Governance Analysis of the IBOSS Information System in Supporting Goods Traffic Using the COBIT 2019 Framework

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Abstract: Information technology (IT) governance is a crucial element in supporting the effectiveness of public service systems, including the goods traffic licensing system in Batam City. This research aims to evaluate the level of capability of IBOSS information system governance using the COBIT 2019 framework. The approach used is mixed method, with Design Factor mapping and MEA03 domain capability measurement as the main focus, where the targeted level is at level 4. The results showed that the IBOSS system was at capability level 2 with a score of 73%, which is included in the Largely Achieved category, which is a condition where most management practices have been implemented and can produce appropriate outputs, although several shortcomings still require improvement. In addition, the results showed a gap of two levels. Improvement recommendations were prepared based on the results of the gap analysis and assessed using the RRV (Resource, Risk, Value) approach to prioritize strategic steps that can strengthen compliance and improve the efficiency of the licensing service system.

Keywords: IBOSS, COBIT 2019, IT Governance, Capability, RRV, Licensing, Goods Traffic.

1 Introduction

Advances in information and communication technology encourage the creation of new opportunities, including in the integration of database systems in organizations. A structured database facilitates data access and processing, thereby supporting fast and precise decision making [1].

The government is greatly helped by information systems in improving the efficiency of public services. Presidential Instruction Number 3 of 2003 emphasizes the importance of implementing e-government to create transparent and accountable governance. Provision of comprehensive data supports regional development planning, cov-

ering human, natural resources, and revenue potential. Sophisticated information systems enable fast and accurate data processing, which is essential in the development process [2].

Batam City as a Free Trade Zone, offers strategic advantages and pro-investment policies that attract investors. Government Regulation No. 41 of 2021 strengthens the investment climate in Batam. The Directorate of Goods Traffic Services and Investment has an important role in managing the flow of goods and investment in Batam. Its main tasks include smooth flow of goods, regulation enforcement, and investment licensing service.

According to official information released by the Public Relations Division of BP Batam, it is known that to support the efficiency of the licensing process, BP Batam has developed the Indonesia Batam Online Single Submission (IBOSS) system. This system is designed to accelerate and streamline the logistics licensing procedures. Head of BP Batam Regulation No. 24 of 2021 confirms the responsibility of BP Batam in providing licensing services in its area. Such services include the issuance of various certificates and business licenses in the port sector through the IBOSS system [3].

Table 1. Recapitulation of Issuance of Entry and Exit January - December 2024

Type of License	Sub Directorate	Number of Licenses
Entry		
Temporary Entry from Outside Customs Area	Industry	990
Impor Permitt Raw Materials and Industrial Auxiliaries	Trade	3328
Import Approval for Non-Restricted Consumer Goods	Trade	1599
Motor Vehicle Impor Permitt	Trade	672
Expenditure		
Temporary Expenditure to Other Places Other Locations Within the Customs Area	Industry	119
Interim Expenditure to Customs Area	Industry	1446
Total Licenses		8154

Table 1 shows data from the IBOSS system, namely the total issuance of 8,154 licenses per January-December 2024. The licenses include the entry of industrial raw materials and the release of goods to and from industrial estates in Batam.

Table 2. IBOSS System Constraints for the Period 2024

Constraints		Number of Occurrences
Bug Application	Application Process Problems - Unable to apply for industrial estate business license	2
	Digital Signature Issue	7
	Registration Problems	1
	Realization Report Issues	1

	Constraints	Number of Occurrences
	User Profile Menu Problems	1
	Problems with Bank Payment System	1
	Integration problems with related ministry/institution applications	16
Application Infrastructure	Firewall problems	2
	Network Connection Problems	1
	Total constraints	32

In Table 2 there are a number of obstacles in the IBOSS system, such as application bugs, infrastructure problems, and human error factors that hinder the service process. There is also a lack of evaluation procedures in the IBOSS governance management process. This causes inefficiencies in system development and management of goods traffic.

COBIT 2019 framework serves as an effective instrument for comprehensively assessing the capability of information technology management systems. Designed by ISACA, this framework provides structured guidance for integrating IT governance and management into organizational business processes. Emphasizing the realization of business value from IT usage, along with effective risk management and resource optimization, COBIT 2019 offers a flexible structure that can be adapted to the specific needs of organizations of different sizes and sectors.[4].

Research was conducted by referring to previous studies as a basis for developing and validating the approach used. The first study is the main reference because it adopts the mapping stages of information technology governance using the Design Factor framework in COBIT 2019. The study provides a systematic overview of assessing and designing adaptive and strategic IT governance [5]. Meanwhile, the second study is used as a reference because of its coherent and comprehensive research structure, which helps in designing research methodologies to have a clear flow [6]. The last study used as a basis in determining the priority level of the recommendations produced [7].

Through analysis using COBIT 2019, this study aims to determine the level of capability of the IBOSS system and provide recommendations for improvement and measurement of the effectiveness of these recommendations to improve goods traffic management in Batam. This research is expected to contribute to the development of information systems in the logistics sector, especially in improving the effectiveness and efficiency of licensing management through IBOSS in Batam City.

2 Theory Study

Information System. Information system is a collection of integrated subsystems that process data into information through input, process, and output. This information supports short and long term decision making and supports the operational, managerial, and strategic activities of the organization to achieve goals [8].

Information Technology Governance. IT Governance is a framework that regulates relationships and processes so that the use of IT is aligned with organizational goals and provides maximum value. IT Governance includes planning, developing, implementing, supporting, and monitoring IT performance, as well as managing risks and resources effectively and efficiently. This responsibility lies with executives and top management to ensure the achievement of Good Technology Governance (GTG) in accordance with applicable strategies and regulations [9].

God Traffic. Traffic includes not only the movement of vehicles and people, but also the movement of goods on the road space that has been provided in an orderly, safe, and orderly manner, as regulated in Law Number 22 of 2009. Goods themselves, according to Government Regulation Number 34 of 2018, include all objects, both tangible and intangible, that have use value and can be utilized for various purposes. Thus, goods traffic can be understood as the distribution or movement of goods in road traffic space to support economic, trade, and other operational activities.

Control Objectives for Information Technology (COBIT). COBIT (Control Objectives for Information Technology) is a framework of guidelines or best practices in IT management, developed by ISACA and ITGI since 1996. COBIT helps organizations manage and integrate all aspects of IT to align with business objectives [4]**.**

COBIT 2019. COBIT was developed by ISACA since 1996 and has undergone five updates. COBIT 1 (1996) focused on auditing, COBIT 2 (1998) on process control, and COBIT 3 (2003) began to include IT management. COBIT 4 (2005) added aspects of IT governance, then COBIT 5 (2012) separated the roles of management and governance. The latest version, COBIT 2019 (released 2018), enhances the framework with design factors and focus areas, making it more flexible and aligned with organizational goals. COBIT 2019 enables more effective analysis of information systems governance [4].

3 Research Methodology

The mixed method is used because the research focuses on in-depth analysis of Design Factor data and capability levels for information system governance as well as in-depth analysis based on the 2019 COBIT framework. Quoting from the book Research Methods, mixed method is an approach that combines qualitative and quantitative methods in one study [10].

An approach grounded in concurrent embedded mixed method design is employed in this study, combining the simultaneous collection of quantitative and qualitative data, with one type serving as the primary focus and the other as a complementary source. This design allows for the integration of both data forms within a single research framework, wherein the supporting data strengthens the analysis and interpretation of the

primary findings [11]. In this context, quantitative data plays a central role through capability measurement using the COBIT 2019 framework, while interviews offer deeper contextual insights into the obtained results.

There are two mixed methods, the first is the Case Study qualitative method. Case study qualitative research is a process of exploring in depth a specific phenomenon or problem. The focus is through in-depth exploration of the COBIT 2019 framework on the object of research [12].

While the next method is a quantitative Policy Research method. a statistical data-based research approach that aims to produce practical policy recommendations to assist decision makers in solving problems in a measurable and objective manner [13]. The results of this study relate to statistical data on the level of capability, which is used to provide appropriate recommendations.

Data Collection. Data collection in this study was conducted through interviews and questionnaires. Interviews are addressed to stakeholders to explore in-depth information about IBOSS system governance, while questionnaires are used to assess Design Factors and system capabilities according to COBIT 2019 guidelines. The questionnaire is closed so that the filling process is easier and more structured.

Research Responden. Respondents in this study include parties who have strategic and operational roles in the management and supervision of the IBOSS system. The main informants come from two key positions, namely the Head of the Goods Traffic Industry Subdirectorate and the Head of the Licensing Information System Subdirectorate. Both provide in-depth data on the flow of processes that run in the system and reveal various problems that occur in the IBSS system during the 2024 period.

There are three stages of the questionnaire used in this process. First, the COBIT 2019 toolkit design factor was filled in by the Head of the Service Information System Sub-Directorate who understood the management of the service system as a whole. Second, the capability level questionnaire was filled in by six members of the IBOSS development team, consisting of the Head of the Sub-directorate of Licensing Information Systems, functional information system processors, and expert information system engineers; this filling structure has been arranged based on the RACI Chart to ensure the role and responsibility of Java. Third, the questionnaire, namely Resource, Risk, and Value (RRV) was filled in by the Head of the Service Information System Sub Directorate to describe the measurement of recommendations.

Research Framework

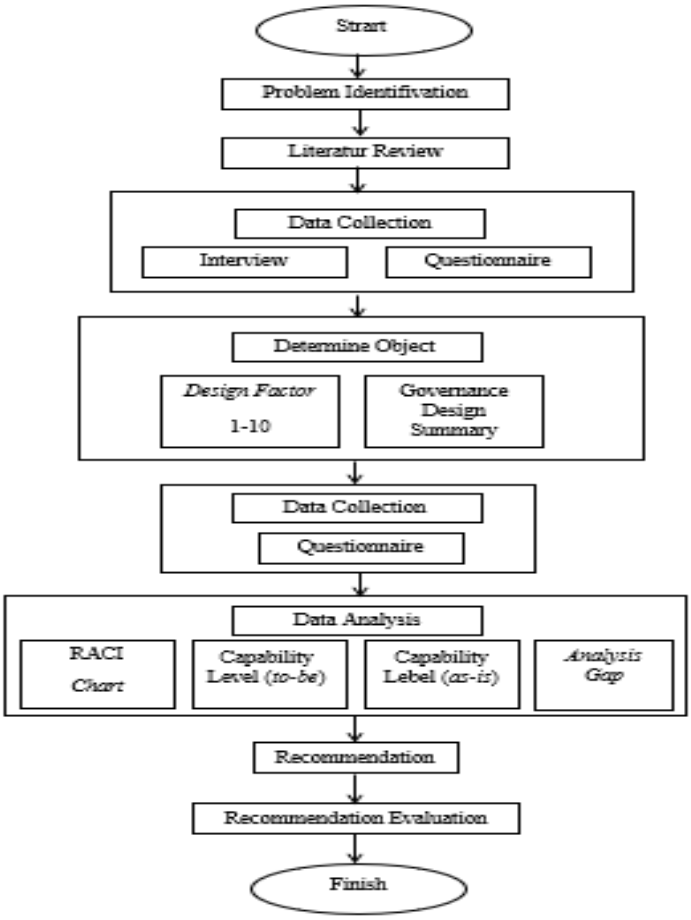

Fig. 1. Research Framework

Figure 1 explains the systematic flow of research, this research begins with a problem identification process to determine the focus of the study. The next step is a literature study to strengthen the theoretical basis and understand the overall research context.

Data collection was carried out through interviews and distributing questionnaires. This data was used to determine the object of study based on Design Factor 1-10, which was then analyzed to develop preliminary conclusions about the governance design.

After the object was determined, the next stage was further data collection using the questionnaire method to deepen understanding. This data was then analyzed using RACI charts, measurement of as-is and to-be capability levels, and gap analysis.

The results of the analysis were used to develop relevant recommendations. Finally, the recommendations were measured to assess their effectiveness in solving the identified problems.

4 Research Result

4.1 Scope of Governance

The scope of governance is analyzed using the ISACA COBIT 2019 Design Factor Toolkit by considering 11 Design Factors to tailor IT governance to the needs of the organization. This governance is analyzed based on information from the results of the questionnaire provided by the IBOSS Application Development Team Coordinator. There are 10 Design Factors to determine the scope of information technology governance [14]:

a) Design Factor 1 Enterprise Strategy, provides an overview of the company's strategy.
b) Design Factor 2 Enterprise Goal, reflects the company's goals that are aligned with the company's strategy.
c) Design Factor 3 IT Risk Category, identifies risks that the company has or has the potential to face.
d) Design Factor 4 IT-Related Issue, identifies IT challenges faced by the company.
e) Design Factor 5 Threat Landscape, the threat landscape in which the company operates.
f) Design Factor 6 Compliance Requirements, analysis of compliance requirements that determine the company's classification.
g) Design Factor 7 Role of IT, the role of IT towards the company.
h) Design Factor 8 Model for IT, a description of the company in obtaining IT resources.
i) Design Factor 9 IT Implementation Methods, the company's method of technology adoption.
j) Design Factor 10 Technology Adoption Strategy, is the company's strategy in technology adoption.
k) Design Factor 11 Enterpise Size, describes the size of the organization based on the number of employees working in the company.

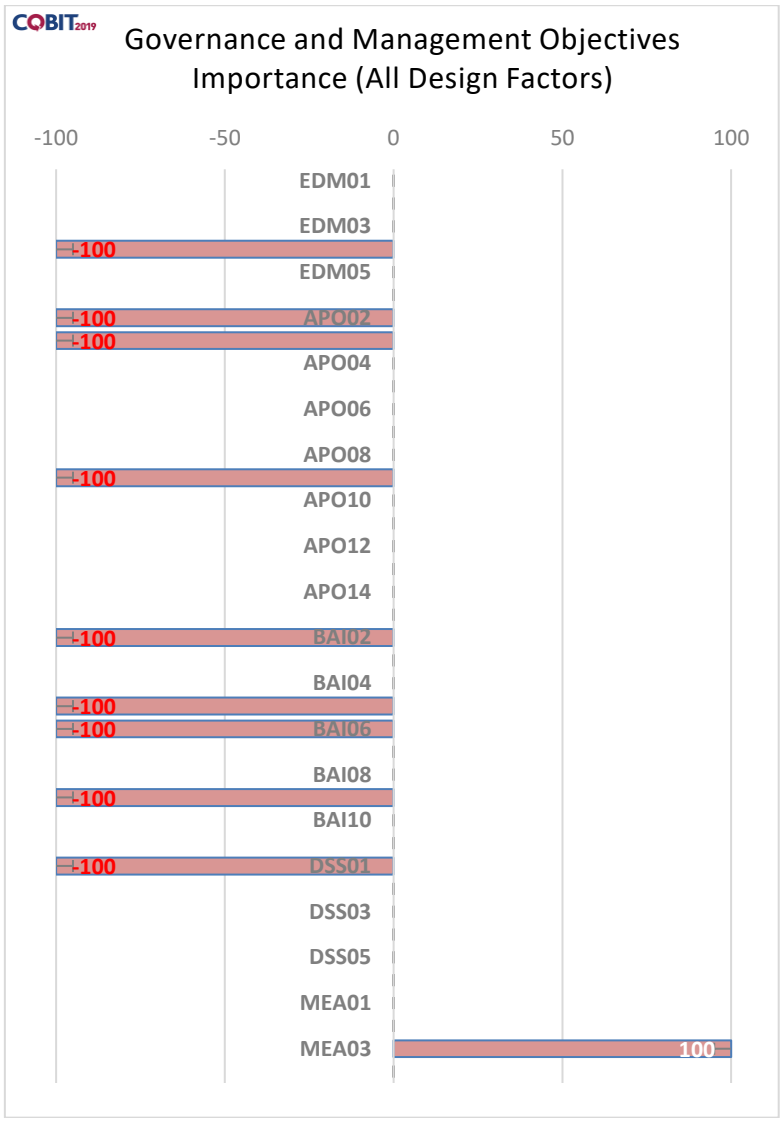

Fig. 2. Results of Objective Importance Level

Figure 2. is the result of analyzing Design Factor 1 to 10 using the ISACA COBIT 2019 Design Factor Toolkit, it is concluded that the objective processes evaluated cover the main aspects that affect the performance and effectiveness of the design. The results are displayed in the form of values representing each process domain in the COBIT 2019 IBOSS information system, which are grouped into four capability levels: values ≥ 75 meet level 4, ≥ 50 meet level 3, ≥ 25 meet level 2, and ≥ 0 meet level 1 [4].

Given the limitations of the issues raised and the results of the overall Design Factor analysis, this research will focus on evaluating the MEA03 domain because it has a goal with a level 4 capability value and an importance value of more than 75. The MEA03 domain is a domain that focuses on monitoring, evaluating, and assessing compliance with external requirements.

4.2 Capability level measurement

The next step after identifying the main domain is to measure the capability level of the MEA03 domain. This process involved six respondents from IBOSS Development Team of BP Batam Data and Information System Center, consisting of: Head of Licensing Information System Sub Bid, two Information System Processing Functional Staff and three Expert Information System Engineering Staff.

Six respondents were asked to fill in a pre-distributed questionnaire by providing answers for each question that reflected the condition of domain activities. Respondents were asked to select "Yes" if the activity had been implemented and select "No" if the activity had not been implemented.

Table 3. Capability Level Questionnaire Results

Code	Activity	R1	R2	R3	R4	R5	R6
AK1	Assign responsibility for identifying and monitoring any changes in legal, regulatory, and other external contractual requirements relevant to the use of IT resources and information processing in the company's business and IT operations.	Y	Y	Y	Y	N	N
AK2	Identify and evaluate all potential compliance needs and their impact on IT and Information Technology (I&T) activities in various aspects, such as data flow, privacy, internal control, financial reporting, industry-specific regulations, intellectual property, health, and safety.	Y	Y	Y	Y	Y	Y
AK3	Assess the impact of IT-related legal and regulatory requirements on third-party contracts, including IT operations, service providers, and enterprise business partners.	Y	Y	Y	Y	N	Y
AK4	Formulate the possible consequences of non-compliance with applicable legal, regulatory or contractual requirements.	N	Y	Y	N	N	N
AK5	Request regular confirmation from business and IT process owners and unit heads to ensure compliance with internal policies.	Y	Y	Y	Y	N	Y

Code	Activity	R1	R2	R3	R4	R5	R6
AK6	Conduct regular (and if required, independent) internal and external reviews to assess the level of compliance.	Y	Y	Y	N	N	Y
AK7	If required, request statements from third-party IT service providers regarding their level of compliance with applicable laws and regulations.	N	Y	Y	Y	N	Y
AK8	If required, request statements from business partners regarding their level of compliance with relevant laws and regulations, particularly in the case of intercompany electronic transactions.	Y	Y	Y	Y	N	Y
	Total Answer Yes	**6**	**8**	**8**	**6**	**1**	**6**

Table 3 presents the findings of the capability level assessment for the MEA03 domain, starting at level 2. The table outlines evaluations from multiple respondents, labeled R1 through R6, concerning specific activities defined within the domain. Each respondent marked a "Y" to indicate that a particular activity is perceived to have been implemented by the organization. This data serves as an initial indication of the extent to which the MEA03 domain activities have been operationalized within the IT environment of the IBOSS system. Therefore, the results of data processing of the current capability level are obtained through calculation [15]:

Table 4. Capability Level Calculation Formula

CC	:	Level of capability achievement in the field of governance and management
$\sum Cla$	:	Total accumulated value of all aspects of governance and management
$\sum Po$	:	Total activities included in the scope of governance and management

Table 5. Calculation of MEA03 Capability Level

1) Respondent 1 $CC = \frac{\sum Cla}{\sum Po} x\ 100\%$ $CC = \frac{6}{8} x\ 100\%$ $CC = 75\%$	2) Respondent 2 $CC = \frac{\sum Cla}{\sum Po} x\ 100\%$ $CC = \frac{8}{8} x\ 100\%$ $CC = 100\%$
3) Respondent 4 $CC = \frac{\sum Cla}{\sum Po} x\ 100\%$ $CC = \frac{8}{8} x\ 100\%$	4) Respondent 4 $CC = \frac{\sum Cla}{\sum Po} x\ 100\%$ $CC = \frac{6}{8} x\ 100\%$

CC = 100%	CC = 75%
5) Respondent 5 $CC = \frac{\sum Cla}{\sum Po} x\ 100\%$ $CC = \frac{1}{8} x\ 100\%$ CC = 13%	4) Respondent 6 $CC = \frac{\sum Cla}{\sum Po} x\ 100\%$ $CC = \frac{6}{8} x\ 100\%$ CC = 75%

Referring to Table 5, the results of Level 2 Capability Level Objective Domain MEA03 are as follows.

Capability Level Formula:

$$CLi = \frac{R1+R2+R3+R4+R5+R6}{\sum R} x\ 100\%$$

Description:

R_1 = Capability Level Value of Respondent 1

R_2 = Capability Level Value of Respondent 2

R_3 = Capability Level Value of Respondent 3

R_4 = Capability Level Value of Respondent 4

R_5 = Capability Level Value of Respondent 5

R_5 = Capability Level Value of Respondent 6

$\sum R$ = Number of Respondents

$$CLi = \frac{75+100+100+75+13+75}{6} x\ 100\%$$

$$CLi = \frac{438}{6} x\ 100\%$$

$$CLi = 73\%$$

Based on the results of the calculations that have been carried out, it is found that objective process MEA03 in the IBOSS system shows a capability level of 73%. This value reflects that the performance evaluation process and system compliance have been running well, although there is still room for further improvement.

Table 6. Activity Rating [4]

Persentage	Description
0% - 15%	N (*Not Achieved*)
16% - 50%	P (*Partially Achieved*)
51% - 85%	L (*Largely Achieved*)
86% - 100%	F (*Fully Achieved*)

Referring to the activity rating in table 6, the percentage of the MEA03 domain indicates that the organization's capability level is in the Largely Achieved category (50-84%), which means it has not yet reached the Fully Achieved level (85-100%). Therefore, it can be concluded that the capability is still at level 2, has not met the requirements for evaluation towards level 3, and does not proceed to the calculation of capability level 3.

4.3 Gap Analysis

Following the computation of the IT governance maturity level, a gap analysis is subsequently carried out. The primary objective of this analysis is to identify discrepancies between the current capability level and the target (expected) capability level. The magnitude of the gap is determined using the formula:

$$Gap = A - B$$

Table 7. Gap Analysis

Domain	Capability Level		
	As-is	To-Be	Gap
MEA03	Level 2	Level 4	2 Level

In table 6, the results of the gap analysis calculation are obtained, that the results of the MEA03 domain in the IBOSS system are at Level 2 capability level. This means that there is a gap of 2 levels from the expected level.

Table 8. Procsess Capability Level [16]

Level	Description
0	The organization does not yet have a clear approach to the process. Activities carried out are sporadic and undirected, so they do not support the achievement of governance objectives.
1	The process is close to achieving its objectives through a series of activities that are still partial and can be classified as initial or intuitive steps, with a low level of organization.
2	The process largely achieves its objectives through the implementation of a number of activities that are still basic or intuitive, and not yet fully well-structured.
3	The process achieves its objectives more systematically through the use of the organization's resources. Generally, the process has a clear and directed framework.
4	The process works towards its goals through a well-established structure, while its success is monitored using measurable numerical indicators.
5	The process has successfully achieved its objectives, has a clear definition, and is equipped with performance measurements that are used to drive increased effectiveness and accompanied by continuous improvement efforts.

Table 8 defines each description of each COBIT 2019 process level. domain MEA03 is at capability level 2, which means the process has been carried out consistently but has not been well documented or formally measured. While the target is at level 4,

indicating the need for significant improvement in process definition, implementation of performance indicators, and evaluation systems to ensure control and continuous improvement.

4.4 Recommendation

Based on the quantitative data analysis that has been carried out, a number of important findings are obtained which form the basis for preparing recommendations for follow-up steps. These recommendations are from activities that have not been fully implemented in the processes that have been evaluated. The following are the results of the recommendations:

Table 9. Result of Analysis and Recommendations

MEA 03
Capability Level 2
Findings
Following the audit of BP Batam's IBOSS system, it was found that there is no adequate arrangement for monitoring and compliance with legal requirements, regulations, and external contracts relevant to the management of IT resources and information processing. Some important processes such as identification of legal responsibilities, evaluation of the impact of regulations on external partners, and regular compliance monitoring mechanisms have not been implemented optimally. In addition, there are no procedures in place to manage the legal consequences of non-compliance, and there is a lack of periodic verification from third parties such as IT service providers and business partners.
Recommendation
1. Assignment of Responsibility (AK1) Assign responsibility for monitoring and managing changes in regulations, laws, and external contracts related to IT operations and systems [17]. 2. Regulatory Impact Analysis (AK3) It is necessary to regularly review the effect of regulations on contracts with third parties, including service providers and business partners, to ensure that all agreements remain in accordance with applicable regulations [18]. 3. Analysis of the Consequences of Non-Compliance (AK4) Establish and document the consequences of non-compliance with regulations and policies to external parties, in order to clarify responsibility and improve compliance [17]. 4. Internal Monitoring (AK5) 5.Implement a periodic reporting mechanism that requires business process owners and IT unit heads to confirm compliance with internal company policies [17]. 6. Verification from IT Service Providers (AK6) Conduct periodic internal and external audits to assess the level of compliance, and consider the involvement of independent parties if needed to maintain objectivity [18]. 7. Verification from IT Service (AK7) There needs to be an official request to third-party IT service providers to provide a statement or documentation of compliance with applicable regulations. An example of a related official request is ISO 37301 certification. 8. Business Mitra Verification (AK8)

The analysis used is the measurement of RRV, namely Resource, Risk, and Value. The measurement aims to assess the readiness of BP Batam in implementing potential improvements to the IBOSS information system [16].

4.5 Recommendation Relavance Measurement

Analysis used is the measurement of RRV, namely Resource, Risk, and Value. The measurement aims to assess the readiness of BP Batam in implementing potential improvements to the IBOSS information system.

Table 10. RRV Criterea

Weight	Description
3	Recommendation is implemented independently by internal. If the solution fails to be implemented, the impact is only felt by one work unit. However, if successful, the impact can improve the performance of all work units.
2	Implementation of recommendations is done through cooperation between internal and external parties. Failure to implement has an impact on several work units, and if successful, the performance improvement is also felt by several work units.
1	Recommendations are fully implemented by external parties. If it fails, all work units will be affected, but its success only provides performance improvement in one work unit

Tabel 10 explains the measurement of RRV (Resource, Risk, Value) using weighting cirteria to asses the recommended solution for the organization.

Table 11. RRV Result

Activity Code	Recomendation	Resource	Risk	Value	Skor
AK1	Assign responsibility for monitoring and managing changes in regulations, laws, and external contracts related to IT operations and systems.	2	3	2	12
AK3	It is necessary to regularly review the effect of regulations on contracts with third parties, including service providers and business partners, to ensure that all agreements remain in accordance with applicable regulations.	3	3	2	18
AK4	Establish and document consequences for non-compliance with regulations and policies for external parties, to clarify responsibilities and improve compliance.	2	2	2	8
AK5	Implement a periodic reporting mechanism that requires business process owners and IT unit heads to confirm compliance with internal company policies.	3	3	2	18

Activity Code	Recomendation	Resource	Risk	Value	Skor
AK6	Conduct periodic internal and external audits to assess the level of compliance, and consider the involvement of independent parties if needed to maintain objectivity.	3	3	3	27
AK7	There needs to be an official request to third-party IT service providers to provide a statement or documentation of compliance with applicable regulations. For example, an official request related to ISO 37301 certification.	3	3	3	27
AK8	Request an affidavit regarding a third party's legal compliance with electronic transactions	3	3	2	18

Table 11 shows the results of measuring recommendations using the RRV approach. Two recommendations received the highest score of 27, namely periodic audits by internal and external parties and requesting compliance documentation from IT service providers, indicating urgency and potential for great impact on improving compliance governance. Meanwhile, the recommendation with the lowest score of 8 indicates that while relevant, its implementation has more limited risk and value. Overall, this table illustrates the strategic priorities in driving effective regulatory and compliance management of IBOSS information systems.

5 Discussion

The implementation of IBOSS information system by BP Batam shows a real effort to digitize the process of goods traffic licensing, as part of the strategy to improve the efficiency of public services in the Batam free trade area. Based on the results of measuring the level of capability using the COBIT 2019 framework in the MEA03 domain, resulting in a capability level of 73% which is included in the Largely Achieved category. Although it has shown good performance, this result shows that the system has not been optimal in fulfilling all governance activities, especially related to compliance with external regulations.

In the gap analysis, a difference was found between the current condition at level 2 and the target at level 4. This two-level difference indicates the need for in-depth and continuous improvement, especially in activities that have not been consistently implemented, such as periodic audits, external partner verification, and documentation of the consequences of non-compliance. These results were then responded to through seven strategic recommendations that were analyzed with RRV (Resource, Risk, Value) measurements, in order to produce priority recommendations.

Findings of this study reinforce prior research while also offering several notable distinctions. The first literature review emphasized the initial mapping using COBIT 2019 Design Factors to develop governance domains [5]. This resulted in the identification

of multiple domains. In contrast, this research focuses exclusively on the MEA03 domain. The second literature review highlighted a comprehensive methodological structure in evaluating IT systems [6]. However, the domains addressed in their study did not include MEA03, which is covered in this research. The last literature review introduced the RRV method for assessing the relevance and prioritization of recommendations [7]. Their research did not progress to the roadmap development phase due to scope limitations. A key differentiation also lies in the research objects. Previous studies primarily focused on the banking sector or manufacturing sector. This study extends the application of COBIT 2019 to the context of public service delivery in government institutions.

6 Conclusion

Findings from this study indicate that the governance of the IBOSS information system holds a strategic role in supporting the licensing process for goods traffic in Batam. This directly addresses the main research question, namely to what extent the capability of the IBOSS system can be assessed using the COBIT 2019 framework. Based on the mapping results using the Design Factor Toolkit, only the MEA03 domain was identified as the primary focus of evaluation. However, this domain remains at Capability Level 2 with a score of 73%, which is categorized as "Largely Achieved." This suggests that although foundational activities have been implemented, they have not yet been fully optimized to reach a higher capability level. The Resource, Risk, and Value (RRV) analysis of seven strategic recommendations further revealed the relative relevance of each recommendation in addressing existing gaps. Nonetheless, this study is limited in scope, as it does not extend to the implementation stage or the formulation of a strategic roadmap for system development. Future research is therefore encouraged to construct a comprehensive roadmap that outlines the development of IBOSS in order to advance governance capability to a more optimal level. With the support of a data-driven recommendation map, BP Batam now has a clearer direction for enhancing IBOSS into a reliable and adaptive digital system that supports efficient goods traffic services in Batam City.

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