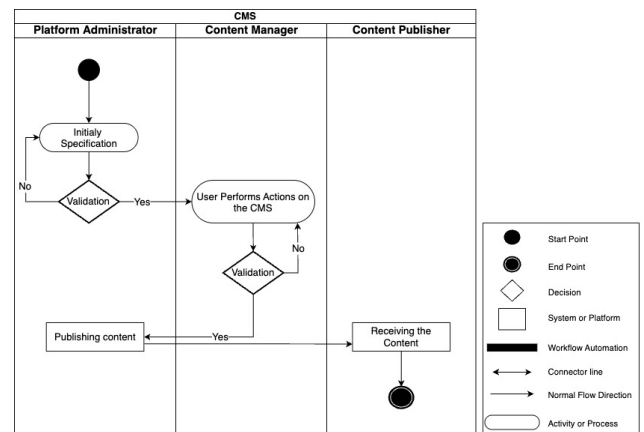

Fig. 1. Current CMS process.

- Platform Administrator performs content review and analysis to ensure data accuracy and CMS implementation readiness. The task of specification review initiates with Excel-format documentation.
- Next, user interaction following specification verification, the Content Manager then manually transfers data from XLS documents into the CMS environment. This manual data entry phase introduces potential error risks and significant time-consuming as the Content Manager must carefully input each data element individually.
- Once data entry having been completed, the Content Manager must perform secondary validation via CMS to ensures comprehensive data accuracy and specification compliance across all entered content. The task remains dependent on manual oversight, though.

- The update of successful data verification and validation will be manually distributed by the Content Manager to notify the relevant stakeholders through various communication channels, such as email and Microsoft Team. This stage requires active user intervention for communication management.
- Platform Administrator publishes validated content through the Content Publisher for distribution across various publishing platforms, including websites and other CMS-integrated systems. These platforms serve as endpoints where content becomes accessible to end users, facilitating public access and content dissemination.

To improve the process, the streamline of the CMS process is introduced as shown in Fig. 2 describing the sequence of operations as follow.

- The system stores XLS files within MS 365 SharePoint. Upon file updates or additions, Power Automate generates triggers through HTTP Connector, initiating automated verification and processing sequences.

- Power Automate functions as the process hub: central automation coordinator, managing system component interactions. SharePoint notification triggers the process and facilitates data transfer to CMS through Webhook protocols.
- Transferred data undergoes comprehensive validation for accuracy and completeness. This automated validation process significantly reduces errors associated with incorrect data entry or incomplete information sets.
- Validated data proceeds through transformation processes, converting information into appropriate formats for management and distribution. This stage ensures data readiness for subsequent processing steps.
- Data are transferred to CMS system through Webhook interfaces, enabling seamless system integration.
- Notification is automatically distributed to relevant stakeholders through various communication channels, including email and other platforms, providing real-time status updates and critical event notifications.
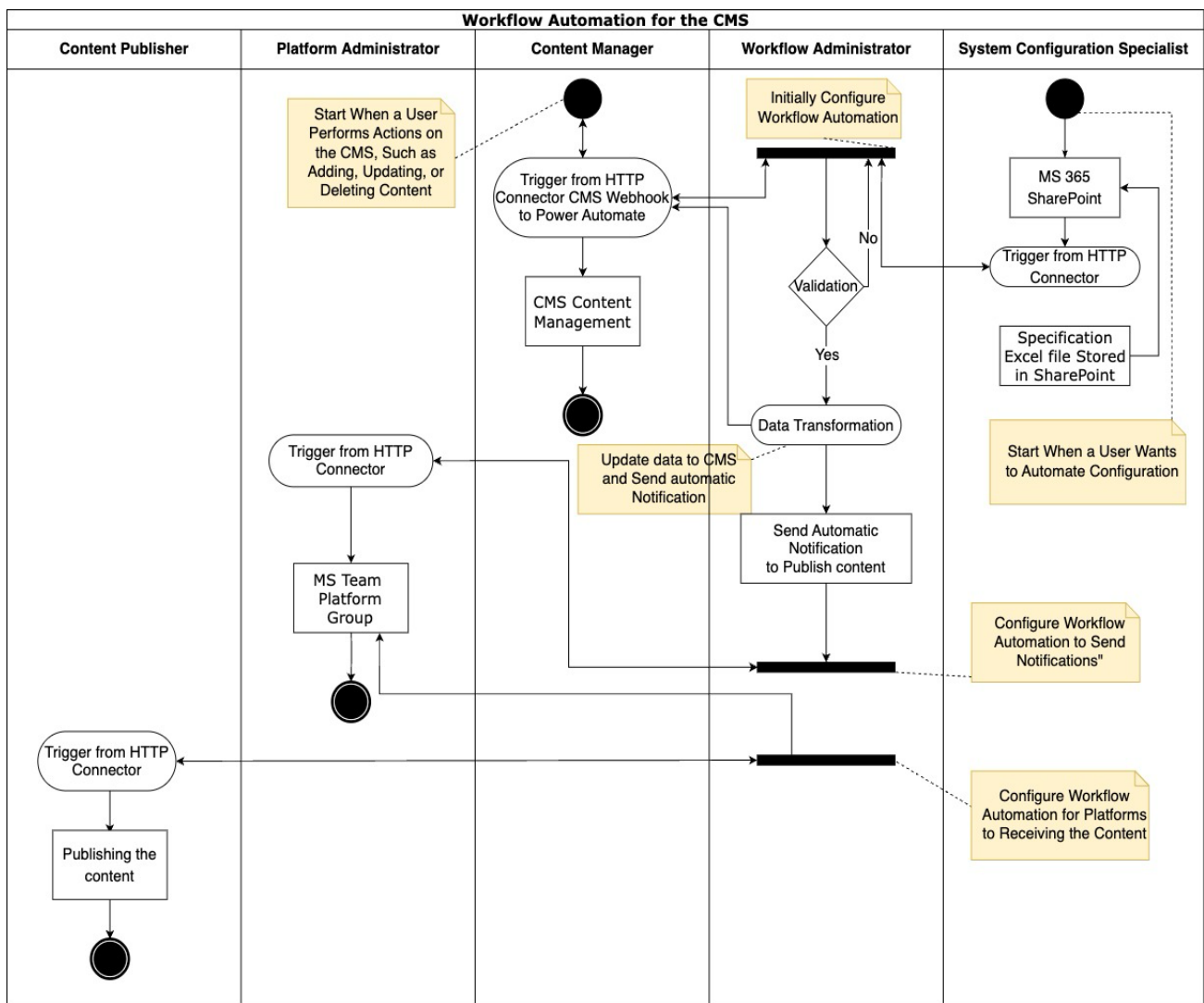

Fig. 2. Workflow of CMS operations.

short_text	long_text	email	rich_text
Power_Aotomate_CMS111	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 1111	power.automate001@cms.co	Proof of Con
Power_Aotomate_CMS222	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 2222	power.automate002@cms.co	Proof of Con
Power_Aotomate_CMS333	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 3333	power.automate003@cms.co	Proof of Con
Power_Aotomate_CMS444	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 4444	power.automate004@cms.co	Proof of Con
Power_Aotomate_CMS555	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 5555	power.automate005@cms.co	Proof of Con
Power_Aotomate_CMS666	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 6666	power.automate006@cms.co	Proof of Con
Power_Aotomate_CMS777	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 7777	power.automate007@cms.co	Proof of Con
Power_Aotomate_CMS888	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 8888	power.automate008@cms.co	Proof of Con
Power_Aotomate_CMS999	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 9999	power.automate009@cms.co	Proof of Con
Power_Aotomate_CMS000	A proof-of-concept project to evaluate Power Automate capabilities for workflow automation. 0000	power.automate010@cms.co	Proof of Con

Fig. 3. Initial Excel file trigger and validation process.

IV. IMPLEMENTATION AND EVALUATION

This section elaborates on the key configurations, integrations, and functionalities for streamlining a CMS process of banking business domain.

A. Create content Task

Starting from the create content task using Power Automate to replace the manual CMS data entry. The System Configuration Specialist creates a SharePoint path to allow Power Automate for accessing the contents in Excel shown in Fig.3. The create content task then proceeds with the workflow configuration created by the Workflow Administrator as shown in Fig. 4, starting with a SharePoint trigger being activated when an Excel file is uploaded or updated. The trigger initiates the automation of data validation to ensure compliance with CMS requirements. Once validated, the data is transformed and sent to the CMS through Webhook integration in order to minimize manual intervention.
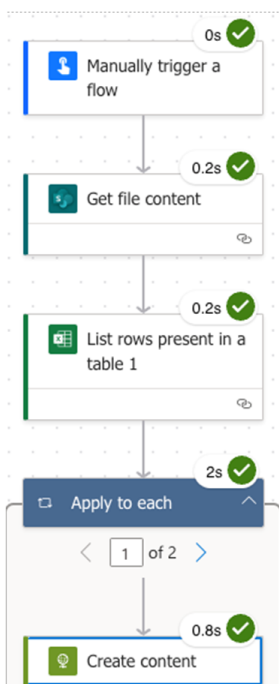

Fig. 4. Workflow of create_content task.

B. Notification Task

Fig. 5. demonstrates how the Workflow Administrator creates a notification task using Automate connectors. When content is updated or published, notifications are automatically dispatched to relevant stakeholders via Microsoft Teams, resulting in real-time updates and collaboration among team members.
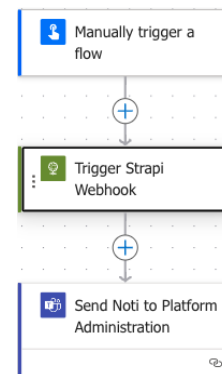

Fig. 5. Notification Workflow Automation Steps

C. Integration with SharePoint, CMS and Microsoft Teams

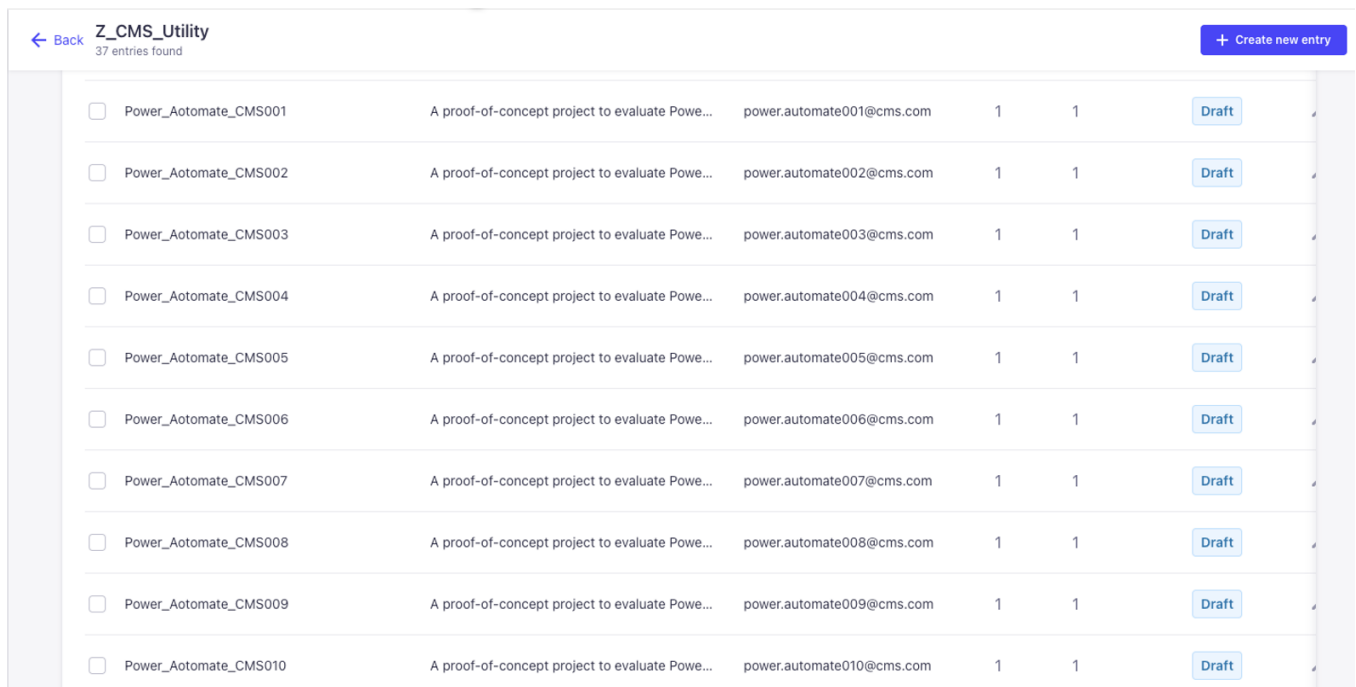To enhance interoperability, the workflow is integrated with:

- *SharePoint*− serves as the primary repository for Excel files containing content specifications. Power Automate utilizes HTTP Connectors to trigger workflows upon file creation or modification, streamlining the initiation of content processing workflows.
- *Power Automate*− leverages Webhook protocols to interact with the CMS for automating the data transfer and validation process. It ensures that content specifications are accurately processed and ready for publication without manual input.
- *Microsoft Teams*− enhances collaboration and provides real-time notifications. Once the contents have been verified and published to the CMS, Power Automate automatically sends updates to designated Teams' channels. The notifications contain the status of content updates and links to the published material, promoting transparency and timely communication among team members.

D. Evaluation

Fig. 6 displays the results of content created on the CMS website through the workflows shown in Fig. 3 and Fig. 4. Content Manager can quickly proceed with subsequent content management processes on the CMS, demonstrating significant

improvement of system integration efficiency. Once the System Configuration Specialist has prepared and uploaded contents to SharePoint, the established workflow automatically operated to efficiently handle repetitive tasks, significantly reducing staff operational time from at least 8 hours to just 1 hour, as shown in Fig 6.

Fig. 6. The result of content created with Power Automate.

The results strengthen the effectiveness of the Power Automate implementation in streamlining CMS process. The findings report that the current CMS process takes 2-5 days for operations, while the improved process with Power Automate takes 1 day.
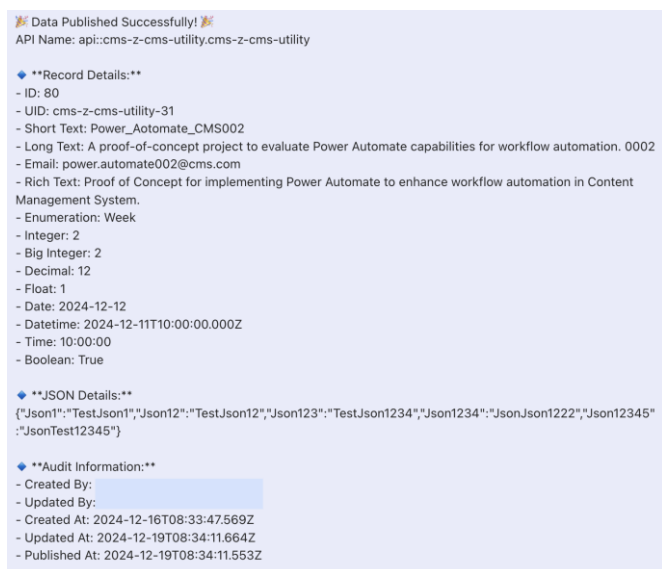

Fig. 7. Microsoft Teams notification results.

The automated notification process shown in Fig. 5 demonstrates rapid and comprehensive stakeholder notification capabilities through the integration between Power Automate and Microsoft Teams. This automation replaced the traditional meeting-based notification process, which requires lengthy meetings to communicate CMS content changes. Platform Administrator in charge of content changes can now quickly manage content across other systems through Teams platform integration, enabling them to update content on their respective platforms. The collaboration between Power Automate and Microsoft Teams has proven to be an effective tool for swift and direct notifications and communication, enabling the platforms to receive and update information rapidly, showing substantial improvements in communication efficiency depicted in Fig. 7 that shows the notification content sent to platforms involved in creating and updating CMS content through the workflow. Power Automate would enable flexible and automated notification message configuration with dynamic messaging capabilities.

V. CONCLUSION

This paper demonstrates the significant benefits of integrating Power Automate with SharePoint, Teams, and Webhooks. Key outcomes include reduced processing time, less human errors, and enhanced improved resource utilization. These achievements highlight the potential of automation to streamline operations, increase organizational efficiency and align with the goals of digital transformation.

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