
IMPLEMENTATION OF QUALITY MANAGEMENT SYSTEM PERFORMANCE BY BATCHING PLANT SERVICE PROVIDER IN KABUPATEN ACEH BESAR

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ABSTRACT

Introduction: Ready-mix concrete service providers from batching plants in Aceh Besar District include PT. A, PT. B, PT. C, and PT. D. The production service provider, even though it has ISO 9001:2015 certification, is not consistent with the quality of the product. This study aims to determine the performance of the quality management system implemented by a batching plant production service provider in Aceh Besar District. The production quality of the batching plant under review is the standard deviation of the compressive strength of the concrete on the Sigli – Banda Aceh Toll Road Project. **Methods:** This study uses a quantitative method approach through a questionnaire. The population is addressed to the personnel of PT. Adhi Karya (Persero) Tbk, which deals with batching plant production, namely project production manager, supervisor, and quality control. Respondents addressed the personnel of PT. Adhi Karya (Persero) Tbk is a service user related to batching plant production, namely project production manager, supervisor, and quality control. **Results:** The results showed that the performance of the quality management system needs to be improved on a high-priority scale for PT. A is the organizational context for PT. B is the organizational and planning context, and for PT. D is planning. **Conclusion:** Performance of PT. What needs to be maintained is planning, operations, leadership, and support; what needs to be improved on a low priority scale is performance improvement and evaluation, and what needs to be improved on a high priority scale is the organizational context

Keywords: Quality management system, quality, production, batching plant, performance.

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INTRODUCTION

The rapid growth of the construction sector has contributed to the increasing demand for ready-mix concrete produced from *batching plants*. *Batching plant* is a tool that serves to mix or produce concrete in large production (Munsil, 2018). Ready-mixed concrete is widely used in construction projects because it has several advantages, such as solid durability, saving time, relatively low costs, and flexibility in adjusting customer demands for various uses (Hossain & Rahman, 2013). These advantages have made concrete *batching plant production* a popular choice among contractor companies.

Contracting companies that use concrete *batching plant production* are referred to as service users or customers. Meanwhile, the party that produces concrete from the *batching plant* is referred to as the service provider. The level of customer satisfaction depends on the quality of the products and services produced (Naser, Jamal, & Al-Khatib, 1999). The quality that meets customer expectations will result in high satisfaction. The quality of a product and service is an important thing

that every company must pursue if it wants to compete in the market. Competing in the market must be able to satisfy the needs and desires of customers, thus requiring companies to consistently improve the quality of their products and services through a quality management system (Lesmana, 2020).

The quality management system is a management system to oversee all activities and tasks within an organization to ensure that the products and services offered are consistent. ISO 9001 is an international standard for quality management systems (Witara, 2018). ISO 9001:2015 has seven clauses in its implementation: organizational context, leadership, planning, support, operations, performance evaluation, and improvement. Companies with ISO 9001:2015 certification will have more chances of winning the market competition. This is due to the guarantee of the quality of the products or services offered and customer trust in related brands (Lesmana, 2020).

The service providers of ready-mixed concrete produced from the *batching plant* in Aceh Besar District include PT. A, PT. B, PT. C and PT. D. All of these companies have ISO 9001:2015 certification. The problem in this study is that the *batching plant production service provider* in Aceh Besar District, even though it has ISO 9001:2015 certification, has not been consistent with the quality of the product. Based on the report of the compressive strength test of Class B concrete (C 30 Mpa) from PT. Adhi Karya (Persero) Tbk on the Sigli – Banda Aceh Toll Road Project in 2020, the standard deviation of *batching plant production results* in Aceh Besar District is still inconsistent is 3.6. According to SNI 03-2847-2002, the standard deviation of the compressive strength of concrete that should be achieved is 5.

METHOD

This study uses a quantitative method approach through a questionnaire. The population is addressed to the personnel of PT. Adhi Karya (Persero) Tbk, which deals with batching plant production, namely project production manager, supervisor, and quality control. The population is addressed to the personnel of PT. Adhi Karya (Persero) Tbk, which deals with *batching plant production*, namely *project production manager*, *supervisor*, and *quality control*. Based on data from PT. Adhi Karya (Persero) Tbk, the *project production manager*, is 12 personnel, the *supervisor* is 36, and the *quality control* is 40. The total population is 88 personnel. Due to the relatively small population, the *sampling technique* used is *saturated sampling*. *Saturated sampling* is a technique in which all members of the population are used as samples (Anshori & Iswati, 2019). The questionnaire aims to inquire about the level of importance and satisfaction of *batching plant production* in Aceh Besar District from the service user's view of the service provider's quality management system. In this case, the quality management system includes seven variables: organizational context, leadership, planning, support, operations, performance evaluation, and improvement. Each of these variables includes two sub-variables: the level of importance (Y) and the level of satisfaction (X) with the same indicators. Measurement of answers using a *Likert scale*. The *Likert scale* used for the level of importance indicator (Y) is very unimportant with a score of 1, not significant with a score of 2, less critical with a score of 3, important with a score of 4, and very important with a score of 5. The *Likert scale* used for level indicators satisfaction (X) is very dissatisfied with a score of 1, dissatisfied

with a score of 2, less satisfied with a score of 3, satisfied with a score of 4, and very satisfied with a score of 5.

Questionnaire data were collected by directly meeting the respondent's location and providing a questionnaire form. Respondents were asked to choose one of the answers provided on the questionnaire form by providing a *checklist* (✓). The distribution of the questionnaires was carried out by mentoring so that if there were questions that were difficult to understand by the respondents, an explanation could be given. This questionnaire data collection was carried out within one month.

RESULTS AND DISCUSSION

1. Respondent's Perception

Service users assess the importance and satisfaction level of the quality management system implemented by the batching plant production service provider in Aceh Besar District (Wijianto, Cahyono, & QOMARIAH, 2020). For example, the providers of batching plant production services in Aceh Besar Regency, which is reviewed, are PT. A, PT. B, PT. C and PT. D. In this case, fellow service users may have different perceptions of the service provider's performance. This is because subjective thinking and feeling influence a person's perception. The output of this service user's perception is the mean value. The recapitulation of the mean value of the level of importance and satisfaction of the quality management system can be shown in Table 1.

Table 1 shows that service users perceive that the quality management system has a basic level of importance with a mean of 3,630. Table 1 also shows that service users perceive the quality management system implemented by PT. A, PT. B, and PT. D has a lower satisfaction level with a mean of 3.014, 3.045, and 3.025. While PT. C has a satisfactory level of satisfaction with a mean of 3.808.

Table 1. Recapitulation of Mean Level of Interest and Level of Satisfaction

No.	Variable	Mean Sub Variable				
		Level of Interest (<i>y</i>)	Satisfaction Level (<i>x</i>)			
			PT. A	PT. B	PT. C	PT. D
1	Organizational context	3,662	3,006	2,909	3,824	3,054
2	Leadership	3,621	3.083	2,966	3,746	2,947
3	Planning	3,693	3,027	3.038	3.818	2,879
4	Support	3,607	3,075	2,989	3,777	3.025
5	Operational	3,675	3.109	3,166	3,865	3.028
6	Performance evaluation	3,564	3,008	2,955	3,833	3.068
7	Enhancement	3,585	2,790	3,295	3,790	3,176
Mean quality management system		3,630	3,014	3.045	3,808	3.025

2. Quality Management System Performance Evaluation

IPA is used to reconcile the mean level of importance with the mean variable level of satisfaction of the batching plant production quality management system from the perception of service users to evaluate the variables' performance in a quadrant. A quadrant is a 1/4 circle

divided by two axes that intersect perpendicularly. The level of importance is on the y-axis, and the level of satisfaction is on the x-axis. Evaluation of the performance of each party providing batching plant production services in Aceh Besar District can be seen in Figure 1 and Table 2.

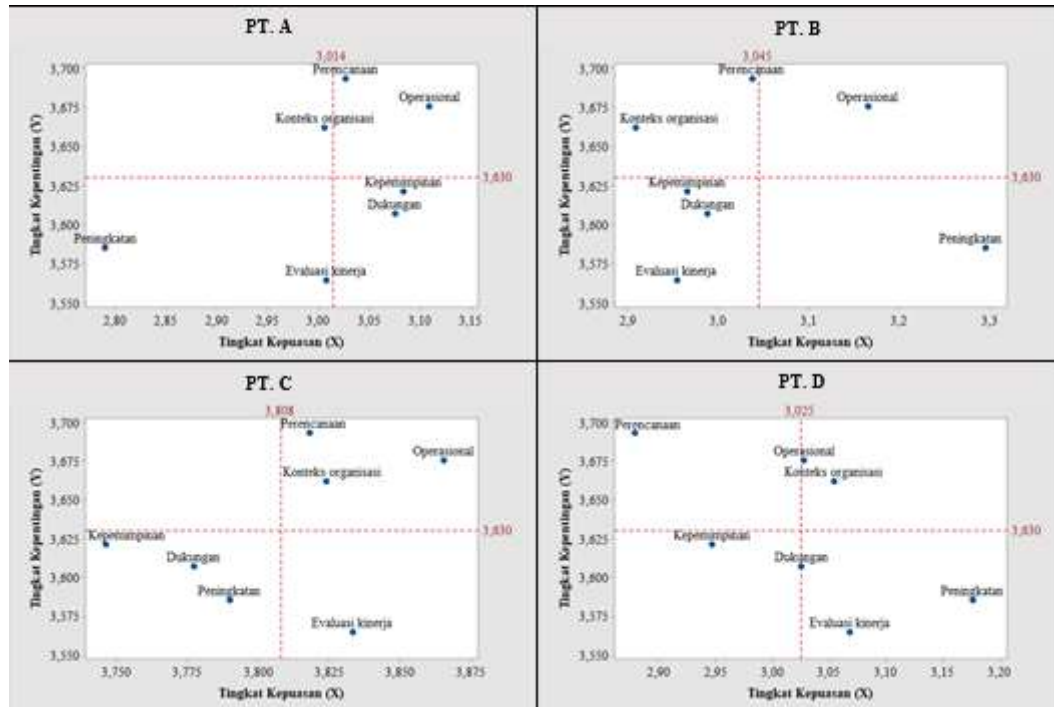


Figure 1. Performance of the Batching Plant Quality Management System from the Service Provider

Table 2. Performance Evaluation for Each Service Provider

No.	System Variables Quality management	Service Provider Performance Evaluation															
		Performance Well				Over Performance				Performance Bad				Very Poor Performance			
		PT. A	PT. B	PT. C	PT. D	PT. A	PT. B	PT. C	PT. D	PT. A	PT. B	PT. C	PT. D	PT. A	PT. B	PT. C	PT. D
1	Organizational context			☐	☐									☐	☐		
2	Leadership					☐				☐	☐	☐					
3	Planning	☐		☐											☐		☐
4	Support					☐				☐	☐	☐					
5	Operational	☐	☐	☐	☐												
6	Performance evaluation						☐	☐	☐	☐							
7	Enhancement					☐		☐	☐		☐						

Based on Table 2, the performance evaluation of the batching plant production quality management system from each service provider in Aceh Besar District can be described as follows:

1. Organizational context

In the organizational context, there are two companies with good performance and two with abysmal performance. Companies that have good performance in the organization's context, so it is necessary to maintain its performance is PT. C and PT. D. Companies with abysmal performance in the organization's context, so it is necessary to improve their performance, which is included in the high priority, is PT. A and PT. B. The organizational context includes four indicators as follows:

a. Understanding the organization and its context

The batching plant service provider needs to understand the external and internal issues relevant to the organization's strategic objectives and direction to achieve the desired quality management system results. Understanding the external context can be facilitated by considering issues arising from the legal, technological, competitive, market, cultural, social, and economic environment, be it international, national, regional, or local. Understanding the internal context can be facilitated by considering issues related to the organization's values, culture, knowledge, and performance.

b. Understanding the needs and expectations of interested parties

Batching plant service providers must monitor and review information about interested parties and ensure relevant requirements to service users.

c. Determine the scope of the quality management system

The batching plant service provider must determine the limits in applying the quality management system and implement all requirements. The scope of the quality management system shall be maintained as documented information. The scope should state the types of products and services covered.

d. Quality management system and processes

The batching plant service provider must establish, implement, maintain, and continuously improve the quality management system, including the required processes and their interactions according to requirements. Maintain documented information to support operational processes. Keep documented information to ensure processes are being carried out as planned.

2. Leadership

The leadership there is one company with extreme performance and three with poor performance. Companies that have extreme performance on leadership, so it is necessary to maintain their performance is PT. A. Companies that have poor performance on leadership, so that they need to improve their performance which is included in the low priority is PT. B, PT. C and PT. D. Leadership includes three indicators as follows:

a. Leadership and commitment

By taking responsibility, the batching plant service provider must demonstrate leadership and commitment to the quality management system. Ensure that the quality policy and established quality objectives align with the organization's context and strategic direction. Ensure quality management system requirements are integrated into the organization's business processes. Promote a process approach and risk-based

thinking. Ensure that the resources needed for the quality management system are available. Communicate an effective and compliant quality management system. Ensure that the quality management system can achieve the desired results. Engage, direct and support people to contribute to the effectiveness of the quality management system. Promote improvement. Support other relevant management roles to demonstrate leadership according to their area of responsibility. Organizations must demonstrate leadership and commitment to the customer-desired focus.

b. Policy

The batching plant service provider must establish, implement, and maintain a quality policy that aligns with the organization's strategic goals and directions. Provide a framework for setting quality objectives, including commitments to comply with applicable requirements, and for continual improvement of the quality management system. The quality policy must be available and maintained as information is documented, communicated, understood, and implemented within the organization.

c. Organizational roles, responsibilities, and authorities

The batching plant service provider shall assign responsibilities and authorities to ensure that the quality management system complies with requirements. Ensure that existing processes can provide the desired output. They were reporting on the performance of the quality management system and opportunities for improvement to top management. Ensure promotion of customer focus within the organization. Ensure that the integrity of the quality management system can be maintained when changes are made.

3. Planning

Planning there are two companies with good performance and two with terrible performance. Companies that have a good performance on planning, so it is necessary to maintain its performance is PT. A and PT. C. Companies that have abysmal planning performance, so it is necessary to improve their performance which is included in the high priority is PT. B and PT. D. Planning includes three indicators as follows:

a. Actions to address risks and opportunities

The batching plant service provider must ensure that the quality management system can achieve the desired results, increase the desired impact, prevent or reduce the undesired impact, and improve. Actions taken to address risks and opportunities must be proportionate to the potential impact on the suitability of products and services. Dealing with risk can be done by avoiding risk, taking risks to pursue opportunities, eliminating sources of risk, changing possibilities or consequences, sharing risks, or maintaining risks with decisions declared to customers. Opportunities can trigger the adoption of new practices, launch new products, open new markets, deal with new customers, build partnerships, use new technologies, and other possibilities in meeting customer needs.

b. Quality objectives and planning to achieve them

The batching plant service provider must set quality objectives on the functions, levels, and processes required for the quality management system. Quality objectives should be consistent with the quality policy, measurable, consider applicable requirements, be relevant to the suitability of products and services, and be monitored, communicated, and updated appropriately. The organization shall maintain documented information on the quality objectives. Planning quality objectives should define what will be done, what resources will be required, who will be responsible, when it is completed, and how the results will be evaluated.

c. Change planning

Batching plant service providers must be carried out in a planned manner when there is a need to make changes to the quality management system. The organization shall consider the purpose of the change and its potential consequences, the integrity of the quality management system, the availability of resources, and the allocation or reallocation of responsibilities and powers.

4. Support

Support there is one company with extreme performance and three with poor performance. Companies with extreme performance on support, so they need to maintain their performance are PT. A. Companies with poor performance on support, so they need to improve their performance, which is included in the low priority are PT. B, PT. C and PT. D. Support includes five indicators as follows:

a. Resource

The batching plant service provider shall determine and provide the necessary resources for establishing, implementing, maintaining, and continually improving the quality management system. These resources are people and infrastructure. Infrastructure can include buildings and associated utilities, equipment including hardware and software, transportation, and information and communication technology.

b. Competence

The batching plant service provider must determine the required competencies of the people performing the work under their control that affect the performance and effectiveness of the quality management system. These people are competent based on education, training, or experience. Retain appropriate documented information as evidence of competence.

c. Awareness

The batching plant service provider must ensure that people working under its control are aware of the quality policy, relevant quality objectives, their contribution to the effectiveness of the quality management system, including the benefits of improving quality performance, and the implications of non-conformance with quality management system requirements.

d. Communication

The batching plant service provider must determine internal and external communications relevant to the quality management system. The scope of communication includes communicating about what, when to communicate, with whom to communicate, how to communicate, and whom to communicate.

e. Documented information

Documented information specified by the batching plant service provider is required for the effectiveness of the quality management system. Documented information must be controlled to ensure that products and services are available and suitable for use, where and when needed, and are adequately protected. Documented information is retained as evidence of conformity which must be protected from unintended alteration.

5. Operational

Operationally there are four companies with good performance. Companies that have a good performance on operations, so it is necessary to maintain their performance is PT. A, PT. B, PT. C and PT. D. Operations includes seven indicators, as follows:

a. Operational planning and control

The batching plant service provider must plan, execute, and control the processes necessary to meet the requirements of the supply of products and services. The output of the planning must follow the operations of the organization. The organization must control planned changes, review undesired changes' consequences, and take action to reduce side effects.

b. Requirements for products and services

The batching plant service provider must determine the requirements for the products and services offered to customers. The organization must have the ability to meet the requirements of the products and services offered to its customers. Organizations must review before committing to supplying products and services to customers.

c. Product and service design and development

The batching plant service provider must define, implement, and maintain an appropriate design and development process, to ensure the subsequent provision of products and services. The organization shall retain documented information on design and development inputs. The organization shall identify, review and control changes made during or after the design and development of products and services to the extent that they do not have an adverse effect.

d. Control of external products and services provided

The batching plant service provider must ensure that the processes provided by external parties do not affect the organization's ability to provide appropriate products and services to customers consistently. The organization shall ensure the adequacy of requirements prior to communication with external providers.

e. Production and service provision

The batching plant service provider must implement production and service provision under controlled conditions. The organization shall protect output during production and service provision to the extent necessary to maintain conformity with requirements.

f. Release of products and services

The batching plant service provider must ensure that the products and services meet the requirements. The release of products and services to customers should continue until the planned arrangements have been satisfactorily completed. The organization shall retain documented information on the products and services released.

g. Control over nonconforming output

The batching plant service provider must ensure that nonconforming outputs need to be identified and controlled to prevent accidental use/delivery. The organization shall take appropriate action based on the nature of nonconforming products and services.

6. Performance evaluation

There are two companies with extreme performance and two companies with poor performance. Companies with extreme performance evaluation performance need to maintain their performance, is PT. C and PT. D. Companies with poor performance evaluation performance, so it is necessary to improve their performance which is included in the low priority is PT. A and PT. B. Performance evaluation includes three indicators as follows:

a. Monitoring, measurement, analysis, and evaluation

The batching plant service provider must analyze the data and information obtained from monitoring and measurement. The results of the analysis are used to evaluate the suitability of products and services, the level of customer satisfaction, the performance and effectiveness of the quality management system, the effectiveness of handling risks and opportunities, the performance of external providers, and the need for improvement of the quality management system.

b. Internal audit

The batching plant service provider must carry out internal audits at planned intervals. This is to provide information on whether the quality management system is following the organization's requirements and international standards. The organization needs to define audit criteria and the scope for each audit. Select auditors and conduct an audit to ensure objectivity and impartiality of the audit process. Make necessary corrections and corrective actions without delay. Maintain documented information as evidence of the implementation of the audit program and audit results.

c. Management review

The batching plant service provider shall review the organization's quality management system at planned intervals to ensure its suitability, adequacy, effectiveness, and alignment with the strategic direction. The output of the management review should include decisions and actions related to opportunities for

improvement, the need for changes to the quality management system, and resource requirements. The organization shall retain documented information as evidence of the results of management reviews.

7. Enhancement

There are two companies with extreme performance and two companies with poor performance. Companies with extreme performance towards improvement, so they need to maintain their performance, are PT. B and PT. D. Companies with poor performance towards improvement, so it is necessary to improve their performance which is included in the low priority is PT. A and PT. C. Improvement includes two indicators, namely as follows:

a. Non-conformances and corrective actions

When nonconformities occur, including any complaints that arise, the batching plant service provider must take action to control and correct them and face the consequences that arise. Corrective action must be appropriate to the impact of the nonconformity that arises.

b. Continuous improvement

Batching plant service providers must continuously improve the quality management system's suitability, adequacy, and effectiveness. The organization shall consider the results of the analysis and evaluation as well as the outputs of the management review. It aims to determine whether some needs or opportunities must be addressed as part of continuous improvement.

Implementation of ISO 9001:2008 quality management system by PT. Jaya Ready Mix is already in proper application condition. The impact of implementing a quality management system based on ISO 9001:2008 has continuously improved quality. Quality improvements include recording storage procedures, work instructions, and *ready-made manufacturing controls for mixed concrete* (Utami and Priyo, 2013). The critical factors for successful implementation are management support, direct management participation, and employee participation in the implementation process (Ingason, 2015). A large contractor company in Indonesia is implementing a quality management system. The motivation of contractor companies to obtain ISO 9001 certification is influenced by more effective management and efficient control of project activities (Willar, Coffey, & Trigunarsyah, 2015). The level of implementation of the ISO 9001:2008 quality management system on the realization of *ready mix concrete products* by PT. SCG Jayamix, from the document and its application in the field, got a score of 7.5 in the excellent category. Implementing ISO 9001:2008 quality management obstacles are minimal inter-departmental coordination and limited Human Resources (HR) (Rahma and Suryanto, 2017). ISO 9001:2008 quality management on *precast concrete* by PT. Waskita Precast Plant Sidoarjo obtained a score of 4 in the excellent category. The obstacles to implementing ISO 9001:2008 quality management are lack of commitment from top management, lack of socialization and communication with top management, and lack of employee involvement (Pratiwi & Suryanto, 2017).

CONCLUSION

Performance of PT. What needs to be maintained is planning, operations, leadership, and support; what needs to be improved on a low priority scale is performance improvement and evaluation, and what needs to be improved on a high priority scale is the organizational context. Performance of PT. B that needs to be maintained is operational and improvement. Leadership, support, and performance evaluation need to be improved on a low priority scale, and the organizational and planning context needs to be improved on a high priority scale. Performance of PT. The Cs that need to be maintained are planning, organizational context, operations, and performance evaluation, and those that need to be improved on a low priority scale are leadership, support, and improvement. Performance of PT. What needs to be maintained is operational, organizational context, performance evaluation, and improvement. Leadership and support need to be improved on a low-priority scale. What needs to be improved on a high-priority scale is planning.

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