

How Supply Chain Influences the Airline Business?

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Abstract:

Supply Chain plays a very vital role in the overall management of airline business ensuring the proper distribution and assimilation of all it's operations , services and vale chain. Therefore, this paper aims at identifying the extensive influence of supply chain in airline business while also defining the challenges it faces and chalking out the ways to improve.

- Firstly, how supply chain has expanded its role towards the airline industry have been discussed in detail. This portion of the paper covered the significant factors as **inventory analysis , planning , aircraft lifecycle** etc. Thus the paper has created the attempt to explain the influence of supply chain in airline industry briefly.
- Secondly, as it is already known that the airline sector is a complex sector and requires constant maintenance , so the supply chain process here faces diverse set of challenges. Therefore, this part of the paper covers the significant challenges like **airline flight scheduling , customer demands , inventory management , catering and hospitality** etc. Hence , the paper has achieved to introducing the challenges of airline business to some extent.
- Thirdly, having discussed the challenges it appeared as vital for the paper to have provided some way out of the mentioned challenges. So in the next part of the paper the probable solutions as **robust airline scheduling , maximizing lifecycle , management of catering , global partnership** etc have been provided. Thus , the paper has aimed to fulfill the role of addressing solutions to the aroused challenges.

- Fourthly, as for any business sector the future holds a great key , henceforth this paper has attempted to explore the future prospects of supply chain in airline business. This portion of the paper briefly discussed future prospects as **air traffic growth, and pursuance of airline flights** in several continents worldwide. Therefore , the paper has aimed to rethink the future for the promising airline business sector.
- Lastly , the paper has shed some light hoping for the continuous growth in airline business with the combined assimilation of technology and value chain provided by supply chain.

Therefore, after addressing a number of issues related to the assimilation of supply chain in airline business the paper has attempted to serve it's purpose. It is thus hoped that the paper has fulfilled it's requirements in concern to the subject in matter.

1.Introduction:

Airline Business is a highly global and demanding issue in today's aviation sectors. The airline business supply a multifarious number of services making use of advanced technologies in their aircraft models. The airline business deals with high risks and higher returns. The detail oriented and rapidly changing sector of airline business is significantly influenced by the supply chain and procurement methods.

2.How supply chain influences the airline business?

The supply chain of aviation industry can be defined as the management of an optimized inventory that comprises of highly essential items in stock while minimizing the idle stock. The aim behind supply chain management of aviation industry is the minimization of maintenance costs , delivering superior productivity while also maintaining authenticate inventory stocks.

It is of no doubt that the supply chain of aviation industry faces diverse number of issues to be addressed. The supply chain process here also has prudent techniques to address these capital intensive issues.



Supply Chain in Airline Industry

The processes & techniques used by supply chain to address the airline business issues include:

Inventory Analysis: It is used to quantify number of items and values , correctness of stock etc. The historical records and volumes of stock are analyzed.

Benchmarking & Planning: Under this segment analysis of customer demands and needs , capacity management are analyzed. The technical aspects like engine maintenance , hangar accommodation , logistics etc are ascertained here.

Maintenance Operations: Cost for planned and unplanned maintenance, time , labour materials are recorded and tracked through this. The effective losses due to unplanned maintenance is also addressed her through cost of ownership.

Material request cycle: The detailed lifecycle management of aviation industry is done through supply chain tools. For this delays in processing orders , days to fulfill order , request analysis etc are analyzed here.

Determining Lifecycle of Aircrafts: This uses predictive alerts to determine life of aircrafts. It's possible to know when the components are past their useful lives or needs any maintenance with the help of predictive notifications.

Vendor & Contract management: Supply Chain Management of aviation industry is complex because of the vendor management issues. Dealings of orders , vendor contracts globally and maintaining them with transparency is handled here. In order to acquire operational success the integration of structures , materials and components is done in the best possible manner.

Tracking & Measuring Objects: The chief performance indicators as consumption history , maintaining expenses , resting life of components for improved capital and operational expenses planning.

Invoicing , Bills & Stock Management: To maintain invoices from multiple vendors in a single platform. Using integrated interface , quality checks , receiving inventory , processing of bills etc are done.

3.Challenges of Supply Chain in Airline Business:

With the emergence of new production levels and continued growth of the airline industry the air traffic and number of passengers is on a high rise. Though such indicators signify sustained growths the supply chain of global airline business is one of the most complex mechanism. As a result there have aroused a number of challenges for the supply chain in the airline business sector.

Airline Scheduling: One of the most challenging and demanding aspects of supply chain in airline business is the flight scheduling. The airline or flight schedule comprises mainly of detailed listing of flights , specified origin , destination , scheduled arrival and departure timings.

However , the difficulty arises in case of the schedule development activity. The schedule development is the estimated duration of flight block times. In this case , The usage of historical data by several companies have proved to be unfruitful for several companies.

To improve the time-performance scheduling during operations and thus upgrade the service level guarantee through customers satisfaction air line companies need to work on the flight schedules figuratively. For instance in our country , the major airline company Biman Bangladesh Airlines , lacks the efficient airline scheduling to meet the high rising customer demands. They have 5-6 hours transition period within the between cycles of the flights that delays the flight cycles and diminishes the efficiency of multiple vehicles taking flight at the same time. Such airline scheduling issues can be solved using service level metrics. (Milind Sohoni, Yu-Ching Lee , Diego Klabjan, 2008)



Robust Airline Scheduling

Lack Of flexible Business Models: During the last decade the value has shifted from airline business providers to their suppliers. Recapturing such lost value is not a easy job as it requires skilled automation , innovation , cost estimation , product development etc.

Minimized Lifecycle Value: The lean operating costs for building new models shorten the lifecycle of previous generation aircrafts. It has been noticed that the average retirement ages for aircrafts has been reducing substantially.

Supply Disruption Risks: Since the airline business is closely related to geo-environmental and natural disasters , there arises the risk of constrained demand due to wrong prediction of future demands.

Inventory Management: Since the inventory required to balance the airline bases are cost intensive these need special considerations and maintenance. Due to emergence of new technologies some inventories get antiquated very quickly. On the other hand , minimal inventories can also lead to delayed shipments.

Transportation of Parts: The machineries and mechanical parts of aircrafts business are very intricate and complex. It is a challenge for the aviation companies to utilize and transport the appropriate tools using the complex mechanisms.

Emerging Markets: Both the air fleets and supply chain markets are expanding. It is gaining growth in the Asia Pacific and Middle East region too. Currently , the Asia Pacific region holds 20% of the global aviation business. There remains inexperienced workforces in these regions for which the aftermarkets have become fragmented and uncoordinated.

Demanding Customer Base: The aviation business market is expanding not only in fleet growth but also experiencing customer demands. It is expected that the fleet traffic would be increasing by 5%. The rise in customer demand is mainly due to availability of competitors.

Strategic Global Partnership: The market for aviation industry is highly centered towards the global markets. To establish ground in the global markets the companies need to cultivate global collaborations through communicating futuristic suppliers and technology providers.

Due to complex , vulnerable and global nature of aviation supply chain the companies need to address the global strategies as much as possible.

Catering and hospitality in supply chain of airline business: The catering and procurement section of supply chain in airline business proves to be another challenging factor. It has mainly two to three considerable factors as :

1. **Sourcing**
2. **Preparation**
3. **Considering Perish ability of Foods served**

Here it needs to be cautious about the **Heating , Reheating , Dispatching** etc while ensuring that the foods served are in ambient temperature , and not **overheated** or **cold**. These factors often prove to be challenging as well.

3.Ways To Improve Supply Chain In Airline Business:

Managing Flight Schedules through Robust airline Scheduling: To mitigate the block time uncertainty of supply chain in airline business two metrics can be used as proposed by the U.S. Department of Transportation. Those metrics are, namely:-

- I. **Flight Service Level**
- II. **Network service Level**

Here the **flight service level** holds similar mechanism as that of the **on-time performance measure** of the aforesaid department. On the other hand , the **network service level** is propagated towards the fulfillment of customer itineraries. To keep co-ordination between the two service levels while also maintaining the desirable profit levels , a **stochastic integer programming** needs to be formulated. This formulation can chalk out by making optimal amendments to an already provided schedule. A different variant of this model is also developed for providing improved service levels along with **optimal network profitability**. Ultimately through intelligent combination of **real-world data , powerful algorithms** and **computerized experiments** , this mechanism can provide the solution to find the optimal bridge between **profitability & service level**. (Milind Sohoni, Yu-Ching Lee , Diego Klabjan, 2008)

This could be fruitful for the airline industries of our country as well. For instance, the **Bangladesh Biman Airlines** have been struggling with their airline schedules due to wastage of in-transit periods. Therefore they could initiate measures for mitigating such issue.

Constructing Flexible Business Model: Airline companies need to construct economies of scale for their newly defined business models. Besides , cost savings , digital product development , automation methods , cost estimation could prove to be fruitful.

Maximizing Lifecycle Value of Aircrafts: To maximize lifecycle value of aircrafts providers will require **organized pricing orientations , customer usage horizons , integration of old and new serviceable components.**

Recovering Supply Disruption Risks: To cope with the supply disruption risks airline businesses need to fortify long term supplier relationship by comprehending the suppliers business. To initiate that identification of market projection and cost drivers through activities with supplier is necessary.

Managing Inventory: For organizing the inventories efficiently , making predictive analyses on the basis of big data that are developed through **restocking of projected needs , constructing time frames & figures.**

Facilitating Transportation of Parts: The complex transportation mechanisms in airline business is done through replenishment of stray parts , integrated hold over logistics , expansion flight lineages etc.

Balancing Emerging Markets: To meet the challenges of fragmented aftermarkets owing to inefficient labor force, the airline businesses need to rethink about operations , placement of facilities , sensing optimal locations for manufactures and skill orientation of staffs.

Satisfying Demanding Customer Bases: To meet the ever growing needs of customers , airline companies need to be aware of recent technologies , strategic relationship with the trading partners , and keeping an eye out on the competitors new developments is required. But , above all, airline businesses need to focus on forming trust and loyalty amongst the customers.

Formation of Global Partnerships: To sustain in the globally oriented business arena of airline sector , the companies need some defense mechanisms that include:

- I. Spreading the expertise through consolidation with futuristic providers and suppliers
- II. Usage of augmented reality and artificial intelligence in the technical aspects
- III. Building and expanding the sphere of supply chain through strategic relationship with global collaborations

Managing the Catering and Hospitality sections of airline Business: Airline businesses need specialized prudence nd attention in this aspect. To maintain the factor as **Perish Ability , Temperature , Edibility** of served foods they need to:

- Ensure that food bears good taste after **reheating**
- Not including food items in short range flights rather serving **Improperly heated food.**

- To maintain ambient smell , taste and not lose quality during dispatching , food should be prepared 12 hours prior to long flights and loaded at least an hour ago for prevention of wrong tempered , perished or smelly food.

Therefore , though the challenges faced by an airline business in the supply chain mechanism , procurement and maintenance is manifold and very complex in nature , the aforesaid way outs would prove very much effective.

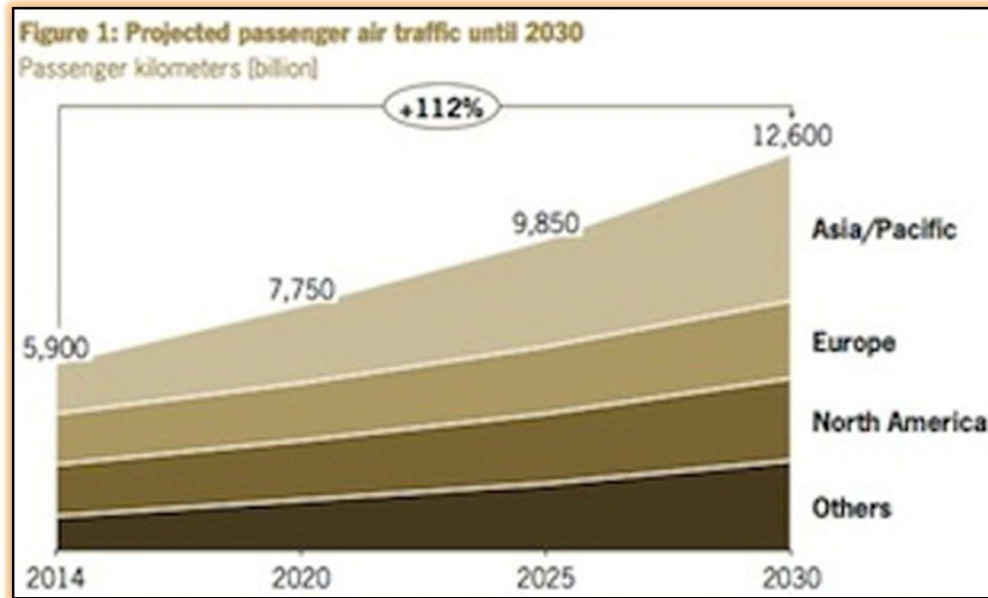
4.Future Prospects of Supply Chain in Airline Business:

Although the supply chain plays a vital role in the overall dealings and mechanisms of airline business , there remains some limitations in such sectors. According to a study by the **Industry Week** regarding the exposure of supply chain in airline businesses , there persists some technical difficulties due to lack of technological expertise. They predict for the future that the supply chain sector will only be trained to deal with the highly advanced new aircraft fleets in about 10 years.

Again , the future of supply chain in airline business is controlled by some predominant factors as the mutually inclusive economic , industrial and air-traffic growth all at the same time.

The demand for air travel is increasing rapidly due to emergence of new markets. The world traffic increasing by 5% is owing to the newly fostered economic growths in both the developed nations and recently industrialized countries. Consequently cost pressure has been building upon the airline industries

According to another leading aircraft specialist journal called the **Aircraft interiors International** , the air traffic growth projections hold much of the future prospects of supply chain in airline business. By the findings of a latest estimate conducted by the aforementioned journal , if the worldwide air travel by customers is represented graphically it shows projections as :-



Projected airline traffic

5.Conclusion:

In concluding to the exploration of the diverse influence , challenges , fields of improvements and future prospects of the supply chain in airline business is that it is the new source of creating value , prosperity , expansion of the airlines business sector. The supply chain does not only hold the key to it's efficiency , but also is the new value chain for the airline business. It is undoubtedly of no high hope if it is opined that the intelligent integration of supply chain value , science and business strategies ,will propagate the ever expending aairline business to unimaginable heights.

References:

(Southeastern Oklahoma State University, 2018) ; (Steven Brand, 2017) ; (Viktoria Ghrokhovskaya, 2018) ; (Milind Sohoni, Yu-Ching Lee , Diego Klabjan, 2008) ;

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