

Aviation spare parts supply chain optimization



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Cathay Pacific Airways Limited is a very profitable airline and has its business all over the world. They receive many awards for their operational efficiency and it has contributed a lot to their success. Behind all this success there are many tedious tasks of aircraft maintenance, repairs and services. Each and every airline requires usual maintenance to ensure operational smoothness and safety. This maintenance process can include regular servicing of aircrafts, change of damaged parts, repair of damaged parts, etc. And to allow this process of maintenance, Cathay Pacific requires a sophisticated spare parts management process.

They have one spare parts management process but it has some drawbacks and certain issues need to be addressed to refine the process and to increase its efficiency. First main point is that these aviation spare parts is very expensive and thus has very adverse effect on Cathay Pacific's balance sheet. They have sufficient inventory of these spare parts but of which significant percentage of parts are dead and inactive stock. They can't simply get rid of these parts because for aircraft safety certain parts are necessary and can be required at any time. They can't ground the plane for long time as costs of aircraft delays and grounding the plane are very high.

The usage pattern of these spare parts is highly unpredictable and thus, future demand forecasting is one of the challenging tasks for Cathay Pacific. Aviation spare parts are mainly divided into two categories Critical and non-critical. Critical spare parts market is mainly dominated by the OEM (Original Equipment Manufacturer) suppliers where as there are many suppliers for non-critical spare parts and the switching option is available. However, this switching option is not recommended as these switching costs are very high.

Robert and Paul have to be addressed the above mentioned issues but there are other issues and factors they have to consider. First of all for critical parts they need to consider the option of outsourcing the maintenance of rotatables or getting service packs where the OEM gives the option of overhauling. For non critical parts, they need to think about cutting down their suppliers. Cathay Pacific has around 2300 suppliers. Cathay Pacific use IT system for spare parts management but they don't have collaborative IT system which facilitates communication between Cathay Pacific and their suppliers. They also need to consider this new green movement. They need to reduce their carbon footprint to reduce new environmental taxes and also save thousands of kilometres and thus, fuel costs.

Some of the options they have are to do tipping point analysis ([1]). It is an end-to-end assessment of the supply chain management process. It is very helpful to determine at what point certain parts are needed to make available or to keep forward to reduce the time and transportation costs. This action of making the parts available closer to demand helps reducing transport and carbon emissions but only at the increased inventory costs. They already have increased inventory costs thus this can't be very difficult for them. However, there are other options available to further reduce high inventory costs. Other options are global sourcing. This means reducing the number of suppliers and the selection of suppliers which are spread across the world. Cathay Pacific already has its hubs in different continents. Selecting the suppliers' close to these hubs will be a good move in the process of amelioration of supply chain. This will help to reduce the links in the existing supply chain and to reduce the length of the journey. As Mr. Wall

of Jaguar Land Rover explains, “ Now you can’t just look at the purchase price of parts, but you have to look at the total landed costs including freight, packaging, customs and the cost of returning any unique containers.”

Selection of few suppliers with long term relationship will help to extend the IT systems and develop a collaborative system which will be beneficial for all and will result into minimum transportation costs and transportation time to the place of demand.

The alliance of different airlines will also be useful to reduce the suppliers’ power in case of critical parts and also help to share the inventory of spare parts. They are already doing this and have to continue to promote such types of activities. As Judy Blackburn, head of the UK logistics team at Kurt Salmon Associates (consultancy firm) explains that when two or more competitors come together and merge their logistics operations and transport systems, they can save approximately 15-20 percent in transportation costs. Third party logistics can be a good option as they can use the expertise of other company for these spare parts management and can focus on their core business.

2. What is Cathay Pacific purchasing power in aviation spare parts procurement? What are the possible alternatives for improvements in the procurement process?

There are two categories of spare parts of the airplane. First one is critical parts and second is non-critical parts. As far as purchasing power is concerned, for critical parts i. e. aircraft engines, etc. Cathay Pacific has very low purchasing power. The main reason behind this is strict air authority

restrictions and the critical parts manufacturers hold an expertise in their parts.

When it comes to non-critical part, Cathay Pacific has certain purchasing power as there are many suppliers. But they should take an account that switching costs from one supplier to another. The best practice they can do is to form an alliance for aircraft spare parts procurement. They already have an alliance, so if all airlines come together and try to unify their procurement process, they will have more purchasing power. Also they don't need to keep much buffer stock or single airline doesn't need to keep a buffer stock which indeed costs more and has a considerable effect on the balance sheet.

If they don't want to form an alliance, they should decrease their number of suppliers. But while doing this, they can use global sourcing strategy. This means to select the suppliers around the world and close to Cathay Pacific hubs. In this way, they can cut down the travelling time of spare parts from their supplier to Cathay Pacific hubs and save costs on transport and CO2 emissions.

When it comes to buffer stock, there are not many options available to cut down the expenses. However, using proper analysis tools and proper IT system, which collaborates with their suppliers too, they can estimate the demand time and place and make available required spare parts.

Procurement process is indeed very important process to ensure the proper availability of spare parts at the very right time and the place where the part is required. Cathay Pacific has an IT system but the use of collaborative IT systems where Cathay Pacific and their suppliers use one single platform to

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communicate with each other and to trade is imperative to cut down buffer stock. They should reduce the number of suppliers and extend this collaborative IT system which will deliver positive results. The reduced number of suppliers and the sharing of IT systems will help to build the trust amongst them and to build the long term relationship.

3. What are the advantages & disadvantages for Cathay Pacific to use third party logistics (3PL) partners for their repair management and logistics management? What are the criteria for Cathay Pacific to choose her 3PL partners for repair management & logistics management?

Third party logistics is one of the best ways to conduct the logistics activities and an important factor in the supply chain management process. As most of the companies can focus on their core business and these third party logistics (3PL) providers can do the rest. The outsourcing company can rely on the expertise of these 3PL providers. Nowadays many global companies are using these 3PL services. Thus, we can state that these services are very popular and have got some advantages. But as the saying says every coin has two sides, these 3PL services have positive as well as negative sides.

First, we will have a look on positive aspects. These 3PL providers have an expertise and resources to provide logistic services. These resources include warehouse, transportation facilities, better IT systems to track and collaborate with other subcontractors, if any, etc. Thus any companies can achieve economies of scope and economies of scale. When it comes to Cathay Pacific, they can outsource their spare parts inventory management to 3PL service providers. Thus, Cathay Pacific will be able to save on warehouse facilities and transport facilities of necessary spare parts in case

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of demand. The direct effect of this outsourcing activity will be reduction in capital investment.

There is no need to change Cathay Pacific's supply chain system as they can just raise an order or necessary requests and the rest will be handled by 3PL provider. 3PL provider will collaborate with the suppliers if needed and do the needful. By synchronising the operations with other deliveries and other customers, 3PL provider can benefit economies of scale. This also means that indirectly, Cathay Pacific will have economies of scale. Other benefit of 3PL is Cathay Pacific can concentrate on its core competencies and customer service to give the better customer experience and other part of repairs will be handled by 3PL provider.

Risk sharing and the reduction in the risks will be other important issue when it comes to 3PL providers. First of all, engaging with 3PL will directly give the benefits of reduced financial risks to Cathay Pacific. Costs savings, better cash flow and better access to resources are the other important benefits.

But there are some disadvantages too. Outsourcing logistics and repair management to 3PL means Cathay Pacific will have no control or less control in its own activities. Other important risk is of discontinuation of the services of 3PL provider and the difference in the perception. 3PL provider will look at these repair management and spare parts logistics process in different angle than Cathay Pacific. There has to be some coordination or basic understanding between these two companies to ensure smooth and dispute free operations. If 3PL provider goes bankrupt or similar case Cathay Pacific

will have huge impact as it has to manage all the activities suddenly and at the short notice.

The above questions arise if they have 3PL provider. But to find 3PL provider is very complex task. First of all it is not easy to develop or to establish reliable and cost-effective relationship. Any mistake in this selection process will lead to huge economic losses for Cathay Pacific. Secondly, there is basic need of information sharing. They have to have basic IT systems which facilitate and ensure the smooth flow and sharing of information. Then, in this case there is a risk of information leak. The information leak is very dangerous and could lead to huge losses for the company.

Thus, the question arises how Cathay Pacific should proceed for selection of its 3PL providers to ensure they will meet the demands? Cathay Pacific has to examine certain aspects to ensure that 3PL provider is meeting with their expectations. They can start by setting the list of objectives which they want to meet by inviting 3PL provider. They can then start doing the list of prospective 3PL providers and inviting their proposals. These proposals can include previous safety details and other details.

It is always a good practice to check previous shipping records and other important documents like licensing, insurance and other necessary factors. They should review these factors and reduce the list of their prospective 3PL providers to 3-4 providers. After it is good practice to check and visit the providers' facilities if possible. This will help to rate the facilities as per Cathay Pacific's requirements. It can also help to check for the place of business of their 3PL providers. These visits can help Cathay Pacific to

examine the employees of 3PL provider, their work ethics and their corporate culture.

These practices will help Cathay Pacific to select the best 3PL service provider for their repairs management and spare parts management. There is another possibility is to collaborate with other airline companies and establish an independent organisation which will specialise in 3PL activities or spare parts management and repair management activities. The similar and the best example of this kind of activity is WNS Global Services which is established by British Airways with other airlines for reservation and baggage handling services for airlines and other travel services. This company now handles front end and back end activities for many airlines and also provides various financial services, etc. This will help to get the expertise of the participant airlines in the specified domain and enable reduction in costs and risks.