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Implementation of Integrated Registration System at BBI Using Zoho CRM And Iso 9001:2015

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Abstract
This study aims to improve the registration system at Brilliant Brain Indonesia (BBI) by implementing Zoho CRM, aligned with ISO 9001:2015 Clause 8 requirements. The existing system faced challenges including time-consuming paper-based forms, frequent data entry errors due to manual input, and fragmented data management across two unintegrated systems. Using the Business Process Improvement (BPI) methodology, which includes Organizing for Improvement, Understanding the Process, and Streamlining phases, this research analyzed and optimized the registration workflow. The Wilcoxon signed-rank test was applied to evaluate the statistical significance of improvements before and after system implementation. The customized Zoho CRM platform utilized features such as webforms, workflow automation, automated validation, and real-time analytics. Results showed a significant reduction in registration processing time from an average of 20 minutes 44 seconds to 17 minutes 55 seconds per registration (14% decrease), and a dramatic reduction in data input time from 4 minutes 3 seconds to 4 seconds per record (98% decrease). These improvements enhanced operational efficiency, data accuracy, and compliance with ISO 9001:2015 Clause 8. Although further module development is needed to fully complete documentation processes, this study demonstrates that integrating cloud-based CRM systems with quality management frameworks can substantially improve educational service operations.
Keywords: Business Process Improvement; ISO 9001:2015; Registration System; Wilcoxon Test; Zoho CRM.

1. INTRODUCING

In the contemporary global and competitive business environment, the quality of customer service has emerged as a pivotal factor in the success of organizations [1]. The efficacy of registration systems is imperative for enhancing service quality, operational efficiency, and customer satisfaction [2]. Nevertheless, numerous organizations continue to encounter substantial challenges in the domains of registration processes and customer data management, particularly in contexts involving manual systems or non-integrated technological frameworks.

Brilliant Brain Indonesia (BBI), a preeminent educational institution catering to students from kindergarten to high school [3], confronts analogous challenges in the registration process for its student body. The primary concerns pertain to the overreliance on paper-based forms, the inherent vulnerabilities in manual data entry, and the dissemination of data across a multitude of non-integrated systems. Consequently, there is an increase in processing times, the presence of extended queues, and a decline in service quality. This phenomenon exerts a direct influence on customer satisfaction and the overall performance of the organization.

Marli Trivana Layan: *Corresponding Author

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This issue is not novel in the realm of operational management. A body of research has previously investigated the significance of automation and digitization in the domain of registration, with the objective of enhancing efficiency and customer satisfaction. For instance, a study conducted at Klinik Pratama and Bidakara Medical Center determined that integrating a Customer Relationship Management (CRM) system into the registration process facilitates patient registration without the need for in-person visits, reduces waiting times, minimizes queues, and enhances the patient experience [4] [5]. Another study applied to the company Ordia demonstrated that the implementation of cloud-based CRM systems, such as Zoho CRM, can enhance data accuracy and facilitate real-time analysis to support strategic decision-making [6].

The alignment of CRM systems with international standards, such as ISO 9001:2015, has been demonstrated to enhance customer relationship management by ensuring quality, security, and operational efficiency. This alignment emphasizes operational control and continuous improvement [7] [8] [9]. As demonstrated by CV. Bearpath, an organization that integrated CRM with the international standard ISO 9001:2015 clause 8.2.1, experienced notable advancements in efficiency, consistency, and customer satisfaction. These improvements led to operational transparency and continuous improvement [10].

Consequently, the implementation of Zoho CRM functions as a substitute to enhance the registration system at BBI, while ensuring adherence to the principles of ISO 9001:2015 Clause 8. This is achieved by providing more structured processes, workflow automation, and customization of modules and fields, thereby assisting the company in enhancing operational efficiency, particularly in the registration process. The approach employed in this study incorporates the Business Process Improvement (BPI) methodology, traversing the phases of Organizing for Improvement, Understanding the Process, and Streamlining, to meticulously analyze and redesign the customer registration workflow [11]. Furthermore, to objectively measure the impact of changes, this study will employ the non-parametric Wilcoxon Signed-Rank Test, a method that has proven effective in assessing significant differences between metrics before and after intervention [12].

The objective of this study is to implement and evaluate Zoho CRM as a solution to improve the registration system at BBI, ensuring its compliance with the requirements of Clause 8 of ISO 9001:2015. The integration of Zoho CRM is expected to reduce processing time, minimize data entry errors, and improve overall operational efficiency, thereby supporting BBI's commitment to quality management and customer satisfaction.

2. METHODOLOGY

This study employed a systematic approach to implement and evaluate Zoho CRM as a solution to improve the registration system at Brilliant Brain Indonesia (BBI), in alignment with ISO 9001:2015 Clause 8 requirements. The research methodology is composed of several key components, which are described below.

Research Design

The research design for this study follows the Business Process Improvement (BPI) framework, which is well-suited for analyzing and optimizing organizational workflows [13]. This approach was chosen to systematically identify inefficiencies in the existing registration system at Brilliant Brain Indonesia (BBI) and to implement targeted improvements aligned with ISO 9001:2015 Clause 8.

Table 1. Research Design

Aspect	Description
Methodology	Business Process Improvement (BPI)
Phases	1. Organizing for Improvement 2. Understanding the Process

Marli Trivana Layan: *Corresponding Author

JURNAL TEKNOINFO
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	3. Streamlining
Organizing for Improvement	Preparation, stakeholder engagement, resource allocation, defining project scope
Understanding the Process	Mapping and analyzing existing registration workflows, identifying inefficiencies and ISO 9001:2015 Clause 8 gaps
Streamlining	Customizing Zoho CRM features: webforms, workflow automation, automatic validation, real-time reporting; staff training and deployment
Objective	Analyze, improve, and optimize BBI's registration system aligned with ISO 9001:2015 Clause 8
Outcome	Systematic problem-solving to enhance operational efficiency and quality compliance

The research adopted a Business Process Improvement (BPI) framework, which includes three main phases, namely Organizing for Improvement which are preparation and planning, including resource allocation and stakeholder engagement. Next, understanding the process which consists mapping and analyzing the existing registration workflow to identify inefficiencies and gaps relative to ISO 9001:2015 Clause 8. Last is Streamlining, which designing and implementing improvements by customizing Zoho CRM features such as webforms, workflow automation, automatic validation, and real-time reporting. The research design employed herein enabled a structured approach to problem-solving, ensuring that the implemented system not only addresses operational inefficiencies but also complies with quality management standards.

Data Collection Techniques

Methods used to gather qualitative and quantitative data to analyze and improve the registration system at BBI described as below.

Table 2. Data Collection Techniques

Data Collection Technique	Description
Observation	Directly observing the existing registration workflow to identify processes and issues.
Interviews	Conducting structured interviews with academic managers, frontliners, IT staff, and stakeholders to gather qualitative insights.
Documentation Review	Examining existing registration forms, reports, and procedural documents.
System Logs & Time Measurement	Recording processing and data input times before and after Zoho CRM implementation for quantitative performance evaluation.

The present study employed a mixed-methods data collection approach, integrating qualitative and quantitative techniques [14]. Through observation and interviews, a comprehensive understanding of the prevailing registration process and its operational challenges was obtained. A documentation review was conducted to identify procedural gaps, and system logs and time measurements were used to objectively evaluate process improvements following the implementation of Zoho CRM.

Implementation Tools

The implementation of these tools is paramount to the customization and deployment of the Zoho CRM platform, thereby addressing the registration system challenges encountered at Brilliant Brain Indonesia (BBI). The selected tools facilitate automation,

Marli Trivana Layan: *Corresponding Author

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validation, and real-time reporting, thereby enhancing operational efficiency and data accuracy.

Table 3. Implementation Tools

Tool/Feature	Description
Zoho CRM Platform	Cloud-based CRM system used as the core platform for registration system improvement.
Webforms	Online forms integrated with Zoho CRM to capture registration data directly, reducing paper use.
Workflow Automation	Automates task assignments, reminders, and status updates to streamline registration processes.
Automatic Validation	Ensures data accuracy by validating inputs automatically, minimizing manual errors.
Real-time Reporting and Analytics	Provides management with up-to-date insights on registration metrics and bottlenecks.

The customization process entailed the adaptation of Zoho CRM modules, including Prospects, Contacts, and Scheduling, to align with BBI's distinct operational requirements. Staff members were the target demographic for training sessions designed to facilitate the seamless adoption and effective utilization of the platform.

Evaluation Method

The effectiveness of the Zoho CRM implementation was evaluated using the Wilcoxon signed-rank test, a non-parametric statistical method suitable for comparing paired samples when data normality cannot be assumed [12][15].

Table 4. Evaluation Methods

Evaluation Aspect	Description
Statistical Test	Wilcoxon signed-rank test, a non-parametric method for paired data comparison.
Purpose	To determine if differences in registration processing and data input times before and after implementation are statistically significant.
Data Analyzed	Processing time per registration and data input duration, measured pre- and post-implementation.

The Wilcoxon test was employed to ascertain the statistical significance of the observed reductions in processing and input times, thereby validating the impact of the system improvements.

Research Procedure

The research procedure outlines the step-by-step approach followed to analyze, implement, and evaluate the registration system improvements [5][16].

Marli Trivana Layan: *Corresponding Author

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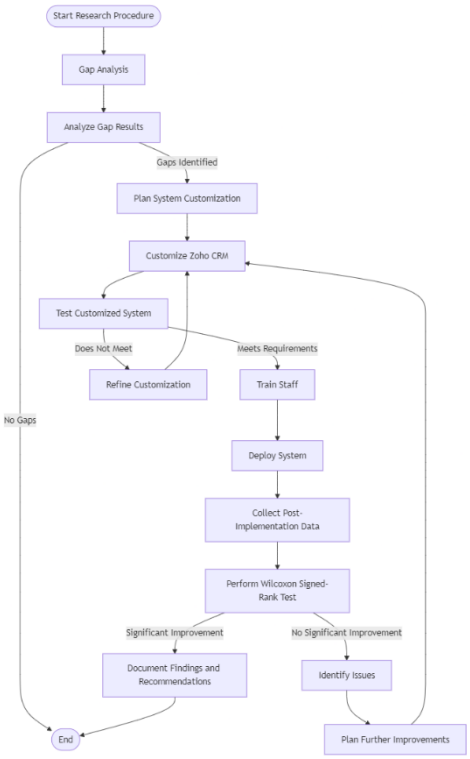

Figure 1. Research Procedure

To facilitate comprehension, the research procedure is presented in the form of a flowchart in Figure 1. The process starts with Gap Analysis to identify discrepancies against ISO 9001:2015 Clause 8. If gaps exist, the system customization phase begins, which is iterative: customization, testing, and refinement repeat until requirements are met. Once the system is ready, staff training and system deployment follow. Post-implementation data collection measures key performance indicators. The Wilcoxon signed-rank test evaluates whether improvements are statistically significant. If improvements are significant, documentation and reporting conclude the procedure. If not, issues are identified and further improvements planned, looping back to customization.

3. RESULT AND DISCUSSIONS

Research Result

This section presents the quantitative and qualitative outcomes obtained from the implementation of Zoho CRM to improve the registration system at Brilliant Brain Indonesia (BBI). The primary focus is on measuring the impact of the system on registration processing time and data input duration, as well as describing the implemented system features that contributed to these improvements.

Gap Analysis on ISO 9001:2015 Clause 8

This section undertakes a comparative analysis of the existing registration system at Brilliant Brain Indonesia (BBI) and the requirements stipulated in ISO 9001:2015 Clause 8 [17][18]. The latter focuses on operational planning, process control, and improvement to ensure consistent service quality. The gap analysis was conducted through observation, interviews, and document reviews, which identified specific deficiencies in BBI's registration process relative to ISO standards. The findings are summarized in Table 3.1, which categorizes gaps according to relevant ISO 9001:2015 Clause 8 sub-clauses.

Marli Trivana Layan: *Corresponding Author

JURNAL TEKNOINFO
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Table 5. Gap Analysis

ISO Clause	Gap Description	Impact on BBI
8.1 Operational Planning and Control	Reliance on manual, paper-based registration forms causing delays and queue buildup.	Inefficient process control, increased processing time, and customer dissatisfaction.
8.2 Requirements for Products and Services	Data managed in two separate, unintegrated systems (paper/Excel and Zoho CRM).	Data duplication, inconsistency, and lack of traceability.
8.3 Design and Development of Products and Services	Lack of automation and workflow integration in the registration process.	Inefficient workflows, delayed task completion, and error-prone data handling.
8.5 Production and Service Provision	Manual data entry prone to frequent errors due to misinterpretation and lack of validation.	Data inaccuracies requiring rework, reducing data reliability.
8.6 Release of Products and Services	Incomplete documentation and monitoring of registration processes.	Non-compliance with quality assurance requirements and poor process visibility.
8.7 Control of Nonconforming Outputs	No formal mechanism for identifying and correcting errors promptly in the registration data.	Delayed error detection and correction, affecting service quality.

The gap analysis reveals that BBI's registration system significantly deviates from ISO 9001:2015 Clause 8 requirements in multiple critical areas, including operational control, data integrity, process automation, documentation, and error management. Addressing these gaps through Zoho CRM implementation is essential for achieving improved operational efficiency, data accuracy, and compliance with quality management standards.

Registration Processing Time

Prior to the implementation of Zoho CRM, the average time required to complete one registration at BBI was 20 minutes and 44 seconds. The protracted nature of the processing time can be attributed to the utilization of paper forms, manual data entry, and verification processes that were susceptible to errors and delays. Following the implementation of the customized Zoho CRM platform, the mean registration processing time was reduced to 17 minutes and 55 seconds per registration. This represents a substantial reduction of approximately 14% in processing time, indicating enhanced operational efficiency and streamlined workflows.

Data Input Duration

The process of data input, a critical component of the registration process, has undergone substantial enhancement. Prior to the integration of Zoho CRM, the manual input of data into the system required an average of 4 minutes and 3 seconds per record. This protracted process was attributable to the manual transcription of data from paper forms and the necessity for repeated verification. Subsequent to the implementation of these modifications, the average data input time was reduced to approximately 4 seconds per record, thereby achieving a substantial reduction of 98%. This was accomplished through the integration of automated data capture mechanisms, such as webforms, and the implementation of integrated validation features. This acceleration not only reduces staff time requirements but also serves to minimize human error.

System Features Implemented

The Zoho CRM platform was customized with several key features to support these improvements.

Table 6. System Features

Features	Description

Marli Trivana Layan: *Corresponding Author

JURNAL TEKNOINFO
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Webforms	Allowing prospective students to submit registration data online, eliminating paper-based forms.
Workflow Automation	Automating task assignments, follow-up reminders, and status updates to reduce manual intervention.
Automatic Data Validation	Ensuring data accuracy and consistency at the point of entry to reduce errors.
Real-time Reporting and Analytics	Providing management with instant insights into registration performance and bottlenecks.

Following the implementation of Zoho CRM, an analytical investigation was conducted on two metrics: registration processing time and data input time. The results of this investigation are presented in Table 7.

Table 7. Implementation Metric

Metric	Before Implementation	After Implementation	Improvement
Registration Processing Time	20 min 44 sec	17 min 55 sec	~14% reduction
Data Input Time per Record	4 min 3 sec	4 sec	~98% reduction

The utilization of Zoho CRM's features has been demonstrated to facilitate the streamlining of business processes, thereby enhancing their operational efficiency. As illustrated in Figure 2, the business process was conducted prior to the implementation of the new system. Figure 3 shows the business process after the implementation of the new system.

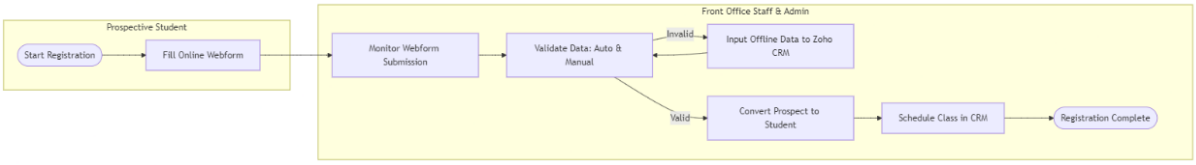

Figure 2. Process Before Implementing Zoho CRM

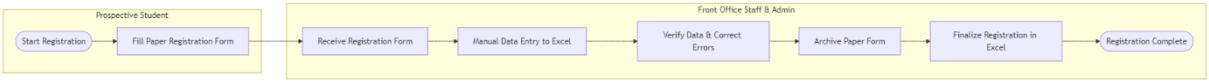

Figure 3. Process After Implementing Zoho CRM

Marli Trivana Layan: *Corresponding Author

JURNAL TEKNOINFO
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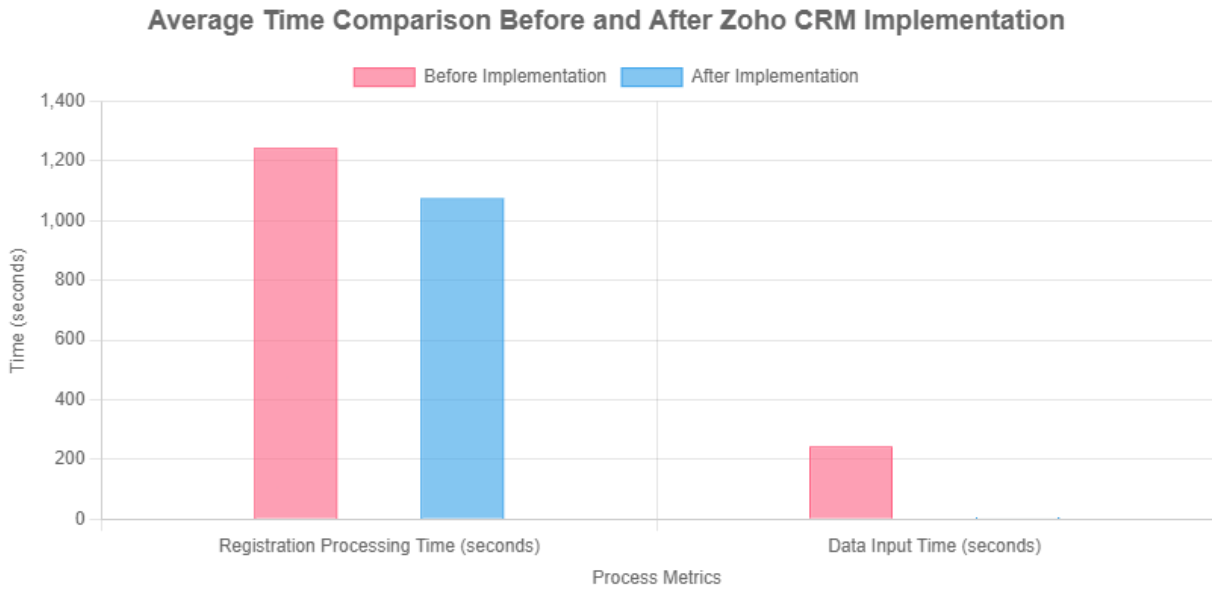

Figure 4. Average Time Before and After Zoho Implementation

These results demonstrate that Zoho CRM effectively addresses the main issues identified in the existing registration process, such as time-consuming paper forms, manual data entry errors, and unintegrated systems, thereby supporting BBI's compliance with ISO 9001:2015 Clause 8 requirements.

Analysis of Result

This section presents a comprehensive analysis of the impact of Zoho CRM implementation on the registration system at Brilliant Brain Indonesia (BBI). The analysis focuses on two key performance indicators: registration processing time and data input time per record. To statistically validate the observed improvements, the Wilcoxon signed-rank test was employed, a statistical method appropriate for paired, non-normally distributed data.

Registration Processing Time Data Overview

Table 8 presents the detailed breakdown of registration processing times for each participant, measured before and after the Zoho CRM implementation. The data includes the time spent on front office explanation, form completion (paper and digital), payment, and the total registration time for both conditions.

Table 8. Registration Processing Time

Registrant	FO Explanation (s)	Paper Form Fill (s)	Digital Form Fill (s)	Payment (s)	Total Estimated time Before (s)	Total Estimated time After (s)
1	449	358	279	121	928	849
2	775	380	135	618	1773	1528
3	648	299	182	501	1448	1331
4	696	320	140	130	1146	966
5	490	320	190	97	974	817
6	651	362	191	171	1184	1013
7	577	336	160	223	1236	1060
8	463	323	100	477	1263	1040

Marli Trivana Layan: *Corresponding Author

JURNAL TEKNOINFO
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The results indicate a consistent reduction in total registration time for all participants following the system implementation. On average, the registration process was shortened from 1,244 seconds (20 minutes 44 seconds) to 1,075 seconds (17 minutes 55 seconds), representing a 13.6% improvement in operational efficiency

Table 9 summarizes the Wilcoxon signed-rank test calculation for registration processing time, comparing the total time before and after implementation for each participant. The table details the differences, absolute values, rankings, and the distribution of positive and negative ranks.

Table 9. Wilcoxon Signed-rank Test

Before (s)	After (s)	Gap (s)	Absolute	Rank	+	-
928	849	-79	79	1		1
1773	1528	-245	245	8		8
1448	1331	-117	117	2		2
1146	966	-180	180	6		6
974	817	-157	157	3		3
1184	1013	-171	171	4		4
1236	1060	-176	176	5		5
1263	1040	-223	223	7		7
Total					**0**	**36**

All observed differences are negative, indicating that every participant experienced a reduction in registration time. The total negative rank sum is 36, with a calculated z-value of approximately -2.52. This result exceeds the critical threshold (±1.96), confirming that the reduction in registration processing time is statistically significant ($p < 0.05$).

Data Input Time Overview

Table 10 displays the data input times for each participant before and after the Zoho CRM implementation, along with the results of the Wilcoxon signed-rank test. The table includes the time spent on Gobindabel and spreadsheet entry, total input time before, input time after, differences, rankings, and the distribution of ranks.

Table 10. Data Input Time

Registrant	Before Implementation (s)			After Implementation (s)	Gap	Absoulute	Ranking	+	-
	Gobimbel	Spreadshet	Total						
1	122	150	272	4	-268	268	8		8
2	118	118	236	3	-233	233	4.5		4.5
3	105	130	235	4	-231	231	3		3
4	124	108	232	4	-228	228	1		1
5	119	118	237	4	-233	233	4.5		4.5
6	124	110	234	5	-229	229	2		2
7	118	135	253	4	-243	249	6.5		6.5
8	117	136	253	4	-249	249	6.5		6.5
Total								**0**	**36**

Marli Trivana Layan: *Corresponding Author

JURNAL TEKNOINFO
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The data show a dramatic reduction in data input time for all participants, from an average of 245.6 seconds (4 minutes 6 seconds) to just 4 seconds per record-a 98.4% decrease. The Wilcoxon test results (total negative rank sum = 36, z ≈ -2.52) confirm this reduction is statistically significant ($p < 0.05$), demonstrating the substantial impact of system automation on data input efficiency.

$$z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}} \quad (1)$$

$$z = \frac{0 - 18}{\sqrt{51}} = \frac{-18}{7.14} \approx -2.52$$

Where:

T = the sum of the sined ranks (smallest positive or negative ranks)

N = number of non-zero differences

$Critical\ z\ (\alpha = 0.05, two - tailed): \pm 1.96$

$Conclusion: |z| > 1.96, significant\ reduction\ (p < 0.05)$

Table 11 summarizes the key performance metrics comparing the registration system at Brilliant Brain Indonesia (BBI) before and after the implementation of Zoho CRM. The table presents average processing times, absolute and percentage reductions, and the results of the Wilcoxon signed-rank test used to assess the statistical significance of these changes.

Table 11. Key Performance Metrics

Metric	Avg. Before (s)	Avg. After (s)	Absolute Reduction (s)	Percentage Reduction	Wilcoxon z-value	p-value	Conclusion
Registration Processing Time	1244	1075	169	13.6%	-2.52	<0.05	Significant reduction observed
Data Input Time	245.6	4	241.6	98.4%	-2.52	<0.05	Significant reduction observed

The results indicate that the Zoho CRM implementation significantly improved the registration system's efficiency at BBI. Registration processing time decreased by approximately 13.6%, reducing average processing from 20 minutes 44 seconds to 17 minutes 55 seconds. More notably, data input time was reduced by 98.4%, from over 4 minutes to just 4 seconds per record. The Wilcoxon signed-rank test confirms these improvements are statistically significant ($p < 0.05$), demonstrating the effectiveness of automation and integration in streamlining operations and enhancing data accuracy.

All participants experienced reductions in both registration processing and data input times after Zoho CRM implementation. Wilcoxon signed-rank test confirms both reductions are statistically significant ($z = -2.52$, $p < 0.05$). Operationally, the registration processing time reduced by an average of 169 seconds (13.6%) and the data input time reduced by an average of 241.6 seconds (98.4%). No positive rank (no participant experienced increased time), demonstrating the uniform effectiveness of the intervention. As for the practical Impact, faster registration and data entry directly support improved customer service, reduced queue times, and compliance with ISO 9001:2015 Clause 8.

Implementation Discussion

Marli Trivana Layan: *Corresponding Author

JURNAL TEKNOINFO
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The implementation of Zoho CRM at Brilliant Brain Indonesia (BBI) exemplifies a successful integration of cloud-based technology with established quality management principles, particularly ISO 9001:2015 Clause 8. The substantial decreases in registration processing time (approximately 13.6%) and data input time (approximately 98.4%) substantiate the efficacy of automating manual workflows, streamlining data entry, and consolidating heterogeneous systems into a cohesive platform. These enhancements not only elevated operational efficiency but also contributed to the mitigation of errors stemming from manual data management, as substantiated by the persistent negative deviations in the Wilcoxon signed-rank test outcomes. The cloud-based architecture and customizable features of Zoho CRM enabled rapid adaptation to BBI's specific business processes, facilitating real-time data validation, workflow automation, and comprehensive reporting. These features are critical for maintaining compliance with ISO standards and improving service quality.

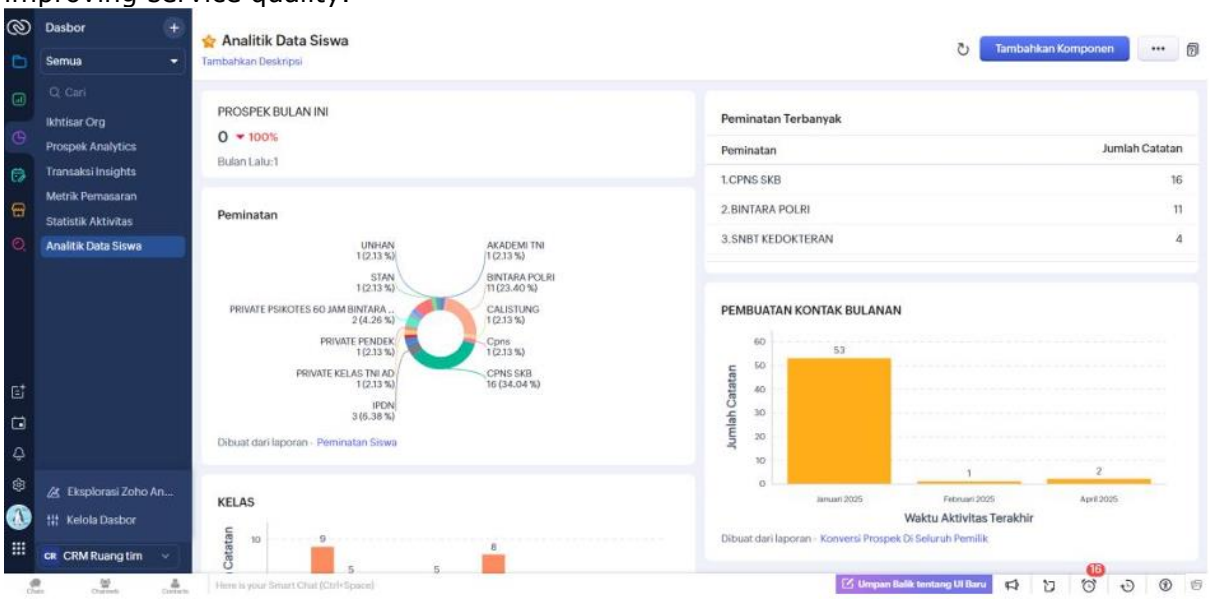

Figure 5. Analytical Zoho Dashboard

Notwithstanding these favorable outcomes, the study also identified persistent challenges, most notably the necessity for additional module development to comprehensively address the elements of documentation completeness and comprehensive ISO 9001:2015 compliance. The adoption of the system was facilitated by targeted training and change management initiatives. However, ensuring the continued effectiveness of the system will necessitate ongoing capacity building and support. These findings are consistent with prior research emphasizing that CRM implementations in educational and service organizations must be complemented by organizational readiness and ongoing improvement initiatives. Subsequent research endeavors may entail the exploration of augmenting the functionalities of Zoho CRM, the integration of said system with other institutional systems, and the automation of compliance monitoring. These measures have the potential to further enhance the quality management and scalability of BBI.

4. CONCLUSION

This study successfully implemented Zoho CRM as a technological solution to improve the registration system at Brilliant Brain Indonesia (BBI), with a focus on fulfilling the requirements of Clause 8 of ISO 9001:2015 related to the management of operational activities. Utilizing a gap analysis-based approach and an iterative improvement cycle, this research identified and addressed several critical weaknesses in the previously used

Marli Trivana Layan: *Corresponding Author

manual system. These weaknesses included lengthy processing times, high risks of data entry errors, and limited interdepartmental integration. The primary contribution of this research lies in the development of a CRM implementation framework tailored to the context of non-formal educational institutions, including custom feature designs such as online registration forms, workflow automation, real-time data validation, and integrated reporting. Quantitative results indicate a substantial enhancement in operational efficiency, with a 14% reduction in registration processing time (from an average of 20 minutes and 44 seconds to 17 minutes and 55 seconds) and a significant decrease in data input time by 98% (from 4 minutes and 3 seconds to just 4 seconds per record). The statistical significance of these improvements was validated through the implementation of the Wilcoxon signed-rank test, with a p-value less than 0.05. This outcome serves to substantiate the efficacy of the implemented solution. Beyond the technical aspects, this study also contributes to understanding the importance of user training and change management strategies in supporting the adoption of new systems. The findings of this study provide empirical evidence of the role of CRM systems in supporting digital transformation and improving the quality of administrative services in educational institutions. These results can serve as a reference for similar institutions that wish to implement cloud-based solutions to improve accountability, transparency, and compliance with quality management standards. In the subsequent phase, it is advised that future research be conducted to investigate the integration of Zoho CRM with other systems utilized by the institution. Furthermore, the development of continuous training modules should be pursued, and the system should be employed for automated compliance monitoring to support continuous improvement and scalability.

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Marli Trivana Layan: *Corresponding Author

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