BUSINESS INTELLIGENCE
SEASON 8
TRÍ TUỆ KINH DOANH

ROUND 2

RYO LOGISTICS ANALYSIS

BEST THỦ

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ABSTRACT

This report provides a comprehensive analysis of Ryo Logistics, a leading logistics service provider in Southeast Asia, with a focus on its operations in 2022. The study utilizes extensive datasets to evaluate the company's performance across various metrics, including order volume, delivery success rates, and operational efficiency. Key areas of analysis include the performance of different regions, stations, and shippers, as well as the impact of factors such as parcel size, delivery type, and regional differences on delivery times and success rates. The report identifies significant trends in customer behavior and operational challenges, particularly in delivery times and the consistency of service across different regions. Based on the findings, the report offers strategic recommendations to enhance Ryo Logistics' operational efficiency, customer satisfaction, and competitive edge in the logistics industry.

LIST OF ABBREVIATIONS

Words	Abbreviations
COD	Cash on delivery
SGD	Singaporean Dollar

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I. OVERVIEW OF RYO LOGISTICS

1.1. Introduction about Ryo Logistics

Ryo is a logistics service provider that provides 100% coverage across all countries in Southeast Asia. The company offers a wide range of logistics services, from transportation to warehousing, and is a trusted partner for e-commerce businesses. With the growing need to store, process, and analyze large amounts of data from customers and e-commerce platforms, Ryo has been a pioneer in the strong application of technology, particularly Business Intelligence (BI), to optimize operations and deliver an exceptional customer experience.

Figure 1.1. Ryo Area of Operations

Ryo Logistics's main area of operations is focused in Vietnam, where the majority of its logistics operations are based. Ryo Logistics has a presence in all provinces in Vietnam, which allows them to have a wide delivery network across the country.

1.2. Introduction to Ryo Logistics's data

The dataset contains data about Ryo Logistics' operations in the year 2022, including data about order details, statuses, contents, and many others. The data also includes data about the shipper, which is the seller, and data about each Ryo Logistics hub. The data have many tables similar to a database with relationships.

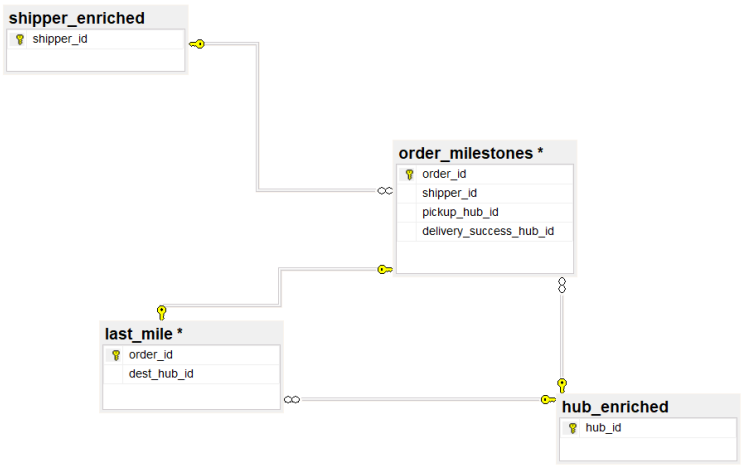

Figure 1.2. Relationship between data tables of Ryo Logistics

Each of the tables in this database contains data about specific categories of logistics operations. order_milestones table contains the most important information about the operations as it is connected to the rest of the table in the database using the star schema model.

1.2.1. order_milestones

This table contains details about the order parcel and information about the order status such as when it was first picked up, when it is been delivered, where is it current location, etc.

Table 1.1. order_milestones table information

Column Name	Data Type	Key
order_id	int	PRIMARY KEY
creation_datetime	datetime	FOREIGN KEY
cod_value_sgd	float	
granular_status	nvarchar	
rts_flag	bit	

order_type	nvarchar	
shipper_id	int	FOREIGN KEY
shipper_reference_number	nvarchar	
delivery_type	nvarchar	
pickup_hub_id	int	FOREIGN KEY
pickup_datetime	datetime	FOREIGN KEY
pickup_attempts	int	
pickup_driver_id	int	FOREIGN KEY
description	nvarchar	
from_city	nvarchar	
to_city	nvarchar	
dest_province_code	nvarchar	
delivery_success_hub_id	int	FOREIGN KEY
delivery_success_datetime	datetime	FOREIGN KEY
rts_trigger_datetime	datetime	FOREIGN KEY
delivery_attempts	int	
first_valid_delivery_attempt_datetime	datetime	FOREIGN KEY
first_valid_delivery_attempt_status	nvarchar	
second_valid_delivery_attempt_datetime	datetime	FOREIGN KEY
second_valid_delivery_attempt_status	nvarchar	

third_valid_delivery_attempt_datetime	datetime	FOREIGN KEY
third_valid_delivery_attempt_status	nvarchar	
last_valid_delivery_attempt_datetime	datetime	FOREIGN KEY
last_valid_delivery_attempt_status	nvarchar	
first_failure_reason	nvarchar	
second_failure_reason	nvarchar	
third_failure_reason	nvarchar	
last_failure_reason	nvarchar	
delivery_driver_id	int	FOREIGN KEY
items	nvarchar	
weight	float	
width	float	
height	float	
length	float	
parcel_size	nvarchar	
created_month	nvarchar	
row_num	int	
total_rows_per_month	int	

1.2.2. hub_enriched

This table contains data about each of the hubs in the Ryo Logistics ecosystem.

Table 1.2. hub_enriched table information

Column Name	Data Type	Key
hub_id	int	PRIMARY KEY
hub_name	nvarchar	
short_name	nvarchar	
address_city	nvarchar	
facility_type	nvarchar	
region	nvarchar	
area	nvarchar	

1.2.3. last_mile

This table contains data about the parcel in its last_mile status

Table 1.3. last_mile table information

Column Name	Data Type	Key
order_id	int	PRIMARY KEY
granular_status	nvarchar	
dest_hub_id	int	FOREIGN KEY
dest_hub_datetime	datetime	FOREIGN KEY
pickup_datetime	date	
first_valid_delivery_attempt_datetime	datetime	FOREIGN KEY
area	nvarchar	

1.2.4. shipper_enriched

This table contains information about shipper details.

Table 1.4. shipper_enriched table information

Column Name	Data Type	Key
shipper_id	int	PRIMARY KEY
shipper_name	nvarchar	
parent_id_coalesce	int	
parent_name_coalesce	nvarchar	
industry	nvarchar	
sales_channel	nvarchar	

1.2.5. ryo_calendar

This table contains information about the dates in Ryo Logistics operations.

Table 1.5. ryo_calendar table information

Column Name	Data Type	Key
date	date	PRIMARY KEY
day	nvarchar	
comments	nvarchar	
working_day	bit	
next_working_day_0	date	
next_working_day_1	date	
next_working_day_2	date	
next_working_day_3	date	

next_working_day_4	date	
next_working_day_5	date	

II. OPERATIONAL ANALYSIS

2.1. Analysis goals

This report aims to track order progress and analyze delivery performance, and evaluate the performance of delivery staff. We will record the time from when the order was placed to when delivery was completed, sorting by status as in-process, delivered or failed. From there, calculate the on-time delivery rate compared to the total number of orders and evaluate the success rate in delivering goods to customers, analyzing data by region, delivery station and staff.

Besides, understanding the causes of poor performance is very important. We will investigate the reasons for untimely or failed deliveries, and identify the risks associated with delivery staff, sellers and delivery areas. Assessment of the on-time pick-up rate will also be carried out to calculate the proportion of staff who carry out pick-up on time and analyze the factors affecting this ratio.

After compiling and analyzing the data, the report will comment on the current shipping situation, point out positive and negative trends, thereby making suggestions for improvement strategies such as employee training, improve order management system and enhance tracking support technology. Business goals include improving on-time delivery rates, improving employee performance, reducing delivery failure rates, and increasing customer satisfaction. Thereby, this report will be the basis to help Ryo improve delivery performance, optimize shipping processes and achieve set business goals.

2.2. Overview

Figure 2.1: Tracking progress of Ryo Logistics

As a leading logistics service provider in Southeast Asia, Ryo Logistics has been leveraging the power of technology to optimize operations and deliver exceptional value to customers.

With over 500,000 orders processed, Ryo Logistics boasts an impressive 90.97% successful delivery rate. Notably, only 9.03% of orders required returns, demonstrating the company's high operational efficiency. This remarkable performance underscores Ryo's effective implementation of technology and streamlined operational processes.

The low return rate, translating to approximately one return for every ten orders, indicates an exceptionally high level of customer satisfaction with Ryo's delivery timelines and procedures.

2.2.1. Yearly Order Volume

While Ryo's data is currently limited to 2022, the substantial order volume and favorable delivery-to-return ratio suggest a consistently strong performance throughout the year. The company's strategic adoption of new technologies has undoubtedly contributed to these positive results.

2.2.2. Quarterly Order Volume

The first quarter experienced a significantly lower order volume compared to the subsequent three quarters.

The second quarter witnessed the highest order volume, followed by a more evenly distributed pattern across the remaining quarters.

This trend indicates a growing customer base, particularly from the second to fourth quarters.

2.2.3. Monthly Order Volume

Overall, there is an upward trend in order volume from the beginning of the year, peaking around June before gradually declining.

However, monthly fluctuations are substantial, highlighting seasonal peaks and troughs.

Notably, order volumes tend to increase during the year-end holidays, such as November and December.

2.2.4. Daily Order Volume

Daily order volume also exhibits fluctuations, reflecting varying customer demand throughout the day. Nevertheless, a general pattern emerges: order volumes typically increase mid-month and decrease towards the end of the month.

2.3. Pickup Rate and Delivery Rate

Figure 2.2. Dashboard Displaying On-time Pickup Rate and Successful Delivery Rate

2.3.1. Overview of the Dashboard

Dashboard Objective: Ryo Logistic has managed a large volume of orders. The dashboard is designed to monitor and analyze the performance of the shipping process on

a monthly basis in 2022. It focuses on the on-time pickup rate of each station and the successful delivery rate across various categories (station, store, and driver).

- A few related notes:

+ Orders created before 4:00 PM → Picked up the same day.

+ Orders created after 4:00 PM → Picked up the next working day.

+ Orders arriving at the station before 11:00 AM → Successfully delivered the same day.

+ Orders arriving at the station after 11:00 AM → Successfully delivered the next working day.

+ Working days do not include Sundays and holidays.

- Charts:

+ % On-time Pickup Rate by Station: Top 5 stations with the highest on-time pickup performance.

+ % Successful Delivery Rate by Station: Top 5 stations with the highest successful delivery performance.

+ % Successful Delivery Rate by Store: Top 5 stores with the highest successful delivery performance.

+ % Successful Delivery Rate by Driver: Top 5 drivers with the lowest successful delivery performance.

2.3.2. Overview Analysis

Key Indicators:

+ Total number of on-time pickups: Approximately 358K, specifically 357,560 orders.

+ Total number of successful deliveries, excluding returns: 308K, specifically 307,830 orders.

+ % On-time pickup rate: 71.5%.

+ % Successful delivery rate, excluding returns: 61.6%.

Compared to the total number of processed orders (approximately 500,000), the total number of on-time pickups is only about 71.5%, indicating that more than 142K orders were picked up late. This means that out of every 10 orders, 3 were not picked up on time. This on-time rate is only fair, and the company needs to improve it further

because longer pickup times will affect the on-time delivery in the future. This significantly impacts customers' and consumers' willingness to receive their orders.

Similarly, compared to the total number of processed orders, the successful delivery rate of 61.6% (by station, driver, store) is relatively low. This is a major concern for Ryo Logistic. Up to 192K orders were not successfully delivered, meaning only about 6 out of 10 orders reached the customer, while 4 orders were either returned or lost during transportation.

Additionally, during the first 6 months of 2022, there was a noticeable difference between the pickup rate and the delivery rate each month, specifically a lower delivery rate as analyzed above. Until the last 6 months, this gap significantly narrowed. In fact, the successful delivery rate even exceeded the on-time pickup rate in August, September, and December. However, it's worth noting that in November 2022, the successful delivery rate was extremely low, at only 0.1%. Out of approximately 34K on-time pickups, only 63 were successfully delivered, with more than 33K orders having no specific information.

A deeper analysis of the factors affecting the rates and discrepancies during the pickup and delivery process is necessary. Hypotheses, reasons, and proposed solutions will be presented in the following sections.

a. Analysis by Station:

The top 5 average on-time pickup rates for each month of the year (when the station had orders created) show a significant disparity among stations, especially between the top 4 stations and the 5th station. Stations ID 205, 155, 216, and 831 have minimal differences, ranging from 79% to 86%. However, the 5th station, ID 15, only achieved an on-time pickup rate of 29%, which is a considerable gap from the first four IDs. This indicates inconsistency in the pickup performance across stations.

When examining each month, the stations mentioned above, if they had orders created, always ranked among those with the highest on-time pickup performance. For example, Station ID 205, except for February 2022 when no orders were created at this station, consistently had orders created in other months of the year. The pickup performance for these months was always good, even exceptional, and consistently stable over several months, leading to the highest average annual pickup performance when

orders were created. Similarly, the other stations: 155, 216, and 831, also performed well and efficiently in the pickup process and should maintain and stabilize their performance.

On the other hand, Station ID 15, despite being in the top 5 stations with the highest on-time pickup rates, did not perform well overall, only achieving average to fairly low activity levels, ranging from around 25% to 40% each month. Some months were particularly poor, with on-time pickups at only around 21% or 16%.

Conclusion: Overall, the on-time pickup performance at Ryo Logistic stations is poor, inconsistent, and needs significant improvement. This is especially important for key stations such as 205, 216, 15, and 12, which received orders in multiple months of the year, indicating that these areas have high levels of trade activity.

Regarding the average successful delivery rate for each month of the year (when the station had orders created), the differences in rates among the top 5 stations with the highest performance are not significant. Stations 120, 125, 130, and 236 consistently performed well in successful deliveries each month.

Notably, Station 205, with the highest on-time pickup rate, also performed well in successful deliveries, with a 52% success rate, making it the station with the 5th highest average successful delivery performance in 2022.

In January and February, when the order volume was still low, the successful delivery rate at many stations was very high, with some achieving a perfect 100%. However, from March onwards, when customer demand increased significantly, leading to a 10 to 20-fold increase in order volume, the stations were unable to maintain the high delivery success rates seen in the first two months of the year.

b. Analysis by Store (Shippers):

Generally, the successful delivery rates of stations and stores are closely related, except in cases where errors originate from the store. In this case, the high successful delivery rates at stations in January and February (as mentioned above) are reflected similarly when looking at the successful delivery rates by store. In January and February, some stores achieved a perfect 100% delivery success rate. For instance, Store ID 6046444 performed exceptionally well, with a 100% success rate in both months.

Large stores such as IDs 702985, 6688748, 6045444, and 372455 consistently had high order volumes. The top 4 stores typically maintained stable successful delivery rates

during the transportation process. Additionally, when comparing on-time pickup rates with successful delivery rates, some stores, such as IDs 6688748, 372455, and 7314925, had very low on-time pickup rates, with the last store not having any orders picked up on time at the station. However, these stores still achieved high successful delivery rates overall, indicating that their performance was not significantly affected. This could be because these stores serve a specific customer base in bustling areas with well-established transportation routes, making it easy to locate delivery addresses. As a result, delays in pickups at stations did not negatively impact customers' experience of waiting for their orders. Another possible explanation is the nature of the products sold by these stores. If they sell expensive, rare, or well-known branded products that customers have to pre-order, a longer delivery time may not affect customers' decisions to accept their orders, leading to high successful delivery rates for these stores.

As pointed out in the overview analysis, in November 2022, the average annual successful delivery rate was extremely low (0.1%). This had a direct and severe impact on stores' successful delivery rates. In November, only two stores had success rates of 10.7% and 3.7%, while the rest had rates below 1%. This suggests that problems occurred during the transportation process, from the station to the driver, and finally to the customer.

Special attention should be given to Store ID 702985, which typically had the highest successful delivery rate, but in November, it was also affected, achieving only a 0.43% success rate. In contrast, Store ID 8282445 had the highest rate that month, with 10.7%. It is possible that orders from ID xxx985 were concentrated at one station, and if that station experienced issues, it would have severely impacted the order success rate. On the other hand, orders from Store ID xxxx445 may have been spread across multiple areas or had a lower volume, which affected the rate differently. The data shows that only 24 orders were picked up on time (ID xxx985 had 536 on-time pickups), and only 3 orders from both stores were successfully delivered. Therefore, even if the batch encountered problems, the successful delivery rate for Store ID xxx445 would not have been significantly affected. The delivery performance for this store cannot be highly evaluated.

c. Analysis by Drivers

The chart shows the top 5 stations with the lowest successful delivery performance. When filtering for stations with the highest successful delivery rates, many drivers have values reaching 100%. These drivers successfully delivered only 1 to 2 packages out of approximately 20-60 packages picked up on time. The small number of successful deliveries may indicate issues related to driver capabilities, navigation skills, or personal issues such as professionalism and work ethic.

2.2.3. Observations, Hypotheses/Causes, and Suggested Solutions

Stations are crucial, playing a central role in the transportation process. They serve as hubs for the collection, sorting, and arrangement of goods before delivery to recipients. The efficiency of a station directly affects the effectiveness of the entire delivery process. An underperforming station can lead to several issues such as:

- **Delayed deliveries**: Goods are not sorted and arranged in time.
- **Damaged goods**: Careless handling during loading and unloading.
- **Lost goods**: Items are misplaced during storage.

a. Why is the successful delivery rate often lower than the on-time pickup rate?

The potential causes likely arise during the delivery process to the customer:

- **Incidents**: Goods may be damaged (e.g., broken, deformed, etc., leading to customer returns), lost, or delivered to the wrong address.
- **Customer service quality**: Customers may refuse to accept goods or request returns due to dissatisfaction with the product/service provided by the store.
- **External factors**: Bad weather (natural disasters, floods, etc.), unexpected incidents such as traffic problems (e.g., vehicle accidents leading to lost goods) can affect the delivery process.
- **Ineffective order management**: Poor tracking and updating of order information may result in delayed or lost deliveries.

b. Reasons for the improvement in the discrepancy between the two rates in the second half of 2022

- In the first half of the year, the company may have received negative feedback and evaluations about the delivery process from customers. Ryo Logistic conducted quarterly

reviews and checks during mid-year. Subsequently, the company planned improvements, leading to a noticeable improvement in the second half of 2022.

- Additionally, there may be some changes between the first and second halves of the year. For example, personnel changes: the company may have replaced underperforming staff and recruited more experienced employees. The company might have also changed partners for transportation or warehousing services or made adjustments in legal regulations and company policies that impacted the delivery process.

c. In November 2022, the successful delivery rate unexpectedly dropped to 0.1%, while in the remaining months, the discrepancy continued to improve.

From the station and driver perspective:

- Hypothesis: A large volume of goods may have been lost during transit. Minor and scattered causes alone would not lead to such a low rate. For instance, theft of a shipment or a traffic accident involving the delivery vehicle could have occurred.
- Suggested solution: These are unexpected and objective causes that cannot be foreseen. However, there are some solutions to minimize damage: The company should enhance monitoring with cameras and personnel at stations and on vehicles during transit. Additional training and strict traffic law regulations for drivers are necessary. Drivers must strictly comply to minimize vehicle collisions and accidents.

From the store perspective:

- Hypothesis:
  - **Input quality**: Errors in entering customer information, delivery addresses, and product codes during the input stage could easily lead to lost goods. Even if the delivery is successful, initial errors could still impact the successful delivery rate.
  - **Customer service**: Poor customer service and support during incidents may influence customers' decisions to cancel or return products.
- Suggested solution:
  - Stores should equip and use order management software to automate processes, reduce errors, and increase data accuracy compared to manual data entry

- Cross-check order information before proceeding to the next stage.
- Customer service training and staffing are specific to each store. Stores should guide employees and build customer service channels that satisfy customers.

d. Hypotheses and suggestions by station (Hub)

Performance inconsistency in the top 5 stations with the highest on-time pickup rates. The top 4 stations show a significant gap compared to station ID 15, which ranks fifth.

Improve successful delivery performance for stations with high return and failure rates.

Causes:

- **Order volume**: Station ID 15 handles a much larger volume of orders than the other four stations, naturally leading to more risks.
- **Staff quality**: Larger order volumes correspond to increased workloads. Therefore, staff training levels at stations need to be improved to ensure timely pickups.
- **Equipment**: The quality and quantity of vehicles and equipment at hubs may affect overall efficiency.
- **Geographical and environmental factors**: Hubs in different areas may face varying challenges related to traffic and climate depending on the season and month. For instance, stations in the Central region during the flood and landslide season are at higher risk of lost goods compared to other areas.

Suggested solutions:

- If the cause is due to a lack of manpower at the stations: Stations can increase the number of night shift workers to boost productivity. Additionally, appropriate salary and bonuses should be provided to employees, without violating labor laws.
- **Training**: Intensify inspections and training to enhance staff competence at hubs, with plans tailored to each station's working culture.
- **Management**: Stations need management and department heads to oversee operations. There should be close coordination between the operations department, IT department, HR department, etc., to minimize order delays.

- **Resource allocation to stations**: Invest in machinery, warehouse management systems, and support equipment such as forklifts, barcode scanners, label printers, and automatic conveyor systems to help increase productivity and accuracy in inventory checks.
- **Infrastructure investment**: If the number of shelves, conveyors, or warehouse space is insufficient for the total number of orders in that area, upgrade and expand the premises or rent additional warehouses to maximize storage capacity. It may even be necessary to transfer part of the goods to auxiliary warehouses.
- **Process improvement**: Review, evaluate, and optimize workflows at stations, especially in the stages of receiving goods, sorting goods, and scheduling deliveries.
- **Input goods quality**: Inconsistent sizes and weights of incoming goods should be classified into groups that facilitate inventory checking.

e. Hypotheses and Proposals for Shippers

Potential Issues:

- The quality of goods from stores will affect the successful delivery rate, especially for stores that allow customers to inspect goods before acceptance. If the quality is poor, customers have the right to return the order to the store.
- Damage level: Are the goods from these shippers prone to damage, fragile, or likely to deform if exposed to air and high temperatures? Is the packaging carefully done? If the store's packaging is inadequate, affecting the external condition of the product, customers also have the right to refuse delivery.

Proposed Solutions:

- Focus on improving the packaging process for each product before sending it out. If the product is fragile or prone to deformation, the store should label or categorize the order with specific notes such as: Urgent/Fragile/etc.
- The store should consider the experience and carefulness of staff in each stage of the working process.
- Regularly check and update the recipient's address and contact information to ensure that the order is delivered to the correct location.

f. Hypotheses and Proposals for Drivers

Hypotheses:

- Considering the low number of orders drivers are responsible for and the poor successful delivery rate, it can be inferred that these drivers are new to the job and have not had enough time or skill to carry out the delivery process efficiently. They might not be familiar with the routes, effective delivery methods, or the rules of the delivery app.
- The drivers' vehicles may not be consistent across different stations and might not meet the required standards.
- Additionally, driver responsibility during work is an issue. Driving skills and work attitude directly impact delivery efficiency.
- Other objective factors such as traffic congestion and bad weather can also affect the drivers' ability to transport goods.

Proposed Solutions:

For the Drivers:

- Ryo should plan proper training for drivers at each station before they take on official duties. Training should include familiarizing them with frequent routes and optimizing delivery paths to save time.
- Conduct regular performance evaluations to promptly identify and support drivers facing difficulties. Establish reward mechanisms to encourage cooperation, or set regulations to address the irresponsibility of drivers.

For the Company and Stations:

- Allocate orders reasonably for each driver based on experience, working area, and working hours. Orders along the same route should be assigned to specific drivers to facilitate and save time in transportation.
- Integrate and update features in the app or system to support drivers during their work. For example, use route planning software to create the most efficient and time-saving delivery routes.
- Build a driver community: Create a forum or chat group where drivers can exchange experiences, share information, and support each other.

- Invest in and ensure that delivery vehicles are always in good condition to minimize breakdowns.
- Consider using appropriate vehicles for each type of goods and terrain, as well as each driver's driving condition.

2.4. Analysis of Stations, Areas, and Provinces Performing Poorly

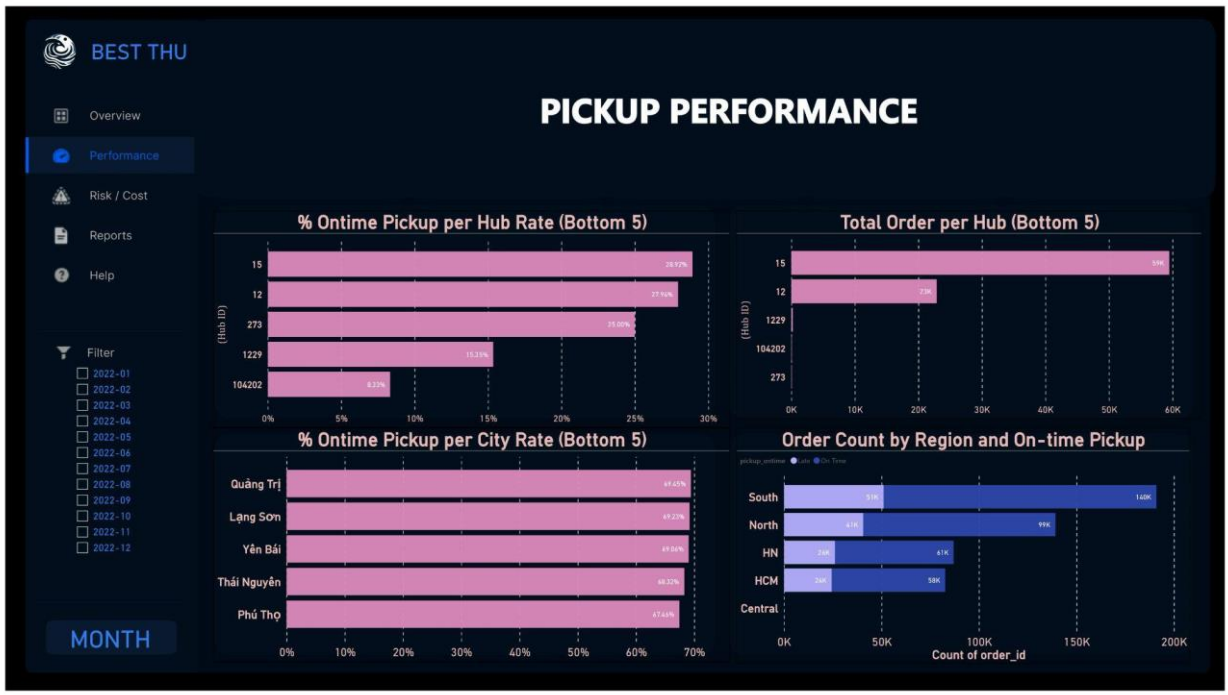

Figure 2.3. Pickup Performance of bottom 5

2.4.1. Pickup rate by each Station

- Station 15: With an on-time delivery rate of 28.92%, this is the station with the worst performance. This number shows that only a small portion of all orders are picked up on time, which can greatly affect customer satisfaction.

- Station 12: On-time delivery rate is 27.94%, only slightly higher than Station 15. This suggests that both of these stations may experience similar problems, which may be related to operating procedures or order management.

- Station 273: The on-time delivery rate at this station is 25%, a worrying number. This can lead to customer dissatisfaction and can affect revenue.

- Station 1229: With a rate of 15.35%, this is one of the stations with the lowest delivery rate. Obviously, this station needs to improve immediately to ensure that customers receive their goods on time.

- Station 104202: Only 8.33% of orders are delivered on time, showing that this station is having serious difficulty making deliveries on time.

2.4.2. Pickup rate by Province

- Quang Tri: On-time pickup rate is 69.45%. Although this number is much higher than for stations, it still shows that there is space for improvement, especially in the context of competition.

- Lang Son: The rate is 69.23%, only slightly lower than Quang Tri. This may indicate that there may be similar problems between these provinces.

- Yen Bai: With a rate of 69.06%, this province is also in the group with unsatisfactory pickup performance. Attention is needed to raise this number.

- Thai Nguyen: On-time delivery rate is 68.32%, showing that this province is also having difficulty ensuring on-time delivery.

- Phu Tho: 67.44% is the province's on-time pick up rate, showing that Phu Tho needs to make more efforts to improve performance.

2.4.3. Total Orders by Station

- Station 15: Total orders are 59K, showing that this is a busy station. However, with low delivery rates, this can lead to overcrowding or poor management.

- Station 12: With 23K orders, this station has a significantly lower number of orders than Station 15. This may indicate that this station not only needs to improve performance, but may also need to increase the number of orders to optimize operations.

In particular, stations 273, 1229, 104202 have a very small number of orders, but poor pickup performance leads to the question of whether the management process is really okay.

2.4.4. Quantity of Orders by Region

- Southern Region: Total orders are 51K, with 140K orders picked up on time. This shows that the region has good delivery performance, possibly thanks to efficient processes and good management.

- Northern Region: Total orders are 41K, with 99K orders picked up on time. Although the region has a lower number of orders than the South, on-time delivery rates still need to be improved to increase customer satisfaction.

- Hanoi area: With 2K orders and 61K pick up orders delivered on time, this area may need to review the delivery process to improve performance.

- HCM area: Total orders are 24K, with 58K orders picked up on time. This shows that the region also needs to pay attention to improving delivery processes.

2.5. Propose Solutions for Pick Up

Figure 2.4. Ontime Pickup rate base on Parcel size, Driver, Weight and Region

2.5.1. Parcel Size:

- Current Situation:

+ Data indicates that the on-time pick up rate tends to decrease as the parcel size gets smaller. Specifically, XXL parcels have the highest on-time pick up rate (78.57%), while XS parcels have the lowest (21.31%).

- Potential Causes:

+ **Priority Management:** Larger parcels (XXL, L) may be prioritized in the handling process because they are more noticeable and less likely to be overlooked. Smaller parcels (S, XS), due to their compact size, may get lost or be overlooked during sorting and handling.

+ **Nature of the Parcels:** Smaller parcels may contain less valuable products or those that do not require careful handling, leading to less attention being paid to them in the transportation chain.

+ **Logistics and Packaging:** Small parcels may require special packaging and transportation measures to avoid loss or damage. If not handled properly, these parcels can be damaged or lost, affecting pick up time.

- Proposed Solutions:

+ **Enhance Process Management:** Establish and implement priority management processes to ensure that all parcels, regardless of size, are handled fairly. This could include sorting parcels at the outset to ensure that small parcels receive the appropriate attention throughout the transportation process.

+ **Training and Awareness:** Train staff on the importance of small parcels and how to handle them carefully. This will help minimize the chances of small parcels being overlooked or mishandled.

+ **Use Tracking Technology:** Implement modern tracking and monitoring systems that allow for real-time tracking of all parcels' location and status. This helps to quickly identify parcels at risk of delayed pick up and intervene in a timely manner.

+ **Continuous Analysis and Improvement:** Regularly analyze pick up data to identify trends and issues related to small parcel handling. Use these insights to adjust processes and improve performance over time.

2.5.2. Region Analysis

- **Current Situation:** There is a significant difference in on-time pick up rates between regions. The South has the highest rate (73.23%), while the Central region has a notably lower rate (52.63%).

- Potential Causes:

+ **Transportation Infrastructure:** The Central region may face challenges with transportation infrastructure, such as mountainous terrain and less developed road systems compared to other regions. This makes movement and pick up more difficult.

+ **Geographical Distance:** The distance between pick up points in the Central region may be greater, leading to longer transportation times and difficulties in ensuring on-time pick up.

+ **Weather Conditions:** The Central region often faces harsh weather conditions such as storms and floods, which disrupt pick up operations.

- Proposed Solutions:

+ **Improve Infrastructure and Routes:** Consider investing in transportation infrastructure in the Central region or using vehicles suited to the area's specific geographical and climatic conditions.

+ **Optimize Routes:** Use location technology and data analysis to optimize transportation routes, ensuring the shortest possible pick up times.

+ **Collaborate with Local Authorities:** Work with local governments and partners to improve transportation conditions, especially during bad weather seasons.

2.5.3. Weight Analysis

- **Current Situation:** The on-time pick up rate varies depending on the weight of the parcel. Heavier parcels (5+ kg) have the highest on-time pick up rate (75.34%), while lighter parcels (0-1 kg) have a lower rate (67.17%).

- Potential Causes:

+ **Priority:** Heavier parcels may be considered more important or valuable, and thus handled more carefully. Lighter parcels, on the other hand, may not receive as much attention.

+ **Storage Capability:** Lighter parcels may be more prone to damage during transportation, requiring more careful handling, but they also risk delays if not properly stored.

- Proposed Solutions:

+ **Improve Packaging Processes:** Ensure that all parcels, regardless of weight, are securely packed and well-protected to avoid damage.

+ **Staff Training:** Train staff on the importance of handling lighter parcels, ensuring that all parcels are treated equally in the transportation process.

+ **Utilize Tracking Technology:** Apply tracking systems throughout the transportation process to detect potential issues with lighter parcels early and intervene promptly.

2.5.4. Driver Analysis

- **Current Situation:** There is a significant variation in driver performance, with some drivers having a very low on-time pickup rate (below 5%).

- Potential Causes:

+ **Experience and Skills:** Some drivers may lack experience or skills in time management and handling unexpected situations on the road.

+ **Work Motivation:** Drivers who are not motivated or do not have enough incentives may exhibit poor performance, affecting the on-time pick up rate.

+ **Working Conditions:** Drivers working under difficult conditions, such as bad weather, long distances, or complex traffic situations, may find it harder to ensure on-time pick up.

- Proposed Solutions:

+ **Training and Support:** Develop regular training programs to enhance drivers' skills and knowledge, including time management, handling emergencies, and customer care.

+ **Incentives and Motivation:** Establish reward and motivation systems for drivers based on performance, encouraging them to work more efficiently.

+ **Monitoring and Evaluation:** Use modern technology to monitor driver performance in real time, allowing for early identification of issues and timely intervention.

Figure 2.5. Ontime Pickup rate based on Shipper and Industry

2.5.5. Shipper Analysis

- Current situation:

  + The 5 lowest-performing shippers have on-time delivery rates ranging from nearly 0% to 3.7%.

    + Shipper code 6443222 has the highest performance in this group (3.7%).
    + Shipper code 7512979 has the lowest performance, almost 0%.
- Potential causes:
    + Lack of training and time management skills.
    + Improper order allocation, causing overload.
    + Lack of motivation due to unsuitable compensation policies.
    + Outdated or insufficient delivery tools and vehicles.
    + Lack of familiarity with delivery areas.
- Solutions:
    + Organize in-depth training courses on time management and route optimization.
    + Implement AI-based smart order allocation systems to balance workload.
    + Develop performance-based compensation policies focusing on on-time delivery rates.
    + Provide modern support tools such as order management apps and GPS devices.
    + Organize experience-sharing sessions between high and low-performing shippers.
    + Establish a mentoring system, pairing new shippers with experienced ones.

2.5.6. Industry Analysis

- Current situation:
    + On-time delivery performance ranges from 50% (Electronics) to 100% (Home & LW).
    + Industries such as Distribution Points, Cosmetics and Per... also have high performance above 90%.
    + Electronics, Luxury Fashion, and Healthcare have the lowest performance, below 75%.
- Potential causes:
    + Varying product characteristics (size, fragility, value) across industries.
    + Special handling requirements for certain industries (e.g., electronics, luxury goods).

+ Geographical distribution of customers in each industry.
+ More complex order processing in some industries.
+ Lack of specialized staff to handle industry-specific products.

- Solutions:
  + Develop industry-specific processing and delivery procedures, especially for low-performing industries.
  + Invest in specialized equipment and vehicles for transporting electronics and luxury items.
  + Provide in-depth training for staff on handling industry-specific products.
  + Establish distribution centers near customer concentrations in low-performing industries.
  + Apply real-time tracking technology to closely manage the transportation of high-value items.
  + Collaborate with industry experts to optimize packaging and transportation processes.
  + Build dedicated teams for industries with special requirements like Electronics and Luxury Fashion.

2.6. Delivery Performance

Figure 2.6. Delivery Performance of Ryo Logistics

2.6.1. Performance Overview

Based on figures from the "Delivery Performance" dashboard, it can be seen that the business is achieving satisfactory results in delivery operations, however there are still points to improve to improve overall efficiency.

The first notable point is the high delivery completion rate, reaching 90.97%. This number shows that the majority of orders have been successfully delivered to customers, reflecting the stability and reliability of the business's shipping process. Along with that, the rate of returned orders is only 9.03%, a relatively low number, contributing to affirming service quality and customer satisfaction.

However, the on-time delivery rate of 61.56% shows that there is still a significant gap to achieve the goal of timely delivery. This can affect customer experience and needs to be improved. The average delivery time of 4.04 days is also an indicator that needs to be considered to shorten, to increase delivery speed and improve customer satisfaction.

Notably, the average number of deliveries is 1.30 times, showing that the majority of orders are successfully delivered the first time. This reflects the efficiency of the business's delivery planning and execution.

The regional breakdown shows significant disparities in delivery performance. The South achieved the highest completion rate with 97.58%, while the Central region only reached 10.53%. This disparity requires a focused improvement strategy for the central region, while learning from success in the south to apply to other regions.

Operationally, the majority of orders are delivered in about 2-3 days and mostly small size orders. This suggests that businesses can optimize the delivery process for small orders, which account for the majority of the workload.

Finally, although the number of on-time orders outweighs that of late deliveries, there is room for improvement in this ratio. Increasing on-time delivery will make a significant contribution to improving service quality and customer satisfaction.

In short, despite achieving positive results in delivery performance, businesses still need to focus on improving on-time delivery rates, shortening average delivery times, and balancing performance between geographical areas. These efforts will contribute to

improving service quality, increasing customer satisfaction, and ultimately promoting the sustainable development of businesses in the delivery sector.

2.6.2. Delivery Time Challenges

Despite the high completion rate, the on-time delivery rate is only 61.56%. This means nearly 40% of orders are not delivered on schedule, potentially affecting customer satisfaction. The average delivery time is 4.04 days, with an average of 1.3 delivery attempts per order.

2.6.3. Regional Analysis

Delivery performance varies significantly across regions:

- South leads with a 97.52% completion rate
- North follows closely at 91.38%
- HCM achieves 85.63%
- HN reaches 81.05%
- Central region has the lowest performance at 10.53%

The alarmingly low performance in the Central region hubs compared to others indicates severe operational and logistics issues. Geographic and weather-related factors may also impact deliveries in this disaster-prone area.

2.6.4. Delivery Type Analysis

The chart shows most orders concentrate on two main delivery types:

- 3 Days - Anytime
- 3 Days - Day Night

This indicates customer preference for flexible delivery options within a 3-day window. Notably, the 3 Days - Day Night option has a high completion rate and low return rate, suggesting customers favor more fixed time slots over anytime delivery.

Same Day, 1 Day - Day Night, and Return 1 Day - Any time services have extremely low order volumes, indicating low customer priority for these options due to various factors.

2.6.5. Parcel Size Analysis

Most orders are small (S) size, followed by extra small (XS). This suggests customer demand is primarily for S and XS parcels, which Ryo Logistics handles efficiently with low return rates.

Notably, Ryo Logistics excels in handling M, L, and XL orders with nearly 100% successful delivery rates, demonstrating versatile and effective transportation capabilities across parcel sizes.

2.6.6. On-Time and Late Deliveries

Ryo's on-time delivery rate is high, tripling the late delivery rate. However, it's concerning that only two-thirds of late deliveries are successful, with one-third being returned. This high return rate for late deliveries may negatively impact customer satisfaction and increase operational costs.

2.6.7. Conclusions

Ryo Logistics' delivery analysis report shows that the company has achieved many significant achievements in optimizing the delivery process, with a successful delivery rate of up to 90.97%. However, the on-time delivery rate only reached 61.56%, showing that there are still many opportunities to improve customer experience.

The distribution of delivery performance across regions is also highly disparate, especially the Middle region, which needs a specific improvement strategy. Increased staff training, improved order management systems and the introduction of follow-up support technology will be important steps to improve the quality of service.

In addition, the analysis of the types of delivery and the size of the parcels shows that the main demand of customers is small orders and flexibility in terms of delivery time. This needs to be given more attention by Ryo Logistics to meet market needs.

In summary, although Ryo Logistics has had positive results in delivery activities, the company still needs to continue efforts to improve on-time delivery rates, shorten average delivery times and balance performance between regions. These efforts will contribute to customer satisfaction and sustainable development in the delivery industry.

2.7. Successful and unsuccessful Delivery

Figure 2.7: Dashboard Displaying Delivery Performance Indicators

2.7.1. Dashboard Overview

Objective of the Dashboard: The dashboard is designed to analyze and monitor overall delivery performance across various categories, focusing on distribution by region, month, size, and weight of goods. It then aims to identify the causes of successful or failed deliveries and propose solutions for improvement.

Charts:

- Pie Chart: Displays the relationship between the successful delivery rate and the failed delivery rate (by driver).
- % Successful Delivery Rate by Region: Top 3 regions with the best delivery success rates.
- Average Delivery Time by Store: Top 10 stores with the longest average delivery times.

Other Components:

- Region: Includes 5 regions: South, North, Central, HCM (Ho Chi Minh City), and HN (Hanoi).
- Month: 12 months in 2022.
- Parcel Size: Includes 6 sizes: S, M, L, XS, XL, XXL.
- Weight: Includes weight ranges, 6 ranges: 0-1kg, 1-2kg, 2-3kg, 3-4kg, 4-5kg, and over 5kg.

2.7.2. Overview Analysis

- Average Number of Orders per Driver: On average, each driver delivers about 57.37 orders. There are drivers who deliver more and others who deliver fewer orders, but the number is still above average, indicating that the volume of orders handled by the drivers is relatively stable with no significant discrepancies among individuals.

- Average Delivery Time (in days): The average time for a store to complete an order, from when the customer places the order until it is successfully delivered, is 4.04 days. This is quite a long time. In many common industries, customers expect delivery within 1-2 days, with a maximum of 3-3.5 days. This could be due to delays in various stages such as order preparation, transportation, or final delivery. Ryo Logistic and the stores should collaborate to optimize the delivery process and shorten customer waiting times. This is a crucial factor that directly affects the online shopping experience and determines whether customers will return to support the store in the future.

- Total Orders Delivered Successfully (308K) and Unsuccessfully (192K): Although the number of successful deliveries is higher (61.6%), the number of unsuccessful deliveries is also concerning, accounting for nearly 40% of the total orders. This requires significant improvements to reduce the number of unsuccessful deliveries, as it can directly impact the reputation of the store and the company, thereby optimizing profits and efficiency.

2.7.3. Detailed Analysis

a. Successful and Unsuccessful Delivery Rates

Analysis by Region:

Comparison of Success/Failure Rates in North - HN and South - HCM: The Southern region and Ho Chi Minh City (HCMC) consistently have higher delivery success rates than the average (61.6%). In contrast, the Northern region - Hanoi (HN) is even below the average rate. The South: Has the highest success rate, indicating that operations in this area are relatively stable.

Total Orders in the South - HCM are about 47K more than in the North - HN. The South has the highest total orders and the best success rate, proving that the Southern - HCM region manages the delivery process better, with more attention paid to

infrastructure and issues related to the delivery team. Geographical challenges or the large number of orders in this area do not significantly affect performance.

Despite differences between regions, the overall success rate is still not high. This is due to the Central region's impact. The total number of orders to be delivered in the Central region is only 19, a small number. However, all orders failed to be delivered, with a 100% failure rate. Therefore, focusing on low-performing areas to improve could be a good approach to enhancing the overall success rate.

Analysis by Month:

Throughout 2022, the top 3 regions with the highest delivery success rates are often South, HCM, and North. South and North consistently rank among the top regions with the highest successful delivery rates throughout the 12 months. Except for three months, July, August, and November, when HN appears in the top, replacing HCM. The Central region consistently has the lowest delivery success rate.

HN and HCM are both central to the country and leading in economic terms. However, the delivery success rate in HN needs significant improvement compared to HCM.

Analysis by Parcel Size:

Size S has the highest total number of orders, surpassing other sizes significantly. The total number of orders follows in descending order: XS and M.

For size XXL, this size has the lowest total orders and success rate compared to other sizes. The size barrier could also affect the delivery process.

The three sizes XS, X, M are often prioritized by consumers for online or intermediary orders due to their convenience and compactness. However, size M has the highest success rate, possibly because the large total orders of size S slightly impact the success rate. But overall, the parcel sizes are well-controlled, with no significant disparities among them.

Sizes S, XS, M are generally more suited to the physique of most of the population, especially in Asian countries. Therefore, demand for these sizes is often higher, leading to retailers stocking them in larger quantities. Additionally, to minimize inventory risks, retailers also limit stocking XXL sizes or only stock them in small quantities. Smaller-sized goods are generally easier to transport and store, reducing costs.

Analysis by Weight of the Orders:

Orders weighing between 0-1kg have the highest total number of orders to be delivered compared to other weight ranges.

There is no significant disparity between weight ranges, with a stable success rate of 60-65%.

b. Delivery Time

The average delivery time in the South and North regions is the same, with both having the shortest delivery times at around 3.917 days. Next is HCM at around 4.2 days, followed by HN, and finally Central.

When checking the top stores in each region with the shortest delivery times, all four regions (except Central) have stores (shippers) with very short average delivery times, sometimes even less than 1 day. In such cases, it's understandable, as some products require urgent delivery. Although within the same province, the store and the customer may agree on the "Express" or "Urgent" shipping method.

When checking the top stores in each region with the longest delivery times, an order in the Central region took up to 247 days from order creation to successful delivery. However, when compared, all regions have stores with certain lengthy delivery times. In such cases, it's understandable, as some orders might require products that need to be pre-ordered, leading to a long wait before the customer receives them, such as international orders or custom-made items. There are also cases where items were lost but later found, causing delays.

2.7.4. Observations, Hypotheses/Causes, and Proposed Solutions

a. The lower delivery rate and slower delivery times in the Northern region (including Hanoi) compared to the Southern region (including Ho Chi Minh City). Improving the delivery rate in the Central region.

Reasons for the stronger performance in the Southern region:

- **Transportation Network:** The Southern region, especially Ho Chi Minh City, has a well-developed transportation network with many major roads and highways, facilitating smoother goods transportation. Meanwhile, some areas in the Northern region, particularly the mountainous provinces, have limited transportation infrastructure, affecting the speed and efficiency of deliveries.

- **Population Density:** The Southern region, particularly Ho Chi Minh City, has a higher population density and greater consumer demand. The population in the Southern region is often concentrated in large urban areas, making deliveries easier. This leads logistics companies to focus their investments in this area. Logistics centers and warehouses in the Southern region are also more modern and better equipped.
- **Climate and Natural Conditions:** The Northern provinces often experience harsher climates, with cold winters and heavy rainfall, impacting the transportation of large quantities of goods.
- **Terrain:** The Northern region has complex terrain, including mountains and hills, making road transportation more challenging.

Reasons for the alarming failure rate in the Central region:

- **Terrain:** The Central region has diverse terrain, including mountain ranges and rivers, particularly in remote areas.
- **Climate and Natural Disasters:** The Central region frequently experiences typhoons, floods, and landslides, disrupting transportation and damaging goods. The prolonged rainy season increases the risk of goods being damaged due to moisture.
- **Transportation Infrastructure:** Many roads in the Central region have not been upgraded, with limited bridges and culverts, leading to deterioration and affecting the speed and safety of transporting heavy loads.
- **Competitive Capability:** Many transportation companies in the Central region are small-scale and have not been developed or strengthened like those in major cities and other regions.

Proposed Solutions:

- Investing in Upgrading Transportation Infrastructure:
    - **Northern Region:** Focus on investing in major transportation routes, upgrading roads in mountainous areas, and constructing bridges and tunnels to connect regions.

    - **Central Region:** Invest in constructing coastal roads, upgrading national highways, and reinforcing bridges and culverts, with particular emphasis on disaster resilience.
- **Developing Additional Services:** Such as packaging, goods preservation, customs, etc.
- **Applying Technology in Modern Transportation Management Systems:** Or using GPS technology to optimize routes, track the status of goods, and reduce costs by monitoring vehicle positions, helping customers stay informed about their orders.

a. Significant differences in delivery times between stores and proposals to improve the overall average delivery time.

Factors affecting delivery times:

- Geographical Distance, Traffic Conditions, and Order Processing Procedures:
    - **Inefficient Route Planning:** Routes that have not been optimized, leading to wasted time.
    - **External Factors:** Bad weather, traffic jams, especially during peak hours.
    - **Technical Issues:** Problems with electricity, water, or other unexpected issues such as vehicle breakdowns or equipment malfunctions.

Proposed Solutions:

- **Optimize Routes:** Use specialized software to plan the shortest routes, avoiding congested areas.
- **Enhance Driver Efficiency:** Train drivers in safe driving skills to avoid traffic violations.
- **Provide Support Tools:** Equip drivers with electronic maps and GPS devices to assist in finding routes.
- **Efficient and Scientific Warehouse Organization:** Arrange goods in warehouses and stations for easy retrieval.
- **Check Goods Before Delivery:** Thoroughly inspect goods before delivery to avoid shortages or incorrect items.

2.8. Shipper Performance

As a leading logistics service provider in Southeast Asia, Ryo Logistics has a large network of shippers. To better understand the performance differences and identify potential improvement areas, we will categorize our shippers into two groups: the top 5 shippers with the highest successful delivery rates and the remaining shippers.

2.8.1. Performance of top 5 shippers

Figure 2.8. Performance of top 5 shippers

This report provides a comprehensive overview of the operational performance of the top 5 shippers within Ryo Logistics' Southeast Asia network. The analysis delves into key performance indicators (KPIs), including order fulfillment rates, on-time delivery percentages, average delivery times, and frequency of deliveries. By examining these metrics, this report aims to identify strengths, weaknesses, and areas for improvement within the logistics network.

Overall Performance:

- **Total Orders:** The system processed a total of 48,042 orders, demonstrating a significant workload and high customer confidence in the service.

- **Order Fulfillment Rate:** An impressive 100% of orders were successfully fulfilled, reflecting the shippers' professionalism and commitment to customers.

- **On-Time Delivery Rate:** While 69.89% of orders were delivered on time, this indicates a potential area for improvement in service quality.

- **Average Delivery Time:** The average delivery time of 2.8 days is commendable, however, there is still room for further reduction.

- **Average Number of Deliveries:** With an average of 1.15 deliveries per day per order, the delivery process is generally smooth and faces minimal obstacles.

Shipper Performance:

- **Successful Delivery Rate:** A bar chart highlights a significant disparity in successful delivery rates among the top 5 shippers. The leading shipper achieved the highest rate, while the others exhibited lower percentages. This disparity suggests variations in capabilities and operational processes among the units.

- **Order Status:** A bar chart indicates that a substantial majority of orders were completed.

- **Deliveries per Order:** While the majority of orders required only one delivery, a smaller portion needed multiple attempts. This could be attributed to various factors such as customer absence, incorrect delivery addresses, or unforeseen transportation issues.

- **Order Pickup Times:** The top 5 shippers demonstrated a high rate of timely order pickups. However, instances of delayed pickups were still observed. This requires attention to improve system efficiency.

2.8.2. Performance of other shippers

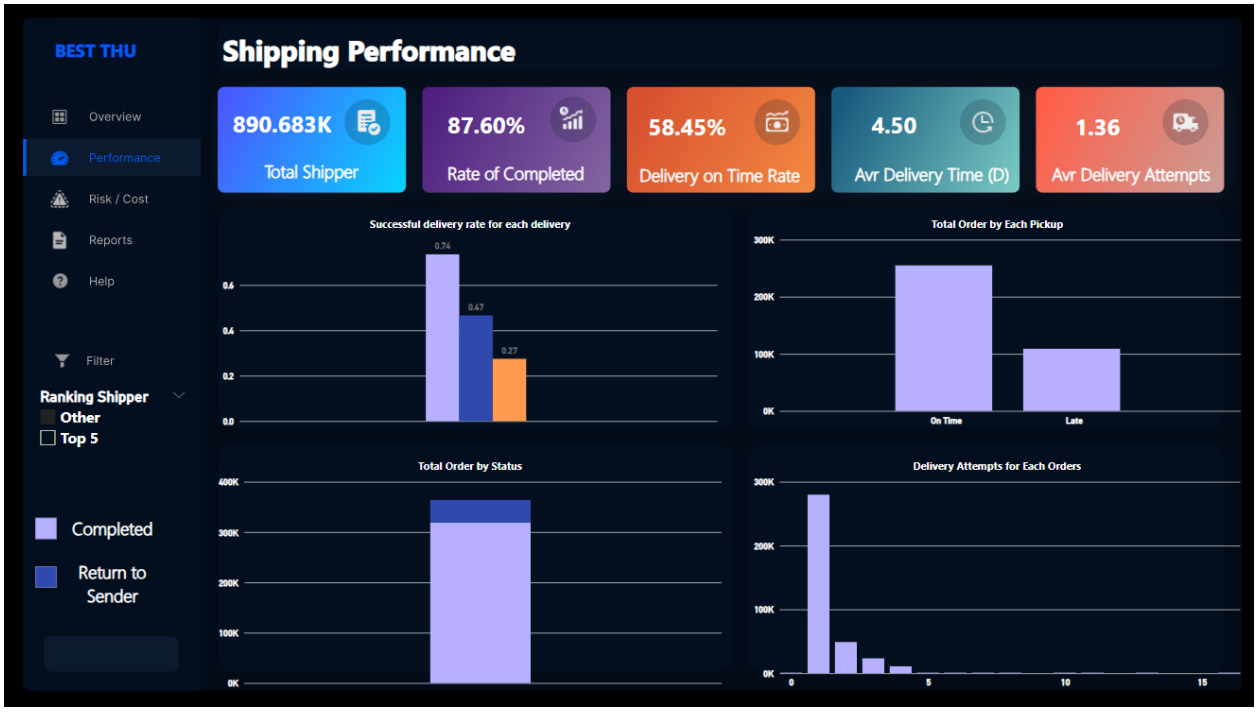

Figure 2.9. Performance of other shippers

Based on the provided dashboard, we can draw the following insights into the performance of non-top 5 shippers within Ryo Logistics' Southeast Asia network.

Overall Performance:

- **Workload:** The remaining shippers handled a substantial 890,683 orders, signifying a significant contribution to the network's overall operations.

- **Order Fulfillment:** While achieving an 87.60% fulfillment rate is commendable, there's room for improvement compared to the top 5 shippers' perfect score.

- **On-Time Delivery:** The 58.45% on-time delivery rate is notably lower than the top 5, indicating a need for enhanced service quality.

- **Average Delivery Time:** With an average of 4.5 days, deliveries were slower compared to the top 5's 2.8-day average.

- **Delivery Attempts:** The need for 1.36 delivery attempts per order suggests more challenges in the delivery process for these shippers.

Shipper performance:

- **First-Attempt Success:** A striking observation is the high rate of successful first-time deliveries for the remaining shippers, significantly outpacing subsequent attempts.

This indicates potential issues in route planning, order preparation, or customer accessibility for repeat deliveries.

- **Order Status:** While most orders were completed, a portion was returned. Reasons could include incorrect addresses, customer unavailability, or unforeseen transportation issues.

- **Multiple Delivery Attempts:** The need for multiple delivery attempts can be attributed to factors such as address changes, damaged goods, or shipper errors.

Comparison with Top 5 Shippers:

- **Workload:** The non-top 5 shippers handled a significantly larger volume, suggesting they play a crucial role in the network's capacity.

- **Performance:** Overall, these shippers lagged behind the top 5 across most metrics, revealing disparities in capabilities, processes, and resources.

- **Improvement Potential:** Despite the current performance gap, there's ample room for growth by learning from the top 5, investing in technology, and enhancing staff capabilities.

2.8.3. Conclusion

The non-top 5 shippers within Ryo Logistics' Southeast Asia network exhibit areas for improvement. To enhance service quality and compete with the top 5, they should prioritize increasing on-time deliveries, reducing average delivery time, and improving first-attempt success rates. Investments in technology and workforce development are also crucial for enhancing competitiveness.

III. BUSINESS DEPARTMENT ANALYSIS

3.1. Analysis goals

Ryo's Business department goal is to capture shopping trends and analyze the behavior of customers, specifically buyers, with shippers. The department needs to track the status, reasons, and trends of order cancellations based on region, payment methods, delays, and other relevant factors to have an insight into shopping trends based on geographic location and during special occasions. From that, they can formulate strategies that drive sales and effectively expand the market.

In this chapter, the team will go through the analysis of the results of the business operation of Ryo in 2022, including the number of orders, successful orders rate, average delivery times, sales number, top performing products,... This analysis will also look the the data from different perspectives ranging from time trends, geography, holidays,...

3.2. Dashboard

3.2.1. Overview

Figure 3.1. Overview dashboard of business results

In the year 2022, Ryo Logistics has processed 494,728 orders with the total Sales number from COD Sales being SGD 5,846,619.07. Out of those orders, approximately 8.97% are failed orders, meaning these orders are rejected and returned for various reasons such as customers wanting to cancel, wrong items, etc. In addition to that, 0.86%

are items that are successfully been delivered but then returned to the seller. The average delivery time for all orders is about 4 days from the time the orders have been confirmed to the time the order is successfully been delivered.

Analyzing by day in the month, the start and end of the month are periods that experience the least amount of orders while the 15th has the highest number of orders out of any day in the month. This also corresponds with the Total COD Sales by Day graph, where sales see a hike in the middle of the month and dip toward the end.

Ryo operates on multiple sales channel platforms, by far Ryo has the most orders from the sales channel “PNS” with a percentage of 54.39% followed by “FS” with a percentage of 26.43%. Looking at the industry category for products, the “fashion” industry takes up a significant percentage of the total number of orders, and there by a large percentage of the sales. In this report, the industry “Miscellaneous” has the most number of orders out of any product category but due to the lack of insight into analyzing that specific industry, the team decided to not include that industry in the report but still keep count of the number of order for accuracy.

Big city such as Hanoi and Ho Chi Minh have the largest number of orders, purely because of the large population, followed by others city in the country like Danang.

3.2.2. Sales performance

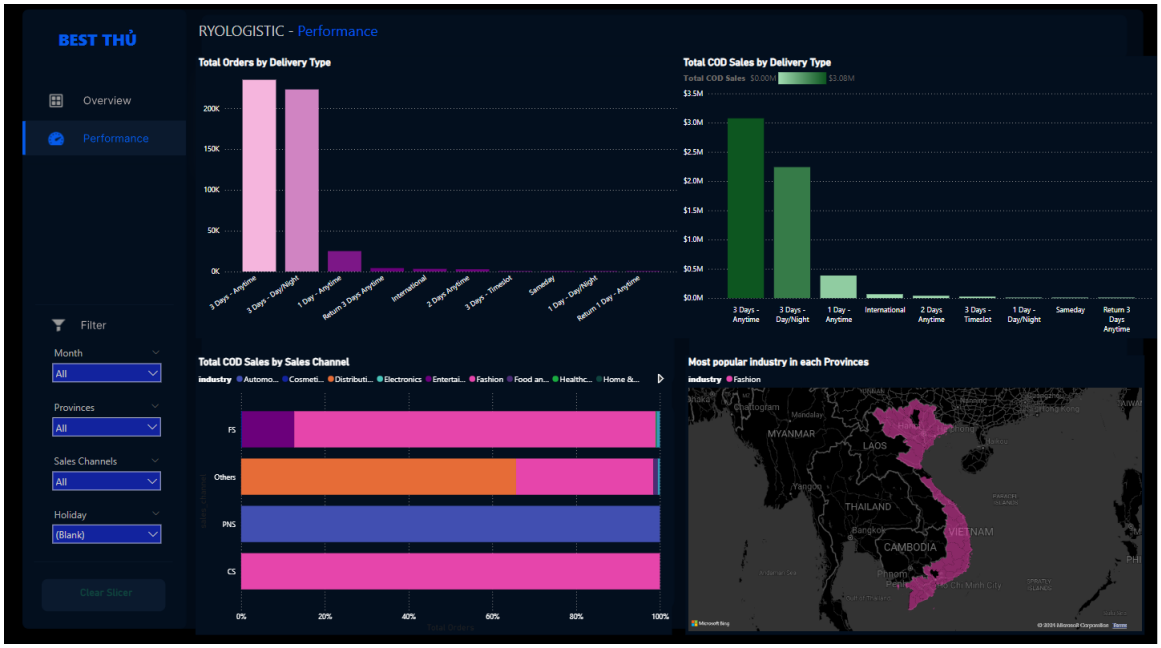

Figure 3.2. Dashboard of sales performance

Looking at the overall sales performance, there are some noticeable differences between delivery types and sales channels. On the other hand, across the country, the most popular industry or product is “fashion” showing that Vietnamese consumers in general like shopping for fashion items such as clothes, accessories, and more on E-Commerce platforms. This is a great opportunity for expanding the market, coming up with marketing strategies, improving products, etc.

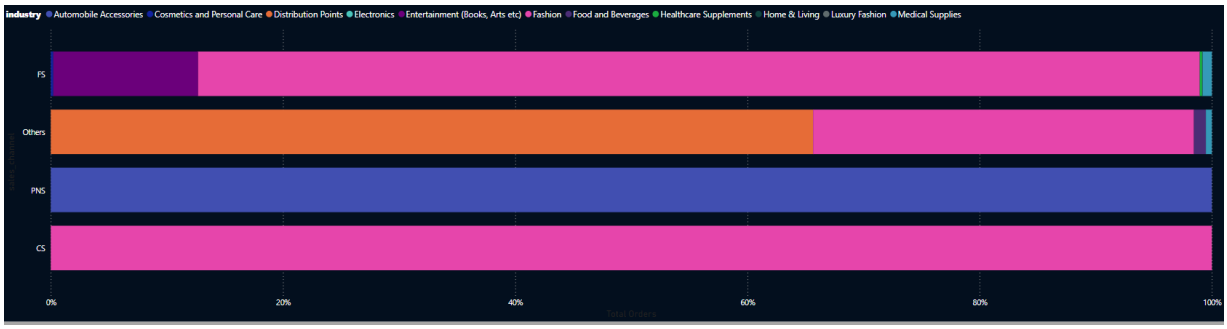

Figure 3.3. Total COD Sales by Sales Channels

Similar to the previous analysis, across all sales channels, aside from “Miscellaneous”, “Fashion” takes up the highest percentage in both FS and CS sales channels. PNS only has “Automobile Accessories” as an available industry and “Distribution Point” takes up the majority of other sales channels, this might be a valuable insight and opportunity for expanding into new markets.

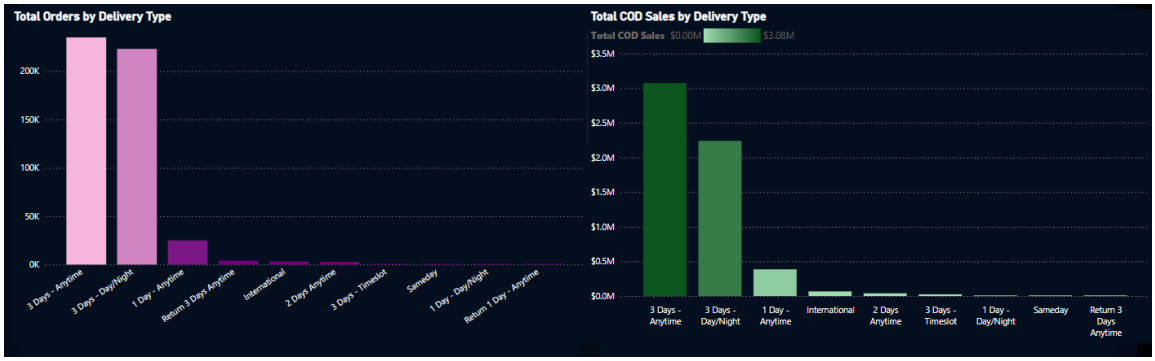

Figure 3.4. Total COD Sales and Total Orders by Delivery Types

Ryo offer various delivery options that take different day to deliver, the most popular and bring in the most COD revenue for Ryo is the “3 Day - Anytime” and “3 Day - Day/Night”. Compare to the standard delivery of many logistics services, 3 days delivery is the standard for many. Expanding and upgrading this type of delivery to be better and faster will help gather more market share. In addition, “1 Day” delivery option is a somewhat popular option for consumers looking to have products delivered quickly,

investing into this delivery option aswell should bring about competitive advantage compare to other delivery services.

3.2.3. Orders performance

Figure 3.5. Dashboard of orders performance

Analyzing by order number, there are some special thing to point out. Such as with a large number of “fashion” products, majority of parcel size only focus on small and extra small packaging, the same also apply to the second most popular industry “entertainment”. This show that most consumers commonly buy small items rather than larger products. This is because of the convenience of ordering many small items and having them shipped to your house rather than buying a single large items.

Looking at the top performing products graph, the most commonly sold item are shoes and decoration items. In addition to that, the top three shoes sold are big brand products such as Nike, Converse, Adidas. This is a great sign of consumer behaviours where they choose for recognizable and trusted brand rather than small brand when buying fashion products.

Although fashion is one of the most popular industry, the average delivery time is also the highest with the average day of delivery is 4.51 days, higher than the total average in this data. This is a limitation of this year analysis, Ryo should have improving the

average delivery time as a priority as delivery time is one of the key factors when customers choose a logistic services.

Failure Reason	Total Failed Orders	Percentage
Khách hàng muốn hủy đơn hàng	22894	50.99%
	11998	26.72%
Đúng địa chỉ không có người nhận	3467	7.72%
Khách hàng yêu cầu thay đổi ngày/giờ giao	2842	6.33%
Giao sai hàng hóa - Đã đồng kiểm	1421	3.16%
Địa chỉ không đầy đủ, không chính xác, không tồn tại	1229	2.74%
Từ chối do không cho phép đồng kiểm	472	1.05%
Khách hàng đặt trùng đơn hàng	469	1.04%
Khách hàng yêu cầu thay đổi địa điểm giao hàng	44	0.10%
Bị hư hỏng - Đã đồng kiểm	24	0.05%
Giao sai hàng hóa - Chưa đồng kiểm	24	0.05%
GH1P thất bại	11	0.02%
Bị hư hỏng - Chưa đồng kiểm	4	0.01%

Figure 3.6. Reasons for failed delivery

With about 44 thousands failed orders there are many reasons for failed delivery with the most common reasons is the customer want to cancel the order before it has been delivered. The second most common reason is blank, this missing data is might be because of the delivery staff did not write down the reason. Other reasons is a mix between customers do not want the orders or the item is broken, wrongly delivered, etc.

3.2.4. Monthly analysis

a. First Quarter

In the 2 months of the year, the total number of orders sum up to 511 orders, a very small number compared to the rest of the year. The low number of orders might be explained by the end of the Covid-19 pandemic when social distancing started to end and people started to buy more products

Figure 3.7. Overview of the first 2 months

Starting with March, the number of order skyrocketed, reaching 24 thousands orders with COD sales almost reaching 250 thousands Singaporean Dollar. All of the orders have been recorded towards the end of the month, around the 20th is when the number of orders when up extremely fast

Figure 3.8. Overview of March

b. Second Quarter

Figure 3.9. Overview of the second quarter

In the second quarter, the number of orders stabilize, the time when the number of orders is highest is in the start of the month, reaching over 40 thousand SGD in COD sales and reaching 9 thousand orders in the 6th day of the month.

Figure 3.10. Overview of June

June is the month that have the most orders in the year, having 62 thousand orders. In this month, there are 5531 orders that have industry is fashion followed by entertainment. June is the month where there are the most diversified products, where

only the top product belong in the fashion industry, the other top 4 have other industry that is not fashion.

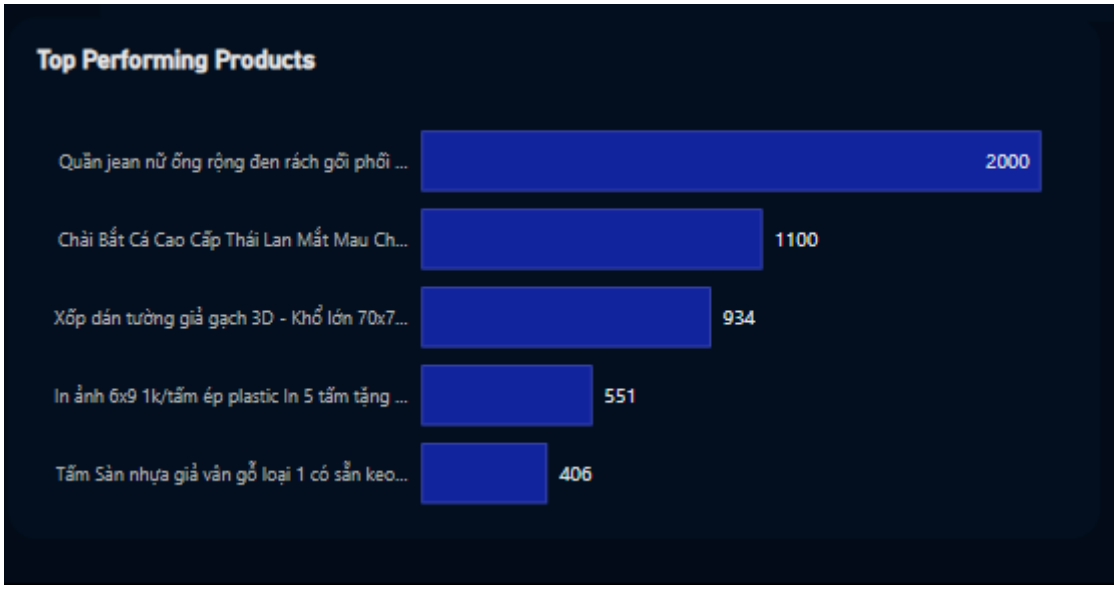

Figure 3.11. Top performing products in June

c. Third Quarter

Figure 3.12. Overview of the third quarter

Third quarter is the quarter where the return rate is the highest with 1.12%, meaning out of 10 products, about 1 products is return for many reasons. In addition, this quarter, Healthcare Supplements have the highest average delivery time of 5.2 days, significantly

higher than the rest of the industries where the time range is from 2 to 4.7 days for delivery.

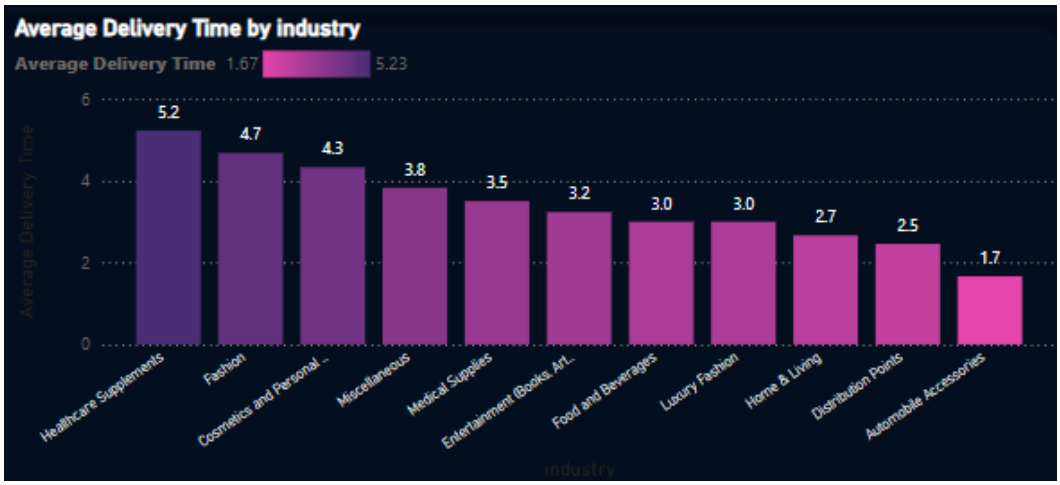

Figure 3.13. Average delivery time by industry in the third quarter

d. Fourth Quarter

Figure 3.14. Overview of the fourth quarter

The fourth quarter is similar to the second quarter, the highest day for orders number is the 12th of the month where the number of orders reach 5 thousands orders. In addition, this quarter, Luxury Fashion have the highest average delivery time of 7 days, significantly higher than the rest of the industries where the time range is from 2 to 4.2 days for delivery. This might due to the increase in demand toward the end of the year where there is a lot of sales event like Black Friday, Christmas, etc.

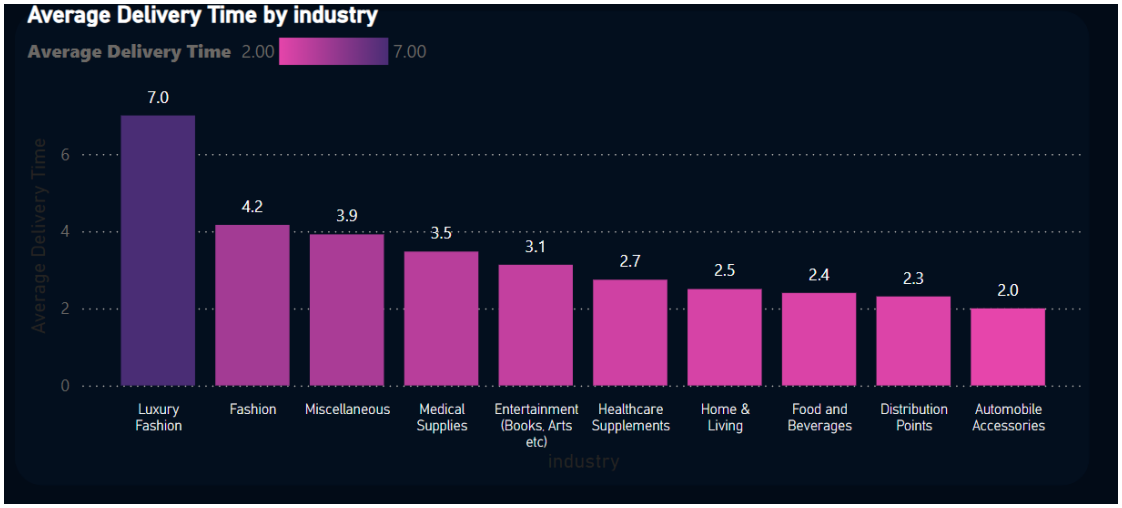

Figure 3.15. Average delivery time by industry in the third quarter

3.2.5. Holiday analysis

Figure 3.16. Overview of holiday periods

During holiday, the number of orders drop significantly, with the total number of orders of all holiday in the year only reaching 5 thousands orders. With Hung King Temple holiday and reunification day having about 2 thousands orders each. In addition to that, only FS and some others sales channels are available in holiday, limiting the choices of consumers looking to purchase during holiday.

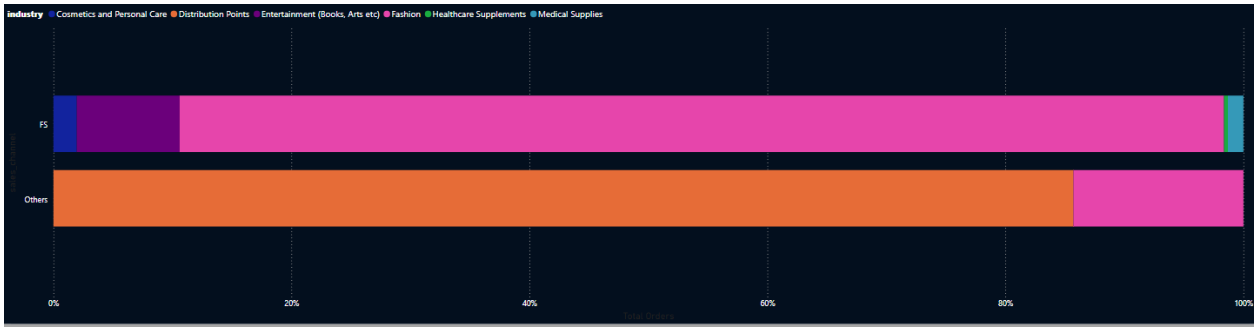

Figure 3.17. Sales Channel during holiday

3.3. Summarization and recommendations

3.3.1. Summarization

After analyzing the business process of Ryo Logistics, there are some insight that worth further research and reviewing:

- Fashion industry have the highest percentage of orders numbers throughout the year.

- Big brand such as Nike, Converse, Adidas are very popular for consumers to purchase online.

- Fashion have the highest average delivery time despite being the best performing industry.

- The most popular delivery method is 3 days, followed by 1 day shipping.

- A lot of seller do not set their industry or set as “Miscellaneous” making it harder to analyze data

3.3.2. Recommendations

Ryo can improve their business performance by changing the app layout, and encouraging seller to update their industry status to have more data to analyze about products and trend. Secondly, Ryo should levage the strong point in the fashion industry build relation with suppliers and big brand, to bring about cheaper price when importing straight from the manufacturer, giving a competitive advantage to competitors. Finally, Ryo can research to improve their shipping method, bringing the average delivery time down, and lower the rate of failed orders.

IV. CONCLUSION

Ryo Logistics has established itself as a key player in the Southeast Asian logistics market, with a robust network that supports a high volume of orders across various regions. The company's overall delivery success rate of 90.97% is commendable, reflecting its effective use of technology and streamlined operational processes. However, the analysis also uncovers several critical areas that require attention to sustain and enhance this performance in the long term.

One of the most pressing issues identified in this report is the relatively low on-time delivery rate, which stands at 61.56%. This metric indicates that nearly 40% of deliveries are not completed within the expected timeframe, a factor that could significantly impact customer satisfaction and brand reputation. The disparity between regions is also notable, with the Central region showing an alarmingly low performance. The challenges in this region, which include geographical difficulties, infrastructure limitations, and frequent adverse weather conditions, require a targeted approach. Investing in infrastructure improvements, enhancing logistical planning, and possibly exploring partnerships with local entities could mitigate these issues and improve delivery reliability in this critical area.

Furthermore, the report highlights significant inconsistencies in performance among different stations and shippers. While some stations and top-performing shippers demonstrate high efficiency and reliability, others lag, leading to a higher rate of failed deliveries and longer delivery times. Addressing these disparities will require a multifaceted strategy that includes better training for staff, optimization of resource allocation, and the implementation of more sophisticated monitoring and evaluation tools to ensure that underperforming stations and shippers receive the support they need to improve.

The report also suggests that Ryo Logistics could benefit from refining its approach to handling parcels of varying sizes and delivery types. For instance, smaller parcels and more flexible delivery options, which are increasingly in demand, often suffer from lower on-time pickup rates. By enhancing process management and utilizing more advanced tracking technologies, Ryo can improve the handling of these parcels and better meet customer expectations. Additionally, the company's current success with larger parcels

and certain delivery types provides a strong foundation upon which to build further capabilities and expand service offerings.

Another area for improvement is the company's ability to manage and optimize delivery times. The current average delivery time of 4.04 days, while reasonable, leaves room for improvement, particularly in highly competitive markets where faster delivery can be a key differentiator. By leveraging technology to optimize route planning, improving coordination among different stages of the delivery process, and investing in faster and more reliable transportation methods, Ryo Logistics can reduce delivery times and enhance overall customer satisfaction.

In conclusion, while Ryo Logistics has achieved significant successes, particularly in terms of overall delivery performance and customer satisfaction, the company must address the identified weaknesses to maintain its competitive edge. By focusing on improving on-time delivery rates, reducing regional disparities, and optimizing operational efficiency, Ryo Logistics can not only enhance its service quality but also strengthen its position in the market. The strategic recommendations outlined in this report provide a roadmap for these improvements, aiming to support the company's growth and ensure its long-term success in the dynamic logistics industry.