

Internship Report on Comprehensive analysis of the Data Management Process of Finance Directorate of Biman Bangladesh Airlines



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Submitted to:

Islamic University of Technology

In partial fulfillment of the requirements for the degree of
BBA in Business and Technology Management (BTM)

Submitted by:

I understand that my final report will become part of the permanent collection of the Islamic University of Technology BBA in Business and Technology Management Program. My signature below authorizes the release of my final report to any reader upon request.

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This internship report is submitted to the Department of Business and Technology Management (BTM) at the Islamic University of Technology (IUT) for the course BTM 4800.



Letter of Transmittal

Farjana Nasrin
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Subject: Submission of “Internship Report on Comprehensive analysis of the Data Management Process of Finance Department of Biman Bangladesh Airlines”.

Dear Sir,

I am delighted to present my internship report titled “Internship Report on Comprehensive analysis of the Data Management Process of Finance Department of Biman Bangladesh Airlines” as a part of the internship program. Working under your esteemed guidance has been a significant accomplishment for me.

In the process of compiling this report, I have strived to provide an accurate reflection of the company’s status and my personal experiences within it. The chance to be a part of Finance Directorate of Biman Bangladesh Airlines has paved the way for comprehensive learning in the realm of a mixture corporate operations and a bureaucratic environment. The experience of working in such a diverse and challenging environment and the opportunity to produce this report under your supervision has been truly rewarding.

I would like to highlight that my time at Biman Bangladesh Airlines has allowed me to understand the intricacies of the Airlines industry. The practical exposure to Key Performance Indicators has truly expanded my knowledge and enriched my professional experience.

The supportive team at Finance Directorate played a crucial role in my learning journey. Despite having a strict hierarchy, every one of my supervisors and senior officers were very kind and helpful to me. Their guidance and mentorship have been instrumental in helping me navigate through various projects, thereby bridging the gap between academic learning and its practical application. Overall, it was an experience way valuable than anything I expected.

Sincerely yours,

Md Zawadul Bashir Al-Muhi
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Declaration

I, Md Zawadul Bashar Al Muhi, a student of the Department of Business and Technology Management of the Islamic University of Technology hereby declare that I have prepared this report on Finance Directorate of Biman Bangladesh Airlines by myself with the guidance provided by my supervisor Ms. Farjana Nasri, Assistant Professor, BTM. I have not intentionally infringed any copyright. The work is authentic to the best of my knowledge. I further declare that the report has not been submitted to any other party or organization for any certification.

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Acknowledgements

Success is a journey, not a destination. In this journey, we need the assistance and guidance of a few individuals. Without their guidance or help, we drift away from our objectives and flail around hopelessly. I am blessed to get the guidance of a number of people in preparing this report. This part is to acknowledge the people who guided me and helped me to compile this report.

First, I express my gratitude to Almighty Allah for the successful compilation of the report. Then, I thank my supervisors Tanvir Hasan, Anupom Kumar Barai, Mohammad Aziz Hasan and Mohammed Anower Hossain for their briefing about the workflow of their respective sections and the process through which they handle data respectively.

In preparing the report, I received active co-operation and guidance from the GM, Managers and Junior Officers of Biman Bangladesh Airlines Limited. I sincerely express my appreciation for their guidance. I would also like to thank all the departmental heads and staff who helped me in various ways. I would like to thank the Chief Financial Officer Md. Nowshad Hossain for allowing me to compile this report. I would like to thank my course teacher, Lecturer Shihab Shahriar for going out of his way and providing us in depth knowledge about Data Management and Data Analysis that allowed me to undertake such a diverse role.

Finally, I would like to express my gratitude to my Supervisor Assistant Professor Ms. Farjana Nasrin for her continued guidance and support in making this report. I thank my supervisor wholeheartedly for placing her trust in me and directing me in completing my internship as well as my report.

Preface

This report documents my findings at Biman Bangladesh Airlines, where I am working as an intern from 28th of January till 26th April. This internship is a valuable opportunity to bridge the gap between theoretical knowledge gained in the classroom and practical applications in the professional world.

During my internship, I was assigned in the various sections of Finance Directorate of Biman Bangladesh Airlines. Through the experiences I gained in those sections, I have gained practical knowledge about the Financial Practices of the Biman Bangladesh Airlines along with their **Data Management** practices.

This report details the internal workings of the sections, including the projects I participated in, the methodologies employed, the challenges encountered, and the lessons learned. I am grateful to my supervisors for their guidance, support, and encouragement throughout this internship. Their mentorship was instrumental in my professional development.

I believe this report will be a valuable resource for both students seeking similar internship experiences and professionals interested in how Biman Bangladesh Airlines handles data.

Executive Summary

This report is the about the professional experience I gained while working in the Finance Directorate of Biman Bangladesh Airlines. Biman Bangladesh Airlines is the only National Carrier of Bangladesh that has been continuing operations in since 1972. Through working in various sections of the Finance Directorate of the Airlines, I got hands-on experience. This report reflects the inner workings of various sections. This report also reflects on the operations and workings of Biman along with their current position in the airline industry. After working with each of these sections, I have listed some recommendations in the last chapter. All the recommendations have been added keeping in mind the growing need of technological adaptations and also has listed current technological shortcomings in the Finance Directorate of Biman Bangladesh Airlines. Implementing these suggestion swill enables Biman Bangladesh to adapt to new technologies in the future.

Internship Completion Certificate



Directorate of Corporate Planning & Training (Training Division)

Ref: 30.34.0000.028.00.000.24.173


Date: 26 May 2024

TO WHOM IT MAY CONCERN

This is to certify that **Md. Zawadul Bashar** (Student ID No-190061119), a student of BBA (major in **Technology Management**) under the Department of Business and Technology Management of **Islamic University of Technology**, Dhaka has successfully completed his internship from **28 January 2024 to 26 April 2024** under the Finance Directorate of Biman Bangladesh Airlines Ltd., Dhaka. He has actively and enthusiastically participated in his training program and we are very impressed with his work.

We hope that the training program in Biman has made him pro-active and more competent as he gained some real life practical experience.

We wish every success in his life.


26.05.2024
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Chapter-01

Introduction To the Report

1.1. Origin of the Report:

As a mandatory part the BBA in Technology Management Program, all the students of the Business and Technology Management (BTM) Department, Islamic University of Technology must undergo twelve (12) weeks long internship program with an objective of gaining practical knowledge about current business world. After this internship program each student must submit an internship report mentioning their activities during the internship program.

I started my internship at the Biman Bangladesh Airlines Limited, Head Office, Dhaka, from 28th January 2024. During my first week, I was assigned to submit a report on the Data Management and Data Governance process of the Finance Directorate. I have compiled information from multiple departments and listed my findings in this report.

1.2. Objective:

Broad Objective:

The objective of this report is to find out about the Data Management and Data Governance practices that are existent in the Finance Directorate of Biman Bangladesh Airlines.

Specific Objectives:

The specific objectives of the study are to-

- Get a deep understanding of the **Data Management** process.
- Compare the **Data Governance** Process with the data governance standards and law of the country.
- Conduct research to identify if the Finance directorate has appropriate tools **for Data Analysis**.
- Design framework to ensure the smooth transfer of data inside the Finance Directorate as well as the entire company.
- Try to identify factors that can affect **Data Security** and **Data Integrity**.

1.3. Scope of the Report

Biman Bangladesh Airlines Limited is one of the renowned airlines in Bangladesh. The scope of the study is to evaluate the Data Management practices of Finance Directorate of Biman

Bangladesh Airlines. The report highlights Data Management and Data Governance processes of various sections of the Finance Directorate.

1.4. Methodology

In order to conduct this internship report both primary & secondary data have been utilized.

The sources of data are-

❖ Primary source of data

- Briefing about the internal working of the sections given by section supervisors.
- Practical work experience in the sections.
- Relevant study materials as provided by section supervisors.

❖ Secondary source of data

- Wikipedia
- Website of the Biman Bangladesh Airlines Ltd
- Various books, articles regarding general airlines functions, and management.
- Books on Airlines Finance and Airline Key Performance Indicators.
- Biman's employees service manual.

1.5. Constraints

The constraints of the report and the study are follows:

- The report has been conducted within a short time frame.
- The study is self-financed.
- The study was limited to the head office.
- The vital limiting factor is lack of experience and sound knowledge for such research.
- Necessary data and information are neither adequate nor well furnished.
- Access to the internal systems and software was not provided for complete system analysis due to confidentiality and lack of experience on the part of the intern.



Chapter-02

Company Overview

2.1. Company Introduction

Biman Bangladesh Airlines, also referred to as Biman, is the country's flag carrier. The airline offers flights from its secondary hubs at Shah Amanat International Airport in Chittagong and Osmani International Airport in Sylhet in addition to its primary hub at Hazrat Shahjalal International Airport in Dhaka. The airline has air service agreements in 42 countries and offers international passenger and cargo services to a number of locations. Kurmitola, in the northern region of Dhaka, is home to the airline Balaka Bhaban's headquarters. An essential component of the airline's corporate operations is the transportation of tourists, migrants, and non-resident Bangladeshi workers, as well as yearly Hajj flights and the operations of its subsidiaries. Due in large part to the volume of inbound and outbound tourists as well as non-resident Bangladeshi visitors, the country's air transport industry is growing at an 8% yearly rate. Biman and other private Bangladeshi airlines are in fierce competition with one another.

Biman began operations in February 1972. Biman held an internal monopoly over Bangladesh's aviation sector for 24 years, until 1996. The airline increased both its fleet and its routes in the decades after it was founded. Biman flew to 29 foreign locations at its height, covering the distance from New York City in the west to Tokyo in the east. The airline was fully owned and operated by the Bangladeshi government until July 23, 2007, when the Caretaker Government of Bangladesh converted it into the largest public limited company in the nation. The airline has started to update its fleet and cut staff since going public limited in 2007. In 2008, the airline and Boeing inked an agreement for the purchase of ten new aircraft, with a further ten options. Following the introduction of the new aircraft, Biman increased in-flight facilities, including live TV feeds, WiFi, onboard Internet, and mobile phones, and expanded its destinations.

European Aviation Safety Agency has certified Biman Bangladesh Airlines as safe to travel in Europe. The airline has recently started operating again to some of its former destinations in Asia and Europe after Biman also passed the IATA Operational Safety Audit. Under its new management team, Biman Bangladesh Airlines has recently seen a noticeable improvement in both punctuality and on-time flight performance.

2.2. History of Biman

With a long history that reflects Bangladesh's changing needs and goals, Biman Bangladesh Airlines Limited (BBAL) is an impressive organization. The airline's history starts just after the nation gained its independence in 1971. Driven by a sense of patriotism, 10 Boeing 707 commanders and seven more pilots, along with other former employees of Pakistan International Airlines, presented a proposal to the Bangladeshi government in December 1971. The idea aimed to establish a national carrier that would serve as a symbol of Bangladesh's recent independence and link its citizens to the outside world.

Following this proposal, Biman Bangladesh Airlines officially took flight in February 1972 under the Bangladesh Biman Ordinance. Initially christened "Air Bangladesh," the airline quickly adopted its current name, "Biman" – a Bengali word derived from Sanskrit that signifies "airplane"

With a single DC-3 aircraft, BBAB commenced domestic operations, connecting Dhaka, the capital city, with key regional centers like Chittagong, Sylhet, and Jessore.

BBAB experienced a period of significant expansion during the 1970s. The airline made a concerted effort to carry out its national carrier duties. An important turning point was when they added Boeing 707 aircraft to its fleet in the early 1970s. These aircraft made it possible for BBAB to conduct its first international flights, creating crucial ties between Bangladesh and other nations. By the end of the decade, BBAB had expanded significantly, flying a large fleet consisting of Boeing 707s for international travel and F27 turboprops for domestic flights. During this time, BBAB also became Bangladesh's only domestic carrier, holding an internal monopoly for more than 20 years until 1996.

Subsequent decades yielded additional advancements for BBAB. Throughout the 1980s and 1990s, the airline added new aircraft to its fleet, including Fokker F28s, DC-10s, Airbus A310s, and ATRs. By continuing to modernize, BBAB was able to access a larger selection of foreign destinations and grow its network. The airline operated flights to an astounding 29 foreign locations at its height, which stretched from New York City in the west to Tokyo in the east.

But over the years, BBAB has also encountered difficulties. Its development and profitability have occasionally been impeded by problems including corruption and poor management. The airline has undergone reorganization in the past few years with the goal of increasing competitiveness and efficiency. BBAB is still an important participant in Bangladesh's aviation industry today, and the country's ongoing economic growth and incorporation into the global economy are entwined with its future.

2.3. Services

Bangladesh's national flag carrier, Biman Bangladesh Airlines (BIMAN BANGLADESH AIRLINES), is essential to the nation's global connectivity as well as to the promotion of foreign travel and business. Since its founding in 1972, BIMAN BANGLADESH AIRLINES has expanded dramatically, providing a vast array of services to meet the various demands of its patrons. This study gives a thorough rundown of the services that Biman Bangladesh Airlines offers, emphasizing its in-flight entertainment, cargo services, and passenger services.

2.3.1 Passenger Services

Biman Bangladesh Airlines places a high priority on the comfort and happiness of its passengers during their travels. The following is a summary of their main passenger services:

1. **Extensive Network:** Biman Bangladesh Airlines is proud to have a robust global network that spans multiple continents. They serve both business and leisure passengers, flying to key locations in Asia, Europe, and North America
2. **Multiple Cabin Classes:** Biman Bangladesh Airlines provides a variety of cabin classes to accommodate a wide range of traveler tastes and spending limits. An affordable and comfortable travel option is offered by economy class. With bigger seats, priority boarding, and access to airport lounges, Business Class provides more comfort. Offering more

legroom and better amenities than Economy and Business Class, Premium Economy Class is available on a few routes.

3. **Online Booking and Management:** Travelers may easily search for flights, compare prices, and safely book tickets with Biman Bangladesh Airlines's user-friendly online booking system. Additionally, choosing seats, checking in for flights, and managing current reservations are made easier via the web platform.
4. **Mobile App:** Biman Bangladesh Airlines provides travelers with a mobile app to conveniently plan their travel while on the go. Users of the app can read boarding cards, book flights, check-in for flights, follow the status of their flights, and access other travel-related information.
5. **Baggage Allowance:** For all cabin classes, Biman Bangladesh Airlines offers a complimentary baggage allowance. The precise amount varies based on the route and cabin class (business class customers receive larger allowances). If necessary, passengers have the option to purchase additional baggage allotment.
6. **Special Services:** Passengers with particular needs are acknowledged by Biman Bangladesh Airlines. They provide services for medical conditions, unaccompanied youngsters, and people with disabilities. Prior preparation is also possible for customers who are expecting or who need special meals.
7. **Frequent Flyer Program:** The "Sagorika" frequent flyer program offered by Biman Bangladesh Airlines gives devoted travelers miles accrued from flights. By using these points, you can get future travel, accommodations, and other amenities.

2.3.2. Cargo Services

By providing effective cargo services, Biman Bangladesh Airlines is essential to Bangladesh's economic growth. A sample of their cargo options is provided below:

1. **Global Network:** Businesses in Bangladesh may import and export goods more easily because of Biman Bangladesh Airlines's freight network, which connects to important trade hubs throughout the world. Biman Bangladesh Airlines provides services for general cargo, pharmaceuticals, perishables, and even live animals.
2. **Dedicated Freighter Fleet:** In order to effectively manage high cargo volumes, Biman Bangladesh Airlines maintains a fleet of freighter aircraft. This guarantees deliveries on time and serves companies who need bulk freight.
3. **Value-added Services:** To satisfy particular client demands Biman Bangladesh Airlines provides a range of value-added cargo services. These consist of door-to-door delivery choices, storage facilities, and help with customs clearance.
4. **Real-time Tracking:** Transparency throughout the shipping process is ensured by Biman Bangladesh Airlines's online cargo tracking system, which enables shippers and consignees to check the status of their shipments in real-time.

5. **Competitive Rates:** Biman Bangladesh Airlines is a desirable choice for companies looking for affordable air freight solutions because they provide cargo services at competitive rates.

2.4. Current Fleet

The current fleet of Biman Bangladesh Airlines consists of the following Aircrafts:

Aircraft	In service	Orders	Passengers				Notes
			C	Y+	Y	Total	
Boeing 737-800	6	—	12	—	150	162	
Boeing 777-300ER	4	—	35	—	384	419	
Boeing 787-8	4	—	24	—	247	271	
Boeing 787-9	2	—	30	21	247	298	
De Havilland Canada Dash 8-400	5	1	—	—	74	74	
Total	21	1					

2.5. SWOT analysis of Biman



Figure: SWOT Analysis of Biman Bangladesh Airlines

Strengths:

1. **National Flag Carrier:** In Bangladesh, Biman has a strong sense of national identity and is a well-known brand. Travelers from Bangladesh may become more devoted and patriotic as a result, offering them a competitive advantage.
2. **Reputable Service:** On board, Biman is renowned for providing authentic Bangladeshi hospitality. This emphasis on friendliness and comfort for passengers can be a big selling factor, particularly for tourists looking for a distinctive cultural experience.
3. **Diverse Services:** To reach a larger market, the airline provides both passenger and cargo services. Biman's ability to diversify enables it to profit from both the transportation of passengers and products.
4. **Fleet Modernization:** In order to enhance its fleet, Biman has been purchasing modern, fuel-efficient aircraft. This upgrade provides passengers with a more comfortable and modern travel experience while lowering operating expenses and increasing fuel efficiency.
5. **Emphasis on Safety:** Biman places a high premium on safety, which may appeal to tourists. Passengers' confidence and trust are increased by a solid safety record.
6. **Biman's monopoly in ground handling:** At the main airports in Bangladesh, ground handling services are only provided by Bangladesh Airlines. By doing this, they can keep expenses under control and maybe improve the efficiency of passenger and cargo handling operations.

Weaknesses:

1. **Management Concerns:** Biman has come under fire for allegedly using politics to sway management choices, which has left decision-makers without sufficient industry knowledge. Missed strategic opportunities and inefficient resource allocation may arise from this.
2. **Bureaucracy:** Difficult internal procedures can impede productivity and judgment. Improved customer service and quicker reaction times can result from streamlining operations and cutting bureaucracy.
3. **Employee Dissatisfaction:** Service quality may be impacted by employee complaints and low morale. Improving customer relations and motivation can result from attending to staff problems and creating a positive work environment.
4. **Outdated Aircraft:** Despite ongoing renovation, a portion of the fleet is still quite old, which negatively affects both passenger comfort and fuel efficiency. Modern airplanes may greatly increase passenger comfort and operational efficiency when older types are replaced.
5. **Limited Innovation:** When it comes to implementing new technology and service offerings, Biman might not keep up with rivals. In the long run, this might make them less competitive. Accepting innovation can result in better client experiences and possibly less running expenses.

Opportunities:

1. **Expanding Market:** Biman will face higher passenger demand as the world's aviation industry is expected to keep expanding. The airline may see more revenue as a result of this growth.
2. **Potential for Cargo:** Given Bangladesh's sizable export market, the cargo services industry has a lot of room to grow. Biman can increase its market share in the cargo sector by utilizing its current infrastructure and knowledge.
3. **Technological Advancements:** Biman can increase productivity, save expenses, and streamline operations with the use of new technologies like data analytics, smartphone apps, and online booking systems.
4. **Domestic sector:** Biman has the opportunity to capitalize on Bangladesh's expanding domestic aviation sector. Biman is able to meet this increasing demand by developing its network as domestic travel increases.

Threats:

1. **Competition:** Regional and foreign airlines provide a serious challenge to market share, particularly in terms of service quality and cost. FitsAir, Air China, and Air Somalia are the airlines launching direct flights to Dhaka.
2. **New competitors:** FlyDhaka, a recent addition to the Bangladeshi aviation industry, may exert pressure on Biman to enhance its offerings and maintain its competitiveness.
3. **Variations in gasoline Prices:** Biman's profitability may be greatly impacted by rising gasoline prices. The risk brought on by changes in fuel prices can be reduced by using hedging techniques and looking into fuel-efficient solutions.
4. **Economic Downturns:** Travel demand can be adversely impacted by global economic downturns, which can have an effect on Biman's revenue. Biman can withstand economic downturns by focusing on cost containment and diversifying its revenue sources.
5. **External Events:** Biman's operations and air travel may be interfered with by security risks such as terrorism or natural catastrophes. Biman can efficiently handle such circumstances if they have a solid crisis management plan and a contingency plan.

2.6. Porter's Five Forces for Biman Bangladesh Airlines

The following is a breakdown of Biman Bangladesh Airlines' Porter's Five Forces:

1. Threat of New Entrants (Low to Medium)

- I. high capital needs for infrastructure and aircraft.
- II. confirmed brand loyalty for currently operating airlines.

- III. Barriers may be created by bilateral agreements and governmental rules pertaining to air travel.

Deregulation and open skies laws, however, might eventually make it easier for new businesses to enter the market.

2. Bargaining Power of Suppliers (High)

- I. Boeing and Airbus are the suppliers of Biman Bangladesh Airlines as there are no other suppliers available.
- II. The specialized character of aircraft results in high switching costs for airlines.
- III. Delivery dates and prices are heavily influenced by suppliers.

3. Bargaining Power of Buyers (High)

- I. There are many airlines to select from, which leads to pricing competition.
- II. Consumers are becoming more conscious of brands and price.
- III. Buyers have leverage thanks to online booking sites and travel companies.

4. Threat of Substitutes (Medium)

- I. Airlines continue to be the primary mode of transportation for long-distance travel, even though high-speed rail can replace short-haul flights.
- II. Future threats could come from technological developments in alternate modes of transportation.

5. Competitive Rivalry (Strong)

- I. Reputable domestic and international airlines compete with Biman. (For example, Qatar Airways, Emirates for international; and US Bangla, Novo Air for Domestic)
- II. There is intense competition in terms of routes, costs, services provided, and in-flight amenities.

In general, fierce rivalry and robust buyer and supplier negotiating power define the airline sector. Biman Bangladesh Airlines should concentrate on tactics that

- 1. Achieve better brand loyalty and customer service.
- 2. Optimize the cost structure and operations.
- 3. Provide appealing routes and competitive prices.
- 4. Take advantage of government assistance.

Biman Bangladesh Airlines can fortify its position in the cutthroat airline sector by successfully tackling these factors.

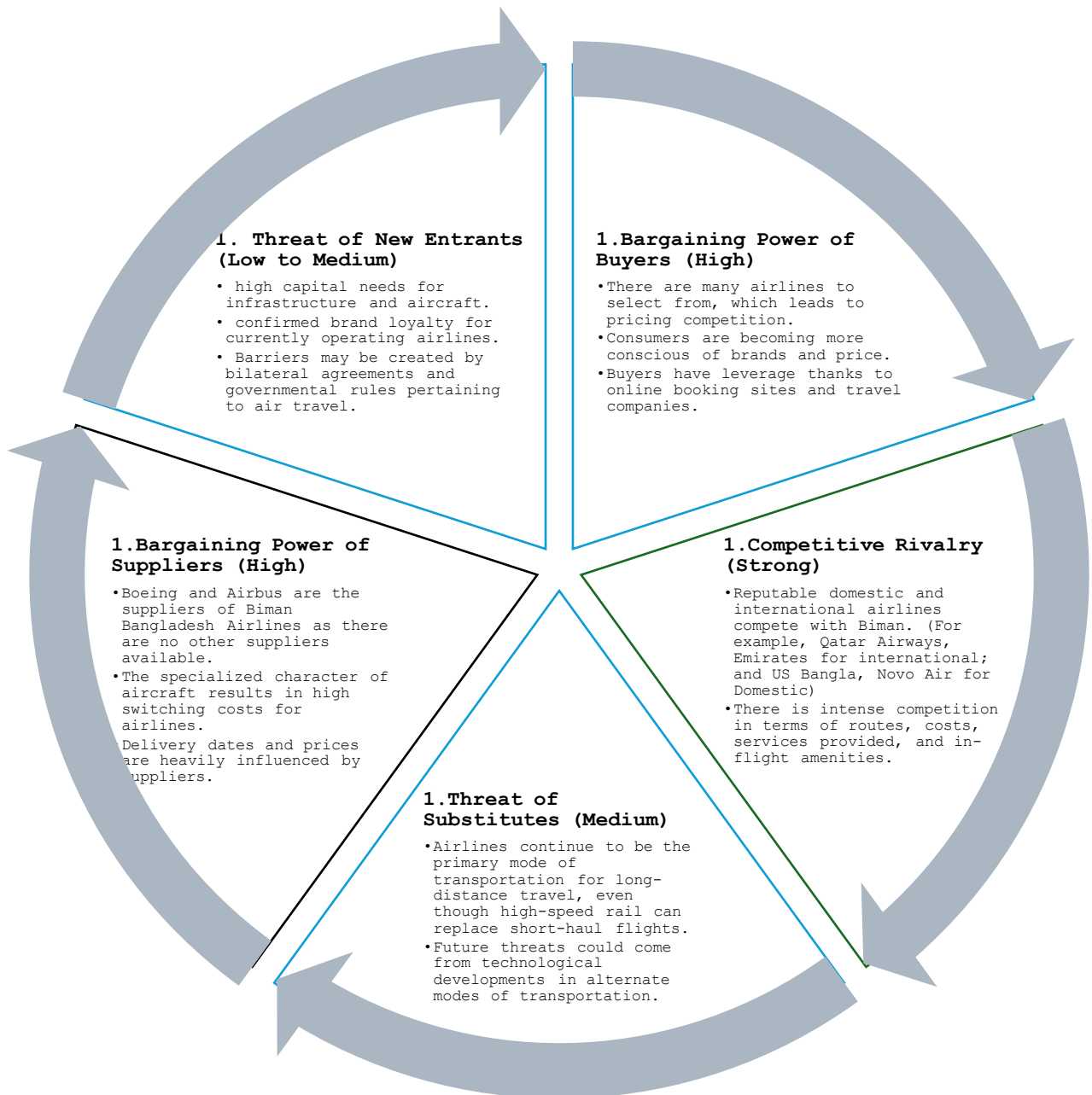


Figure: Porter's Five Forces of Biman Bangladesh Airlines

2.7. Analysis of Biman Bangladesh Airlines using PESTEL

A strategic tool for evaluating how external influences affect a firm is PESTEL analysis. PESTEL is an acronym for the following factors: Political, Economic, Social, Technological, Environmental, and Legal. Businesses might find possible opportunities and risks in the wider market by examining these six categories.

PESTEL Analysis of Biman Bangladesh Airlines is given below:

Political Factors:

1. **Possibilities:** Possibilities include the possibility of new bilateral air transport agreements opening up routes and government support for Biman as the national carrier.
2. **Risks:** Travel may be discouraged by political unrest in Bangladesh or the countries of destination. The efficiency of management decisions may be affected by government intervention.

Social Factors

1. **Possibilities:** A youthful population that is growing and has a passion for traveling and discovering new places. There is a growing need for both business and pleasure travel.
2. **Risks:** Feelings about travel may be impacted by social upheaval or security issues. Shifting customer tastes in favor of low-cost carriers or other kinds of travel.

Economic Factors:

1. **Possibilities:** As Bangladesh's economy expands and its disposable income rises, demand for travel may rise as well.
2. **Risks:** Variations in gasoline prices have a big effect on running expenses. The fluctuation of currency exchange rates can have an impact on international routes' profitability.

Technological Factors

1. **Possibilities:** Possibilities include investing in digital marketing and online booking platforms to increase consumer reach and experience. To cut expenses, fuel-efficient aircraft development and route optimization technologies are being pursued.
2. **Risks:** New travel possibilities brought about by quick technical improvements could upend the airline business. Operations and data security may be impacted by cybersecurity risks.

Legal Factors:

1. **Possibilities:** Government initiatives supporting the expansion of the aviation and tourism industries.

2. **Risks:** Tight aviation safety laws may raise the price of doing business. Cargo operations may be impacted by modifications to international trade laws.

Environmental Factors:

1. **Possibilities:** Investing in environmentally friendly activities and fuel-efficient planes can lower carbon emissions and enhance brand perception.
2. **Risks:** Regulations pertaining to carbon emissions or environmental fees may raise expenses. Choices about travel may change as climate change becomes more apparent.

Biman Bangladesh Airlines can create plans to take advantage of opportunities and lessen dangers by taking these PESTEL elements into account. Here are a few instances:

1. To meet the increasing demand for travel, concentrate on providing appealing routes and low pricing.
2. Invest in fuel-efficient technologies and fleet modernization to lower expenses and lessen your impact on the environment.
3. Improve the in-flight experience and customer service to foster brand loyalty and win competitively.
4. Speak up in favor of laws that assist the aviation sector and advance travel to Bangladesh.

A comprehensive PESTEL analysis helps Biman Bangladesh Airlines make informed decisions, adapt to changing circumstances, and gain a competitive edge.



Chapter-03

Industry Analysis of Airlines Industry

The airline industry is a critical component of the global economy, facilitating passenger and cargo transportation across vast distances. This report provides a comprehensive analysis of the industry, exploring its current state, key trends, major challenges, and future outlook.

The industry analysis highlights a market projected to reach USD 400 billion by 2027, driven by factors like rising disposable incomes, increasing travel demand, and technological advancements. However, the industry faces significant challenges, including volatile fuel prices, geopolitical instability, intense competition, and environmental concerns.

The report delves into various aspects of the industry:

1. **Market Size and Growth:** Talks about the size of the global and regional markets, trends in freight and passenger traffic, and growth-influencing variables.
2. **Industry Structure:** Examines airline alliances, airport infrastructure, and various airline business models (low-cost, full-service, etc.).
3. **Competitive Landscape:** Determines the main competitors, evaluates their approaches to competing, and considers the effects of mergers and acquisitions.
4. **Key Drivers and Challenges:** Looks at things like increased demand and technology breakthroughs that are driving the sector forward. It also looks at issues like changes in fuel prices, recessions, and environmental laws.
5. **Technological Advancements:** Talks about how technology can spur innovation, increase operational effectiveness, and improve the traveler experience.
6. **Environmental Impact and Sustainability:** Examines efforts aimed at promoting environmentally friendly aviation practices and assesses the environmental impact of the sector.
7. **Future Outlook:** Offers information on the expected course of the airline sector, taking into account new developments and possible interruptions.

3.1. Market Size and Growth

The global airline industry market size was valued at USD 346.81 billion in 2023. It is expected to grow at a Compound Annual Growth Rate (CAGR) of 3.53% during the forecast period, reaching USD 400 billion by 2027.

1. **Passenger Traffic:** Over the past few decades, there has been a gradual rise in passenger traffic, driven by causes such as:
 - a) **Increasing disposable income:** As emerging countries' economies expand, more people will be able to afford to travel by air.
 - b) **Urbanization:** As more people move into metropolitan areas, there is an increasing demand for commercial and recreational air travel.
 - c) **Relaxation of travel restrictions:** Growing globalization and laxer visa requirements may result in an increase in passenger numbers.
 - d) **Low-cost airlines (LCCs):** With the rise of LCCs, air travel has become more affordable to those on a limited budget.

2. **Cargo Traffic:** It is anticipated that air cargo traffic would rise gradually due to the following factors:
 - a) **Growth in e-commerce:** Air freight is crucial to the quick and effective delivery of goods to the rapidly expanding e-commerce industry.
 - b) **Globalization of supply chains:** Air freight is growing more and more significant as companies get raw materials and completed items from all over the world.
 - c) **Perishable items:** For the prompt delivery of perishable commodities, such as fresh vegetables and medications, air transportation is essential.

Regional Variations: While growth rates will differ by region, the Asia-Pacific region is anticipated to increase at the fastest rate because of its burgeoning middle class and rising trade volumes.

3.2. Industry Structure

The airline industry is characterized by a complex structure with various players and business models.

1. Airline Business Models:

- a) **Full-service carriers (FSCs):** FSCs offer a wide range of services, such as first-rate cabins, onboard meals, and vast route networks. Lufthansa, Singapore Airlines, and Emirates are a few examples.
 - b) **Low-cost airlines (LCCs):** By emphasizing efficiency and cost-cutting strategies, LCCs provide discounted tickets on simplified services. Ryanair, Southwest Airlines, and IndiGo are a few examples.
 - c) **Hybrid carriers:** These airlines offer some premium services at competitive fares by combining aspects of both FSCs and LCCs. Norwegian Air and JetBlue are two examples.
2. **Airline Alliances:** Airlines form alliances with one another in order to codeshare (sell seats on each other's flights), provide smooth connections, and accumulate frequent flyer miles on many partner airlines. The following are major alliances:
 - a) SkyTeam (which includes Delta Air Lines, Air France-KLM, and China Eastern Airlines)
 - b) Oneworld (which includes American Airlines, British Airways, and Qatar Airways)
 - c) Star Alliance (which includes Lufthansa, Singapore Airlines, and United Airlines).

3. Airport Infrastructure: In the airline business, airports are essential. They supply the infrastructure needed for takeoff, landing, processing passengers, and moving cargo. For seamless operations and punctual performance, airport infrastructure must be efficient.

3.3. Competitive Landscape

The airline industry is highly competitive, with players vying for market share through various strategies:

1. **Cost Leadership:** By using a single aircraft type, increasing passenger loads, and providing a restricted number of amenities, LCCs concentrate on reducing operating costs.
2. **Network Optimization:** To connect important hubs and serve both business and leisure travelers, airlines optimize their route networks.
3. **Customer Service Differentiation:** By providing exceptional customer service, in-flight amenities, and reward programs, FSCs set themselves apart.
4. **Technology Adoption:** To increase operational effectiveness, customize the traveler experience, and provide cutting-edge services, airlines are embracing technology more and more.

Mergers and Acquisitions: As businesses look to increase route networks, obtain economies of scale, and consolidate market share, mergers and acquisitions are a common subject in the airline sector. These steps, nevertheless, may also result in less competition and more expensive tickets.

Key Players: Major players in the airline industry include:

1. **North America:** American Airlines, Delta Air Lines, United Airlines, Southwest Airlines
2. **Europe:** Lufthansa Group (Lufthansa, SWISS, Austrian Airlines), Ryanair, Air France-KLM, International Airlines Group (British Airways, Iberia)
3. **Asia-Pacific:** Emirates, Singapore Airlines, China Eastern Airlines, China Southern Airlines, Cathay Pacific
4. **Middle East:** Qatar Airways, Etihad Airways, Fly Emirates.

3.4. Key Drivers and Challenges

Drivers

- a) **Growing Disposable Income:** A greater number of individuals can now afford to travel by air as developing countries' economies expand.
- b) **Technological innovations:** Enhancing efficiency, safety, and passenger experience, technological innovations are revolutionizing the sector. (See section 6 for more details.)
- c) **Globalization:** As long as trade and travel between countries are encouraged, there will be a demand for air cargo and passenger services.
- d) **Emerging Markets:** There are a lot of growth prospects in emerging markets in Latin America, Africa, and Asia.

Challenges

Fuel Price Volatility: Changes in fuel costs have a big effect on how profitable an airline is.

- a) **Geopolitical instability:** Route closures and disruptions in travel patterns can result from political upheaval and regional conflicts.
- b) **Economic downturns:** These might result in lower consumer expenditure and a decline in the demand for travel.
- c) **Environmental Concerns:** Pressure for sustainable practices is a result of the aviation industry's substantial contribution to greenhouse gas emissions.

3.5. Technological Advancements

Technology plays a vital role in driving innovation and improving efficiency in the airline industry. Key trends include:

1. **Artificial Intelligence (AI):** AI can forecast maintenance requirements, optimize flight scheduling, and customize the traveler experience.
2. **Big Data Analytics:** To better understand customer behavior, adjust pricing policies, and boost operational effectiveness, airlines employ big data.
3. **Digital Transformation:** To improve the traveler experience, airlines are utilizing digital platforms for self-service check-in, online booking, and mobile apps.
4. **Autonomous Aircraft:** Although still in its infancy, this technology has the potential to completely transform air travel by lowering pilot expenses and enhancing security.

3.6. Environmental Impact and Sustainability

The airline industry faces increasing scrutiny for its environmental impact. Aircraft emissions contribute significantly to greenhouse gas emissions and climate change. Airlines are exploring various solutions:

1. Fuel Efficiency:

- a) **New planes Technologies:** Airlines are spending money on more fuel-efficient, newer planes. Among these developments are:
 - i. **Lightweight materials:** By reducing weight during the construction of an airplane, composite materials like carbon fiber help to minimize fuel use.
 - ii. **Aerodynamic design:** By greatly reducing drag, better engine and wing arrangements can minimize fuel consumption.
- b) **Engine developments:** Better fuel burn is produced by more efficient turbofan engines with greater bypass ratios (the ratio of air leaving the core to air combusting inside it).
- c) **Operational Efficiency Measures:** To maximize fuel consumption while in flight, airlines are putting the following procedures into place:
 - i. **Ideal flight paths:** Constructing aircraft routes that are more direct and fuel-efficient by using sophisticated navigation technologies.
 - ii. **Continuous Climb and Descent (CCDO):** This technique lowers fuel consumption at these stages by using continuous ascent and descent profiles in place of conventional step-climb techniques.
 - iii. **Taxi Optimization:** Reducing the amount of time spent on the ground during taxiing by making the most use of the runway and using effective ground handling techniques.

2. Alternative Fuel:

- a) **Biofuels:** A viable alternative are sustainable aviation fuels (SAFs), which are made from renewable resources like algae or plant oils. When SAFs are used instead of conventional jet fuel, lifecycle carbon emissions can be greatly reduced.
- b) **Difficulties:** Compared to regular jet fuel, SAFs are more expensive and their production is currently restricted. To lower prices and boost production capacity, research and development are still being done.
- c) **Hydrogen Fuel Cells:** Although this technology is currently in its early stages of development, hydrogen-powered aircraft could one day be emission-free. For widespread implementation, significant scientific advances in fuel cell efficiency, infrastructural development, and hydrogen storage are required.

3. Carbon Offsetting:

- a) **Carbon Offset Programs:** Airlines provide customers with the opportunity to purchase carbon offsets in order to make up for the carbon impact of their flight. Usually, the money from these offsets goes toward other projects that lower greenhouse gas emissions, including planting trees or developing renewable energy sources.
- b) **Efficiency:** There is disagreement on the effectiveness of carbon offsets, and certain initiatives lack transparency. Nonetheless, they can inspire passengers to assume responsibility and increase knowledge of the effects of flying on the environment.

4. Additional Considerations:

- a) **Market-Based Measures:** To encourage airlines to adopt greener technologies and cut emissions, regulatory agencies are looking into market-based measures like carbon trading programs.
- b) **Infrastructure Development:** Investing in environmentally friendly aircraft infrastructure, such as biofuel production plants and airport hydrogen refueling stations, is essential to easing the switch to cleaner fuels.
- c) **Cooperation:** To hasten the development and uptake of sustainable aviation solutions, cooperation between airlines, aircraft manufacturers, fuel producers, governments, and research institutes is crucial.

3.7. Future Outlook

The future of the airline industry is expected to be shaped by several key trends:

- a) **Continued Growth:** A number of factors, including globalization and increased disposable incomes, are likely to fuel further growth in both passenger and cargo traffic.
- b) **Sustainability Focus:** As industrial pressure to lessen its impact on the environment grows, more money will be invested in sustainable processes.
- c) **Technological Disruption:** New developments in artificial intelligence (AI), driverless cars, and advanced materials will keep the business changing.

- d) **Consolidation:** The pursuit of economies of scale and market share supremacy may propel more airline consolidation.
- e) **Personalization:** By providing specialized services and taking into account individual preferences, airlines will use technology to make the traveler experience more unique.

3.8. Challenges and Uncertainties:

1. **Challenges:** Despite the positive outlook, the airline industry still faces challenges such as:
 - a) **Fuel Price Volatility:** A large amount of an airline's operating costs are related to fuel costs. Profitability can be significantly impacted by changes in the price of oil globally. Unpredictable changes in gasoline prices can be caused by a variety of factors, including supply chain interruptions, geopolitical unrest, and environmental restrictions. Airlines might find it difficult to protect themselves against these risks, which could put a strain on their finances and affect ticket pricing.
 - b) **Economic Downturns:** Financial crises or economic recessions can result in lower consumer expenditure and a drop in the demand for travel. Companies can decide to reduce their travel expenditures, and vacationers might decide to stick closer to home. When airlines reduce capacity, it may have a cascading effect that results in job losses and industry stagnation.
 - c) **Geopolitical instability:** Travel patterns can be severely disrupted by political upheaval, regional conflicts, and new security threats. Airlines may be obliged to reroute flights, cancel flights to specific locations, or adopt extra security measures, all of which can raise operating expenses and cause annoyance to passengers.
 - d) **Changing Customer Preferences:** The expectations and preferences of travelers are ever-changing. The emergence of the sharing economy has given rise to substitute lodging choices such as Airbnb, which may have an effect on hotel reservations made through airlines. Furthermore, if worries about climate change grow, some tourists might decide to book more environmentally friendly flights, which would put pressure on airlines to show that they are committed to protecting the environment.
 - e) **Technological Disruption:** While there are numerous advantages to technological improvements, there are also potential risks. Concerns concerning pilot employment and labor relations are brought up by the possibility of autonomous aircraft. Additionally, as airlines depend more and more on technology for operations and passenger experience, cybersecurity threats are becoming a bigger worry.
 - f) **Unforeseen occurrences:** The airline industry's susceptibility to unforeseen occurrences has been highlighted by pandemics such as COVID-19. These occurrences have the potential to severely reduce demand for travel, resulting in numerous cancellations, closed borders, and monetary losses. The sector must be ready to adjust to and bounce back from these setbacks.
2. **Uncertainties and the Future:** These difficulties bring to light the unpredictability that airlines will confront in the years ahead. The industry's agility, adaptability, and openness

to innovation will determine how well it can navigate these risks. Key areas of attention will consist of:

- a) **Fuel Hedging Techniques:** Creating complex fuel hedging techniques to lessen the effects of price changes.
- b) **Diversification:** Adding sources of income other than freight and passenger services to build a more robust business model.
- c) **Initiatives for Sustainability:** Showing a significant dedication to sustainability by funding the development of alternative fuels, fuel-efficient technologies, and carbon offset schemes.
- d) **Customer Centricity:** Constantly coming up with new ideas to cater to changing consumer tastes and provide tailored travel experiences.
- e) **Technological Innovation:** Adopting cutting-edge technologies to solve cybersecurity issues and enhance operational effectiveness, safety, and passenger experience.

By remaining proactive and addressing these challenges head-on, the airline industry can chart a course for sustainable growth and navigate the uncertainties that lie ahead.



Chapter-4

Description Of Main Duties

4.1. Assigned Sections

The objective of this part is to give out necessary information regarding the sections that I have worked in the Finance Directorate during my internship at Biman Bangladesh Airlines.

4.1.1. Corporate Budget and Flight Profitability Systems

Supervisor: Tanvir Hasan, Assistant Manager (Accounts)

The main functions of Corporate Budget and Flight Profitability Systems Section are:

1. Perform Data analysis on a massive amount of Data and derive Insights and Key Performance Indicators (KPIs) used in Airline Industry.
2. Visualization of the analyzed output data and KPIs.
3. Find out the profitability of operations based on routes, round trips, legs of journey etc. and formulating budget.

The functions are explained in detail below:

1. Performance of Data Analysis: In order to derive insights and KPIs from the huge amount of data-

- I. The data is cleaned in a specific format under a specified guideline.
- II. The data is then uploaded in a software called Accelya Software Solution.
- III. Accelya Software Solution takes the data and analyzes the data.
- IV. They derive Key Performance Indicators (KPIs) and send them back the Flight Profitability Systems Section in a number of excel files.

2. Visualization of the Data: The analyzed data is then visualized in the form of graphs and charts in excel to have a better understanding and insight of the Key Performance Indicators (KPIs).

3. Finding Profitability:

- I. The data is used to find the profitability based on routes, round trips, legs, station, country of operation etc.
- II. After analyzing the profitability, the necessary budget formulation and allocation is done.

A flowchart of the workflow of Corporate Budget and Flight Profitability section:

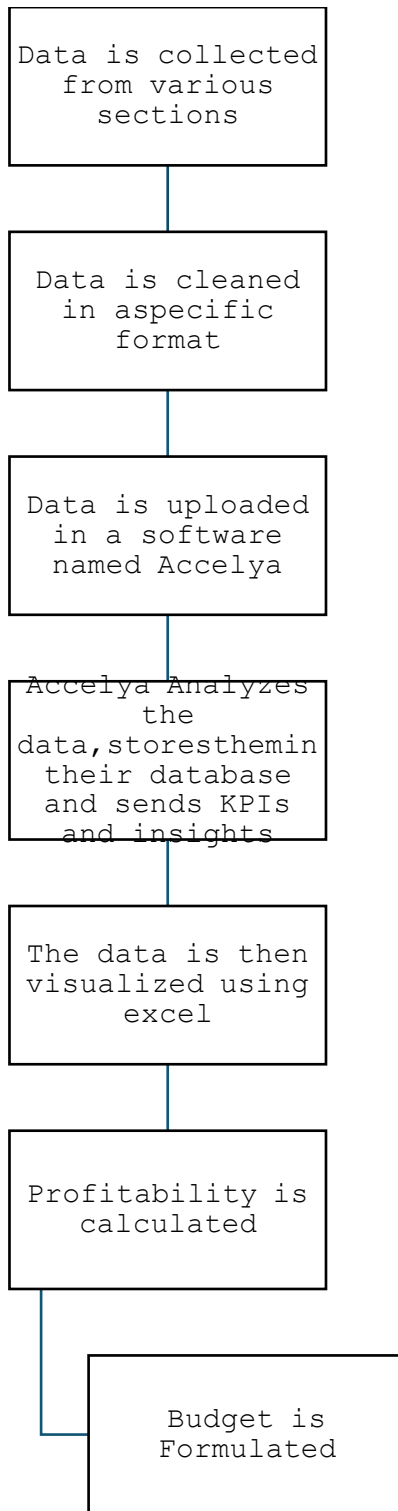


Figure: A flowchart of the workflow of Corporate Budget and Flight Profitability section

Software Used: Accelya, a global leader in airline software, empowers over 200 airlines to navigate the ever-evolving travel landscape. Their open and modular platform caters to forward-thinking airlines seeking to transform their operations.

4.1.2. Revenue

To understand the workflow of Revenue, we need to learn some additional aspects. They are listed below in an organized format.

The sales channels of Biman Bangladesh Airlines:

1. Passenger
 - a) Biman Own counter
 - b) GSA Sales Agent
 - c) BSP Agent
 - d) ARC Agent (USA)
 - e) ASD Agent (China)
 - f) TAP
 - g) Holiday Wings
 - h) Mobile Banking
 - i) BSP EASY PAY
 - j) IATA Pay
 - k) Biman Loyalty Club
 - l) Biman Call Center
2. Cargo
 - a) Excess Baggage
 - b) Cargo Own Counter
 - c) Cargo Sales Agent

Forms of Payment:

1. Cash
2. Credit Card
3. Credit
4. Non-Scheduled Flight
5. COD Deportee

Non-Transportation Services:

1. Ground Handling Services
2. Cargo Handling Services
3. Engineering Services Handling
4. Biman Food Catering Company (BFCC)

5. Biman Poultry Complex
6. MT service Pool
7. Printing and Publication

Multiple arrays of transactions occur through those sales channels via the multiple payment method. The main job of revenue is:

- a) Reconciliation of the tickets sold through passenger sales channel by monitoring the ledgers.
- b) Reconciliation of the coupon sold through cargo sales channel by monitoring the ledgers.
- c) Reconciliation of each of the payment methods by checking their respective payment methods.
- d) Reconciliation of non-transportation services.
- e) Resolving any conflict or mistake in the ticketing process (carried out by Sabre)
- f) Making the ticketing data by **Sabre** readable by the accounting system of Biman Bangladesh Airlines (QAS).

These responsibilities are carried out by separate sections. Their roles are discussed below:

4.1.2.1. RAPID

Supervisor: Muhammed Anower Hossain

Passenger Revenue Processing (PRP) also known as Passenger Revenue Accounting (PRA) is a section of Revenue Processing Accounting system which process, calculate and prepare Passenger Revenue Accounting Journal for-

- a) Passenger Sales
- b) Uplift
- c) Passenger Interline

Full form of **RAPID = Revenue Accounting Proration, Interline Billing and Decision**

Support. RAPID is integrated with the following Software's:

1. Rapid
2. Verdi
3. Prism
4. AVES Kites
5. SABRE PSS System
6. IATA Simplified Invoice Settlement

7. iNET
8. BSP
9. QAS

The main functions that RAPID carry out are:

- a) **Resolving any conflict or mistake in the ticketing process:** If there is any kind of errors in the ticketing and billing carried out by Sabre ticketing systems, the errors are mitigated by using the Accelya software. Moreover, if there is any counter claim by the passengers, agents, and other parties; they are reconciled by **RAPID**.
- b) **Making the ticketing data by Sabre readable by the accounting system of Biman Bangladesh Airlines (QAS):** The data structure and format that is used by Sabre is completely different than the software used by Accounts Section that QAS. So, the data structure is changed and formatted so that QAS system can use the data.

4.1.2.2. Revenue Interline

Supervisor: Mohammed Aziz Hasan

Interlining in Airlines definition: In the airline industry, **interlining** refers to a collaborative agreement between two or more airlines.

Interline agreement can be-

- a) Unilateral Agreement-One party is involved here.
- b) Bilateral Agreement-two parties are involved.
- c) Multilateral Agreement-three or more parties are involved.

This agreement allows them to:

1. **Sell tickets** for each other's flights, even if the passenger's itinerary involves multiple airlines.
2. **Coordinate passenger handling** for these connecting flights. This means passengers experience a smoother journey:
 - a) **Single check-in:** You only need to check in once for your entire trip, even if it involves multiple airlines.

- b) **Baggage transfer:** The airlines take care of transferring your checked luggage between connecting flights.
- c) **Rebooking assistance:** In case of delays that cause you to miss a connecting flight, the airlines will typically rebook you on the next available flight.

Here's a breakdown of key points about interlining:

- a) **Agreements:** Airlines can have **unilateral** or **bilateral** interlining agreements. Unilateral allows only one airline to sell tickets on the other's connected flights, while bilateral allows both airlines to do so.
- b) **Common in alliances:** Members of airline alliances (like Star Alliance, Oneworld, or SkyTeam) almost always have interlining agreements with each other.
- c) **Less common with low-cost carriers:** Many low-cost airlines don't participate in interlining due to their separate operational structures.

Interlining essentially benefits both airlines and passengers:

- a) **Airlines:** They can expand their reach to destinations they don't directly serve, attracting more customers.
- b) **Passengers:** They have the convenience of booking a single ticket for a multi-airline trip with easier connections and baggage handling.

Functions of the Revenue Interline Department: The functions of Revenue Interline departments are:

1. Handling the billing and invoicing of interline passengers.
2. Handling the billing and invoicing of interline cargo.
3. Handling the billing and invoicing of Miscellaneous services.

The detailed explanations are given below:

1. Handling the billing and invoicing of interline passengers:

The invoicing of interline passengers is performed under the “**SPECIAL PRORATE AGREEMENT (SPA)**”. The billing and invoicing of interline passengers is done in a software name Accelya. Accelya is a software outsourced by Biman Bangladesh Airlines. Three types of actions are performed using this software:

- a) Billing the fare of interline passengers carried by Biman Bangladesh Airlines to respective airlines. (Outward Billing)
- b) Auditing the bills sent by other airlines for carrying the passengers of Biman Bangladesh Airlines. (Inward Billing)
- c) **Correspondence:** Correspondence is when the bill sent by Biman is contested by other airlines or more than three times for various reasons. In that case the billing is uploaded to a website managed by IATA.

2. Handling the billing and invoicing of interline cargo:

The invoicing of interline cargo is performed under the “**SPECIAL PRORATE AGREEMENT (SPA)**”. The billing and invoicing of interline cargo is carried out by a software named CargoSpot. Three types of actions are performed using this software:

- a) Billing the fare of interline cargo carried by Biman Bangladesh Airlines to respective airlines.
- b) Auditing the bills sent by other airlines for carrying the cargo of Biman Bangladesh Airlines.
- c) **Correspondence:** Correspondence is when the bill sent by Biman is contested by other airlines or more than three times for various reasons. In that case the billing is uploaded to a website managed by IATA.

Software Used: Cargospot, developed by CHAMP Cargosystems, is a software suite catering to various stakeholders in the air cargo supply chain, encompassing airlines, ground handlers, and terminal operators.

3. Handling the billing and invoicing of Miscellaneous services: There are three types of forms that are used by Revenue Interline to file ground handling billing for miscellaneous services. The forms are:

- a) **Security Form:** This form is issued by the Security directorate of Biman Bangladesh Airlines that has information on the services provided.
- b) **GSE Utilization Form:** GSE stands for Ground Support Equipment. The GSE form contains information about the equipment chartered by other airlines from Biman Bangladesh Airlines. Biman Bangladesh Airlines is the sole ground handling service providing company that renders ground handling services to about 40 foreign airlines that are operating to/from HSIA (Hazrat Shahjalal International Airport) in Dhaka. Domestic Airlines such as US Bangla, Novo Air and Air Astra have their own GSE dept. So, they manage their handling by their GSE dept. Only foreign airlines are dependent on Biman's ground handling dept. Since 1972 Biman has been providing ground-handling services to other airlines.
- c) **Traffic Form:** This form is issued by the Foreign Carrier Handling Unit of the Operations Department and contains ground handling services rendered to other foreign carriers.

The miscellaneous services recorded by these forms are:

1. Ground handling under **ICH BILETERAL AGREEMENT.**
2. Post office mail under **UPU (UNIVERSAL POST UNION).**
3. Dg, Disposal, Cool Room Charge, POD Charge, Live Handling Carry Charge under **TACT RULE.**
4. Terminal Handling Charge, Cargo Handling, Cargo & Mail under signed agreement with respective airlines.

Software Used: The software named Finesse Suite is an internal product of Accelya that is developed for handling the **Miscellaneous Billing Operations.**

A flowchart on the billing and invoicing of interline cargo is given below:

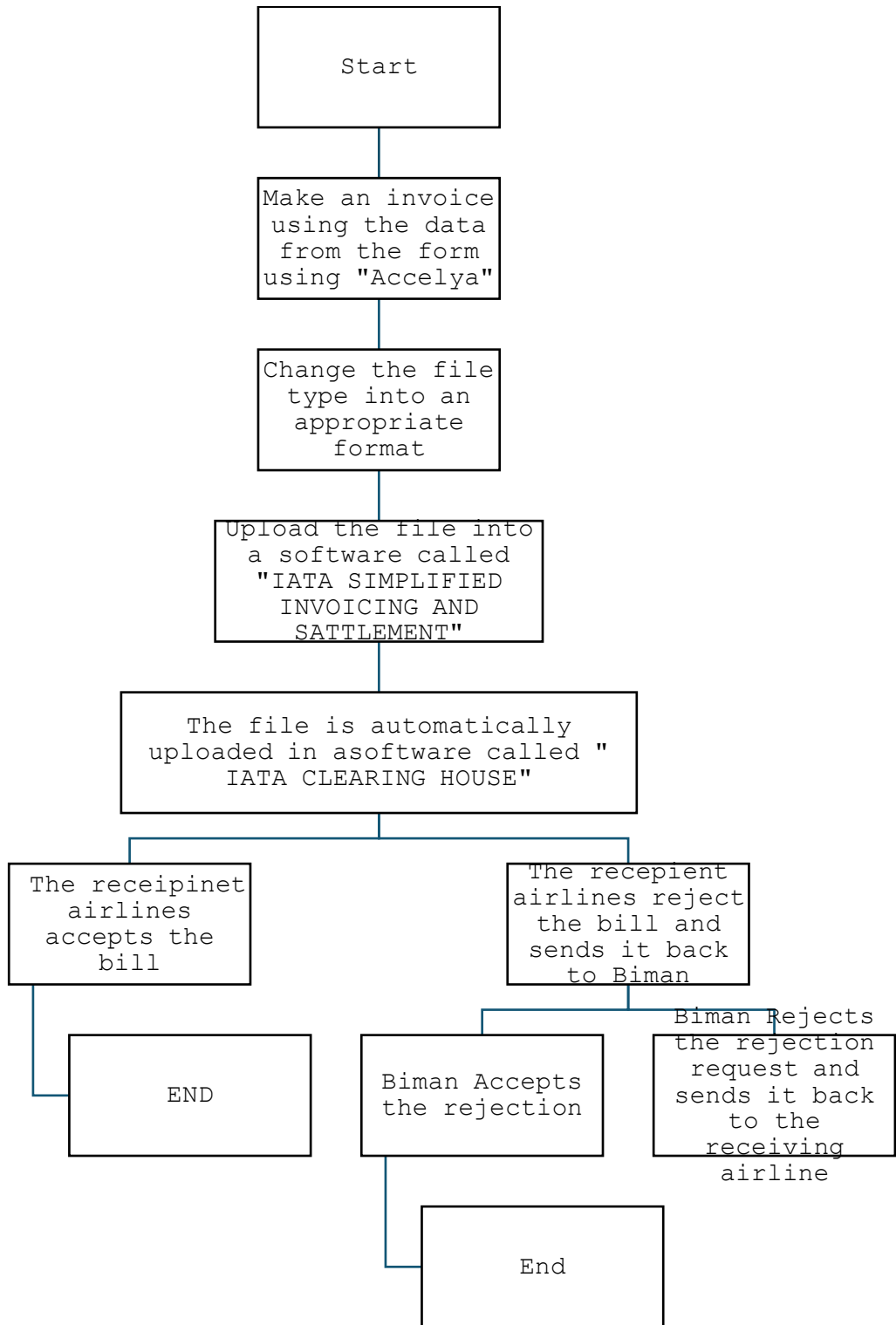


Figure: Flow Chart of Interline Passenger Billing

A flowchart on the billing and invoicing of interline cargo is given below:

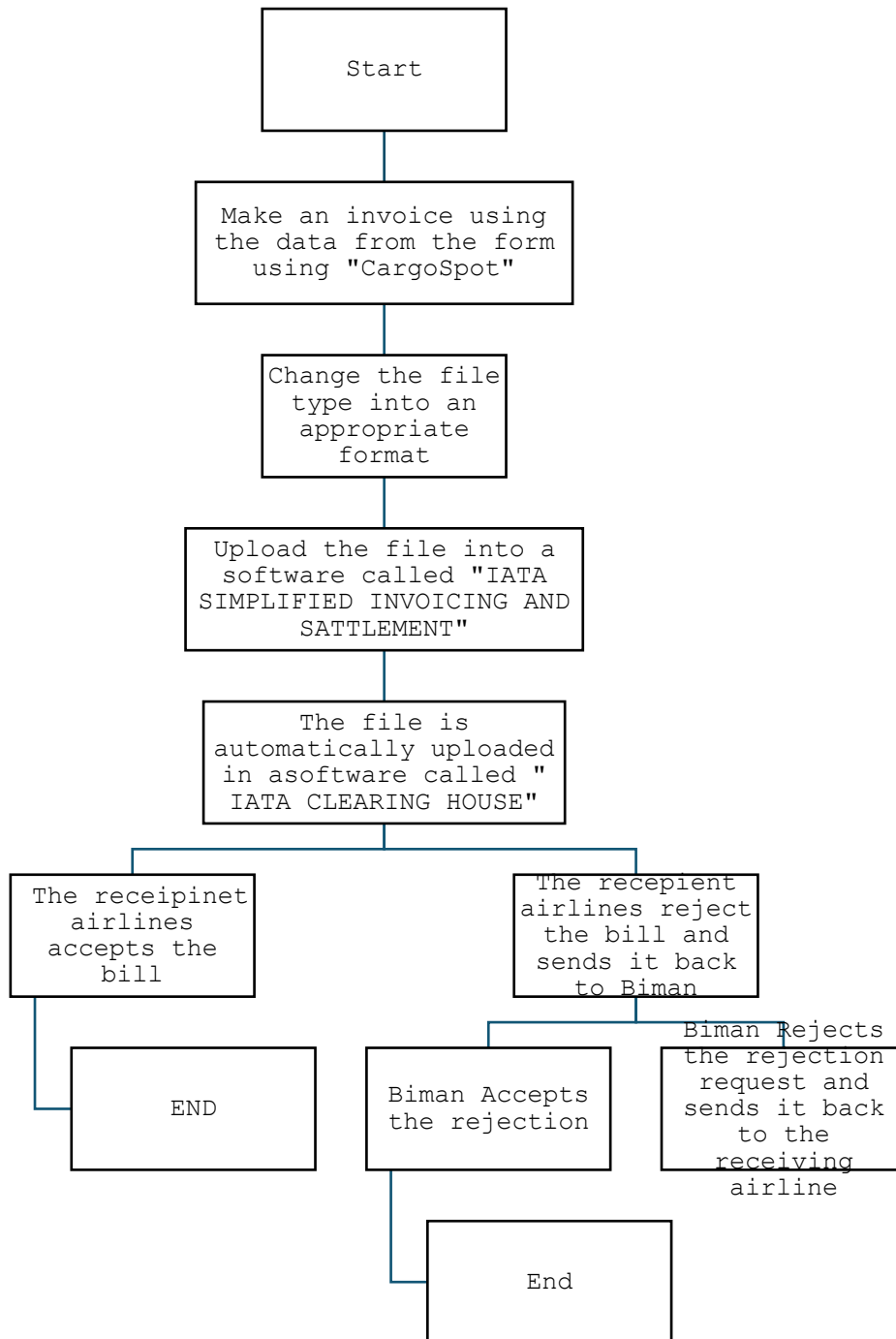


Figure: Flow Chart of Interline Cargo Billing

The flowchart on the billing and invoicing of “Miscellaneous Billing Software” is given below:

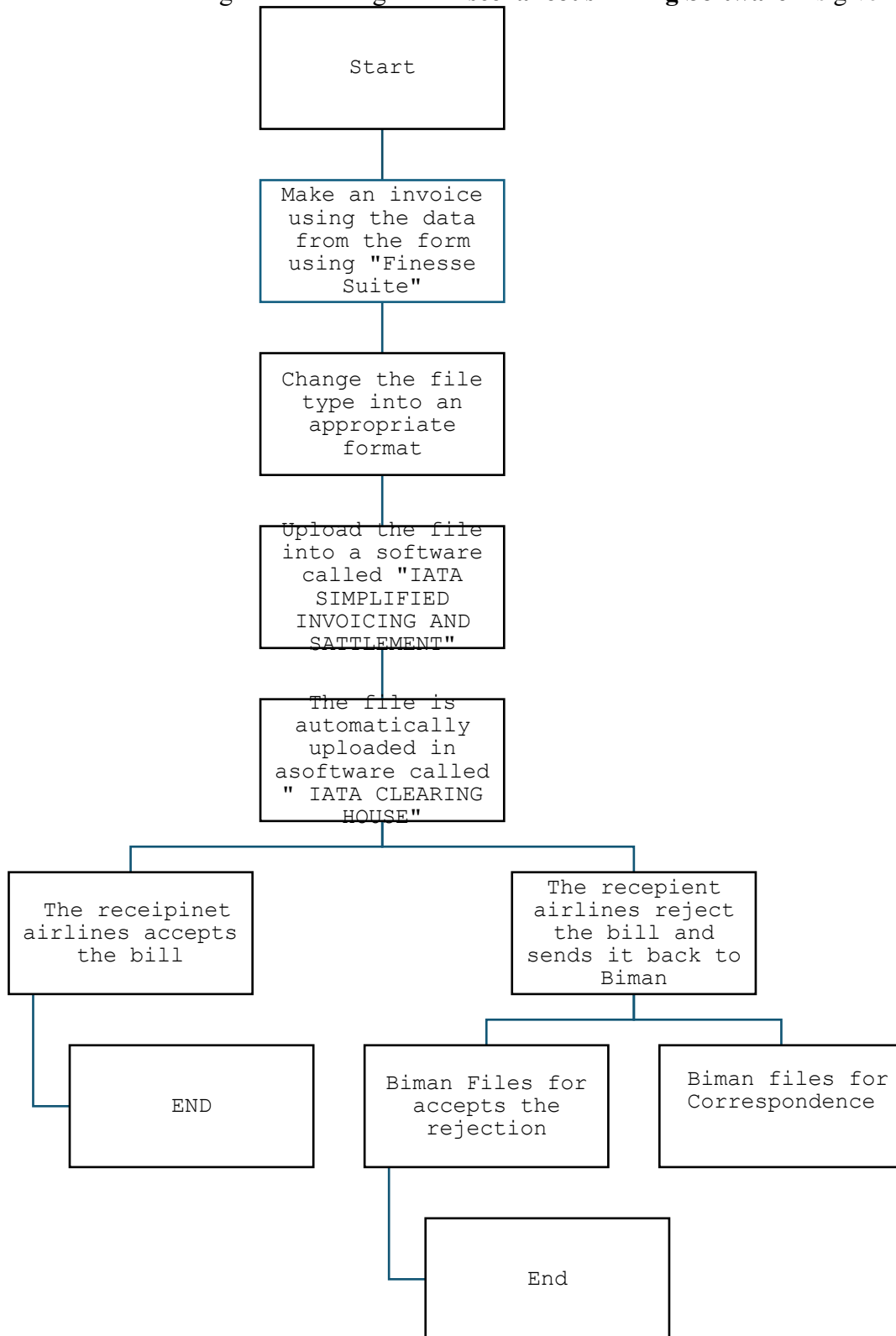


Figure: Flow Chart of Miscellaneous Billing Software Billing and Invoicing

4.1.2.3. Revenue General

Supervisor: Anupom Kumar Borai

The main activity of Revenue General is Reconciliation. The Reconciliation Process includes:

1. **Passenger Sales Reconciliation:** There are Biman Bangladesh Stations all around the world. The domestic stations are mostly maintained by using Biman staff. But stations around the world do not have full Biman Staff. Rather, the staff are outsourced by using General Sales Agents (GSA). In these stations, ticketing and accounting are done separately. The main job of Revenue General is to determine whether the tickets, services, and expenses have been reconciled yet. Reconciliation means to check the tickets; services have been paid for or the expenses are accounted in ledger.
2. **Cargo Sales Reconciliation:** The cargo sales reconciliation is mainly conducted by Revenue General.

Revenue General maintain ledgers and journal by themselves as a safety measure and for auditing purposes.

4.1.2.4. Revenue Audit

Supervisor: Abdullah Al Mamun

Revenue Audit is a section that deals with the tickets that have been contested and payment that has not been made by other party. Audit checks if the reason for contest is valid or not and then decides what to do or how to proceed.

4.1.2.5. Revenue IBE

Supervisor: Mohammad Mohidul Islam

Revenue IBE is a section that has a similar function to Revenue General. They are:

1. **Reconciliation:** Revenue IBE reconciles with the tickets that have been sold online through the Biman Bangladesh Airlines Website.
2. **Issue Refunds:** Another task in this section is to issue refunds to passengers after cutting the appropriate costs.
3. **Establish and Maintain Payment Gateway:** This section takes steps to establish new payment gateways and they maintain and reconcile the gateways.

4.1.3 Materials Allocation & Engineering Section (MAES):

Supervisor: Md Shazzadul Kabir

The activity of this section includes accounting for various purposes. The accounting carried out by this section are:

- a) They perform all accounting for purchases.
- b) They perform all accounting for advanced purchases.
- c) They perform the accounting for the Engineering Stores
- d) They perform the payment for Crew Salary

4.2. Software Used

4.2.1. Accelya

Here's a deeper dive:

- **Modular Solutions:** Airlines can choose specific functionalities like passenger revenue accounting, cargo management, or industry analytics, tailoring the platform to their unique needs.
- **Streamlined Retailing:** Accelya facilitates the entire customer journey, encompassing booking, managing flights, and post-purchase services. This includes both online and traditional channels.
- **Holistic Approach:** Their software goes beyond ticketing, covering above-wing aspects like passenger experience and below-wing functionalities like cargo operations and cost management.
- **Data-Driven Decisions:** Accelya equips airlines with business intelligence tools for informed decision-making, allowing them to optimize revenue and enhance operational efficiency.
- **Innovation at the Core:** Accelya actively champions New Distribution Capability (NDC) standards, promoting a more open and data-driven approach to airline retailing.
- **Technological Foundation:** Built on the robust infrastructure of Amazon Web Services (AWS), the platform offers scalability, security, and reliable performance.

This expanded description emphasizes Accelya's focus on customization, data-driven insights, and continuous innovation within the airline industry.

4.2.2 IATA CLEARING HOUSE:

The IATA Clearing House (ICH) acts as a central hub for financial settlements within the air transport industry. Here's a breakdown of its functions within 120 words:

- a) **Facilitates Invoice Exchange:** Airlines electronically submit invoices to the ICH for services rendered to other airlines (e.g., interline passenger fees, cargo charges).
- b) **Streamlines Payments:** ICH acts as an intermediary, collecting payments from the buying airline and distributing them to the selling airline. This eliminates the need for individual settlements between airlines, reducing administrative burdens.
- c) **Dispute Resolution:** The ICH provides a framework for resolving invoice disagreements. Airlines can submit rejections with justifications, and the ICH facilitates communication between parties to reach a resolution.
- d) **Increased Efficiency:** By centralizing invoice processing and payments, ICH promotes faster settlements, improves cash flow management for airlines, and reduces administrative costs.
- e) **Security & Standardization:** The ICH operates under strict security protocols and utilizes standardized formats for all transactions, ensuring data integrity and efficient processing.

In essence, the IATA Clearing House acts as a vital intermediary, simplifying financial settlements and fostering smoother financial transactions within the complex airline industry.

4.2.3. IATA Simplified Invoicing and Settlement

IATA Simplified Invoicing and Settlement (SISS) is an electronic platform designed to streamline the billing process between airlines for specific transactions within the 120-word limit:

- a) **Targeted Transactions:** SISS focuses on simplifying invoicing and settlement for transactions like interline passenger fees, cargo charges, and other miscellaneous airline-to-airline services.
- b) **Simplified Workflow:**
 - a. Airlines electronically submit invoices directly to SISS in a standardized format.

- b. The platform automatically validates the invoice data, reducing errors and delays.
- c) **Faster Settlements:** Once validated, SISS facilitates swift electronic payments between airlines, expediting the settlement process.
- d) **Reduced Costs:** By eliminating the need for manual processing and paper-based transactions, SISS lowers administrative costs for airlines.
- e) **Improved Transparency:** The platform provides a clear audit trail for all transactions, enhancing transparency and accountability.

SIS serves as a valuable tool for airlines, promoting efficiency, cost savings, and faster settlements in specific billing scenarios within the air transport industry.

4.2.4 Finesse Suite

A brief idea about the software finesse suite is given:

1. **Targeted User Base:** The main user base of this software are airlines that have ground handling, security, and equipment handling capabilities.
2. **Comprehensive Solutions:** It offers a range of functionalities:
 - a) **Miscellaneous Services Management:** Streamlines airfreight operations for airlines, encompassing services availed by other airlines.
 - b) **Ground Handling:** Provides ground handlers and terminal operators with tools for invoicing and billing.
 - c) **Business Intelligence:** Equips users with data analysis tools to gain insights into ground services handling, security services, and ground equipment services provided by airlines.
3. **Enhanced Efficiency:** Finesse Suite promotes paperless workflows through e-documents like electronic invoices and e-security declarations, facilitating faster processing and reducing administrative burdens.
4. **Scalability & Integration:** The software is designed to adapt to the needs of businesses of all sizes, from smaller operations to extensive cargo networks. Additionally, it integrates seamlessly with other industry-standard systems.

4.2.5. CargoSpot

A brief about the proprietary software CargoSpot is given Below:

1. **Tailored Solutions:** Cargospot offers a comprehensive suite addressing the specific needs of each user group:
 - a. **Airlines Cargo Management:** Streamlines airfreight operations encompassing sales, pricing, handling, shipment tracking, and e-documents (e.g., e-AWB) for a paperless workflow.
 - b. **Ground Handlers & Terminal Operators:** Provides efficient cargo processing tools for inbound/outbound handling, customs clearance, and quality control.
 - c. **All Stakeholders:** Equips users with data analysis tools to gain insights into cargo volume, performance metrics, and cost management, enabling data-driven decision making.
2. **Enhanced Efficiency:** Cargospot automates manual tasks, promoting faster processing times and reducing administrative burdens. Features like e-documents eliminate paper-based processes, further streamlining operations.
3. **Scalability & Integration:** The software adapts to the needs of businesses of all sizes, from smaller operations to extensive cargo networks. Additionally, it seamlessly integrates with other industry-standard systems, facilitating a unified workflow.
4. **Global Reach:** Cargospot supports various languages and regulatory requirements, catering to the diverse needs of the international air cargo industry.

By providing a centralized platform with user-specific functionalities, Cargospot fosters smoother collaboration, optimizes operational efficiency, and empowers informed decision-making across the air cargo supply chain.

4.3. Assigned Jobs and Responsibilities

This section will provide the information about the tasks that were assigned to me during the internship period:

1. **Attend Mandatory Briefings:** I had to attend an introductory briefing in every section that I was assigned to during my internship. I also had to attend other section related briefings during this time.

2. **Generating Weekly Reports:** I had to generate a weekly report that contained flowcharts and algorithms regarding the workflow of the section. It was a totally different report compared to the report that I submitted to my supervisor.

3. **Writing Program to Automate Data Analysis:** During my time in the Corporate Budget section, I was assigned to automate the data analysis process of the section, The section did not have any tools or software that they could use perform the data analysis. Therefore, the section had to outsource this service. The tasks I had to perform were:

a) Collect Data from various sections of the finance directorate.

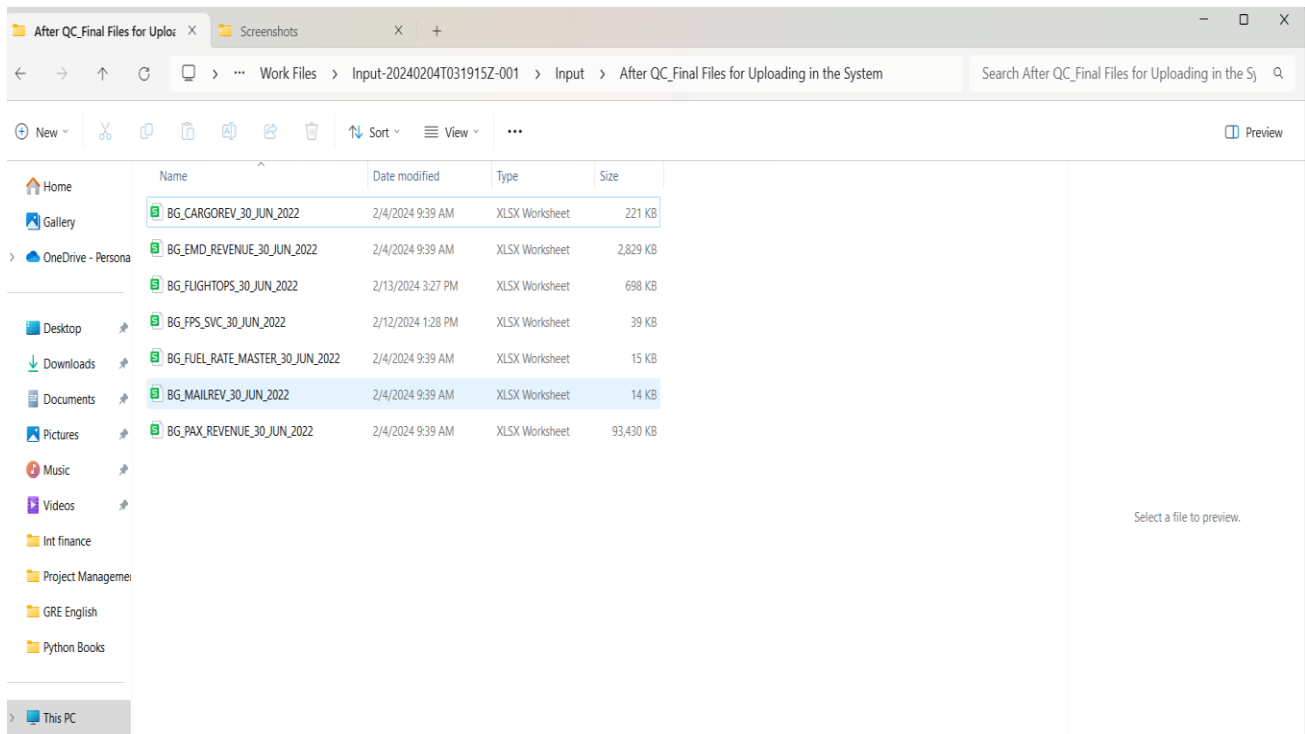


Figure: Input Files

b) Conducting research to identify the tool with most compatibility with section.

c) Coding the program in a code editor

```

1 import pandas as pd
2 #Import cargo revenue file and work with it
3 cargo_rev=pd.read_csv("BG_CARGOREV_30_JUN_2022.csv",skiprows=[0,1,2,3,4])
4 cargo_rev = cargo_rev.fillna(cargo_rev.apply(lambda x: x.fillna(0) if x.dtype=='float64' else x.fillna('')))
5 cargo_rev["Gross Revenue"]=cargo_rev["Gross Revenue"].str.replace(",","")
6 cargo_rev["Net Revenue"]=cargo_rev["Net Revenue"].str.replace(",","")
7 cargo_rev["Charge Weight"]=cargo_rev["Charge Weight"].str.replace(",","")
8 cargo_rev["Gross Weight"]=cargo_rev["Gross Weight"].str.replace(",","")
9 cargo_rev["Service Weight"]=cargo_rev["Service Weight"].str.replace(",","")
10 cargo_rev["Gross Revenue"] = pd.to_numeric(cargo_rev["Gross Revenue"], errors="coerce")
11 cargo_rev["Net Revenue"] = pd.to_numeric(cargo_rev["Net Revenue"], errors="coerce")
12 cargo_rev["Charge Weight"] = pd.to_numeric(cargo_rev["Charge Weight"], errors="coerce")
13 cargo_rev["Gross Weight"] = pd.to_numeric(cargo_rev["Gross Weight"], errors="coerce")
14 cargo_rev["Service Weight"] = pd.to_numeric(cargo_rev["Service Weight"], errors="coerce")
15 Total_File=cargo_rev[cargo_rev["True Org/Des"] == "Total"]
16 Total_File = Total_File.fillna(cargo_rev.apply(lambda x: x.fillna(0) if x.dtype=='float64' else x.fillna('')))
17 Total_File = Total_File.rename(columns={"Online Org/Des": "Currency"})
18 #Drop columns with missing values
19 del Total_File["Unnamed: 2"]
20 del Total_File["Sector From/to"]
21 del Total_File["Awb Number"]
22 del Total_File["Flight Date"]
23 del Total_File["Flight Number"]
24 del Total_File["A/c Type"]
25 del Total_File["Regn"]
26 del Total_File["Commnd Type"]
27 del Total_File["Unnamed: 18"]
28 del Total_File["Unnamed: 19"]
29 del Total_File["Unnamed: 21"]
30 del Total_File["Unnamed: 22"]
31 #BDT in own currency
32 BDT_earned=Total_File[Total_File["Currency"] == "BDT"]
33 BDT_gross_rev_BDT = BDT_earned["Gross Revenue"].sum()
34 BDT_net_rev_BDT = BDT_earned["Net Revenue"].sum()
35 # AED to bdt conversion

```

Figure: Data Analysis Automation Program

d) Constructing a notebook so that the program becomes interactive and shareable.

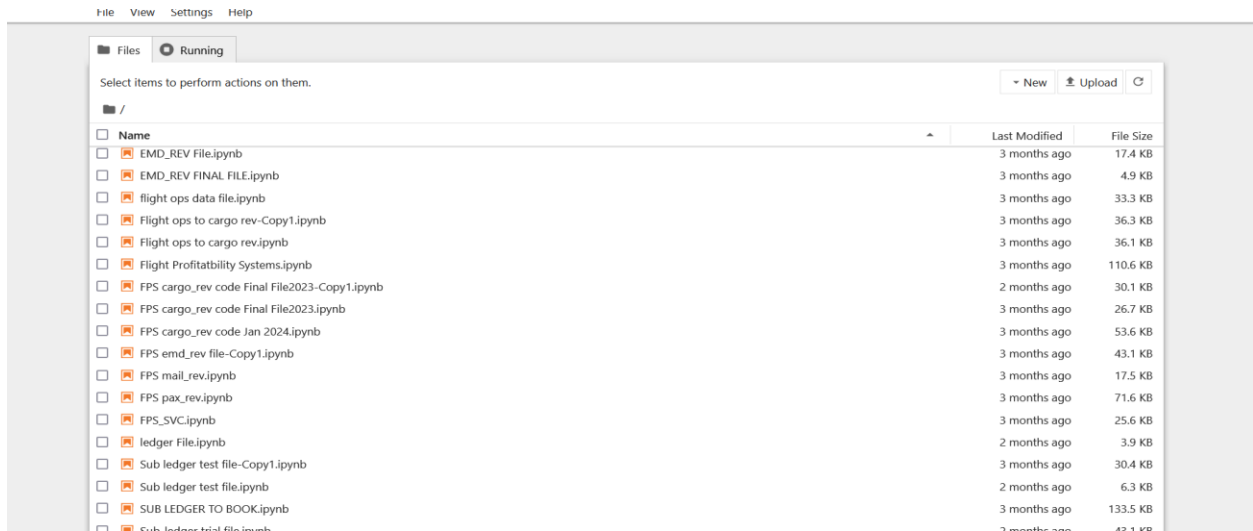


Figure: Automation Program Notebooks

e) Generating Reports from the derived analysis.

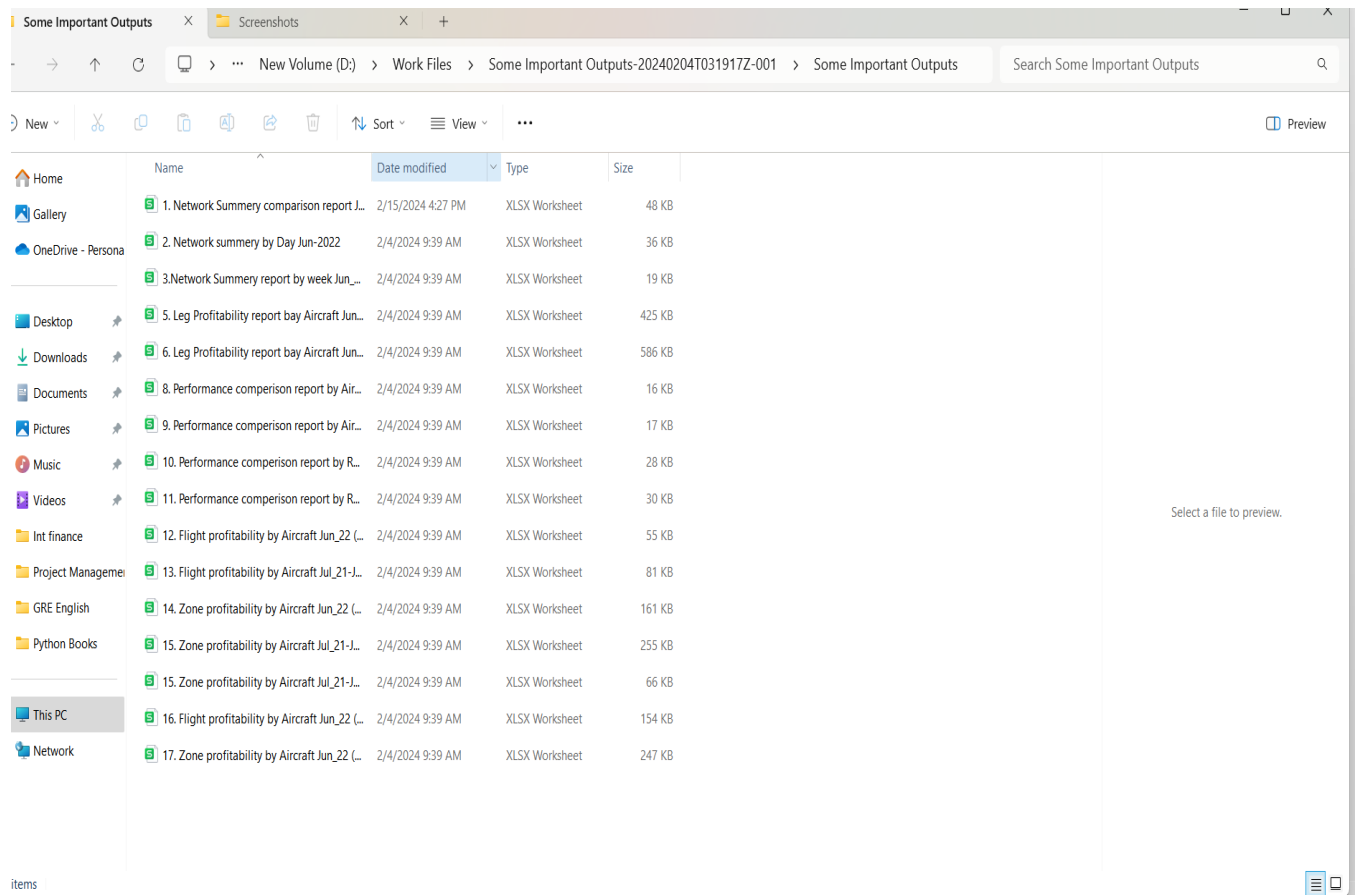


Figure: Sample Reports from the derived analysis

4. Automating a ledger: I was tasked to automate a ledger by my supervisor in the Revenue General Section. It was similar to data analysis automation performed in Corporate Budget. The tasks that I performed were:

- a) Convert excel file to csv file.
- b) Convert the subledger to a csv file.
- c) Mine Data from subledger and transfer it to a master file.

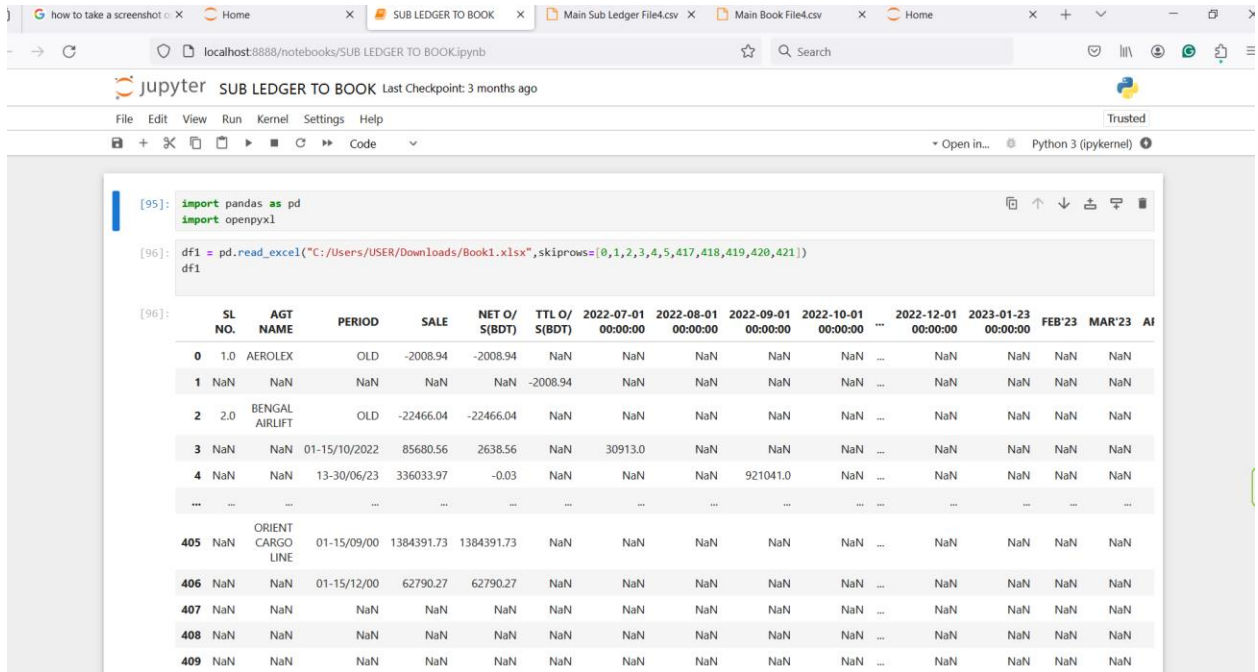


Figure: Ledger Automation

These were the tasks that were assigned to me by my supervisors.



Chapter-5

Analysis

5.1. Company Analysis

5.1.1. Efficient Process

1. **Ground Handling:** Biman The national flag carrier, Bangladesh Airlines, is an important part of the country's aviation sector. It's interesting to note that its application goes beyond passenger transit. As a major force in ground handling services, Biman makes sure both its own and other airlines' flights run well.

In the past, Biman relied on other businesses to handle ground handling. But control and efficiency might have suffered as a result of this strategy. Realizing this, Biman made calculated investments in staff, supplies, and education to build a strong internal ground handling division. This action was taken in an effort to optimize departure times, streamline operations, and maybe increase revenue by providing services to other airlines.

The ground handling services provided by Biman cover a wide range of tasks. Handling passengers includes checking people in, organizing luggage, and making sure everyone boards on schedule. Ramp handling include pushing back tractors and de-icing units, loading and unloading goods and passengers, and marshalling planes into place. In addition, Biman handles technical pre-flight issues and makes sure the aircraft are correctly serviced and ready for takeoff.

Developing a robust ground handling capacity provides Biman with numerous benefits. First of all, it gives the airline more control over turnaround times, which could enhance its own flight schedule punctuality. Second, the knowledge acquired can be used to provide ground handling services to other airlines using Bangladeshi airports, creating new sources of income. This may be especially helpful at the third terminal, which recently opened.

But creating a profitable ground handling division means overcoming some obstacles. For operations to be effective, it is essential to have a personnel that is motivated and well-trained. Furthermore, Biman must continuously upgrade its ground support equipment (GSE) in order to uphold high operational standards and safety requirements. In addition, Biman will need to provide competitive pricing and high-quality services in order to effectively compete with well-established ground handling firms.

In summary, Biman Bangladesh Airlines' intention to enter the ground handling market represents a calculated step in the direction of increased operational control and possible income production. Through efficient resource management and resolution of related issues, Biman can firmly establish itself as a full-service aviation supplier in Bangladesh, guaranteeing passengers' smooth and efficient air travel experiences on both its own and other airlines' flights.

2. **Biman Food Catering Services:** In addition to providing customers with air travel, Biman Bangladesh Airlines takes pleasure in providing them with a pleasant culinary experience. A closer look at Biman's catering service is provided here:

- I. **Internal Specialist:** Biman Bangladesh Airlines is proud to have its very own cutting edge food facility, the Biman Flight food Centre (BFCC), which is ideally situated close to the Hazrat Shahjalal International Airport in Dhaka. This enables strict control over the caliber, hygienic practices, and prompt delivery of meals to airplanes.
- II. **Various Menu Selections:** BFCC accommodates a broad spectrum of dietary requirements and inclinations. A variety of international dishes will be served to passengers together with specialties from Bangladesh. Additionally, Biman may be able to fulfill special meal requirements for allergy sufferers, vegetarians, and travelers on religious pilgrimages.
- III. **Emphasis on Quality and Freshness:** Biman highlights the use of locally obtained, fresh ingredients whenever feasible. They guarantee that customers have a nutritious and delectable in-flight meal by adhering to stringent quality control procedures and international food safety requirements.
- IV. **Beyond Biman Flights:** The knowledge of the BFCC goes beyond the flights conducted by Biman. They provide food services to private planes, UN flights, other domestic and international airlines, and even VVIP aircraft. This not only brings in more money but also shows off Biman's ability to serve a larger clientele.
- V. **Forward-Looking:** Biman is always working to enhance its catering offerings. They may look into things like adding more local specialties and allowing customers to customize their meals in advance. Furthermore, given the increased emphasis on sustainability, Biman might consider using eco-friendly packaging or cutting down on food waste.

The overall goal of Biman Bangladesh Airlines' catering service is to give customers a delicious and cozy meal experience. With an emphasis on quality, a variety of menu options, and in-house knowledge, Biman aims to make every trip elegant.

3. Engineering Services: Ensuring the safety and airworthiness of its fleet is a crucial obligation of Biman Bangladesh Airlines, the nation's flag airline. The competent staff of Biman's engineering services department is in charge of this crucial assignment. Biman has a fleet of several kinds of aircraft, each requiring a different kind of upkeep. The engineering team is in charge of a wide range of duties, such as:

- I. **Scheduled Maintenance:** To ensure that aircraft systems operate correctly and to prevent breakdowns, routine inspections and servicing are essential. This includes regular component replacements, airframe inspections, and engine checks.
- II. **Unscheduled Maintenance:** Technical issues might occur unpredictably even with careful attention. The engineering crew has the tools necessary to identify and resolve these problems quickly, cutting down on delays and guaranteeing passenger safety.
- III. **Maintaining Records and Documentation:** For the purpose of monitoring aircraft health and guaranteeing adherence to aviation laws, comprehensive maintenance records are essential. The engineering staff at Biman keeps these records up to date for every aircraft.

The problems pertaining to its engineering services are being actively addressed by Biman Bangladesh Airlines. Modernization initiatives have the potential to lower maintenance costs and increase operational effectiveness, even if they involve buying newer aircraft. Biman's engineering skills can also be improved by making more training investments and collaborating with foreign aircraft maintenance businesses.

Biman's technical services division is essential to ensuring that the company's fleet is airworthy and continues to link Bangladesh with the rest of the globe. They achieve this by emphasizing safety, staying up to date with technological developments, and making the most use of their resources.

5.1.2. Inefficient Process

I have discovered certain flaws in the Data Management and Data Governance process after evaluating it. They are as follows:

1. There is no Management Information System in place at Biman Bangladesh Airlines.
2. The databases aren't precisely located in one place.
3. Biman Bangladesh Airlines makes use of numerous outsourced systems and software.
4. Biman Bangladesh Airlines contracts out their whole process of data analysis.
5. The majority of the data are not easily accessed and are not organized well.

Here is an explanation of these ideas and how they may affect the future:

1. **Lack Of MIS:** Biman Bangladesh does not possess a Management Information System (MIS). Consequences of moving forward without a MIS:
 - a) **Decision Making Without Data:** MIS facilitates informed decision-making across several areas, such as flight operations, marketing, and customer support, by offering essential data and analytics. Without this data, crucial choices may rely on intuition or outdated information, potentially leading to suboptimal outcomes.
 - b) **Operational Inefficiencies:** A MIS can optimize a number of procedures, including inventory control, scheduling, and resource allocation. In the absence of it, Biman Bangladesh Airlines may experience operational cost increases, delays, and inefficiencies.
 - c) **Inadequate Performance Monitoring:** Without a MIS, it is harder to track important performance indicators (KPIs) like revenue creation, passenger happiness, and on-time performance. This makes determining where improvements are needed and gauging the success of current tactics difficult.
 - d) **Communication Silos:** In the absence of a MIS to enable data interchange, information may become stuck within specific departments. This may make it more difficult to work together, result in redundant work, and give an incomplete picture of the airline's overall performance.
 - e) **Less Strategic Planning:** Without the historical data and current performance trends that a MIS can offer, creating long-term strategy becomes more difficult. This may make it more difficult for Biman Bangladesh Airlines to adjust to shifting consumer demands and business developments.

- f) **Competitive disadvantage:** To obtain a competitive advantage, a lot of airlines use MIS solutions. In the absence of such a system, Biman Bangladesh Airlines may find it more difficult to maximize efficiency, enhance customer satisfaction, and control expenses.

2. Decentralized Database: Biman Bangladesh has a lot of servers of their own. They also avail themselves of a lot of cloud-based services. Drawbacks of having a decentralized database:

- a) **Complexity:** Compared to conventional centralized systems, managing and keeping up a decentralized database can be more difficult.
- b) **Performance:** Due to extra processing steps and network latency, searches and data access may be slower than in centralized systems.
- c) **Obtaining Consensus on Data Modifications:** In certain decentralized models, consensus-building may take longer than in centralized systems.
- d) **Regulation and Compliance:** Complying with data privacy laws may become more difficult in the case of decentralized databases.
- e) **Integration Challenges:** It can be difficult to integrate an existing centralized system with a decentralized database.

3. Outsourced Software: Drawbacks of outsourcing most of the software:

While outsourcing software development can offer numerous advantages, relying too heavily on outsourced solutions can lead to some drawbacks. Here's a breakdown of some key potential downsides to consider:

a) **Loss of Control and Customization:**

I. Vendor lock-in: If you rely a lot on software that is outsourced, you have to rely on the vendor's development roadmap and experience. This may restrict your capacity to swiftly make necessary modifications or personalize the software.

II. Limited Visibility and Control: It can be difficult to comprehend how the software functions internally. Communication difficulties with the development team may make troubleshooting issues or requesting particular modifications more time-consuming.

III. Concerns About Data Security: On servers under the outsourcing company's control, sensitive data may be stored. It becomes essential to have explicit commercial agreements and strict data security processes.

b) **Communication and Collaboration Challenges:**

I. Cultural misconceptions and Time Zone Differences: Working with a team that is located in a different time zone might cause communication to lag and cause misconceptions. Communication styles that differ between cultures might sometimes present difficulties.

II. Language Barriers: These can make it difficult to express your wants and expectations clearly, which could result in software that falls short of your expectations.

III. Complexity of Project Management: Overseeing several software projects that are outsourced might be challenging, necessitating committed work to guarantee efficient collaboration and communication.

c) **Quality and Maintenance Issues:**

I. Hidden Costs: Although outsourcing can save money up front, the vendor's continuing maintenance and support charges can mount up over time.

II. Integration Challenges: It might be expensive and difficult to integrate outsourced software with your current systems, necessitating further development effort.

III. Unexpected problems and Defects: Since you might not have total control over the development process, there's a higher chance that you will run across problems or defects in the product. It is crucial to have explicit support channels and warranty terms.

d) **Overall Impact:**

I. Vendor Dependency: You start to rely on the knowledge and ongoing assistance of the outsourcing provider. It's essential to choose a dependable long-term spouse.

II. Less Innovation: Relying too much on software that is outsourced can prevent your team from creating in-house knowledge and coming up with creative software solutions.

4. **Outsourcing the Entire Data Analysis process:** Drawbacks of outsourcing the entire data analysis process-

a) **Loss of Control and Strategic Insights:**

I. Limited Knowledge of Your Business: Outsourced analysts might not have a thorough understanding of the objectives and unique business context of your company. This may result in lost chances to get insightful information from your data.

II. Black Box Effect: You could not fully comprehend the technique or reasons behind the outcomes if the analysis process is entirely outsourced. This may make it more difficult for you to understand the results and turn them into workable plans.

III. Data Security and Privacy Risks: There are privacy and data security issues when sharing sensitive data with an outside company. Contractual agreements and strict data security standards are crucial.

b) **Communication and Collaboration Challenges:**

I. Difficulty Communicating Complex Needs: It can be difficult, especially when there are hurdles to communication, to effectively communicate your unique data analysis needs, intended results, and industry context.

II. Delayed Decision-Making: Waiting for the analysis and recommendations of outside analysts might cause decision-making cycles to lag.

III. Integration with Current procedures: It might be challenging to incorporate insights from an external investigation into your current internal workflows and procedures, which could impede implementation.

c) **Quality and Expertise Concerns:**

- I. **Misaligned Priorities:** It's possible that the outsourcing company's objectives don't quite line up with your particular requirements. It's possible that they are managing several clientele with various needs.
- II. **Absence of Domain Expertise:** Poor analysis may result from the outsourced team's lack of in-depth understanding of your sector or particular data sets.
- III. **Hidden Costs and Long-Term Dependency:** You become dependent on the outside team for continuous analysis when you pay recurring outsourcing fees, which can pile up quickly.

5.2. Market level Analysis

Experience: Although Biman has a lot of experience in the airline industry, it has failed to utilize any of the experiences it has accumulated over 50 years of its founding. Biman through its course has been victim of its own mismanagement. Although Biman is trying hard to turn around, it will require a lot of consistent efforts.

Services Provided: Biman provide a lot of different services. Even though we expect Biman to earn most of its income from ticket sales, it is not the case. The most profitable service of Biman Bangladesh is Ground Handling services. Next are Biman Food Catering Company (BFCC), Biman Poultry Complex (BPC), and Cargo Sales. Most of Biman Subsidiaries and Services are more profitable than passenger sales.

Route Focus: Biman Bangladesh Airlines is trying to increase the number of routes it operates on both internationally and domestically. It has newly opened routes in Rome and Japan.

Customer Relationship: Biman has always had a bittersweet relationship with its customers. Massive delays, mismanagement, poor luggage handling, lukewarm services have garnered the dissatisfaction of customers over the years. Though the service has improved, and mismanagement is being tackled, customers still have a view that is not suitable for Biman Bangladesh Airlines. However, at the current rate, it can be easily deduced that the flow of tide will change. To improve customer relation, Biman has introduced Frequent Flyer Programs, lounges, Call Center etc.

Price and Value Proposition: Biman has a competitive price for most of its routes. But it has exorbitant prices in a few routes that it has monopoly.

Brand Reputation: Biman has a negative brand reputation due to years of mismanagement and corruption. Although the service quality has improved, it will take years to get rid of the current brand reputation. The ageing fleet is also of significant concern.

5.3. Professional Level Analysis:

During my internship at Biman Bangladesh Airlines. I gained valuable insights into various software and expanded my technical and data analysis skills. I gained knowledge on terms and

Performance indicators of the airline industry. Consequently, I decided to pursue a Master's in Data Analysis and Cybersecurity and pursue the career of a data scientist.

Throughout my internship, I had the opportunity to work on two automation projects. These automation projects helped me a lot in understanding my capabilities and identifying the areas in which I need to improve myself. The courses I took in the BTM department, such as Enterprise Resource Planning, Management Information Systems, Computer Science and Technology 2 (Database Administration), and Computer Science Technology 3 equipped me with the knowledge that I used successfully in the automation projects. Moreover, the Project Management and Operations Research course helped me to enhance my decision-making and project-management skills. Accounting and Finance Courses were crucial when I worked In Revenue General and MAE&S section. The course International Finance and International Business Enterprises was unexpectedly useful as I had to deal with foreign currencies and foreign station data.

However, I encountered some challenges during my internship. Most of the software used by Biman Bangladesh Airlines were proprietary and under strict admin control. I did not have enough clearance to work on them. One other problem was lacking the lack of my data analysis knowledge. The data analysis course that I took was intermediate level. I soon hit the wall when I started working with the automation ledger. The data in the ledger was encoded in a different format. To counter this problem, I researched a lot of topics and concepts. I concluded that taking more courses of advanced data analysis will would be really beneficial for me.

Overall, my internship experience was highly beneficial, and I look forward to pursuing a career as a Data Scientist. The skills and knowledge I gained during my internship will undoubtedly aid me in the future.



Chapter-6

Conclusion & Recommendations

Conclusion

My internship at Biman Bangladesh Airlines has been an invaluable learning experience. During this time, I gained firsthand exposure to the inner workings of the airline industry, specifically within the context of Biman's operations.

During my internship, I mainly worked with Corporate Budget, Revenue General, Revenue Interline, RAPID, Revenue IBE, and MAES section.

Working within the Corporate Budget department allowed me to design and write programs that would allow the company to analyze and visualize data. My involvement in this task equipped me with valuable insights into Data Science.

During my time in Revenue, I learned about the complex systems used by Biman. I was given a comprehensive briefing on the Software used by Biman Bangladesh Airlines. It gave me a certain sense of familiarity with software's used in the airline industry.

I am grateful to Biman Bangladesh Airlines for providing me with this enriching opportunity. The knowledge and skills I gained will be instrumental in my future endeavors within the aviation industry. I am particularly interested in flight operations of an airlines and believe the experience at Biman has well-equipped me to pursue a career in this field.

Biman equipped me with an experience that was way beyond my expectations.

I am confident that Biman Bangladesh Airlines will continue to soar to new heights, and I wish the airline continued success in the years to come.

Recommendations:

The following suggestions are meant to help Biman Bangladesh Airlines enhance their data management:

1. Implement a Management Information System (MIS):.

- I. A unified platform for gathering, storing, analyzing, and distributing data amongst different departments can be offered by a MIS.
- II. This will enhance reporting capabilities, consistency, and accessibility of data.

2. Integration and Consolidation of Data:

- I. Biman has to create a method for easily integrating current databases, or combine them into a single, cohesive system.
- II. Data silos will be removed, enabling a more comprehensive perspective of operations.

3. Reduce Reliance on Outsourced Systems:

- I. Consider whether bringing essential data systems in-house would allow for more control and possible cost savings.

- II. For continuing support and maintenance, think about forming alliances with IT firms.

4. Develop In-house Data Analysis Capabilities:

- I. While some data analysis may need to be outsourced, it may be required to establish an internal staff of data analysts to handle core duties and obtain more in-depth knowledge tailored to Biman's requirements.
- II. Invest in educating current employees or seek out data analysts with the necessary experience.

5. Improve Data Organization and Accessibility:

- I. To guarantee data security, uniformity, and quality, implement data governance policies properly.
- II. Provide intuitive user interfaces and reporting capabilities so that authorized staff may quickly access and use data to make well-informed decisions.

6. Invest in Data Security: To safeguard confidential client and business data, be sure that strong data security procedures are in place.

7. Data Analytics Training: Employees at all levels should have access to training on data analytics so they can grasp the value of data and how to use it efficiently.

8. Data-Driven Culture: Encourage an organizational culture where decisions are made based on data, using insights from the data to inform plans and boost productivity.

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8. (Biman Bangladesh Airlines, <https://www.biman-airlines.com/fleet>).

Appendices



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Summary



Md Zawadul Bashar- 190061119

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 1st week

Date: 28th January to 1st Feb 2024

List of activities with brief descriptions:

1. Reporting and Assignment:


- Reported to the Chief Financial Officer (CFO) for section assignment.
- Assigned to the Corporate Cost and Flight Profitability Systems section.
- Reported to my supervisor in the section.
- Introduced myself to all the members of the section.

2. Primary training and Overview:

- Researched about the history of Biman Bangladesh Airlines under the instruction of the supervisor.
- Briefed on the number of aircrafts, stations, and routes Biman Bangladesh Airlines operate.
- Briefed about the Key Performance Indicators (KPI's) of the airline industry.
- Instructed to read and research study materials provided by supervisor.

3. Task Completion:

- Completed the task of conduct an comparison of some 'Expression of Interest'(EOI) files submitted for "Procurement of Flight Profitability and Budgeting Systems and Associated Services."


22/02/2024

Company Supervisor

Tanvir Hasan

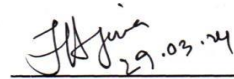
Assistant Manager (Accounts)

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29.03.24

Academic Supervisor

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Assistant Professor

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WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 2nd week

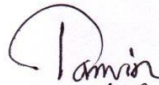
Date: 4th February to 8th February 2024

Task Assigned:

- Finding out the reasons for the gap of data analysis in the finance directorate primarily focusing on **Corporate Cost and Flight Profitability Systems section**.
- Writing Data Analysis programs in order to reduce the data analysis gap and streamline the data analysis process in order to reduce costs involved in outsourcing data analysis functions.

Tasks Performed:

- Collected information about the existing databases in which the section collects and stores their data.
- Collected information on which software's the section uses to work data. The section uses Excel for data collection and visualization.
- Conducted research to decide on which language to use for data analysis. I chose **Python** programming language. Due to shortage of time, I decided against developing API's and instead decided to develop interactive notebooks that are shareable and easy to use with lots of instructions.
- I collected data from previous years to use as a basis to develop programs.
- Informed my supervisor about my findings and asked his permission to proceed.


22/02/2024
Company Supervisor

Tanvir Hasan

Assistant Manager (Accounts)
Cost And Budget
Finance Directorate
Biman Bangladesh Airlines Ltd.
Contact: 01734484517


29.03.24
Academic Supervisor

Farjana Nasrin

Assistant Professor
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Md Zawadul Bashar- 190061119

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 3rd week

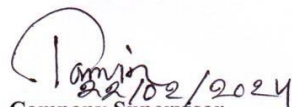
Date: 11th February to 15th February 2024

Task Assigned:

- Writing Data Analysis programs in order to reduce the data analysis gap and streamline the data analysis process in order to reduce costs involved in outsourcing data analysis functions.

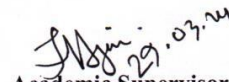
Tasks Performed:

- Researched on all the platforms which I can use to develop data analysis notebooks
- I decided to use Jupyter Notebooks on Anaconda Navigator. I also created similar notebooks on Google Colaboratory. I also used VS Code to store my source code.
- Made a list of all the outputs I need to generate. I requested the help of my supervisor in solidifying my understanding about the inputs and how to generate the outputs.
- Developed three separate notebooks based on the inputs.
- Ran the code in the notebooks to check if there are any errors.
- Debugged the notebooks from existing errors.
- Wrote detailed instructions on the notebook to so that anyone can use the notebook.
- Mailed the notebooks to my supervisor and requested for feedback.


Company Supervisor

Tanvir Hasan

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Md Zawadul Bashir-190061119

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 4TH week

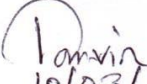
Date: 18th February to 22nd February 2024

Task Assigned:

- Writing Data Analysis programs in order to reduce the data analysis gap and streamline the data analysis process in order to reduce costs involved in outsourcing data analysis functions.

Tasks Performed:

- In continuation of the previous tasks, I developed 3 more notebooks to conduct the Data Analysis activities "Corporate Cost & Flight Profitability Section".
- I developed one notebook that contained code to analyze Passenger data and desired outputs like passenger count, passenger count etc.
- I developed the second notebook that contained code to analyze Flight Operations data and find outputs.
- I developed the third notebook that contained code to analyze EMD data i.e. data about the additional services of the passengers that gave additional outputs.


10/03/2024
Company Supervisor

Tanvir Hasan

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29.03.24
Academic Supervisor

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WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 5TH week

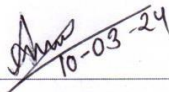
Date: 25th February to 29th February 2024

Task Assigned:

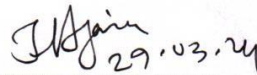
- Reassigned to the Revenue General Section
- Given a briefing about the tasks and responsibilities of the Revenue General Section by the section manager and my supervisor.
- I was briefed about the 'CargoSpot' Software Biman Bangladesh airlines. I was taught to read the invoices, ledgers and how they operate.
- I was tasked to write a file that extracts data from a ledger and joins the data in a master file.

Tasks Performed:

- I started working on the ledger and master file and encountered a problem. The ledger file was not programmable as it was not UTF-08 encoded. Without this encoding, python will not be able to read the file.
- I researched from data available in the internet, watched you tube videos and read python programming books to solve this issue. I learned an entire new library of python named openpyxl.
- After countless tries like changing file type, reformatting file etc. I was not able to find any solution for the issue as the ledger generated by CargoSpot software cannot be modified.
- However, I made a general programming file to complete the task with UTF-08 encoded file.


10-03-24

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29.03.24

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Md Zawadul Bashir-190061119

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 6th week

Date: 10th March to 14th March 2024

Task Assigned:

- Briefed about the internal workings of the **Revenue Interline Department**.
- The supervisor demonstrated the billing and invoicing process of soft wares like **CargoSpot, Accelya, and Finesse Suite**.
- Demonstrated the working mechanism of **IATA** soft wares like **IATA SIS and IATA Clearing House**.
- Instructed to make report on the internal working of the **Revenue Interline Department**.

Tasks Performed:

- Formulated a report on the internal workings of the **Revenue Interline Department**.
- Participated in the Fire Drill conducted by **Biman Bangladesh Airlines** under the supervision of **Fire Services and Civil Defense Department**.

Ahazam
13.03.24
Company Supervisor

Mohammed Aziz Hasan
Accounts Supervisor
Revenue Interline
Finance Directorate
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Farjana
29.03.24
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Md Zawadul Bashar-190061119

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 7th week

Date: 18th March to 21st March 2024

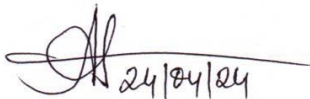
Assigned Section: "Revenue Accounting Proration-Interline Billing and Decision Support"(RAPID)

Task Assigned:

- Briefed about the **Sales Channels** of Biman
- The supervisor gave an explanation about the **Revenue Documents**.
- An overview of the **life cycle of a ticket** is illustrated.
- An overview is given of **the RAPID** section, the workflow of the section and the monthly data output.
- An in-depth briefing is given about the array of software used by the **RAPID** section.

Task Performed:

- Formulated a comprehensive report on the workings of the **RAPID** section.
- Formulated a flowchart and algorithm based on the report.



24/04/24

Company Supervisor

Muhammed Anower Hossain
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Passenger Sales Processing Team
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Md Zawadul Bashar-190061119

Date: 24-04-2024

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 8th week

Date: 24th March to 28th March 2024

Assigned Section: "BG Sales Audit"

Task Assigned:

- An overview is given of **BG Sales Audit** section.
- A brief is given about the Query/documents used by the **BG Sales Audit** section.
- An in-depth briefing is given about the "VERDI" software and other software(s) used by the **BG Sales Audit** section.

Task Performed:

- Formulated a comprehensive report on the workings of the **BG Sales Audit** section.
- Formulated a flowchart and algorithm based on the report.


Company Supervisor

Abdullah Al Mamun
Deputy Manager Accounts
BG Sales Audit
Finance Directorate
Biman Bangladesh Airlines Ltd.

Academic Supervisor

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Md Zawadul Bashar-190061119

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 9th week
Date: 31st March to 4th April 2024
Assigned Section: "Revenue IBE"

Task Assigned:

- An overview is given of **the Revenue IBE** section.
- A brief is given about the Internet Billing Engine.
- A demonstration is given about the ticketing system.
- An in-depth briefing was given about the software's used by the **REVENUE IBE** section.

Task Performed:

- Formulated a comprehensive report on the workings of the **Revenue IBE** section.
- Formulated a flowchart and algorithm based on the report.


Company Supervisor

Md Sohikul Islam
Account Supervisor
Revenue IBE(e-commerce)
Finance Directorate
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Academic Supervisor

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Md Zawadul Bashar-190061119

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 10th week

Date: 7th April to 9th April 2024

Assigned Section: "Revenue IBE"

Task Assigned:

- An overview is given of **the Revenue IBE** section.
- A brief is given about the Internet Billing Engine.
- A demonstration was given about refund process.
- An in-depth briefing was given about the software's used by the **REVENUE IBE** section.

Task Performed:

- Formulated a comprehensive report on refund process of the **Revenue IBE** section.
- Formulated a flowchart and algorithm based on the report.


Company Supervisor

Md Sohidul Islam

Accounts Supervisor

Revenue IBE(e-commerce)

Finance Directorate

Biman Bangladesh Airlines Ltd.

Academic Supervisor

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Md Zawadul Bashir-190061119

WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 11th week

Date: 15th April to 18th April 2024

Assigned Section: "Revenue IBE"

Task Assigned:

- An overview is given of reconciliation of the revenue earned through internet booking.
- A brief overview of the reports and ledgers used in the reconciliation process.
- An in-depth briefing was given about the software's used by the **REVENUE IBE** section.
- A brief is given about the payment pathways that can be used during internet booking.
- A step-by-step guide on how to incorporate new payment pathways in internet booking engine.

Task Performed:

- Formulated a comprehensive report on refund process of the **Revenue IBE** section.
- Formulated a flowchart and algorithm based on the report.

Company Supervisor

Mohammad Mohidul Islam

Junior Accounts Officer

Revenue IBE(e-commerce)

Finance Directorate

Biman Bangladesh Airlines Ltd.

Academic Supervisor

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Md Zawadul Bashar-

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WEEKLY OVERVIEW OF INTERNSHIP ACTIVITIES

Week: 12th week

Date: 21st April to 25th April 2024


Assigned Section: "MAE&S Section"

Task Assigned:

- An in-depth briefing was given about the software's used by the **MAE&S** section.
- An in-depth briefing was given about the accounting and disbursement of purchases.
- An in-depth briefing was given about the accounting and disbursement of advanced purchases.
- An in-depth briefing was given about the accounting and disbursement of the Engineering Stores
- An in-depth briefing was given about the accounting and disbursement of Cabin and Cockpit Crew Salary and Allowances.
- A document listing the standard operating procedure is provided.

Task Performed:

- Formulated a comprehensive report on disbursement process of the **MAE&S** section.
- Formulated a flowchart and algorithm based on the report.


26/5/2024

Company Supervisor

Md Shazzadul Kabir
Manager(Accounts)
MAE&S
Finance Directorate
Biman Bangladesh Airlines Ltd.

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