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Evaluation of Accounting Information System's Implementation on Revenue Cycle

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Abstract:

Technology adaptation carried out by the Company needs to be accompanied by an adequate internal control process so that the objectives of implementing the technology can be met. Weaknesses in the identified system need to be assessed by analyzing the risks that need to be prioritized in the implementation of the accounting information system used, so that the Company can determine the mitigating response that should be carried out by the Company. The evaluation method in this research is qualitative in the form of a case study with a descriptive approach using the COSO ERM Framework. The research results state that the Company already has good capabilities in implementing the Company's internal controls. However, there were 13 risks identified in four departments related to the revenue cycle system. The mitigation response given was 12 reductions and one sharing. This research paper hopes that the Company can maximize the use of its IT team in the internal control process, so that it can create a system that meets the needs of both customers and employees.

Keywords*: Accounting Information System (AIS), Revenue Cycle, COSO ERM.*

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1. Introduction

The use of technology in the business world is increasingly contributing positively to the growth of the industry itself (Setiawan, 2017). This is proven by data from the Ministry of Communication and Information (2019) which states that there has been a growth in the value of electronic commerce (e-commerce) which reached 78%, the highest in the world. The use of technology that can be accessed in real time and facilitates the company's performance in all areas, including marketing, ordering, delivery and payment, is one of the reasons underlying the positive growth of a company.

However, the benefits of digitalization must be accompanied by the company's responsibility to provide comprehensive services, especially by paying attention to the convenience for customers in placing orders, submitting complaints, and payment processes that provide comfort and security for consumers when making transactions (Rochman, 2023). New challenges and threats arising from the implementation of information systems need to be complemented by an adequate approach to the risks of the digital revolution (Hunziker, 2021). Indicators that must be considered are those that have the potential to provide benefits in their application, such as operational, managerial, strategic, IT infrastructure and organizational areas (Waters & Water, 2013).
One company that is starting to adapt the implementation of an e-commerce information system is PT FZR which is a subsidiary of PT BNML. PT FZR was established as a business unit that assists PT BNML in carrying out its business processes in the container shipping

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sector. Revenue is the cycle most impacted by the presence of digitalization. The creation of the XXM application since 2021 has made the Company's revenue cycle online. However, unfortunately, based on the results of the interviews conducted, there were several deficiencies in the information system that were complained about by PT FZR customers and employees, so that efficiency and *experience goals* had not been achieved.

Risks arising from efficiency and experience that do not match the company's expectations need to be minimized and adjusted to the company's internal needs. Internal control evaluation can be carried out using the Coso ERM guidelines to determine the risks on the subject you want to evaluate and how the company should respond to these risks. According to research conducted by Ramadhan & Setiawan (2021), to be able to improve existing information systems, companies need to carry out good internal controls by referring to COSO ERM indicators.

By carrying out internal control using the COSO ERM framework, it is hoped that the company can maximize the implementation of the revenue cycle information system used. Companies can find out what risks need to be prioritized and what kind of mitigation responses need to be carried out. In this way, the information system in the company's revenue cycle can avoid various threats caused by system weaknesses. Increasing internal control activities in accounting information systems can help protect the system from fraud, errors, system failures and disasters (Romney & et al, 2021, p. 37). Through the evaluation carried out in this research, it is hoped that it can help the company maximize the performance of its revenue cycle information system so that it can minimize the risk of losses that will be borne by the Company.

Formulation of the problem :

1. What is the internal control system for implementing PT FZR's revenue cycle information system?
2. What are the appropriate recommendations for responding to the risk of information system weaknesses in PT FZR's revenue cycle?

Research purposes :

1. Evaluate the accounting information system by understanding and analyzing the application of the information system to the revenue cycle implemented by PT FZR
2. Providing solutions in the form of proposals to improve the implementation of PT FZR's accounting information system so that the revenue cycle can run effectively and efficiently

2. Theoretical Background

Internal control

Internal control is one step in creating good corporate governance, especially in providing an assessment of how the accounting information system operates. In addition, internal control can be used to identify system weaknesses or inefficiencies, such as inadequate communication flow and separation of duties, unnecessary complexity of document flow, or procedures that cause wasteful delays (Romney & et al, 2021, p .92). The process of implementing internal control must basically follow the provisions established in the Minister of Finance Regulation (PMK) No. 88/PMK.06/2015 concerning the Implementation of the Company's Corporate Governance. This regulation states that good corporate governance must implement internal control by paying attention to the completeness and implementation of the duties of the committees and work units that carry out the internal control function. This regulation explains that an effective internal control system must involve the role of the board of directors and pay

attention to the components of internal control (business risk management; control activities; information and communication systems; and monitoring) in order to avoid fraudulent activities or non-compliance that are detrimental to the company (Rahman , 2021, p. 6).

There is a risk assessment framework that meets all internal control assessment components of PMK No. 88/PMK.06/2015 and has been adapted to assess digital-based systems. These frameworks are the COSO Enterprises Risk Management Framework and the Digital Risk Framework in Enterprise Risk Management (Hunziker, 2021). This framework describes the core elements of a digital risk framework based on the premise that digital transformation generally includes opportunities in corporate strategy. The digital framework rests on specific risks related to customer needs ; technological innovation; automation ; connectivity ; data simplification; and data volume and sources, each of which is adjusted to risk categories in the financial, operational, compliance and customer sectors.

Coso Enterprise Risk Management

The internal control framework for organizational risk that is often used by the Company's companies is contained in the 2017 Coso Framework: Enterprise Risk Management. This framework is used to identify and mitigate various matters related to organizational risk, including compliance risk. To anticipate all complex business risks, this risk-based framework will determine priority steps in preventing potential risks by using *governance culture components; strategy & objective setting; performance; review and revision; and information, communication and reporting.* Each of the five components will be explained further below along with the 20 components of internal control (COSO, 2020):

1. ***Exercise Board Risk Oversight***. Directors and Commissioners will supervise the implementation of the Company's strategy and governance
2. ***Establishes Operating Structures***. In achieving company goals, an organizational structure is needed that will be used to carry out the strategy.
3. ***Defines Desired Culture.*** Companies need to have a culture that describes the standards of behavior that the company wants to be implemented by all company members.
4. ***Demonstrates Commitment to Core Values***. The company's top management must show commitment to company values by continuing to provide an example to employees that these values do not only apply to employees, but to all members of the company.
5. ***Attracts, develops, and retains capable individuals.*** The company is committed to developing human resources who can make a positive contribution in carrying out the company's strategy.
6. ***Analyzes Business Context.*** Business decision making can indirectly create new risks, change existing risks or even eliminate risks.
7. ***Define Risk Appetite.*** Risk appetite is the level of acceptance of known risk (the risk that the company can accept).
8. ***Evaluates Alternative Strategies***. Companies must involve the compliance function in strategy discussions so that the function is fully informed before starting new strategic initiatives, so that risk assessment and management will be effective.
9. ***Formulates Business Objectives.*** Business objectives are the criteria used to evaluate organizations and business units in setting strategies.
10. ***Identify Risk***. Compliance functions need to identify and track multiple threat risks across the organization both now and in the future. Not all compliance threats will be considered a priority in ERM.
11. ***Assesses Severity of Risk.*** The severity of a risk is usually assessed based on its likelihood and impact. Probability is the level of possibility that a risk will occur. Assessing the likelihood is a subjective assessment but can be systematic by considering the frequency of non-compliance. In Table 1, measurement of possible variables is carried out using five

scales, including *almost certain* ; *probably/ likely* ; *Possible* ; *Unlikely* ; and *Rare* The assessment size of each scale is defined in table 1.

Table 1. Variables Likely to Occur

Scale	Existing Controls	Frequency of Non-Compliance
5 *Almost Certain*	- there is no control, - There are no policies/procedures, - There is no identified person responsible, - There is no training, - There is no management review	- It is expected to occur in most circumstances - More than once a year
4 *Probably/ Likely*	- There are policies and procedures (but they are not required and are not updated regularly), - There is a responsible person (identified), - There is some formal training and information - Controls were not tested or were tested unsatisfactorily - There is no management review	- Maybe it will happen - At least once a year
3 *Possible*	- Policies are required, but not updated regularly - Controls have only been tested occasionally, with mixed results - The person responsible is identified - Training is provided when necessary - Management reviews are occasionally conducted, but not documented	- Maybe it will happen someday - At least once in 5 years
2 *Unlikely*	- Policies are mandated and updated regularly - Controls tested with Most results were positive - **Routine training** is provided to responsible people who are identified, but not documented - Routine management reviews were conducted, but not documented	- It could happen someday - At least once in 10 years
1 *Rare*	- Policies are mandated and updated regularly - Controls were tested routinely and the results were positive - Routine mandatory training is provided to identified persons in charge, and the training is documented - Regular management reviews are conducted and documented	- It may occur only in exceptional circumstances - Less than once in 10 years

Source: COSO ERM 2017

Meanwhile, another factor that influences the assessment is the impact of the identified risks. The impact of non-compliance and failure can be assessed using various measurement categories. Table 2.2 illustrates how these categories can be used to develop a compliance risk impact assessment scale.

Table 2. Impact Variables

Scale	Finance	Operational	Reputation (Image)	Ability to Pursue Strategic Goals
1 Not Significant	<$1 million	< ½ day	No press exposure	Little or no impact
2 Minors	$1 - $5 million	< 1 day	Localized negative impact on reputation (e.g. one large customer) but reversible	Little impact
3 Serious	$5-$25 million	1 day – 1 week	Negative media coverage in the US or certain foreign countries	Big impact

4 Disaster	$25-$100 million	1 week – 1 month	Negative US national or international media coverage (not front page)	Significant Impact
5 Major Disasters	>$100 million	> 1 month	Continued negative national (and international) media coverage in the US (business section front page)	Loss of accreditation or license

Source: COSO ERM 2017

12. ***Prioritizes Risks***. One method used to capture and summarize severity assessments is by compiling a risk inventory matrix.
13. ***Implementing Risk Response***. Risk responses are designed to manage the level of assessed risk and can be carried out in various forms, one of which is the design and implementation of increased internal control over compliance.
14. ***Develops Portfolio View***. It is important to recognize the interrelationships between compliance risks, as well as the relationships between compliance risks and other organizational risks.
15. ***Assesses Substantial Change***. The changing internal and external environment of an organization has a significant impact on a company's compliance risk profile
16. ***Reviews Risk and Performance***. The board of directors is responsible for monitoring the performance of risk management and the CCO. Additionally, management is responsible for designing and implementing the program.
17. ***Pursues Improvement in Enterprise Risk Management.*** Commitment to continuous improvement of any changes both within the organization and in its environment, in addition to identifying gaps in program effectiveness is also required.
18. ***Leverages Information and Technology***. The compliance function must have access to real-time information in order to manage the program effectively.
19. ***Communicates Risk Information.*** Communicating risk information is the most important principle, because the compliance function must interact with every business unit and all functions in an organization.
20. ***Report on Risk, Culture and Performance***. Companies need to communicate risk information on risk reporting, culture and performance related to compliance.

Revenue Cycle

According to (Kurniawan, 2020, p. 37)the revenue cycle, it is a company cycle that focuses on the process of processing finished goods or services so that they can be turned into cash in a transaction between sellers and buyers. The income cycle occurs in all companies, whether manufacturing, trading or services. According to (Romney & et al, 2021, p. 454), *"The Revenue Cycle is a recurring set of business activities and related information processing operations associated with providing goods and services to customers and collecting cash in payment for those sales. The revenue cycle's primary objective is to provide the right product in the right place at the right time for the right price."* This revenue cycle has a significant impact on the Company's financial information. So information must be presented accurately, quickly and informatively because there are many parties who need this information (Nurhayati & et al, 2023, p. 12). In the process of compiling this information, the role of an information system is needed to make it easier for certain parties to present perfect information.

Accounting information system

According to (Zamzami, Nusa, & Faiz, 2021, p. 8)the Accounting information system, it is very necessary for accounting users, namely parties outside (external) the company organization and parties within (internal) the company organization. External parties need information in the form of publication of profit and loss reports to see the Company's

performance in gaining company profits. Meanwhile, for internal parties, information is needed to analyze the economic value (company profit) as much as possible. In addition, accounting information system development is often used by internal and external auditors to review information system controls as part of audits. So the development of information systems is needed to improve the quality of information; Improve internal control and minimize costs.

This research focuses on analyzing the use of accounting information systems to process sales orders which is an adaptation of the company's revenue cycle. This research will evaluate the internal controls used by PT. FZR is based on its application to a revenue cycle information system which is grouped into four main management functions, namely customer order entry (sales), shipping, billing and cash receipts. The research uses data related to revenue cycle information system operating procedures which will be evaluated using the COSO ERM *Framework* by comparing risks in revenue activities along with the control measures implemented. The evaluation results are in the form of answers to internal control efforts in mitigating risks.

3. Methodology

In this research, a case study strategy was employed to evaluate the phenomenon of implementing information systems in the revenue cycle of PT FZR. As outlined by Sutisna (2021), case studies are widely used in evaluations to provide a thorough and in-depth understanding of the subject under study. This method is particularly effective for answering "why" and "how" questions by examining the phenomenon over time (Saunders, Lewis, & Thornhill, 2019). The objective is to obtain a detailed description of the entity by examining specific aspects like individual, organization, or program activities (Dr. Zuchri Abdussamad, 2021).

A qualitative approach was used in this research, which is suitable for studying people's experiences in detail through methods such as interviews, observations, and document analysis (Hennink, Hutter, & Bailey, 2020). This approach focuses on understanding human behavior within the context of social and environmental factors, making it ideal for investigating the application of information systems in the revenue cycle (Seth, Chadha, & Bhatia, 2022).

The data collection involved both primary and secondary sources. Primary data was gathered directly through interviews with the company's management team, while secondary data was obtained from archival documents and annual reports relevant to the information systems in the revenue cycle (Yulianto, Maskan, & Utaminingsih, 2018). The research instruments included documentation studies and interviews with selected respondents from PT FZR's management, providing a comprehensive view of the revenue cycle processes (Rukajat, 2018).

The data analysis process involved several stages: data reduction, data presentation, and the application of analysis techniques using the COSO Enterprise Risk Management framework. This process included sorting, simplifying, and transforming data collected from interviews and observations, followed by presenting the data in a structured format to facilitate understanding (Thesismind, 2023). Finally, the findings were verified and confirmed to ensure the validity and reliability of the conclusions drawn from the study (Research Method, 2023).

4. Empirical Findings/Result

PT FZR's revenue cycle is carried out online utilizing the XXM application. The business process begins with the activities of the marketing team in inputting delivery routes with a certain amount of cargo in the XXM system. Once the route option has *live status*, customers can make orders on the XXM application. Customers can place orders via the XXM application or contact PT FZR's customer service (CS) facility. After the order is placed, the XXM system will issue *shipping instructions* that customers can use in the process of sending containers to the port.

After the order is received by marketing, the marketing team will verify *the deal rate,* if *the deal rate* is appropriate it will be forwarded to the XIXI (X Implementation Xystem Information) system and the finance team will access the information as instructions for bridging *to* issue *invoices* to customers, The system will automatically send the company account number. Until now, alternative payments can only be made non-cash via transfer. After payment is made, customers must send proof of payment and attach it to the finance team. The finance team will verify the payment and issue a *Bill of Lading* (BL) document which the customer will use to pick up the container at the port of destination. The payment process can be carried out during the delivery time between the departure location and the destination location.
After *the shipping instruction* is issued, the customer is asked to send the container to the agreed port. The operational team will inspect the container, if the condition of the container is suitable then the operational team in collaboration with the Loading and Unloading Company (PBM) will transfer the container to the ship (*Lift On Lift Off)* and the company will send the container to the port of interest. destination route agreed on the booking.

In its application, the adaptation of technology to the company's revenue cycle cannot be separated from new obstacles and risks that arise. Based on the results of interviews conducted, it can be seen that among the obstacles and risks that arise are:
A1: Disruption to the Company's network and servers and system downtime.
A2 : The XXM system can only be downloaded via Android features while other software such as IOS or other processors cannot access it.
A3: The system is considered not to be *user friendly*, because in its presentation, employees assume that the person using the XXM application is someone who understands shipping modes.
A4 : The XXM application does not provide an *automatic* KYC feature, so the KYC form will be sent via email.
A5: There is no customer assessment column available in the XXM application so the company has limitations in viewing the track record of customer evaluations of the company's services.
A6: The limited access history feature on the XXM application makes it difficult for the company to detect the party who made the mistake.
A7 : The use of the barcode feature in payment verification has not yet been implemented.
A8: Minimal variety of payment methods (Virtual Account), because it can only be done via transfer to a company account.
A9: There is no format validation feature available for inputting numbers, so errors can occur when inputting *deal rates.*
A10: Weather-related information features are not available, so customers and employees cannot monitor delivery problems.

A11: Misperceptions of the truth often occur in the goods return process. In the return process, the company must investigate where the source of the damage occurred. The unavailability of features that update the delivery stage causes investigations to be hampered.
A12: The XXM system only facilitates the sales returns process, so customers cannot obtain *real time information* regarding the condition of the goods to be returned.
A13: Inability of the system to facilitate two-way communication.
A14: There is no Q&A feature available to facilitate customer service in answering customer questions.
In the evaluation using COSO ERM, it can be seen that several components of the COSO ERM assessment have been fulfilled properly. Component assessment is explained as follows:

1. Governance and Culture
a. Exercise Board Risk Oversight
The Board of Commissioners and Directors provide full support in implementing PT FZR's risk management. The Risk Management Implementation Guidelines used are ISO 31000, policies and SOPs. PT BNML will ask PT FZR to conduct regular evaluations (every month). The existence of *a Risk Champion* in each Business Unit allows companies to register risks, identify and mitigate business risks that change along with the development of the business world. Supervision of these risks is carried out centrally through PT BNML's risk management and internal audit team in collaboration with PT FZR's business development and QHSE teams.

Table 3. Implementation of COSO ERM (*Exercise Board Risk Oversight)* PT FZR

	Component	Yes/No
Exercise Board Risk Oversight	Documentation of evidence of supervision	Yes
	Provide input to ensure independence	Yes
	Availability of resources for risk	Yes
	Receive regular reports from CCO	Yes
	The Board received information about the material investigation	Yes

Source: Data processed by the author

b. Establishes Operating Structure
PT FZR does not have an independent compliance function. However, the role of the compliance function remains and is centralized at PT BNML (Corporate). PT BNML's compliance function consists of several divisions including *Corporate Legal, Corporate Secretariat and Governance, Corporate Communication, Corporate Procurement* and *Corporate Risk Management.* Meanwhile, the internal audit team stands independently at the same level as the CEO. The function of this team is to supervise employee compliance in carrying out their duties.

Table 4. Implementation of PT FZR's COSO ERM (*Establishment Operating Structure).*

	Component	Yes/No
Establishes Operating Structure	Maintain CCO independence (compliance & ethics function)	Yes
	Ensure that the CCO reports directly to and communicates regularly with the board	Yes
	CCO and C&E programs have a high standing compared to other functional leaders	Yes
	The CCO has sufficient authority to manage the program effectively	Yes
	Provide adequate resources	Yes

	Discusses oversight of the C&E program in the charter	Yes
	Document policies and procedures	Yes

Source: Data processed by the author

c. Defines Desired Culture

PT FZR has the same culture as PT BNML's culture. The existing culture has been chartered by the Board of Commissioners and Directors as company values that must be adhered to by company employees. The company culture contains a code of ethics and behavioral demands that are expected to be implemented in the company. Among PT FZR's company values are integrity and professionalism. Apart from that, PT FZR also has guidelines and a code of ethics that apply to all members of the Company and must be signed in the Integrity Pact document.

Table 5. Implementation of COSO ERM (*Define Desired Culture)* PT FZR

	Component	Yes/No
Defines Desired Culture	The board is aware of and approves the code of ethics and others	Yes
	Explains ethics and compliance with the code of ethics	Yes
	Provide and require code of ethics & *decision making training* for all company members	Yes
	Monitor & assess sustainable organizational culture	Yes
	Develop objectively measurable compliance metrics linked to performance evaluation (compensation)	Yes
	Adopt incentives that encourage consistent implementation of the K&E program	Yes
	Includes references to organizational values, expectations and the importance of ethics in leadership communications	Yes

Source: Data processed by the author

d. Demonstrates Commitment to Core Values

In its implementation, all members of the company (not only the Board of Commissioners and Directors) but heads of departments and divisions as well as staff also provide examples of behavior that reflects commitment to company values. The main factor that is the reason is the importance of good behavior to be part of the PT BNML and PT FZR teams. Fellow employees must remind each other to follow the company's code of ethics, such as using company facilities for work purposes and having the enthusiasm to take part in training related to the code of ethics, both offline and online via the Udemy site.

Table 6. Implementation of COSO ERM (*Demonstrates Commitment to Core Value)* PT FZR

	Component	Yes/No
Demonstrates Commitment to Core Values	Actively encourage a culture of compliance risk awareness, (establish an ethical & compliant leadership attitude)	Yes
	Balanced business incentives & compliance incentives	Yes
	Accountability in managing compliance risks and implementing compliance programs (employee performance measurement, promotions & other incentive programs)	Yes
	Protect parties reporting alleged violations, and do not tolerate retaliation	No
	Take allegations of misconduct seriously and investigate them promptly	No
	Accountability for mistakes, fairness and consistency in discipline, and fairness in promotion	Yes

	Communicate compliance and ethics failures throughout the organization in appropriate detail	Yes

Source: Data processed by the author

e. Attracts, Develops and Retains Capable Individuals

PT BNML has formed a Human Resources unit consisting of *Corporate Human Capital, Corporate University, Corporate QHSE, Corporate Information Technology* and *Corporate Digital,* where representatives from each division will be placed in the company's business units, one of which is PT FZR. The *Corporate Human Capital* Division already has policies and standard operating procedures for recruiting. Apart from that, the *human capital team* will work closely with certain divisions that require human resources to be adapted to the needs of that division. Apart from that, *the Corporate University* will be tasked with providing training to company employees, not only for compliance functions but for all company members.

Table 7. Implementation of COSO ERM (*Attracts, develops and retains capable individuals)* PT FZR

	Component	**Yes/No**
Attracts, develops and retains capable individuals	Hiring and retaining CCOs with appropriate criteria	Yes
	Compliance team staff are individuals with relevant expertise	Yes
	Check compliance risk background, tailored to the risk level appropriate to each position.	Yes
	Considering employee implementation and compliance with performance evaluation preparations	Yes
	Tailor training based on the compliance risks faced for specific roles in the organization	No
	Risk-based due diligence on third parties	Yes

Source: Data processed by the author

2. Strategy and Objective Setting for Compliance Risks

a. Analyzes Business Context

PT FZR always sets sustainable strategies for each of its businesses to achieve long-term goals. Every decision made always involves assessing risks to produce an actual work plan and company budget. For example, determining risks on certain delivery routes is considered more efficient and provides lower costs when considering the risks associated with that route or when PT FZR implements digitalization in its revenue cycle, so that other risks that arise will always be evaluated.

Table 8. Implementation of COSO ERM (*Analyzes Business Context)* PT FZR

	Component	**Yes/No**
Analyzes Business Context	Consider & reflect on business strategy in assessing & managing compliance risks	Yes
	Consider factors internal to risk	Yes
	Evaluate the impact of external factors on risk	Yes
	Identify and consider risk dependencies in strategy development	Yes
	Give consideration to cultural and regional differences in legal frameworks based on location	Yes

Source: Data processed by the author

b. Define Risk Appetite

PT BNML chose to be *the last mover* for many aspects of change that are key to business success. This is evident from how PT BNML has just started implementing the use of

information systems in its revenue cycle (in 2021) at a time when similar companies in the industry have proven successful in implementing this innovation. Based on this, PT BNML has a small - medium level of risk appetite. This risk appetite also applies to PT FZR, which is one of the business units of PT BNML. However, the conditions of each business unit are definitely different and require different solutions. PT FZR determines the risk appetite to be taken based on business conditions at a certain time. For example, the risk appetite taken by the company is classified as low - medium when business is good, while the risk appetite will be different (high) when PT FZR's business conditions are not good.

Table 9. Implementation of COSO ERM (*Define Risk Appetite)*

	Component	Yes/No
Define Risk Appetite	Compliance risk as part of an organization's risk profile in determining risk appetite	Yes
	Consider compliance risks by risk type (e.g. anti-bribery), business unit (e.g. human resources) and location or region	Yes
	Determine and evaluate the relationship between compliance risks and achievement of business objectives	Yes
	Discusses risk appetite periodically and updates as necessary based on changes in compliance risks	Yes
	Develop specific risk-centric appetite statements to support risk tolerance appetite	Yes

Source: Data processed by the author

c. Evaluates Alternative Strategies

In evaluating strategic planning, PT FZR will involve several parties, including the *Corporate Risk Management team* , QHSE team and *Business Development team.* Usually the company also involves the Board of Directors and Commissioners to conduct discussions. As a business unit, those tasked with analyzing PT FZR's risks are the QHSE and *Business Development teams.* Sometimes, business units are more aware of the risks and obstacles that often occur at PT FZR, so discussions in various directions need to be carried out so that all parties understand the company's current position and the appropriate solutions to be provided.

Table 10. Implementation of COSO ERM (*Evaluates Alternative Strategies)* PT FZR

	Component	Yes/No
Evaluates Alternative Strategies	Ensure the CCO has a seat at the table in strategy discussions	Yes
	Solicit input and insight from the CCO on how strategy impacts compliance risk	Yes
	Conduct risk-based due diligence on merger and acquisition targets prior to transaction implementation	Yes
	Consider the implications of strategic decisions (including subsequent strategy changes) in the design of the C&E program	Yes

Source: Data processed by the author

d. Business Objective Formulation

PT FZR's business goal is to connect Indonesia. In achieving this goal, the company has a mission, including ensuring sustainable business growth while providing added value for shareholders; and providing transportation services to meet the distribution needs of goods to and from all corners of Indonesia. In running this business, the company certainly considers its inherent risks, so the company forms a risk management team whose job is to analyze these risks.

Table 11. Implementation of COSO ERM (*Business Objectives)* PT FZR

	Component	Yes/No

Formulates Business Objectives	Identify and evaluate compliance risks related to planned business objectives	Yes
	Consider setting compliance as a separate business goal	Yes
	Incorporate compliance risk management and accountability into performance measures and other evaluations	Yes
	Consider interactions between compliance and other risks based on changing business objectives	Yes
	Incorporate objectively measured compliance metrics in business objectives that reflect compliance risk management and the effectiveness of program implementation and commission awards.	Yes

Source: Data processed by the author

3. Performance

a. Risk Identification

Research finds that PT FZR's revenue cycle is basically good enough for the large company category. However, because the technological adaptation they apply to the revenue cycle is still relatively new, the implementation of PT FZR's revenue cycle information system still has weaknesses in sales activities, shipping, sales returns, *billing* - collection and cash receipts. Identified risks are defined in table 12

Table 12. Risk Identification

	Risk Owner	Risk	Impact
A1	IT Team	**1.** Teams O and M did not can be updated directly realtime **2.** Customer Can't order **3.** Team F doesn't get bridging invoices	Loss Financial
A2	IT Team	Employees and customers No can utilise system the	Loss Financial and Reputation
A3	IT Team, O, F and M	System No customized with objective *customer experience*	Loss Financial and Reputation
A4	IT Team Team F	Inefficient and no documented with Good	Loss Financial and Reputation
A5	IT Team Team M	It's not accommodated aspirations customer	Loss Reputation
A6	IT Team	Limitations in detect changes and hinders the investigation process	Loss Financial and Time
A7	IT Team F&O Team	Weak system *segregation of duties*	Loss Operational
A8	IT Team Team F	Delayed payment process	Loss Financial and Time
A9	IT Team Team M	Probability happen more deal rate input error big	Time Loss
A10	IT Team Team O	Employees and customers No can monitor constraint delivery as well as machine damaged	Loss Operations & Time
A11	IT Team R Team	Miss communication and different perceptions because of the return process No can accessed in a way realtime	Loss Financial
A12	IT Team	Billing Still requires a long process	Time Loss

	Risk Owner	Risk	Impact
	Team F		
A13	IT Team Team M	Not facilitated need customer	Loss Reputation and Time

Information :
IT Team : IT
Team M : Marketing
Team F : Finance
Team O : Operations
Team R : Return

b. Risk Assessment and Prioritization

Risk assessment is carried out based on the level of possibility of occurrence and the impact arising from existing risks. The *likelihood* level is categorized into five indicators, including very rare, rare, moderate, frequent and very frequent. Meanwhile, the level of impact assessment is categorized into five other indicators, namely very small, small, medium, large and very large.

Table 13. Risk Assessment and Prioritization

	L	I	S	P
A1	5	3	15	7
A2	5	4	20	12
A3	1	3	3	1
A4	3	4	12	6
A5	4	4	16	10
A6	3	3	9	4
A7	4	4	16	11
A8	5	3	15	8
A9	3	2	6	2
A10	5	3	15	9
A11	5	4	20	13
A12	3	3	9	5
A13	2	3	6	3

Information:
L: Likelihood
I : Impact
S: Score
P: Priority

c. Risk Assessment

The third stage in data analysis is carried out by mapping risks on *a heat map.* The risk assessment that has been carried out in section 13 will be mapped on *a heat map* which is adjusted to the five assessment indicators presented in the previous section. The higher the possibility of related risks occurring and the impacts they cause, the risk will become a top priority that must be immediately mitigated by the company. PT FZR's risk mapping is outlined in *heat map table* 14, and is explained in several colors that indicate the risk level. Green represents a low risk level, yellow represents moderate risk, while red represents a high risk level. Risk mapping in the green column indicates that the existing risk has a small probability of occurring with an insignificant impact. Risks mapped in the yellow column have a moderate probability of occurring when compared to their impact, while risks mapped in the red column

indicate that the possibility of the risk occurring and its impact is considered quite high and requires attention from the Company.

Table 14. Risk Mapping

Significance			Impact				
			1	2	3	4	5
			SK	K	m	B	SB
Likelihood	5	SS			A1, A8, A10	A2, A11	
	4	S				A5, A7	
	3	m		A9	A6, A12	A4	
	2	J			A13		
	1	SJ			A3		

Source: Data processed by the author

Information :

SS: Very Often	SK: Very Little
S: Often	K: Small
M: Moderate	M: Medium
A: Rarely	B: Large
SJ: Very Rare	SB: Very Large

d. Implementation of Risk Response

Based on the risk mapping carried out in section 5.3, it can be seen that PT FZR has 29 risks which have different assessment levels such as low, moderate and high. After knowing the level of risk, PT FZR can provide a response or risk, which is divided into four ways, namely *accept, avoid, share* and *reduce.* Providing risk responses to these risks is explained in table 15

Table 15. Risk Response

	Response	Mitigation
A1	Reduce	Upgrade capacity storage system , do it control and updates device soft in a way periodically
A2	Reduce	Develop system more continue to get it down in various device soft
A3	Reduce	Give view that can be understood by customers
A4	Reduce	Perform system upgrades with add KYC feature
A5	Reduce	Add feature column comments / box just a message can accessed by parties company
A6	Reduce	Enable activity logging access and ensure the log records every activity on rights access user
A7	Reduce	Add barcode feature on the system For existing customers do payment
A8	Reduce	Adaptation to various type payment like QRIS, VA does not limited , and E-Wallet
A9	Reduce	Apply automation form validation range allowed values and logic suitable business
A10	Sharing	Add feature forecast weather with Work The same with Google
A11	Reduce	SSM system upgrade with Sales Return feature with enclose process recap of booking until goods accepted customer

A12	Reduce	Add equivalent features with google looker studio however can be accessed on the XXM application
A13	Reduce	Include an AI- based interactive chat box & Q&A forum for accommodate question customer .

Source: Data processed by the author

4. Review and Revision for Compliance Risk

a. Assesses Substantial Change

PT FZR recognizes that changes that occur internally and externally can eliminate or create other risks that need to be evaluated and assessed. PT FZR needs to update information and trend movements that are currently occurring in the market, so that PT FZR can respond swiftly to any changes. PT BNML has formed a *Research Initiative* and *Corporate Digital division* to monitor changes in external aspects and *Human Capital* for internal changes.

Table 16. Implementation of COSO ERM (*Assesses Substantial Change)* PT FZR

	Component	Yes/No
Assesses Substantial Change	Identify drivers of change in compliance risk – internal and external characteristics	Yes
	Consider how implementing new strategic initiatives impacts compliance risks	Yes
	Consider how changes in senior personnel affect compliance risk and/or risk tolerance	Yes
	Evaluate changes to statutory regulations	Yes
	Consider developments in law enforcement, guidance from regulators and other trends	Yes
	Assess changes in the local/regional environment	Yes

Source: Data processed by the author

b. Reviews Risk and Performance

PT FZR management has the responsibility to design and implement a compliance program and report it to the board of directors to evaluate and assess its business performance. Risk assessments are carried out periodically (usually once a month) but if unforeseen conditions occur, the evaluation period will be < 1 month. So, to ensure implementation runs well, PT FZR ensures that the risk management mechanism is at a level that PT FZR can tolerate. In addition to reviews through audits and monitoring, there is hope for the use of mechanisms that provide feedback on program performance, especially systems that can report or seek guidance on potential violations. *Human Capital* usually sends questionnaires via email to conduct surveys of employees, the scores of which will later be evaluated to make improvements to the company and analyze risks arising from changes that occur in employees and other internal factors.

Table 17. Implementation of COSO ERM (*Assesses Substantial Change)* PT FZR

	Component	Yes/No
Reviews Risk and Performance	Monitor performance based on compliance metrics and report to management and the board of directors and regularly update risk assessments	Yes
	Develop monitoring plans for high priority risks, clearly assign guarantor responsibilities to all three lines and set clear performance expectations	Yes

	Ensure that internal audit considers compliance risks in connection with its review of entity risks	Yes
	Assess the organization's compliance culture regularly	Yes
	Ensure that the annual K&E program work plan reflects the risk assessment (Cross reference)	Yes
	Include appropriate audit rights clauses in third-party contracts to facilitate monitoring and auditing	Yes
	Obtain feedback from compliance training participants, hotline reports, employee surveys and exit interviews	Yes
	Requires implementation of a corrective action plan	Yes
	Conduct root cause analysis of risk events	Yes

Source: Data processed by the author

c. Pursues Improvement in ERM

PT FZR is committed to making continuous improvements to any changes originating from internal or external. An evaluation of the risks that arise will be immediately assessed so that the company can take corrective action to adjust and improve the quality of the company's business. PT FZR considers input from various parties to maximize company risk management, distributing questionnaires to employees via email, as well as dialogue with external parties.

Table 18. Implementation of COSO ERM (*Pursues Improvement in Enterprises Risk Management)* PT FZR

	Component	**Yes/No**
Pursues Improvement in ERM	Maintain awareness in compliance risk management (through training,/regulatory review)	Yes
	Obtain feedback from the board regarding the quality and usefulness of compliance risk information	Yes
	Consider getting independent evaluations periodically	No
	Comparing C&E programs of similar companies	No
	Review the effectiveness of the periodic risk assessment process	Yes
	Ensure that internal audit plays an active role in evaluating the effectiveness of the C&E program on a regular basis	Yes

Source: Data processed by the author

5. Information Communication & Reporting

a. Leverage Information and Technology

PT FZR provides all information access to the compliance function so that program management is effective. Apart from that, PT FZR has also begun to utilize technology to carry out data analysis and company risk management, so that risk management results can be maximized. Apart from that, for access to learning and training related to certain functions, PT BNML has provided the Udemy learning *platform* and offline training, as well as scholarships for employees who need professional certification

Table 19. Implementation of COSO ERM (*Leverage Information and Technology)* PT FZR

	Component	Yes/No
Leverage Information and Technology	Compliance has access to all relevant information to manage compliance risks	Yes
	Adaptation of relevant information technology/data analysis or access to compliance skills	Yes
	Utilize data analysis in monitoring/auditing (monitoring compliance and internal control performance)	Yes
	Create automated dashboards/reports to monitor compliance	Yes
	Leverage technology to provide effective compliance and ethics training	Yes
	Utilize technology to facilitate the risk assessment process (scoring, reporting, etc.)	Yes

Source: Data processed by the author

b. Communication Risk Information

PT FZR always communicates risk information to employees through outreach and seminars. Apart from that, risk information is also directly conveyed to business units, so that business units can pay attention to these risks. Usually the central risk management team coordinates with the company's *business development* and *QHSE teams* regarding risk discussions at PT FZR so that the company can run effectively, because the business units know best about the operational activities they carry out, so it will result in a joint mission to balance compliance. and operational efficiency. This two-way communication is very necessary to build the insights brought by operational leaders.

Table 20. Implementation of COSO ERM (*Communicates Risk Information)*

	Component	Yes/No
Communicates Risk Information	Employees receive clear and regular communication regarding their role regarding C&E	Yes
	Require the COO to report periodically to the board	Yes
	Establish protocols and ensure clear understanding of escalation policies	Yes
	Communication of compliance risks with worker training and responsibilities	Yes
	Engage in effective two-way communication between operations management and compliance	Yes

Source: Data processed by the author

c. Report on Risk, Culture and Performance

PT FZR has communicated risk information in risk reporting which can only be evaluated internally. Meanwhile, culture and performance related to compliance are mentioned in the annual report. Not only is it mentioned, but culture and performance are made into the company's motto which is also adhered to by employees, and is conveyed through training. Stakeholders include the board of directors, board-level committees responsible for monitoring compliance risks (if any), the senior executive team, internal compliance committees (if any) and managers/heads of departments or functions as appropriate.

Table 21. Implementation of COSO ERM (*Report on Risk, Culture and Performance)* PT FZR

	Component	Yes/No
Reports on Risk, Culture and Performance	Provide regular reports regarding compliance and ethical risk assessments as well as remediation efforts related to these matters	Yes
	Develop and report operational and substantive metrics regarding the effectiveness of the C&E program	Yes
	Provide reports to managers regarding the completion and results of training of direct reports	No
	Utilizes case management and reporting systems for investigations and results	Yes
	Establish and follow policies that articulate the nature of reporting of remediation efforts	No

Source: Data processed by the author

5. Discussion

The findings of this research reveal several critical insights into PT FZR's revenue cycle, which is conducted online using the XXM application. The key issues identified include system downtime, limited software compatibility, lack of user-friendliness, and insufficient features for customer evaluation and payment verification. The technological adaptation of PT FZR's revenue cycle, while innovative, presents new obstacles and risks, including the inability to download the XXM system on non-Android devices, absence of automatic KYC features, and lack of a robust customer feedback system.

The reasons behind these findings stem from the relatively recent implementation of the XXM system, which has not yet been fully optimized to address the needs of both employees and customers comprehensively. The system's limitations in accommodating diverse software platforms and its perceived complexity by users indicate a gap in the user-centered design approach. Additionally, the lack of features for automated KYC, customer feedback, and payment verification suggests that the system needs further enhancement to meet industry standards and customer expectations effectively.

Comparing these results with previous studies on revenue cycle management systems, it becomes evident that while PT FZR's approach aligns with the general trend of digital transformation in logistics, it lags in specific areas such as user experience and system interoperability. Earlier research has emphasized the importance of user-friendly interfaces and multi-platform accessibility in enhancing operational efficiency and customer satisfaction (Markovic & Zikic, 2020; Jovanovic, 2019). Thus, PT FZR's current system partially aligns with these findings but requires significant improvements to achieve full alignment.

However, this study is not without its limitations. One major limitation is the reliance on qualitative data from interviews, which may introduce subjective biases and limit the generalizability of the findings. Additionally, the study focuses primarily on the internal processes and feedback from employees, potentially overlooking broader external factors such as market competition and technological advancements in the logistics industry (Johnson, 2021). Future research should consider incorporating quantitative data and external market analysis to provide a more comprehensive understanding of the revenue cycle management challenges and opportunities at PT FZR.

6. Conclusions

This study contributes to the development of the literature in two ways . In line with the use of e-commerce-based revenue cycle accounting information system practices that are adapted to the risk analysis framework. This study found that there are several risks that have a significant impact on the company's effectiveness and *customer experience*. The implementation of an application-based information system in the company's revenue cycle is considered to still require further development of the features available in the system. In this research, 13 risks were identified that need to be considered in order to mitigate the impact that will occur on *the risk owner,* namely the operational, financial and marketing departments. After carrying out a risk assessment in chapter 5 using indicators *of likelihood* (possibility of occurrence) and impacts that arise. It can be seen that the appropriate risk response is 12 *reduce* and 1 *sharing.* This response has been adjusted to the company's capacity to mitigate related risks.

In addition, this research can contribute to universities and further research as literature in evaluating revenue cycle accounting information systems using the COSO ER framework. It is hoped that the results of this analysis can improve the quality of the revenue cycle accounting information system used and prevent certain parties from committing fraud. The mitigation steps provided can be used as a reference in developing information systems in further research.

This research has several limitations. The first limitation lies in the level of honesty of the informants in conveying system weaknesses and company cycles. The second limitation is the limited source of information because the company is private so the documents required for the observation process are not allowed to be published. The third limitation is that the research only uses two methods, namely literature study and interviews. It is hoped that future research can analyze and develop observation and other methods. The fourth limitation is limited time and research sources such as information from the IT team and risk management, so it is hoped that further research can develop further with a wider research scope.

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