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Analysis of the Internal Control Systems for Delivery of Covid-19 Vaccine in Expedition Service Companies Using Internal and External SWOT Approach (Case Study DHL ID: 2020)

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Abstract: In the context of the COVID-19 pandemic, expedited services companies play a pivotal role in the distribution of vaccines, necessitating effective internal control systems. This research utilizes COSO Internal Control Framework and SWOT analysis to examine the internal control system for COVID-19 vaccine delivery within companies. Through qualitative interviews and quantitative analysis of company documents, strengths and weaknesses of the internal control system, as well as external opportunities and threats impacting vaccine distribution, are identified. The study aims to provide recommendations to enhance the internal control system for improved efficiency and effectiveness of COVID-19 vaccine distribution. By contributing insights into vaccine logistics and internal controls, this research supports global efforts to combat the pandemic by ensuring secure and timely delivery of vital vaccines.

Keyword: Internal Control, Pharmaceutical Deliveries, SWOT Analyses, COSO Framework

INTRODUCTION

The COVID-19 pandemic has underscored the critical role of expedited services companies in facilitating the timely delivery of essential goods, particularly vaccines. These companies are at the forefront of the vaccine distribution chain, responsible for transporting vaccines from manufacturers to distribution centers, healthcare facilities, and ultimately, to the arms of individuals worldwide. The success of these deliveries hinges on the reliability, security, and efficiency of the logistics processes employed by these companies.

However, the challenges posed by the COVID-19 vaccine distribution are multifaceted. These challenges include stringent temperature control requirements for certain vaccines, the need for rapid and reliable transportation, complex regulatory compliance, and the risk of supply chain disruptions. In response to these challenges, expedited services companies must

have robust internal control systems in place to ensure the integrity and safety of vaccine shipments.

Vaccines are considered the path out of the COVID-19 pandemic. The government is implementing a phased strategy to vaccinate the population, initially targeting populations at high risk of severe disease and infection (Orangi et al., 2022). The novel corona virus termed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread throughout the globe at a formidable speed, causing tens of millions of cases and more than one million deaths in less than a year of its report in December 2019. Since then, companies and research institutions have raced to develop SARS-CoV-2 vaccines, ranging from conventional viral and protein-based vaccines to those that are more cutting edge, including DNA- and mRNA-based vaccines (Park et al., 2021). As the pandemic of coronavirus disease 2019 (COVID-19) continues to thread its way around the globe, disruptions are occurring in healthcare, commerce, and travel, with countries closing off their borders. One of the less publicised consequences of the pandemic is its impact on the delivery of important health services, including immunisations, to populations residing in low and middle income countries (Nelson, 2020). Distribution and delivery of Coronavirus 2019 (COVID-19) vaccines have become challenging after their emergence. Today's platforms and systems leveraged for managing data related to COVID-19 vaccines' distribution and delivery fall short in providing transparency, trackability and traceability, immutability, audit, and trust features. Also, they are vulnerable to the single point of failure problem due to centralization. Such limitations hindering the safe, secure, transparent, trustworthy, and reliable distribution and delivery process of COVID-19 vaccines (Musamih et al., 2021).

This research aims to conduct an analysis of the internal control system for COVID-19 vaccine delivery within expedited services companies. The study utilizes the COSO Control Framework and SWOT (Strengths, Weaknesses, Opportunities, Threats) framework to evaluate both internal and external factors that impact the efficiency and effectiveness of vaccine distribution. By examining the strengths and weaknesses of the internal control system, as well as the opportunities and threats present in the external environment, this research seeks to provide insights into how expedited services companies can optimize their operations for vaccine delivery

METHOD

The research method uses COSO Control Framework data analysis techniques (Schandl & Foster, 2019), coupled with a Likert scale questionnaire (Wilson, 2023) to help weight the scores for each existing variable. Later the results will be seen in the data analysis method used in this research, Internal and External Graph of SWOT Diagram (Sugiyono, 2016).

Research Population

Indonesian COVID-19 Vaccine distributors companies, trucker companies, carriers, and other industry stakeholders in Indonesia that published to handle the deliveries of COVID-19 Vaccine.

Sample

150 employees from Indonesian COVID-19 Vaccine distributors companies, trucker companies, carriers, and other industry stakeholders in Indonesia that published to handle the deliveries of COVID-19 Vaccine.

Data Collection Technique

Qualitative data is gathered through semi-structured interviews with key informants, including logistics managers, environmental officers, escort delivery officers and pharmaceutical experts. These interviews provide insights into the decision-making processes,

challenges, and opportunities associated with implementing sustainable logistic strategies (Sugiyono, 2018).

Data Analysis Technique

Qualitative data from interviews and case studies are analysed using thematic analysis techniques to identify key themes, challenges, and best practices associated with COVID-19 deliveries (Sugiyono, 2018).

RESULTS AND DISCUSSION

Results and Discussion

Internal control is activities that are important to company to monitor the running of the company's operations continues to run smoothly with what was expected. According to (Romney & Steinbart, 2015). The analysis carried out is based on the theory of the Committee of Sponsoring Organization of the Treatway Commission (Schandl & Foster, 2019). Presentation of the results of data analysis is carried out informally (in narrative form) and formally (in the form of tables, graphs, etc.). Presentation in narrative form to identify what kind of planning is being applied so that a complete picture of the problem being discussed is obtained. A formal presentation is carried out to describe the SWOT analysis carried out by PT. DHL Indonesia to increase control power. The SWOT analysis diagram is treated so that an overview of the existing research results can be determined precisely, namely which strategies are suggestions for the research object.

Analysis of the Control Environment

DHL's Commitment to Integrity and Ethical Values:

DHL, as a global logistics company involved in COVID-19 vaccine deliveries, demonstrates a commitment to integrity and ethical values by adhering to strict guidelines and regulations set by health authorities and vaccine manufacturers. This includes ensuring the proper handling and secure transport of vaccines, maintaining temperature controls, and safeguarding against theft or tampering by DHL ID.

Supervisory Responsibilities at DHL:

DHL's management plays a crucial role in supervising vaccine delivery operations, overseeing the adherence to established protocols, and providing guidance to employees involved in the process. Regular training and monitoring of staff ensure that responsibilities are carried out effectively.

Establishment of Structure, Authority, and Responsibility at DHL:

DHL has a well-defined organizational structure with clear lines of authority and responsibility. Roles and responsibilities related to vaccine handling and delivery are delegated appropriately, ensuring accountability throughout the process.

DHL's Commitment to Competence:

DHL invests in training programs for its employees, particularly those involved in vaccine deliveries, to ensure they have the necessary skills and knowledge. This commitment to competence enhances the quality and safety of vaccine transport.

Encouraging Performance Accountability at DHL:

DHL promotes a culture of performance accountability by setting clear performance targets and regularly evaluating employee performance. This ensures that individuals are accountable for their actions and results in the delivery process.

Risk Assessment Analysis

Determining Goals at DHL:

DHL sets specific goals related to COVID-19 vaccine deliveries, such as timely and safe transport, maintaining the integrity of the cold chain, and minimizing disruptions. These

goals guide the risk assessment process.

Identifying and Analyzing Risks at DHL:

DHL conducts thorough risk assessments to identify potential risks related to vaccine delivery, such as delays in customs clearance, equipment malfunction affecting temperature control, or route disruptions. These risks are analyzed to develop mitigation strategies.

Assessing the Risk of Fraud at DHL:

Given the high-value and critical nature of COVID-19 vaccines, DHL implements measures to assess and mitigate the risk of fraud, including strict inventory controls, background checks for personnel, and surveillance systems.

Managing the Risk of Change at DHL:

As the situation surrounding COVID-19 evolves, DHL adapts its risk management strategies to address new challenges. This includes implementing agile protocols to respond to changing regulations or emerging threats.

Analysis of Control Activities

Developing Control Activities at DHL:

DHL implements robust control activities, such as temperature monitoring devices, GPS tracking of shipments, and secure storage facilities. These activities ensure the integrity and safety of vaccine shipments.

Developing General Control over Technology at DHL:

DHL leverages technology such as blockchain for secure and transparent tracking of vaccine shipments. This technology enhances traceability and reduces the risk of tampering or counterfeiting.

Detailing Policies and Procedures at DHL:

DHL has detailed policies and procedures in place for vaccine delivery, covering aspects such as handling, storage, transportation, and emergency response. These policies are regularly updated to align with evolving best practices and regulations.

Information and Communication Analysis

Using Relevant Information at DHL:

DHL utilizes real-time data and information systems to monitor vaccine shipments, ensuring they remain within specified temperature ranges and are delivered on schedule. This data-driven approach enhances decision-making and operational efficiency.

Effective Internal Communication at DHL:

DHL fosters effective internal communication among teams involved in vaccine delivery, ensuring timely updates on protocols, changes in regulations, and operational requirements. This facilitates a coordinated and efficient delivery process.

Effective External Communication at DHL:

DHL maintains transparent and effective communication with external stakeholders, including vaccine manufacturers, health authorities, and receiving facilities. This ensures smooth coordination and alignment of efforts throughout the vaccine delivery chain.

Monitoring/Supervision Analysis

Continuous and/or Separate Evaluation at DHL:

DHL conducts continuous monitoring and evaluation of its vaccine delivery operations through regular audits, inspections, and performance reviews. This ongoing supervision allows for timely identification of any deficiencies or deviations from established protocols.

Reporting and Follow-up on Deficiencies at DHL:

In instances where deficiencies are identified, DHL promptly reports and addresses them through corrective actions. This includes implementing process improvements, additional training, or adjusting procedures to prevent recurrence.

SWOT Analysis for DHL's COVID-19 Vaccine Delivery

Strengths

Global Presence and Infrastructure: DHL's extensive global network and advanced infrastructure enable efficient and timely delivery of COVID-19 vaccines to various regions worldwide.

Advanced Technology Integration: DHL's use of advanced technologies like temperature-controlled logistics, real-time tracking, and blockchain ensures the integrity and safety of vaccine shipments.

Robust Control Activities: The implementation of control activities such as temperature monitoring, GPS tracking, and secure storage facilities ensures the integrity and safety of vaccine shipments.

Experience and Expertise: With years of experience in logistics and pharmaceutical supply chains, DHL possesses the expertise to handle the complexities of vaccine distribution.

Weaknesses

Dependence on External Factors: DHL's operations are vulnerable to external factors such as weather disruptions, customs delays, and geopolitical challenges, which could impact vaccine delivery timelines.

Potential Security Risks: Despite stringent security measures, DHL faces inherent risks of theft, tampering, or counterfeit vaccines during transit, especially given the high demand for COVID-19 vaccines.

Training and Skill Gaps: There may be gaps in training and skills among staff handling vaccine deliveries, potentially leading to errors or mishandling.

Opportunities

New Market Expansion: The increasing demand for COVID-19 vaccines presents an opportunity for DHL to expand its market reach and offer specialized vaccine delivery services to emerging markets.

Technological Innovation: DHL can capitalize on technological advancements to enhance its vaccine delivery processes further, such as implementing AI-driven route optimization or drone delivery for remote areas.

Partnerships and Collaborations: Collaborations with vaccine manufacturers, healthcare facilities, and government agencies can create synergies and improve efficiency.

Threats

Competition from Other Logistics Providers: DHL faces competition from other logistics giants and local providers entering the vaccine delivery market, which could affect market share and pricing.

Regulatory Changes and Compliance: Rapidly evolving regulatory requirements and compliance standards for vaccine transport pose a threat, as non-compliance could lead to delays and penalties for DHL.

Supply Chain Disruptions: Disruptions in the supply chain, such as delays in vaccine manufacturing or transportation, could impact DHL's delivery schedules.

The following data is a tabulation of the results of questionnaires for respondents, where each question item is given an alternative answer. Each answer is rated according to the scoring rules of very important, important, less important, and not important. The opportunity factor is given a value of 4 (strongly agree) to 1 (disagree). Meanwhile, the threat factor is given a value of 1 (strongly agree) to 4 (disagree).

No	Main Internal Factors	Weight	Rank	Weight Score
Stregth				
1	Global Presence and Infrastructure	0.18	3	0.54
2	Robust Control Activities	0.20	4	0.80
3	Well-Defined Organizational Structure	0.15	4	0.60
Sub Total		0.53		1.94
Weakness				
1	Dependence on Technology	0.10	1	0.10
2	Training and Skill Gaps	0.15	2	0.30
3	Complexity of Regulatory Compliance	0.22	1	0.22
Sub Total		0.47		0.62
Total		1.00		2.56

No	Main External Factors	Weight	Rank	Weight Score
Opportunities				
1	Market Expansion for Vaccine Deliveries	0.15	3	0.45
2	Technological Advancements	0.24	3	0.72
3	Partnerships and Collaborations	0.18	4	0.72
Sub Total		0.57		1.89
Threats				
1	Supply Chain Disruptions	0.12	1	0.12
2	Regulatory Changes and Compliance	0.20	2	0.40
3	Competitive Landscape	0.11	1	0.11
Sub Total		0.43		0.63
Total		1.00		2.52

This analysis is applied in a diagram divided into four quadrants. The aim is to determine the company's position and its development, by adding up the strength and opportunity factors which have a positive value (+), while the weakness and threat factors have a negative value (-).

$$X = \text{Strength} - \text{Weakness}$$

$$X = 1.94 - 0.62$$

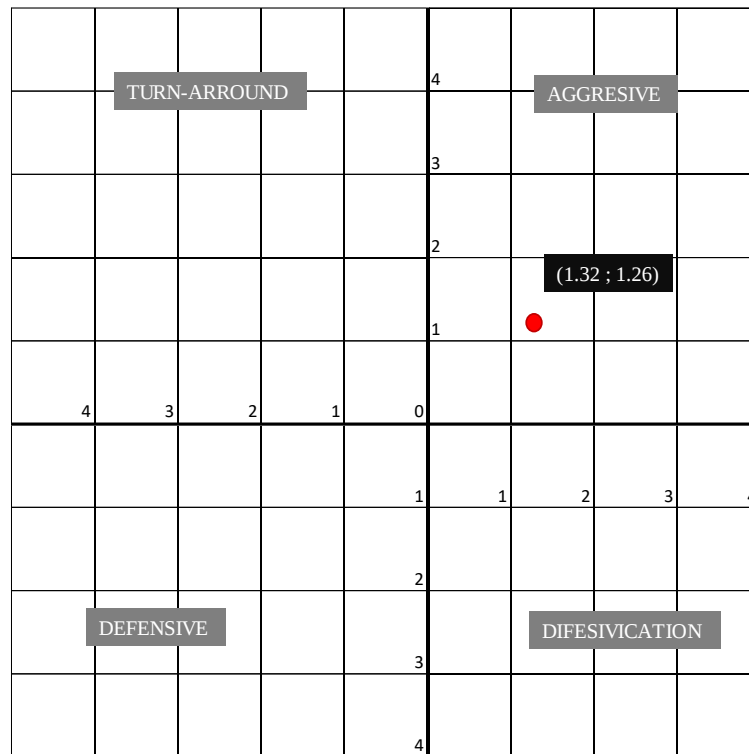
$$X = 1.32$$

$$Y = \text{Opportunities} - \text{Weakness}$$

$$Y = 1.89 - 0.63$$

$$Y = 1.26$$

Based on these results, it is known that the horizontal axis (X) is (1.32) and the vertical axis (Y) is (1.26). So the position of the company when depicted on a diagram is at coordinates (1.32 ; 1.26).



As the result of Aggressive strategy on the matrix, DHL can do below point.

Investment in Advanced Technology:

DHL should aggressively invest in advanced technology solutions for real-time monitoring and tracking of vaccine shipments. This includes leveraging blockchain technology for secure and transparent tracking, as well as IoT (Internet of Things) devices for temperature monitoring. These technologies will enhance visibility and ensure the integrity of vaccine deliveries (Talley, 2018).

Enhanced Training Programs:

Develop aggressive training programs aimed at closing skill gaps among staff involved in vaccine handling. Training should focus on proper vaccine storage, handling protocols, and emergency response procedures. Continuous training and certification programs will ensure a high level of competence among employees (Marques-Quinteiro et al., 2019).

Strategic Partnerships and Collaborations:

Forge aggressive partnerships with vaccine manufacturers, healthcare facilities, and government agencies. Collaborations can include joint planning for efficient distribution, sharing of resources and expertise, and establishing dedicated vaccine delivery hubs. These partnerships will enhance DHL's capabilities and enable a more coordinated response to vaccine distribution challenges (P G & G S, 2022).

Proactive Regulatory Compliance:

Develop an aggressive approach to staying updated with changing regulations and compliance requirements (Salguero-Caparrós et al., 2020). Establish a dedicated team responsible for monitoring regulatory changes and implementing necessary adjustments

swiftly. This proactive stance will ensure DHL remains compliant and avoids potential disruptions (Diehlmann et al., 2021).

Expansion of Cold Chain Infrastructure:

Aggressively expand DHL's cold chain infrastructure to accommodate the growing demand for vaccine deliveries. This includes investing in additional cold storage facilities, specialized vehicles, and equipment. By expanding capacity, DHL can capture more market share and meet the increasing needs of vaccine distribution (Dong & Miller, 2021).

Continuous Improvement and Innovation:

Foster a culture of aggressive continuous improvement and innovation within DHL's vaccine delivery operations. Encourage employees to propose and implement innovative solutions to enhance efficiency and reduce risks. Implement aggressive performance metrics to drive accountability and reward innovative ideas (Bagies et al., 2022).

Market Expansion and Differentiation:

Aggressively pursue opportunities for market expansion in regions with high demand for COVID-19 vaccines. Differentiate DHL's services by highlighting its robust internal control system, advanced technology, and partnerships with reputable organizations. Aggressive marketing campaigns can showcase DHL as a reliable and trusted partner for vaccine distribution (Santoso & Besral, 2018).

Agile Response to Supply Chain Disruptions:

Develop an aggressive contingency plan to address potential supply chain disruptions (Bi et al., 2022). This includes establishing alternative supply routes, backup storage facilities, and rapid response teams. Aggressive scenario planning and simulation exercises will enable DHL to react swiftly to unforeseen challenges (Musamih et al., 2021).

Aggressive Monitoring and Reporting:

Implement aggressive monitoring and reporting mechanisms to track key performance indicators (KPIs) related to vaccine deliveries. Establish aggressive reporting intervals and conduct regular reviews to identify trends, areas for improvement, and opportunities for optimization. Aggressive data analysis will drive informed decision-making and strategic adjustments (Chen, 2020).

Aggressive Brand Promotion:

Aggressively promote DHL's role in COVID-19 vaccine deliveries through targeted marketing and communication campaigns. Highlight the company's commitment to integrity, ethical values, and superior internal control system. Aggressive brand promotion will enhance DHL's reputation as a leader in vaccine logistics and attract new partnerships and business opportunities (Mohamed Shoffian et al., 2021).

These aggressive strategies aim to leverage DHL's strengths, address weaknesses, capitalize on opportunities, and mitigate threats identified in the SWOT analysis. By implementing these strategies, DHL can position itself as a leading and reliable partner in the global effort to distribute COVID-19 vaccines efficiently and securely.

CONCLUSION

The analysis of DHL's internal control system for COVID-19 vaccine deliveries reveals a combination of strengths and weaknesses, along with potential opportunities and threats in the external environment. DHL's global network and advanced infrastructure, coupled with its commitment to integrity and robust control activities, serve as significant strengths in ensuring

the efficient and secure delivery of vaccines. The well-defined organizational structure further enhances accountability and operational efficiency. However, weaknesses such as dependence on technology, training gaps, and the complexity of regulatory compliance highlight areas for improvement.

In the external environment, opportunities for DHL lie in the expanding market for vaccine deliveries, technological advancements, and potential partnerships. Leveraging these opportunities can further enhance DHL's capabilities and market presence in vaccine distribution. However, threats such as supply chain disruptions, regulatory changes, and increasing competition emphasize the need for proactive risk management strategies. Moving forward, DHL can capitalize on its strengths by investing in advanced technology for tracking and monitoring, addressing training gaps through comprehensive employee development programs, and staying updated with evolving regulatory requirements. Collaborations with vaccine manufacturers, healthcare facilities, and government agencies can unlock new opportunities for market expansion and service improvement. Moreover, a proactive approach to risk management, including continuous monitoring and swift responses to changes, will be crucial in mitigating potential threats.

By addressing these factors, DHL can further strengthen its internal control system for COVID-19 vaccine deliveries, ensuring the continued success of its operations in this critical area. The insights gained from this analysis can serve as a roadmap for DHL and other logistics companies to optimize their processes, enhance efficiency, and contribute to the global effort in combating the pandemic through the secure and timely delivery of life-saving vaccines.

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