

Measurement of Information System Quality Management using ISO 9001:2015 Standards at PT Bersama Kita Besar

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ABSTRACT

Operational problems related to performance evaluation within the company are the background for this research. Data was collected through interviews with the chief auditor, a 4-item questionnaire for the head of IT and 3 IT staff, and observations of company documents and staff performance. The questionnaire used a Likert scale, and the overall assessment applied the Maturity Model. Results indicated that PT. Bersama Kita Besar achieved a level 3 (Defined Process) in maturity. Small improvements are needed to reach levels 4 and 5, such as enhancing staff performance through training and adding competent human resources. The study focused on the IT division of PT Bersama Kita Besar, using clauses 4 to 10 of ISO 9001:2015 for measurement. These results can support the company's ISO 9001:2015 certification efforts and ongoing improvements.

ABSTRAK

Permasalahan operasional yang berkaitan dengan evaluasi kinerja dalam perusahaan menjadi latar belakang penelitian ini. Pengumpulan data dilakukan melalui wawancara kepada kepala auditor, kuesioner sebanyak 4 item kepada kepala TI dan 3 staf TI, serta observasi terhadap dokumen perusahaan dan kinerja staf. Kuesioner menggunakan skala Likert, dan penilaian secara keseluruhan menggunakan Maturity Model. Hasil penelitian menunjukkan bahwa PT. Bersama Kita Besar mencapai level 3 (Defined Process) dalam kedewasaan. Diperlukan perbaikan kecil untuk mencapai level 4 dan 5, seperti peningkatan kinerja staf melalui pelatihan dan penambahan sumber daya manusia yang kompeten. Penelitian difokuskan pada divisi IT PT Bersama Kita Besar, dengan menggunakan klausul 4 hingga 10 ISO 9001:2015 untuk pengukuran. Hasil ini dapat mendukung upaya sertifikasi ISO 9001:2015 dan perbaikan berkelanjutan perusahaan.

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INTRODUCTION

Nowadays, all institutions/companies are required to survive in the world of globalization (Bernardo, 2012). Management standardization has become a major issue, especially related to Management System standardization (Hahn, 2012). For this reason, an institution/company needs to prepare a quality system framework in the desired direction in accordance with the targets

set by the institution, in the sense that quality goals and objectives are always oriented towards the satisfaction of the institution's customers or work partners (Ramirez et al, 2023).

Responding to the issues mentioned above, the management system standard that has developed in developed countries and even in developing countries is the ISO 9001 Quality Management System (Neves et al, 2021). This standard is a means or as a tool to achieve quality goals and objectives which are expected to be able to respond to the development of globalization so that it can achieve effectiveness and efficiency of an organization (Kayyali & Khosla, 2021). However, in its implementation, there are various obstacles. As in the research journal "Implementation Barriers of ISO 9000 within the Malaysian local government" by (Abdullah, Razak, Hanafi, & Jaafar, 2013). The findings from the following study indicate that the main obstacles in the process of implementing ISO 9000 in LG organizations are not completely the same as the main obstacles that have been commonly identified previously. Of the total of five identified barriers, it was found that these barriers were related to organizational aspects, resources as well as behavior and culture (Abdullah, Razak, Hanafi, & Jaafar, 2013).

ISO certification for a company does not always guarantee that the company will develop further in the future because each company has different criteria and standards. Based on research conducted by (Singles, de Water, & Rueel, 2013)". In the study, they found that ISO certification does not play a full role in the development of a company (Singles, de Water, & Rueel, 2013). The ISO 9000 & 9001 Quality Management System needs to be planned well because this activity is a very large investment both in terms of funding and in terms of time (International Organization for Standardization, 2017).

A good plan is the key to successful implementation (George, 2021). Plans are a bridge connecting the present and the future or the current position with the expected future position (Bridge, 2021). Through planning, management coordinates strategies and efforts, prepares for change and manages developments in order to facilitate and expedite the management of the ISO 9001:2000 quality management system (Hermawan et al, 2018). Good planning is the art of making difficult things simple so that it makes it easier to make things possible, possible, possible and possible to achieve (Wella & Chia, 2019).

The background for conducting this research is, among other things, operational problems related to performance evaluation within the company. The problems above occur due to communication barriers and incompetence as well as a lack of knowledge regarding the systems found in some of the company's employees/employees which result in effects/problems in the management and production processes which make the company's performance and operations not run optimally.

RESEARCH METHODS

Research Object

PT Bersama Kita Besar (BKB) is a paint industry company in Cikande - Banten, producing competitive products. The company is expanding by creating a new 7000m2 distribution area in Tigaraksa Tangerang-Banten. BKB is committed to innovation and customer satisfaction, preparing a laboratory, equipment, and competent workers to create new breakthroughs in the paint and decoration industry.

Research Methods

In measuring QMS PT BKB will use the ISO 9001:2015 standard. ISO 9001:2015 is the latest standard from ISO 9001 which replaces the previous version, namely ISO 9001:2008. The ISO process model is formed from a sequence of input, process, output which is based on the PDCA (ISO) cycle. There are fundamental changes in the latest version of ISO, namely a more in-depth review of the environment and organizational context as well as risk-based thinking, ISO 9001:2015 not only pays attention to customers, but also the environment of the organization to increase the organization's resilience and sustainability to change.

This research uses a method with clauses in the ISO 9001:2015 standard which contains 10 clauses (International Organization for Standardization, 2017).

1. Scope. Implementing a quality management system is a strategic decision for an organization that can help the organization to improve its overall performance and provide a strong foundation for sustainable development initiatives. In this clause, it will explain whether the existing scope available at PT Bersama Kita Besar is good and in accordance with ISO 9001:2015 standardization or not.
2. Normative reference. Every company must have concepts, principles and definitions of a quality management system that must be understood and applied to all employees.
3. ISO-9001:2015 and ISO-9000:2015 are both based on a glossary of terms and definitions. Both standards encourage a process-oriented approach to quality management, improving customer satisfaction and efficiency. They emphasize understanding and overseeing interrelated procedures to enhance overall company performance by controlling linkages and interconnections. The process approach involves managing processes and interactions to achieve desired outcomes, aligning with the organization's quality policy and strategic direction, using the PDCA cycle for effective management. The process approach in a quality management system helps in understanding and satisfying requirements, evaluating processes for value-added contribution, achieving efficient performance, and enhancing processes through data and information assessment.
4. Organizational Context. Every company must be able to understand the general requirements regarding the basics that must be carried out by every company, whether they come from within (internal) or outside (external).
5. The concept of leadership. Senior executives must demonstrate leadership and dedication to the creation and execution of the Quality Management System. They must also strive to enhance its efficiency by: a) Taking responsibility for the effectiveness of the management system; b) Ensuring that the Quality Policy and quality objectives established for the Quality Management System align with the organization's strategic direction and context; c) Ensuring that the quality policy is effectively communicated, comprehended, and implemented throughout the organization, etc.
6. Planning. Every company/organization must take advantage of existing opportunities and identify and mitigate the risks that the organization will face in the future. Every company / organization must also set quality targets at the relevant levels and functions at the levels and processes required by the organization.
7. Support. Companies must have data support such as documented information, infrastructure, human resources, etc. HR management, both recruitment and entry training, and management of infrastructure and work environment are also included. What is meant is: 1. Resources; 2. Competence; 3. Concern; 4. Communication; and 5. Documented Information.
8. Operational. Planning product realization up to delivery and even after sales. Also included in this clause are external providers or external providers including suppliers. Identification and traceability, Customer Property, Design and Development are also included in this operational clause. Controlling inappropriate output is also included in clause 8.
9. Performance Evaluation. Customer satisfaction is an essential metric for evaluating the performance of a company or organization's management system. The organization tracks data relating to consumer impressions regarding the organization's compliance with customer expectations.
10. Improvement. The organization must take corrective action to eliminate the causes of nonconformities to prevent their recurrence. Likewise, companies take preventive

measures to eliminate the causes of potential nonconformities to prevent their occurrence. An improvement will enable a company/organization to take preventive action against their problems.

The questionnaire method is used by researchers to support the validity of the data and information obtained. Apart from that, this method can also be used if you want to know something in more depth, namely related to the company's day-to-day management process. The questionnaire was distributed to 4 people from the IT department where the number of questions/statements was 170 items. The questions/statements presented are based on clause 4 to clause 10 of ISO 9001:2015. The questionnaire that will be distributed is a Likert scale questionnaire with 5 scale options, namely: when responding to questions on a Likert scale, respondents determine their level of agreement with a statement by selecting one of the available options. Options are also differentiated based on the type of question with formats such as:

Tabel 1. Likert scale

Scale	Description
1	Strongly Agree
2	Agree
3	Neutral
4	Disagree
5	Strongly Disagree

The total score for each individual is the sum of the scores for each item from that individual (Sloan et al, 2002). Based on the respondent's answers, a tendency will be obtained regarding the respondent's answers. The questionnaire distributed uses a Likert scale. So the answer index calculation is carried out using the formula:

$$\text{Index Value} = ((F1 \times 1) + (F2 \times 2) + (F3 \times 3) + (F4 \times 4) + (F5 \times 5)) / 5 \quad (1)$$

Where:

F1 is the frequency of respondents answering 1 (Strongly Agree)

F2 is the frequency of respondents who answered 2 (Agree)

F3 is the frequency of respondents who answered 3 (Neutral / Fair)

F4 is the frequency of respondents who answered 4 (Disagree)

F5 is the frequency of respondents who answered 5 (Strongly Disagree)

The maturity level of a software development house in presenting/creating/developing software can be measured using the CMM (Capability Maturity Model) which consists of (Dadhich & Chauhan, 2012):

1. Initial. The first function lacks project management, quality assurance, change management system, documentation, and relies largely on the expertise of an individual who possesses comprehensive knowledge of the product being produced.
2. Repeatable. The characteristics of a repeatable function are that software quality begins to depend on processes rather than people, there is simple project management, there is simple quality assurance, there are simple documents, there is simple software configuration management, there is no knowledge management, there is no commitment to always follow the SDLC under any circumstances, there is no static control for project estimates and is susceptible to changes in organizational structure.
3. Defined. The characteristics of the Defined level are that the SDLC has been determined, there is a commitment to follow the SDLC under any circumstances, the quality of the process and product is still qualitative or only an estimate, does not apply Activity Based Costing, and there is no standard feedback mechanism.

4. Managed. The characteristics are as follows, Activity Based Costing already exists and is used for estimating the next project, the software and project quality assessment process is quantitative, costs are wasted for data collection because the data collection process is still done manually, tends to be unclear due to human when we pay attention to their behavior, they tend to change, there is no defect prevention mechanism and there is no feedback mechanism.
5. Optimized. Automatic data collection, defect prevention mechanisms, excellent feedback mechanisms, and improving the quality of human resources and also improving process quality.

RESULTS AND DISCUSSION

Planning

The Quality Management System needs to be planned well because this activity is a very large investment both in terms of funding and in terms of time. A good plan is the key to successful implementation. Plans are a bridge connecting the present and the future or the current position with the expected future position (International Organization for Standardization, 2017). PT Bersama Kita Besar (BKB) is a company operating in the paint industry. BKB operates in the Cikande - Banten area, and the factory was built on 1 hectare of land. Until now, we continue to produce quality products that are very competitive on the market. From the results of the interviews, it was found that PT BKB experienced difficulties in managing competent human resources because many BKB employees had limited knowledge of the quality management system and also new employees who joined, both permanent employees and students working as interns. The factors above have an impact on employee performance and company progress. From the results of observations made, there are not many employees at PT BKB (Bersama Kita Besar). Management in the role of each employee is also not very good. However, the performance and cooperation between PT BKB staff and employees has enabled the company to achieve its goal all along, namely to become the best company at its level.

Implementation

Interviews were conducted with department heads to obtain information about management and existing problems at PT BKB. From the results of the interviews that have been conducted, it can be concluded that PT BKB has carried out management referring to ISO 9001:2015. As a result of the interviews conducted, PT Bersama Kita Besar has a lack of competent human resource management because many BKB employees have limited knowledge of the quality management system and also new employees who have joined, both permanent employees and students working as interns, as well as a lack of training. especially for office employees. The factors above have an impact on employee performance and company progress.

Data that can be analyzed and processed becomes increasingly clear whether it is useful or not in measuring the ISO 9001:2015 quality management system at PT BKB. This research was carried out with reference to a maturity model which has 5 levels, namely Level 1 – Initial, Level 2 – Repeatable, Level 3 – Define, Level 4 – Managed and Level 5 – Optimized. Analyze and use a Likert scale for each clause and sub-clause, starting from clause 4 to clause 10. Clauses 1 to 3 are not used because these clauses are only introductory. After processing the data, the following results were obtained.

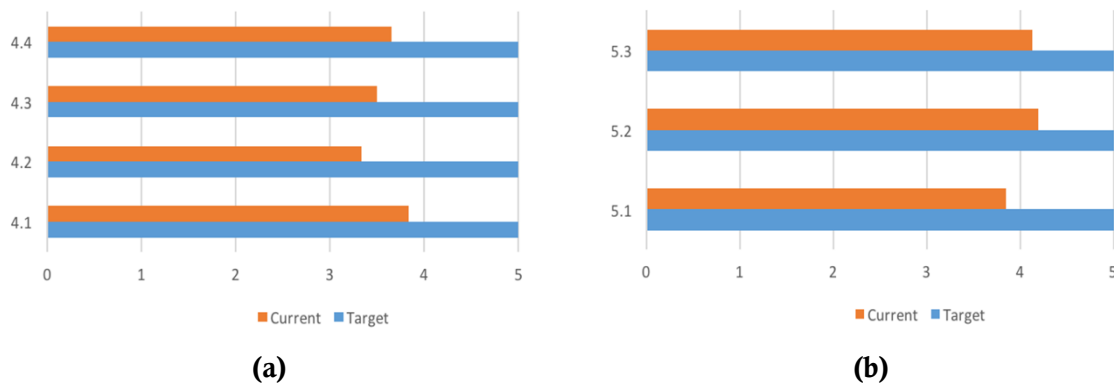


Figure 1. (a) Clause 4 Organizational Context and (b) Clause 5 Leadership

Clause 4 discusses the company context and quality management. This clause has 4 indicators. On the chart the first indicator is on a scale of 3.8. From these results it can be said that almost all staff and employees at PT BKB understand the context of their company and this is true. Furthermore, in the graph the second indicator is on a scale of 3.3 because the company does not really understand what the interested parties actually need and expect. This usually happens to every newly established company. In the graph, the third indicator is on a scale of 3.5 because the company is lacking in determining the boundaries and implementing a quality management system to determine its scope. Finally, in the graph, the fourth indicator is on a scale of 3.6, which can be concluded that the quality management system and processes have been understood and comprehended by the majority of staff and employees at PT BKB. Based on the Maturity Model, the results obtained in clause 4 are at level 3 – Define Process. At this level, the company can be said to have carried out standardization, documents and training.

Clause 5 discusses leadership. This clause has 5 indicators. This clause has an important role in a company because it is related to the company's achievements. Therefore, this clause needs more attention in its implementation. The first indicator is on a scale of 3.8 because most have carried out their commitments, including in the leadership of the company. Furthermore, the second indicator is on a scale of 4.1 because the company has carried out its responsibilities in management. In this case, the applicable quality policy is in accordance with the objectives and context of the company. The third indicator is on a scale of 4.1 because the majority of employees at PT BKB understand their respective roles and responsibilities towards the company. Based on the Maturity Model, the results obtained in clause 5 are at level 4 – Managed and Measurable. At this level, PT BKB is already at a good level, but needs to make improvements.



Figure 2. (a) Clause 6 Planning and (b) Clause 7 Support

Clause 6 discusses planning. This clause has 3 indicators where each indicator explains something different from the previous indicator. The first indicator is on a scale of 4.1 according to what is happening in the company. The company has its own actions to handle existing risks and opportunities. The second indicator is on a scale of 4.2 because the company's quality targets and plans to achieve them are clearly visible, even though implementation has not been optimal. Finally, the third indicator is on a scale of 3.8 because changes are carried out in a planned manner when the organization/company determines the need to make changes to the quality management

system even though these changes are rarely made. Based on the Maturity Model, the results obtained in clause 6 are at level 4 – Managed and Measurable. At this level, PT BKB can be said to have carried out supervision and followed existing procedures to obtain an action process in overcoming problems.

Clause 7 focuses on the topic of human resources. This clause has a total of 11 indications. This clause provides further details regarding the help provided in a company, encompassing resources, expertise, awareness, communication, and documented information. Upon examining the initial indicator, it is evident that the organization scores 3.9 on the scale. This score reflects the company's suboptimal performance in identifying and supplying the necessary resources for establishing, implementing, maintaining, and enhancing the quality management system. Additionally, the second indicator is rated at 3.8 on a scale since the organization does not give importance to the necessary skills and abilities of those who perform tasks under its supervision. Furthermore, it is imperative to verify the competence of individuals through their education, training, or experience. Additionally, the third indicator is rated at 4.1 due to the high level of awareness among PT BKB employees regarding the company's quality policies, relevant quality targets, and their own performance and contributions.

This is different from the fourth indicator which is on a scale of 3 because the company is quite good at determining internal and external communications that are relevant to the quality management system, including 5W + 1H (What, When, Where, Who, and How) communication. Finally, the fifth indicator is on a scale of 3.8 because the company does not really ensure the suitability of the format, identification and description, as well as review and approval for suitability and adequacy. Based on the Maturity Model, the results obtained in clause 7 are at level 3 – Defined Process. At this level, PT BKB can be said to have implemented this clause and has standardized documents and training.

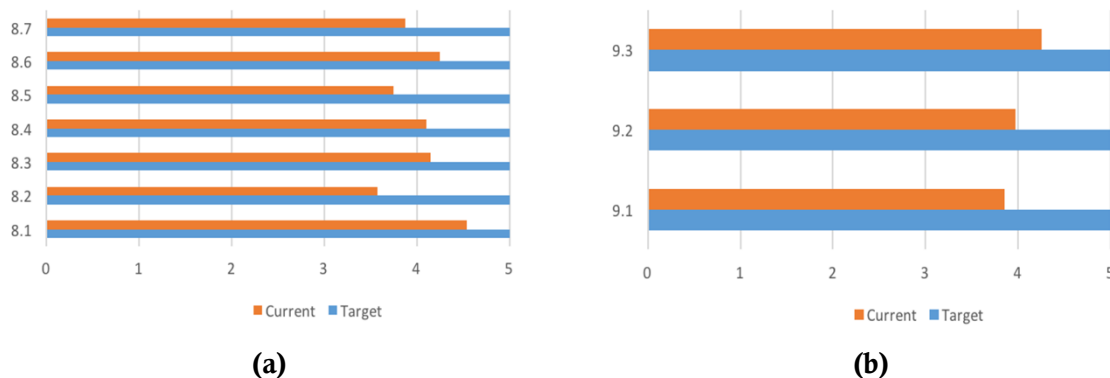


Figure 3. (a) Clause 8 Operational and (b) Clause 9 Performance Evaluation

Clause 8 addresses the topic of operational control. This clause has a total of 7 indications. This clause encompasses the strategic process of planning for the entire product lifecycle, from initial production to delivery and even post-sales support. This clause also addresses the topics of external provision, supplier identity, customer property, design, and improvement. The first indicator is rated at 4.5 on a scale because the company effectively plans, implements, and controls the essential procedures to meet the requirements for providing products and services, and carries out the prescribed actions accordingly. Additionally, the second indicator is rated at 3.5 due to the company's deficiencies in developing, executing, and sustaining procedures for identifying the specifications of items and services to be provided to clients, thereby affecting the company's advancement. The third indicator is rated at 4.1 on a scale because the design and development processes have been effectively defined, implemented, and maintained to ensure the proper provision of subsequent products and services.

Followed by the fourth indicator which is on a scale of 4.1 because the external processes provided, products and services are in accordance with the requirements. Furthermore, the fifth indicator is on a scale of 3.7 because PT BKB's production and service provision is in good condition as expected although it must be further improved. PT BKB's production and service

provision runs like other companies in general and there needs to be improvement in this regard to support the company's achievements. The sixth indicator is on a scale of 4.2 because the release of products and services to customers is continued until the planned arrangements have been completed satisfactorily

Finally, the seventh indicator is on a scale of 3.8 because the company takes appropriate action based on the nature of the nonconformity and its impact on the conformity of products and services but falls short in ensuring output that does not comply with requirements is identified and controlled to prevent unintentional use or delivery. Based on the Maturity Model, the results obtained in clause 8 are at level 4 – Managed and Measurable. At this level, PT BKB can be said to be at a fairly good level where clause 8 has been implemented well.

Clause 9 discusses performance evaluation. This clause has 4 indicators. This clause discusses more about the company's performance in its implementation where the organization/company needs to pay attention to customer satisfaction. The first indicator is on a scale of 3.8 where PT BKB is less than optimal in monitoring, measuring, analyzing and evaluating necessary to ensure valid results as well as analyzing and evaluating appropriate data and information arising from monitoring and measuring. Furthermore, the second indicator is on a scale of 3.9, where several improvements are needed on this indicator to get maximum results that are in line with the target. And finally, the third indicator is on a scale of 4.2, which shows that PT BKB is running well and still needs development to become better.

The results of the measurement of clause nine are that the existing performance has decreased due to the existing impacts. Therefore, recommendations need to be implemented so that company performance can improve. Recommendations for performance evaluation based on the use of the fishbone method have also begun to be implemented or are even already underway. Based on the Maturity Model, the results obtained in clause 9 are at level 4 – Managed and Measurable. At this level, PT BKB can be said to be at a fairly good level where clause 9 has been implemented well.

Figure 4 Clause 10 is a graphic for clause 10 which contains improvements in accordance with ISO 9001:2015:

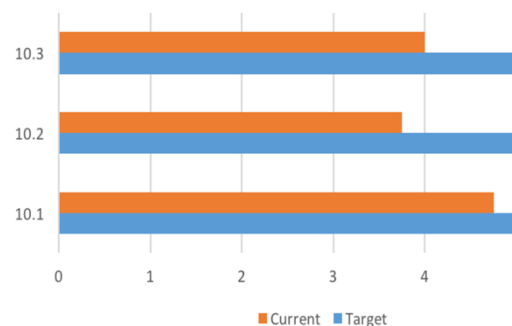


Figure 4. Clause 10 Improvement

Clause 10 discusses improvements. This clause has 3 indicators. This clause is the last clause in ISO 9001:2015. This clause explains that a company must take corrective action to overcome non-conformities so that they do not happen again and this clause plays a very important role, because an improvement will enable a company/organization to take preventive action against their problems. The first indicator is on a scale of 4.7 where PT BKB has determined and selected opportunities for improvement and implementation of actions necessary to meet customer needs and increase customer satisfaction. From these results, it can be said that the first indicator has worked well at PT BKB. Furthermore, the second indicator is on a scale of 3.7 which explains that PT BKB needs several improvements to this indicator to get maximum results that are in line with the target.

Finally, the third indicator is on a scale of 4 because the company continues to improve the suitability, adequacy and effectiveness of the quality management system and considers the results of analysis and evaluation and the output of management reviews. From these results, it can be

said that the indicators have been running well at PT BKB and there is still a need for progress towards better ones to support the company's achievements. The measurement results in clause ten are after the recommendations have been implemented. The next step is to carry out measurements again to reassess the company's maturity level. So, we can know what must be done to make continuous improvements in order to achieve better quality management. Based on the Maturity Model, the interim results obtained in clause 10 are at level 4 – Managed and Measurable. At this level, PT BKB can be said to be at a fairly good level where clause 10 has been implemented well and still has to make developments in order to reach the top level in the Maturity Model.

CONCLUSION

The conclusion of this research is that PT BKB has run the company and management in accordance with ISO 9001:2015 standardization quite well, where most of the requirements listed in the ISO 9001:2015 clauses have been fulfilled and based on the results of the evaluation measurements carried out, it should be necessary to carry out there are changes for the better, especially in the existing leadership methods and discipline of existing staff, as well as regular evaluations within the company so that the company's performance can be well controlled so that the company's goals can be achieved.

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