

OPTIMIZING COMPANY RESOURCES BY UTILIZING HUB AND SPOKE COLLABORATION WITH THIRD-PARTY LOGISTICS

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Abstract: Collaboration in a transportation business is a strategy that can optimize existing resources in order to achieve maximum results. The hub and spoke collaboration carried out by RPX and Grab creates a delivery network pattern, where Grab uses RPX stations to make same day deliveries. This study aims to find out whether collaboration with other companies as a third-party logistics can optimize the existing resources in each company. The method used in this study was case study and the data obtained was processed qualitatively. Research data was collected by interviewing company's employees where this research was carried out and also those from collaborative partner companies. A field observation and review of documents related to the of collaboration were also carried out to support this research data. The results of this study reveal that this hub and spoke collaboration can, in fact, optimize the resources of collaborating companies. This can be seen from the benefits obtained by the parties involved in this project.

Keywords: *collaboration, hub and spoke, third-party logistic, company resources*

Introduction

The COVID-19 pandemic has brought changes in society where most activities are carried out from home due to social restrictions. This change in consumption patterns also demands the food and beverage industry sector to be more active in developing innovations to make it easier for people to consume. This sector is closest to the community that is supposed to use technology to make it easier for consumers. Changes in people's consumption patterns are also related to changes in marketing, transportation and logistics systems. Basically, logistics is a concept related to the movement and good storage of materials or products so that it can increase customers' satisfaction (S.M. Aghazadeh, 2003).

The change in transportation services that occurred was from those who previously preferred regular service switching to same-day delivery services. Therefore, transportation and logistics companies must certainly take advantage of this opportunity by expanding their network. Acceleration is very much needed, and one of them can be overcome by collaborating the resources of each company. It is generally known, that logistic collaboration

can provide more social as well as operational cost savings. Many companies are aware that this collaboration is needed with the aim of achieving mutual benefits greater than what the company will achieve individually (Cao M, et.al, 2010).

RPX, as a pioneer in integrated logistics delivery with nearly 40 years of experience in Indonesia, serves shipments from e-commerce companies including: JD.id, Lazada, Zalora and others. For domestic shipments, RPX has several services, including, hand carry (For extremely urgent shipment, with a dedicated courier on flights to deliver packages with a personal touch), Same day (package delivery with an estimated delivery date of the same day), Next day (delivery of packages with an estimated arrival of tomorrow), Regular (delivery of packages with an estimated arrival of 3-7 days), Heavy weight (delivery of packages with a minimum weight of 20 kg).

The regular service is the service that is most widely used because the coverage area is the widest compared to other services. It provides wide range of service with delivery times and rates that best suit customer needs.

There are numerous demands from business partners who use RPX services that require same day delivery services, even instant delivery in less than 6 hours. One of the factors that support the success of this same day delivery service is the large number of courier partners. However, this cannot be done in a short time, either in developing the technology or in the partnership system with its complexity.

On the other hand, Grab Holdings Inc. - as the third party, is an investment holding company. The group enables access to transportation, delivery, mobile payment, financial services and enterprise offerings in Southeast Asia through its mobile application (the Grab Platform) (Grab Overview, 2022). Third Party Logistics (3PL) is defined as an external company that performs logistics functions for other companies, the functions performed by 3PL may cover the whole process logistics or certain activities in the process (Lieb, 1992).

Through its delivery services Grab offers retailers a user-friendly service with full traceability during deliveries. Customers can click a same-day delivery option at checkout and communicate with their driver during delivery, reducing delivery administration and improving success rates (Morahan, 2022)

There are some benefits obtained by having a third-party logistics (3PLs) as a partner. 3PLs provide expertise and helpful guidance, such as looking out for [2019 Third-Party Logistics Study: State of Logistics Outsourcing Report](#) by Penske, Penn State, Infosys, and Korn Ferry, 73% of 3PL users believe that 3PLs offer “new and innovative ways to improve logistics effectiveness” and 89% of shippers believe partnering with a 3PL has “contributed to improving services for the ultimate customer.” Shippers and 3PLs are working together better than ever before. And that can be directly contributed to the level of personal service shippers experience when partnering with a 3PL (Stefanssons, 2006)

Collaborating with a 3PL is chosen as a way to optimize company’s resources since it is considered less expensive compared to building or investing on new infrastructure. As explained in a study done by Swastika, et.al, collaboration with logistic service providers makes the company service users feel calm about the risk of failure of logistics transactions because they have been handled by a service provider company. This kind of collaboration can also reduce substantial investment costs for logic related matters in order to increase the main business development capital. In addition, collaboration can increase the flexibility to reach markets where companies will be free to develop their markets and to realize economies of scale (Azmi, 2011).

In this study, the researcher focuses on the collaboration that is initiated by RPX and Grab by applying the hub and spoke system. The hub and spoke system is chosen because of its advantages as well as efficiency. The purpose of this study, therefore, is to find whether or not the hub and spoke system can optimize company’s resources of both parties.

Hub and spoke network models are a proven method of analyzing transport pathways/corridors and strengths. They were initially developed and applied to airline industries and have since been applied to shipping, logistic delivery, and other transportation activities (e.g. Aykin, 1995; Bendall and Stent, 2001; Bryan and O'Kelly, 2005; Hsu and Hsieh, 2007; Imai et al., 2009).

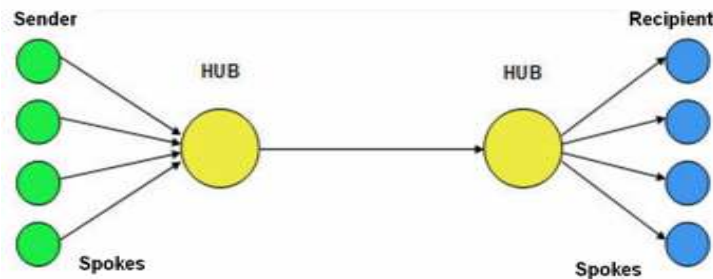
This model also allows to resolve the best solutions that use mixed variables of decision making. The model includes multiple objectives which depend on the decisions of the decision maker and which include: the minimization of the distances between spokes and hubs, the maximization of capabilities of trucks, the maximization of the number of bases in order to sustain the costs in case of unfavorable weather, the maximization of human resources. (Cullen, 2008))

Transportation in a pure hub-and-spoke system works as follows: At the "first" transportation stage several customers are served by picking up their shipments and bringing them to the corresponding depots. Several pick-up tours can be executed by every depot. At the second transportation stage, shipments coming from the different originating depots (sending depots) are consolidated at the hub or hubs and redirected to their respective destinations (receiving depots). At the hub or hubs, sorting of the parcels (weight up to 31.5 kg) or piece goods (weight greater than 31.5 kg) takes place. Within the scope of daily disposition the number of trucks (or other transportation facilities) and the number of loading units (one or two containers) must be adjusted to the current quantities on a given day from every sending depot to the hub(s) and from the hub(s) to every receiving depot. The third transportation stage encompasses the delivery tours to the receiving customers which are carried out by every receiving depot. Pick-up and delivery tours can often combine (Zapfel and Wasner, 2002).

Technology-based companies, Grab and RPX, collaborate to provide same day delivery services at competitive rates. There are two collaborations carried out, the first is that Grab serves last mile for RPX deliveries which is

currently in the integration stage. Secondly, RPX serves middle mile hub & Spoke for Grab delivery.

The following is an overview of the Hub and Spoke process, where Grab courier will pick up from the partner and send it to the RPX station. Then RPX with the middle mile fleet will send the packet to the destination station. In the final stage, represented in blue circle, the Grab courier will do last mile delivery.



Methodology

This research is conducted by using qualitative methodology and using interview as data collection technique to respondents from the logistic company and the partners that are involved in the collaboration with RPX.

Data were gathered from field observation as well as in-depth interview with employees from both parties. Based on the observation, RPX had 3 shuttle time windows for the process of sending packages between stations or hubs in Jabodetabek, that were at 07.00 WIB, 16.00 WIB and 21.00 WIB. The type of fleet used was Blind van with a payload capacity of 800kg, with 7 units of fleets. The average load of each blind van was currently 400 kg per unit. This means that there was still 400 kg of capacity that can be used from 1 unit of blind van and a total load of 2,800 kg from 7 units for one shuttle from 3 available shuttles. While the other 2 shuttles used a fleet of fully loaded ankle and double ankle trucks. Therefore, there was an opportunity in increasing the optimization of shuttle.

Optimization (Nurrohman, 2017) is an effort to improve the performance of a work unit or individual related to the public interest, in order to achieve satisfaction and success from the organization of activities.

The first step in load optimization was to calculate the rates that would be offered to partners. The cost calculation was carried out by RPX using the ABC (activity based costing) method. ABC Costing according to Rudianto (2013: 160), is an approach to determining product costs that assigns costs to products or services based on resource consumption by activity. This calculation was useful in reducing cost allocation deviations. The percentage of each variable from ABC Costing was: manifest data, sorting at the origin station was 25%, sorting at the destination station was 25% and inbound, outbound shuttle costs were 50%. Data from observation showed that RPX in this collaboration, did not add resources, all activities utilized existing resources. After calculating using ABC costing, the rate given to using this shuttle was Rp 5,500/kg

The researcher, then, got an explanation from the Grab side that the strategy in running this hub and spoke is the MVP (minimum viable product) strategy where this service was made in simple features but is able to provide maximum results as shown in the following operation process



In order to support the document review, in-depth interview was also carried out. There were total of 6 people were interviewed.

Institution	Title
RPX	Account Manager
RPX	Business Solution Manager
RPX	Engineer Manager
RPX	Operation Senior Manager
RPX	IT Manager
Grab	New Business and special Project Manager

Table.1 List of interviewees

Furthermore, in an attempt to support research data, a field observation was also performed during the trial of this project, which was successfully carried out on August 15, 2022 and September 19, 2022, August 15, 2022. In addition, the project was planned to be launched on October 20, 2022.

Discussion and Result

A. Technical Process (API)

In this collaboration, data integration or what is called as API (Application Programming Interface) is carried out between three parties, namely: Grab Partner (Ecommerce / B2B company) - Grab as a service provider company-RPX that connects origin and destination. API (Application Programming interface) integration is performed to obtain manifest data, display shipping costs, and perform package tracking. The Integration Process includes the exchange of data such as packet manifest data, and delivery status.

The following is an example of package manifest data sent by grab via the API

user_created	awb	order_number	service_type_id	origin	destination	destination_bill_city	shipper_account	shipper_address1
API-grabrpxhubspoke	799992196311	16644450238938165555D	PSS	HLP	HLP	JAK	758078798	Jl. Sate Pd. Aren 2 No.
API-grabrpxhubspoke	799992196300	1664445023893AAC87385	PSS	HLP	HLP	JAK	758078798	Jl. Sate Pd. Aren 2 No.
API-grabrpxhubspoke	799992196274	16643643333763E9A9829	PSS	HLP	HLP	JAK	758078798	Jl. Sate Pd. Aren 2 No.
API-grabrpxhubspoke	799992196252	16643643333765C792F0A	PSS	HLP	HLP	JAK	758078798	Jl. Sate Pd. Aren 2 No.
API-grabrpxhubspoke	799992196241	1664364333376B1DDB47D	PSS	HLP	HLP	JAK	758078798	Jl. Sate Pd. Aren 2 No.
API-grabrpxhubspoke	799992196230	166436433337625DB5552	PSS	HLP	HLP	JAK	758078798	Jl. Sate Pd. Aren 2 No.
API-grabrpxhubspoke	799992196226	1664364333376BDE0EA04	PSS	HLP	HLP	JAK	758078798	Jl. Sate Pd. Aren 2 No.

Table 2. Sample of package manifest data sent by Grab via API

This data is in the form of package identity that will be sent via API which consists of order number information, service type, origin and destination station, recipient address. After the data is received by RPX and the manifest process is carried out, the package can be tracked by both the grab and RPX systems live.

The following is an example of package tracking on an RPX system.



B. Operation Process

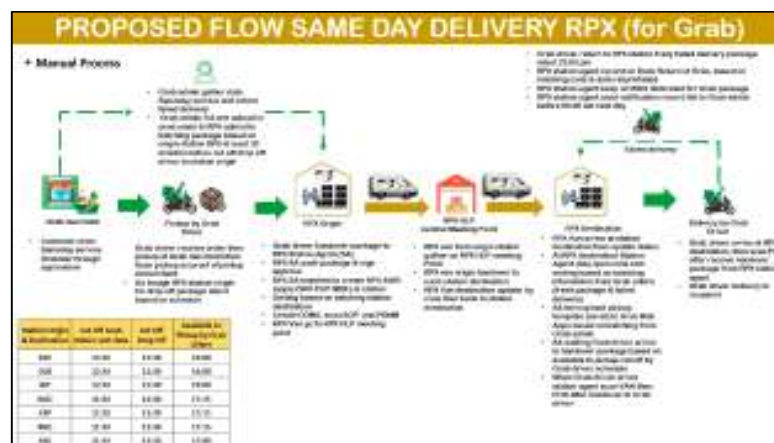
In order to cater larger range of delivery, the hub and spoke collaboration project covers the delivery origin and destination area by utilizing the following RPX stations:

3LC Station	Address
HLP	Jl. Ciputat Raya No.99, Pondok Pinang, Jakarta Selatan 12310
CGK	Jl. Duri raya/Terusan tol No.50 A Duri kepa, Jakarta Barat 11510
JKT	Jl. Palbatu I No. 19 Menteng dalam Tebet Jakarta Pusat 12870
KGD	Rukan Sedayu City Kelapa Gading unit SCBRA 11 Jakarta Utara 14240
CXP	Jl.Sulawesi Blok H No.1 kawasan MM2100 Cibitung Bekasi 17520
RKO	Jl. Benda No.45 Rawabokor kota Tangerang Banten 15125
BJG	Jl. Bogor Km.51 No.507 Cimandala Kab. Bogor 16710

Table 3. list of RPX Stations

The following is the Hub and Spoke operation workflow, where the Grab courier will pick up from the partner and send it to the RPX station. Then RPX will send the packet to the destination station. After the package arrives at the destination station, the station agent will group the packages based on the courier code (batching). This code systemically (API) will be sent after all packages arrive at the destination station. Thus, there is no manual process for which packages are handed over to each Grab courier. The flow of the execution process is as follow:

Figure 1. Delivery flow for Grab



C. Business Advantages

Initially, the objectives of the hub & spoke project seen from each party create multiple shipments and provide more competitive shipping rates.

Based on data taken from the interviews from the 3PL, in this case – Grab, it is shown that this collaboration allows Grab courier to do multiple shipments where one courier can send at least 20 packages within 5 hours. This project also facilitate the Grab courier in achieving the MVP (minimum viable product) more rapidly. Lastly, it also provides a more competitive rate than the same day with one destination, with a tariff difference of 40% below the previous same day rate.

RPX, on the other hand, can obtain several satisfying benefits without having to use additional resources. The collaboration increased shuttle load per unit from the previous 60% to 81%. The escalation surely affects on company's

revenue since it optimizes the shuttle fleet. The total revenue of this collaboration is predicted to reach up to Rp. 165,000,000 referring to the forecast provided by Grab. The detailed optimization is illustrated in the table below:

Capacity per unit	load per unit average	% load per unit	Vacant capacity per unit	Total unit	Total Vacant Capacity	Grab Volume Forecast per day	Total Vacant Capacity - Grab volume	Vacant Capacity - Grab volume per unit	% load per unit
800 kg	480 kg	60%	320 kg	6 unit	1.920 kg	1.000 kg	920 kg	153 kg	81%

Table 4. Capacity

Conclusion

The results of the study show that the implication of hub and spoke collaboration between the RPX and grab as the third-party logistics is proven to be beneficial for both parties. Not only it minimizes costs, but it also optimizes the existing resources of each party involved in the collaboration. It facilitates the optimization of shuttle fleet, and reduces delivery time without having to invest for new infrastructures.

Further studies concerning the similar topic needed to be done, in order to provide more information about hub and spoke collaboration.

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