**Portfolio Project 8: Option #1: US Organization Capstone Project Summary**

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**US Organization Summary – Akoustis, Inc.**

One of the biggest challenges a new company faces is allocating cost to resources that are lacking; Akoustis Inc is one of those companies. Because they are only a few years old they have become use to using primitive means to record data and have assigned multiple people to analyze that data. However, this often leads to many errors in the reporting and miscommunication between departments on how to report finance numbers. The company has begun to understand that they are large enough where they need to invest in a business intelligence tool to analyze Big Data if they want to see reports that reflect accurate data.

**Akoustis Inc.’s Background within the Semi-Conductor Industry**

Akoustis Inc is a smaller company but a leading competitor in the semi-conductor industry. While they a newer competitor being open for only 8 years, they have made a footprint in the industry by achieving several high-volume contracts. The company invests time and resources into the development of RF wafer filters for wifi applications, defense applications, and infrastructure applications. Many companies in this field are successful when they land contacts for major jobs; for example, if a company can sign a deal with Apply or Samsung for their filters to be included in the latest phone release, the contact will identify the parameters the customer is requiring and then revenue for the filters is discussed and terms are agreed upon. Akoustis has proved to its competitors that they can produce competitive products. Because of their newer status the company has just begun to invest in themselves by way of implementing an ERP system. Now the company will undertake the project of implementing a complementary business intelligence tool to integrate into their new ERP system.

**Business Problem**

With the drive to be a leader in the semiconductor industry, Akoustis, Inc. has strived to make changes internally that will help them level their playing field with their competitors. One of the biggest challenges they face is analyzing data by using primitive means, like building reports in Microsoft Excel. However, this takes a lot of resources within the people that work at the company and can often lead to human error mistakes when reporting on financial numbers. The company has made substantial improvement by implementing an ERP system; however, they are beginning to understand that they need to invest in a business intelligence tool to analyze Big Data if they want to see reports that reflect accurate numbers.

**Details of Microsoft Power BI Methodologies**

Powe BI is Microsoft’s business intelligence tool and is widely used by business because of its flexibility to manipulate data. Most companies are consumed by big data, and Akoustis is no stranger to this as well; this data needs to be properly analyzed and sorted in order for it to be referenced and used by companies to aid in its health and prosperity in their industry. With its advancing analytical technology, Power BI offers users a way to visualize different types of datasets in a way that is clear and easy to interpret. Once integrated into an ERP system, the tool works to collect and store data from different environments. Power BI uses Azure Active Directory (AAD) to store and manage user identities and manages the storage of data and metadata using Azure BLOB and Azure SQL Database, respectively (*Power BI data storage in desktop app and Service,* 2019). They also primarily code with Python when integrating with other power apps such as Power Automate.

**Using Microsoft Power BI to Perform Data Analysis**

The business intelligence tool that will be used for the company is Microsoft Power BI. This intelligence tool is easily able to be integrated into their ERP system because it is owned by Microsoft. Akoustis’s ERP system is Microsoft Dynamics 365, this system comes with a range of preset Power BI reports that can be easily created with the help of the ERP system implementors. This connection allows for an easier communication between the BI tool and the ERP system, and it also aids in team reporting for those within the company who use Microsoft Teams for projects. By combining the capabilities of Power BI and Dynamics 365, there are a range of services designed to enhance data quality, deliver impactful insights, ensure swift deployments, secure data transfers, and simplify user access (*Power bi + dynamics CRM service page,* 2023). Microsoft also offers a discount on Power BI Pro licenses with the ERP system, which can be given out to the primary team members in the company, and they can be easily switched over to another team member should someone need it. This cost savings aspect was a huge benefit to the company as business intelligence systems can be very pricy.

**Data Visualizations for Data Analysis**

Data visualization is one of the most important capabilities of any Business Intelligence (BI) and analytics solution because it enables people to translate complex data into a visual context, such as a chart or graph, identify trends that numbers alone cannot easily reveal, and discover hidden patterns in your dashboard (MetaOption LLC, 2022). The focus of implementing data visualizations is to build a bookings and billings page for finance, sales, and operations so the numbers are accurately and comprehensively reported. This will solve the issue of having a manual reporting matrix for finance. The bookings page will report the entirety of orders that are currently on backlog along with the operations planning team’s estimates on when the order can be fulfilled. Tracking signed contracts, specific wins per salesperson, and details like plan tiers or product upgrades help Customer Success gauge onboarding strategy and expansion/upgrade opportunities (*Bookings vs. Billings vs. Revenue*, 2023). This will also benefit the inside sales team as they can easily access the page and be relay facts to customers in real time about the estimated shipping date for products by order number.

A billings page will be more beneficial to finance and sales especially. The billings page should consist of an overview of the completed orders. This should have a dynamic list of orders that have been invoiced and then should relay the percentage of how soon a customer pays their invoice based on their billing terms. For example, if a customer has billing terms of Net30, they should be paying their invoice within 30 days. This should be tracked to see how responsive a customer is to our invoices. If any customers are delinquent, then the customer should be highlighted in red on both the bookings and billings page to alert the operations, sales, and finance teams that this customer should not be receiving any more orders until their invoices are paid up. This warning should be enacted through the ERP and translated into the business intelligence tool through a hold on the finance team’s side.

Akosutis has also been reviewing their overall orders in backlog and seeing if there is any difference from the sales forecast. This difference is referred to as “gap” data. Microsoft Power BI will report this “gap” data by calculating the “gap” between each month that finds the difference between current backlog and the sales forecast. The design team will perform the standard “back-and-forth” style of designing, making numerous iterative changes until they reach something that is acceptable to the client (Hussain, 2019). In this case the planning manager will be the client and will be our line of defense as we determine if this “gap” data is correctly displayed. This will be reported to the organization on the Power BI dashboard to ensure that the finance team and sales team and operations team can accurately display this at meetings.

**Power BI Methodologies**

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**Data Analysis Usage**

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**Data Analysis Techniques**

In order to create a bookings and billings page for the financial data, there data that is transferred over form the ERP system, must be analyzed and sorted accordingly. The intention of Microsoft’s Power BI is that it will be able to gather the data that has been entered into the ERP system, clean the data of any inconsistencies it might detect, choose an analytical technique, use that technique to analyze the large amount of data, and then interpret the results that either classify the data as backlog for future orders, or as a completed order that has been fulfilled. This will be done by using a time series analysis on the data taken in. Time series analysis involves using statistical methods to analyze trends in a company's financial data over time (Gopal & K, 2023). See Example 1 and Example 2 in the Appendix for the python evaluation. This python program takes in financial data as a csv file (this will eventually become automated in the final phase of the BI implementation), and analyzes the data based on the begging on the physical year and then plots the data in a time series graph. This will allow users to see the trends in the data. Then this data will be converted into a bookings and billings visual on the Power BI dashboard.

**Conclusion**

Akoustis has been regarded as a potential leader in the RF semi-conductor industry. Their methods have been sub-par so far, but now that the company is really investing in themselves, the health of the organization should improve overall. The implementation of a business intelligence tool that is imbedded into their ERP system is one way where the company can really show their professionalism. The visualization they can create by having a tool that can easily analyze their data will help them gain better standing within their industry.

The implementation of a business intelligence tool that is imbedded into their ERP system is one way where Akoutis, Inc. can highlight their professionalism. The visualization they can create by having a tool that can easily analyze their data will help to pull in prospective clients and ensure existing customers of their growth. Microsoft’s Power BI tool will help aid in this professional growth by providing a thorough analysis of their financial data and reporting it accurately so that all users can easily see new and existing trends.

**Appendix**

A screenshot of a computer program

Description automatically generated

Example 1: Time Series Analysis Technique

A graph with red and blue lines

Description automatically generated

Example 2: Time Series Analysis Graph



Example 3: Sales Order Data csv file

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