IMPACTS OF AUTOMATION ON BID MANAGEMENT: EFFICIENCY IN THE BIDDING PROCESS

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ABSTRACT

Purpose: Bid management is the systematic process of creating and managing a bid – a detailed, costed, customer-specific solution or services, the persuasive proposal – on behalf of one organization to gain a business deal, contract, or offer of work from another organization. This research paper aims to study the effects of automation on bid management, with a focus on efficiency in the bidding process.

Design/Methodology: A mixed-methods approach was employed, involving a survey, interview, reliability analysis, and paired t-test statistical analysis, assessing both time and human resources spent on bid management pre- and post-automation implementation.

Findings: The implementation of proposal automation software significantly reduced the average team size ($p=0.000233604$) and time required for proposal creation ($p=0.0005102281$), indicating increased efficiency and lower resource needs, with RFPIO, Loopio, Qvidian, and Qorus being the most commonly used tools among respondents.

Originality/Value: This study provides fresh insights into the practical consequences of bid automation, filling a gap in the existing literature by giving empirical evidence of its effects on efficiency, both of which are critical for enterprises and stakeholders involved in procurement and bidding procedures.

Keywords: Bid management, Proposal management, Automation, Proposal automation Software, Bidding Process, Efficiency, Artificial Intelligence

Introduction

A brief overview of the topic

Bids, sales, and marketing are essential components of every business, whether it is a product or service organization. The size of the Large deals can reach or even exceed $500 million. (Kadre, 2011) Bid management, in the context of procurement and sales, refers to the process by which companies prepare and submit proposals or bids to win contracts. It is a critical function for many businesses, as it directly impacts their ability to secure new work, maintain cash flow, and grow. The bid manager must collaborate closely with sales, technical, delivery, and commercial teams (finance, legal, and so on) to prepare a winning proposal (Nickson, 2003). Sales, delivery, and technical teams may be spread around the globe and belong to various verticals (departments or functions within an organization), thus effective coordination and interpersonal skills are essential.

The process often involves a thorough understanding of the request for proposals (RFPs), detailed planning, research, proposal writing, and review, among other steps. (Sanli, 2023) Bid management is important because of its capacity to give a disciplined strategy to contract acquisition, ensuring that organizations are competitive, efficient, and effective in their pursuit of new opportunities. Proper bid management can improve the quality of submissions, increase win rates, and ultimately, contribute to the organization's bottom line (Fallmann, 2021). The author has used the words “bid” and “proposal” interchangeably and is synonymous in the industry.

In general, efficiency refers to the ability to do a task or work with the least amount of time and effort. Essentially, it means employing as few resources as feasible to do the task. Time, energy, money, materials, or manpower are all examples of resources. Efficiency is frequently used in the context of business and technology to refer to the extent to which time, effort, or cost is effectively used for the intended task or goal. It is all about doing things correctly and getting the most out of your resources.

When it comes to bid management and automation, efficiency can be evaluated from several angles:

Time Efficiency: Automation tools may cut the time necessary to prepare and manage bids dramatically, allowing personnel to focus more on strategic objectives.

Cost Efficiency: The software may minimize the costs associated with the bidding process by eliminating errors, reducing the need for rework, and reducing the number of people required.

To summarize, an effective automated bid management system would allow a company to produce high-quality bids with less time, resources, effort, and expense. (Philbin, 2008) Increased productivity and competitiveness are frequently the result of increased efficiency.

Automation and Artificial Intelligence (AI) in Bid management

The advent of Artificial Intelligence (AI) and automation technologies is revolutionizing business practices, particularly in the realm of bid management. The use of these technologies is saving businesses valuable time and resources, as they can significantly enhance productivity and optimize existing resources. (Fallmann, 2021)

Artificial intelligence (AI) refers to robots and software's ability to mimic human intelligence, learn from experience, adapt to new inputs, and do activities that normally require human intellect. It includes technologies like machine learning, natural language processing, and robots. (Russell, 2010)

Automation is generally referred to as the use of technology, often in the form of software or machines, to perform activities (simple repetitive tasks to complex processes) with minimum human participation. The use of technology, particularly software solutions, to streamline and automate repetitive operations in the bid process, such as data collecting, document preparation, and approval procedures, is referred to as bid management automation. This automation improves the efficiency, accuracy, and speed with which bids are prepared, potentially raising the win rates for organizations.

In the context of bid management, businesses worldwide strive to maximize their time and resources while maintaining a stable cash flow. Although it is commonly acknowledged that bid management is a laborious, time-consuming, and very manual procedure, it goes far beyond simply compiling documents. (Rajbhoj, Nistala, Kulkarni, & Ganesan, 2019) (Bidhive, n.d.). Artificial Intelligence (AI) is now being integrated into bid management processes, automating certain aspects and enhancing the efficiency and effectiveness of the process. AI and Automation can help with data extraction, content generation, knowledge management, competitive analysis, gap analysis, and tracking of ongoing bids. (Rajbhoj, Nistala, Kulkarni, & Ganesan, 2019) AI-driven automation solutions can also aid in reducing processing time and improving the quality of responses, leading to a higher likelihood of winning bids. (Connectbase, 2021)

The automation of the bid management process through AI can assist bid managers in saving time and securing business contracts, thereby creating a "win-win" situation. (Fallmann, 2021) (Manchanda, 2021)

Key steps in the bid management process where AI-based automation can prove beneficial include:

Research and Planning: A typical tender process involves multiple departments, from management to security. For the bidding process to begin, it is critical to establish the company's suitability for the contract and its capacity to meet the tender's demand. This requires the bidding team to have an extensive knowledge base. AI-based automation solutions can eliminate the need for a "middleman" and enhance data sharing across departments, thereby saving time and ensuring that no valuable information is missed. (Fallmann, 2021)

Content Generation: With machine learning skills such as natural language processing (NLP), AI-based automation can help with content development. These technologies can assist teams construct accurate responses by sorting through current information to find answers to inquiries. As a result, rather than going through a large number of documents, responses are created from high-quality knowledge within the enterprise's systems. (Fallmann, 2021)

Learning from the Past: Learning from past experiences is an important aspect of creating a winning proposal. This includes reviewing prior RFI and RFP responses and drawing on knowledge from existing knowledge bases. Automation tools can undertake competitive analysis, giving your team fresh ideas and a competitive edge by providing insights into the best practices employed by competitors in their tender process. (Fallmann, 2021)

Efficiency and Quality: Automation can assist bid management teams in reducing processing time and improving job quality. AI-powered solutions may provide a thorough picture of activities in each active bid, ensuring that nothing is overlooked.

Furthermore, AI and automation aid in gap analysis, allowing organizations to discover potential gaps in reaching their goals and ambitions. Answering RFPs efficiently and identifying those most likely to win is critical for company success, and this is an area where Automation may make a major difference. (Fallmann, 2021)

However, there are valid concerns that arise with the advent of AI-driven automation solutions. Many companies worry about having sufficient data to generate appropriate responses to win bids or whether losing the human touch could be detrimental. While these concerns are valid, it's important to note that AI should be viewed as a tool to assist with bid writing components, not as a replacement for human interaction. AI can assist in the formulation of meaningful solutions if all data sources are linked, saving significant time and resources (Fallmann, 2021). When examining issues such as content optimization, competitive analysis, topic research, tone, and grammar, the human element remains critical.

Literature Review

Existing research on automation in bid management

Managing change in a complicated business environment is difficult. The rate of change in technology, managerial innovation, and the overall competitive environment are among the most important of these. Understanding how the firm runs allows you to identify and fix problems that are impeding growth. (Stader, 1997)

The creation of bid management software has been one of the most significant advancements in bid management. Many of the tasks involved in the bid management process, such as discovering new opportunities, preparing and maintaining proposals, tracking progress, and submitting bids, are automated by bid management software. (Bidhive, n.d.) Businesses have saved significant time as a result, allowing them to focus on generating high-quality proposals rather than administrative responsibilities. The global proposal management software market was worth $1.8 billion in 2021 and is expected to reach $7 billion by 2031, rising at a 14.8% CAGR from 2022 to 2031 (Priyadarshi & Kumar, 2022). In bid management operations, AI can be utilized to automate repetitive tasks such as data entry and document processing, as well as to provide real-time insights into bid performance. It is also capable of analyzing bid data and forecasting future bids. (Fallmann, 2021)

What is Proposal Automation?

Proposal automation is a method of streamlining and automating the development of business proposals through the use of software. It combines data from many sources and employs templates to swiftly generate professional, consistent, and correct proposals. This method is intended to replace manual labour, increasing efficiency and production. (Nicklas, n.d.)

What is Proposal Automation Software?

Proposal automation software is a digital technology that assists firms in more efficiently generating and managing proposals. It enables the integration of data from several platforms, automates regular operations, and improves team cooperation. The software automates crucial steps in the proposal process, such as shredding the document, building compliance matrices, and checking compliance by identifying holes. A proposed solution can also extract acronym meanings and occurrences, as well as detect and shred essential FAR/DFAR and flow-down provisions. (Harrington, 2021) The automation software is especially beneficial for managing complex proposals that involve input from several sources as well as cooperation across multiple departments. (Nicklas, n.d.)

Key Features of Automation Software (Nicklas, n.d.):

- **Integration:** Proposal automation software integrates with CRM, CPQ, and other systems to streamline data gathering and ensure accuracy.
- **Collaboration:** The software allows multiple team members to work simultaneously on a proposal, improving team collaboration.
- **Content Libraries:** The software provides a centralized storage space for proposal content, making it easy to find, update, and reuse materials.
- **Automation and Workflow:** Automates routine tasks such as follow-ups, notifications, and updates, thereby streamlining the proposal management process.
- **Analytics:** Offers data on proposal performance and tracks metrics to aid decision-making.

Uses of Proposal Automation Software:
Proposal automation software is used for quickly and precisely preparing proposals, minimizing manual duties, boosting team cooperation, and tracking proposal performance. Businesses can use it to deliver personalized proposals and track their progress throughout the sales cycle. It also aids in ensuring that proposals adhere to branding guidelines and regulatory obligations. (Nicklas, n.d.)

Limitations of Proposal Automation Software (Nicklas, n.d.):
Despite its benefits, proposal automation software has some limitations:

- **Initial Set-Up:** It requires time, money and resources to implement correctly.
- **Learning Curve:** Users may need time to become proficient with the system.
- **Data Privacy:** There can be concerns over data security, especially when integrating with other platforms.
- **Limited Customization:** Some software might not fully cater to specific business needs.

Bid management software offers several advantages and disadvantages that IT companies should consider when deciding whether to adopt this technology. (Priyadarshi & Kumar, 2022). 49% of respondents are using dedicated automation software (Loopio, 2023). The benefits of bid management software are increased efficiency, Improved collaboration, enhanced visibility, greater accuracy, increased competitiveness, helps establish roles, maintains brand consistency, Time savings, and improved content storage and maintenance. (Tomlinson, 2022) (Igou, 2021) (Gittleson, n.d.) (Loopio, 2023) As we have some benefits, some disadvantages of bid management software are also observed like the cost of acquiring and managing automation software or tool, Learning curve, technical issues, limited customizations and dependence on technology. (Tomlinson, 2022) (Igou, 2021)

Bid management is a crucial element of business strategy, particularly in industries with competitive procurement processes like construction, manufacturing, and digital marketing.

Gaps in the Existing Literature
Despite the growing body of research on bid management and business process automation, several gaps remain:

Real-world Application of AI in Bid Management: While the theoretical possibilities of AI in bid management are well-documented, there is a lack of comprehensive data and analysis that demonstrate its real-world applications and success factors.

Efficiency of Bid Management and Automation: There's limited research on how bid management can be automated and its impact on Efficiency.

Procurement: There's limited research on practical, non-biased, and real benefits that would be achieved by organizations after implementing Bid management automation. Currently, available data is provided by the different automated bid management software providers and can be biased to suit themselves.

Ethics and Fairness in Automated Bid Management: As AI-based solutions become more prevalent, questions about transparency, fairness, and ethics in automated bid management need addressing.

This research aims to fill these gaps by providing insights into real-world applications of AI-based Automation in bid management, exploring the intersection of bid management and automation, and delving into and long-term considerations of these technological advancements.

The purpose and objectives of the research
Purpose of the Research
The purpose of this research is to investigate the impact of automation on bid management, focusing specifically on efficiency. Through the analysis of Survey data, interviews, and document analysis, the study aims to understand the ways in which automation is improving the bidding process.

Objectives of the Research
1) To analyze the efficiency of automated bid management: The study will investigate how automation improves the efficiency of bid management processes. This will involve analyzing the time and resources saved through automation.

2) To provide recommendations for the adoption of automation in bid management: Based on the findings of the research, the study will provide recommendations for businesses on whether to adopt and implement automation in their bid management processes.

Research Methodology

Research Design

The approach for answering the questions or testing the hypotheses that prompted the research in the first place is referred to as a research design. (Pinsonneault & Kraemer, 1993)

Because it allows for a flexible and interactive approach to the research subject, the author chose an exploratory research design. Exploratory research is commonly utilized when doing a study for the first time or when the issue is not well understood or completely investigated.

The effects of automation on bid management, specifically on efficiency in the bidding process, are a relatively new and fast expanding subject of study in this context. An exploratory strategy is required because it allows the researcher to:

a) Identify and evaluate novel and existing phenomena: Because bid management automation is still in its early stages, an exploratory research methodology enables the researcher to comprehend and express the important characteristics and implications of proposal automation software.

b) Create relevant hypotheses: The exploratory nature of the research methodology allowed for the creation of hypotheses about the effects of automation on bid management, which were then assessed with the paired t-test.

c) Determine the most effective methods: Given the scarcity of prior research in this field, exploratory research assists in determining the most relevant data collection methods and analytical procedures, in this case, surveys and the paired t-test.

d) Flexibility: Exploratory research gives research design flexibility. This allows the study approach to be adapted when new insights are discovered, which is especially crucial in a rapidly growing sector like automation.

In conclusion, the researcher's use of an exploratory research methodology allowed him to delve into the topic of automation's impact on bid management, providing a solid grasp of the efficiency changes in the bidding process.

Primary Research

The primary research for this study was undertaken in two stages. In-depth interviews gave qualitative insights into user experiences and impressions of the automation process, while surveys were circulated to collect quantitative data on the impact of proposal automation software.

Secondary Data

Secondary research was carried out by thoroughly studying online resources, reading published academic journals, and analyzing past studies on related issues. This technique provided a comprehensive grasp of existing knowledge, identified gaps in the present literature, and laid the groundwork for the primary research in the study. It also included document analysis which is available in the public domain like industry reports, blogs, websites, and books.

Population

This study's population included bid managers, sales professionals, and top executives who play critical roles in their organizations' proposal creation and bid management process.

Sampling method

The respondents were selected using a purposive sampling method, targeting individuals who have firsthand experience with bid management and, ideally, with automation in these processes.

Sample size

The sample size was decided to be around 40 experts from IT organizations with a revenue of more than $10 million or 25 workers because such organizations often have a more structured bid management process and the capacity to invest in automation technologies. As a result, they provide a representative and relevant population to adequately examine the effects of automation on bid management. Furthermore, because the survey was business-to-business, obtaining more respondents proved difficult. Given the confidential and proprietary nature

of many organizations' bidding procedures, acquiring access to key decision-makers ready to give in-depth views was a time-consuming and challenging undertaking.

Data Collection Tools and Methods

This study project's data collection procedures included contacting 40 respondents. The research topics were chosen because they were relevant to the topic at hand - bid management and business process automation. It's presumed they were professionals involved in these areas within their organizations.

Here's a breakdown of the data collection tools and methods:

1**. Questionnaire:**

Questionnaires/Surveys were used as a primary tool for data collection. It was collected through google forms and printed form. The survey was made up of closed-ended questions. The closed-ended questions were aimed to collect quantifiable data on topics such as the number of bids managed every month, the average time spent on each bid, the bid success rate, and changes in these metrics following the implementation of automation. These were structured to obtain responses on a wide range of topics relevant to the research such as:

- Experiences with bid management automation
- Time spent before and after bid management automation
- Number of team members working on proposals before and after bid management automation
- Utilization, productivity, and efficiency of the resources

The questions were quantitative in nature to get a comprehensive understanding of the respondent's perspectives.

2. Interviews:

In-depth interviews were conducted with some respondents to gain more nuanced insights. Open-ended questions were used to encourage respondents to share detailed experiences and opinions. These interviews were either conducted face-to-face, over the phone, or via digital platforms, depending on the feasibility and preference of respondents. The interviewers were picked from a group of survey respondents, with a preference for those who demonstrated substantial expertise with bid management automation or who had unique insights based on their survey results. The interviews were semi-structured, with a pre-defined set of questions to steer the dialogue while allowing participants to express their experiences and ideas in depth. The interviews were aimed to collect qualitative data to supplement the survey's quantitative data, offering a more nuanced picture of the effects of automation on bid management. Respondents were able to share more specific insights into their experiences with bid management automation, including benefits, challenges, and recommendations for improvement, thanks to the open-ended questions.

3. **Document Analysis:**

In some cases, secondary data was collected through the analysis of existing internal reports, publications, case studies, or other relevant documents provided by respondents or available in the public domain.

Hypothesis

- **Null Hypothesis (H0) for Hypothesis 1:** There is no significant difference in the time spent on creating proposals before and after the implementation of proposal automation software.
- **Alternative Hypothesis (H1) for Hypothesis 1:** There is a significant difference in the time spent on creating proposals before and after the implementation of proposal automation software.
- **Null Hypothesis (H0) for Hypothesis 2:** There is no significant difference in the average number of people working on a proposal before and after the implementation of proposal automation software.
- **Alternative Hypothesis (H1) for Hypothesis 2:** There is a significant difference in the average number of people working on a proposal before and after the implementation of proposal automation software.

Data Analysis

Microsoft Excel, a capable tool for organizing and categorizing huge datasets, was used to organize and aggregate the acquired data. Following that, detailed statistical analysis was carried out using **SPSS (Statistical Package for the Social Sciences),** a strong software for advanced data management and statistical analysis that facilitated the reliability analysis and paired t-tests used in this research. Data were collected from 40 professionals who play a critical role in Bid management.

Sr. No.	Variable	Response	Frequency	Percentage
1	Respondent Role	CEO/COO/CXO	2	5%
		Vice President	6	15%
		Director	6	15%
		Manager	14	35%
		Associate/Analyst	12	30%
2	Respondent Years of experience	Less than 5 Years	9	23%
		Between 5 to 10 Years	15	38%
		Between 11 to 15 Years	6	15%
		Between 16 to 20 Years	8	20%
		More than 20 Years	2	5%
3	Respondent Company Employee Size	1 to 100	0	0%
		101 to 500	2	5%
		501 to 2,500	1	3%
		2,501 to 10,000	2	5%
		10,001 to 50,000	12	30%
		More than 50,001	23	58%
4	Company Revenue	Less than or equal to $10 Million	0	0%
		$11 Million to $100 Million	3	8%
		$101 Million to $500 Million	6	15%
		$501 Million to $1 Billion	8	20%
		More than $1 Billion	23	58%
5	Average Deal Size	Less than $5M Million	10	25%
		$5 to $50M	26	65%
		More than $50M	4	10%

Table 1. Results of Respondent

Reliability Analysis

Reliability analysis was performed, and Cronbach's alpha score is 0.636. It indicates that the measurements used in this study have an adequate level of internal consistency. This score runs from 0 to 1, with a greater value indicating a better level of dependability.

Cronbach's Alpha	N of Items
0.636	4

Table 2. Reliability Analysis

Cronbach's alpha reliability analysis was done to analyze the consistency and reliability of the survey instrument employed in this study. This is critical because it determines if the survey items or questions are connected and assess the same underlying construct or aspect. In other words, it checks whether the questionnaire is reliable and produces consistent results, confirming the validity of the survey data findings. A reliable instrument boosts confidence in the outcomes, making them more reputable and trustworthy.

Paired T-Test:

Following data collection, the paired t-test was used to analyze the results. In the case of two correlated samples, this statistical technique is used to compare two population means. The paired t-test is an effective technique for determining if changes to a business process result in benefits. It compares the performance metrics before and after the implementation of changes, assuming that the data follows a normal distribution. Each pair represents one respondent's input, allowing us to examine the effects of bid management and automation within the same organization.

The goal of applying the paired t-test was to understand if the introduction of AI in bid management and automation in business processes led to significant changes in the respondent's organizational performance, based on the parameters defined in the survey. The test helped to establish if the perceived improvements (or declines) were statistically significant or could be attributed to random variation.

The respondents were asked to report the **average time they spent creating a proposal before and after implementing the automation software**. Each pair of responses represented one participant's before-and-after experience.

The first paired t-test analyses the means of two related groups to see if there is a statistically significant difference between them. The null hypothesis is that the mean difference between paired observations is zero. The null hypothesis is rejected if the p-value is less than the chosen significance level (often 0.05), showing a significant difference.

In this situation, the paired t-test yielded a **p-value of 0.0005102281** as shown in Figure 2**.** So, the author **rejects Null Hypothesis (H0) for Hypothesis 1.**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	15.031	12.039	2.128	10.691	19.372	7.063	31	0.000

Table 3. Paired t-Test 1

The second paired t-test was used to examine the effect of proposal automation software on the **average number of individuals involved in proposal creation**. Before and after the introduction of the automation software, the participants were asked about the normal team size for a proposal. As with the last test, each pair of responses represents one participant's reported team size before and after the software implementation. The paired t-test examines the means of these paired observations to see if there is a statistically significant difference.

The null hypothesis of the paired t-test in this context is that there is no difference in the average number of individuals working on a proposal prior to and after automation software installation. This null hypothesis would be rejected if the p-value was less than the chosen significance level (typically 0.05), showing a meaningful difference.

In this situation, the paired t-test yielded a **p-value of 0.0002233604** as shown in Figure 3. So, the author **rejects Null Hypothesis (H0) for Hypothesis 2.**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 2	0.567	0.728	0.133	0.295	0.838	4.264	29	0.000

Table 4. Paired t-Test 1

Findings

1) Out of the total respondents only 38 % use proposal automation tools or software. The rest of the professionals either don't use it or want to use it but their organization is not ready to invest in automation.
2) **Time Savings: p-value of 0.0005102281.** This is less than 0.05, indicating that there is a statistically significant difference in proposal time before and after the installation of proposal automation software. As a result, we can conclude that the use of automation tools has greatly decreased the time spent on proposal creation.
3) **Reduced resources and increased efficiency: p-value of 0.0002233604**. This value is less than 0.05, indicating that there is a statistically significant difference in the number of individuals working on

proposals before and after the proposal automation software was implemented. Therefore, we can infer that the implementation of the automation software has significantly affected the team size required to create proposals. Presumably, it has reduced the number of people needed, which could indicate increased efficiency and lower resource requirements per proposal.

4) Almost everyone agreed that automation has a significant impact on the utilization, productivity, and efficiency of users.
5) By using an automation tool, on average utilization, productivity, and efficiency of the resources were increased by 40 to 60%.
6) The most used proposal automation software used by respondents were RFPIO, LOOPIO, Qwidian, and Qorus.

Limitations of the Research and Future Study

Please note that the number of respondents (40) and the paired t-test are generally not sufficient to provide a comprehensive view of a larger population. Further research with a larger sample size and/or additional statistical analyses may be necessary for more robust conclusions.

Although the statistical test indicates a significant difference, the practical significance and usefulness of the automation software should also be considered based on cost, ease of use, the learning curve for users, and its impact on the quality of proposals, among other factors.

About the Pair t-test, the exact difference in time spent and the magnitude of the effect cannot be determined solely from the p-value. These insights would require more information such as descriptive statistics (like means or medians) and the effect size, which could be calculated using measures such as Cohen's d or the correlation coefficient r.

As with the previous test, the exact difference in the number of people and the magnitude of this effect would require additional data such as the mean team sizes before and after the software implementation, and the calculation of an effect size measure. Furthermore, while the statistical results indicate a significant reduction, practical considerations of the effects on proposal quality, team dynamics, and job roles should also be considered and can be a topic for future research.

The use of Generative AI in proposal automation can be a good relative topic for future relevant research.

Future research could further explore the long-term impacts of proposal automation software, including effects on proposal quality, client satisfaction, and business growth.

Conclusion

The research has successfully demonstrated the impact of automation on bid management, with statistical evidence showing that proposal automation software significantly reduces the time and human resources needed to create and manage proposals. It indicates that automation contributes to increased efficiency in bid management processes. Additionally, the study found that software like RFPIO, Loopio, Qvidian, and Qorus were commonly used among respondents. However, it is also important to note the limitations of automation software, such as the initial setup time, the learning curve for users, potential data privacy concerns, and possible limitations in customization to specific business needs.

In conclusion, while automation has demonstrated significant benefits in enhancing the efficiency of the bidding process, organizations should carefully consider their specific requirements, potential challenges, and the choice of the right software. The findings of this study could prove valuable for businesses and stakeholders in procurement and bidding processes, informing their decision-making regarding the adoption and implementation of proposal automation tools.

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