National College of Ireland

Project Submission Sheet – 2020/2021

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I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.

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Signature:	Omkar Ratnoji Tawade
Date:	17-12-2020

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1. Please attach a completed copy of this sheet to each project (including multiple copies).
2. Projects should be submitted to your Programme Coordinator.
3. **You must ensure that you retain a HARD COPY of ALL projects**, both for your own reference and in case a project is lost or mislaid. It is not sufficient to keep a copy on computer. Please do not bind projects or place in covers unless specifically requested.
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Business Intelligence and Business Analytics

NIKE Sales Report

Implementation Report – Group Project

Team 12 A

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I. INTRODUCTION

The best way to describe Power BI is a user-friendly platform for providing key insights on various types of data by collecting and managing this data so that it gives users an easier visual to conclude from. The main way this would be done would be via charts and various graphs. It is great for a business to use to provide detailed but also easy to read simplistic reports on specific aspects of the business or even the business as a whole, Power BI is not disrupted or challenged by the size of the company using the platform, from local shops to global enterprises, decision making has been improved with the implementation of Power BI. The Figure 1 below shows the visual outlook of the Power BI dashboard displaying detailed insights on data collected and organized by the cloud-based application.

Figure 1. Example of Power BI Dashboard.

Power BI is a Microsoft product and was developed by Thierry D'Hers and Amir Netz who were part of the SQL server reporting team at Microsoft, Power BI was originally the work of Ron George back in 2010 under the project name Crescent. Under additional changes and updates to the then crescent, the first official launch of Power BI was released to the general public in July of 2015 and has garnered praise and recognition in a very short space of time to become one of Microsoft and businesses main tools within their company's along with excel which is also still a big tool used for reporting and insightful outcomes critical to decision making.

Custom Dashboards are a big part of Power BI and when designed can produce the following:

1. Wrap the Metrics with Contextual Metadata.
2. Validate the Design by a Usability Specialist.
3. Prioritize and Rank Alerts and Exceptions.
4. Enrich Dashboard with Business-User Comments.
5. Provide for Guided Analytics

Power BI can come in several versions, this is important as some businesses might not be financially equipped for some versions and would not be able to support the deployment.

The different versions of Power BI are:

1. Power BI Desktop – This version of Power BI is free for everyone and its main demographic is small to medium enterprises.
2. Power BI Mobile – This is pretty self-explanatory; the application is used for mobile devices and tablets.
3. Power BI Premium – This version is more massive for global businesses with access to features that are unavailable with the free desktop version.
4. Power BI Embedded – Can be an additional add on with the businesses personally own applications.
5. Power BI Report Server – This would be used for businesses that need to retain data on in-house servers.

There are many advantages to using Power BI and businesses reap the rewards and gain an advantage over competitors in their respected markets that are not using Power BI. The Figure 2 below showcases the top 10 advantages of using Power BI.

1. Power BI is widely accessible around the world and across many devices like IOS and android which means every user can download Power BI whereas other applications may not be compatible with the user's device.
2. Personalization is great when it comes to Power BI and gives users the ability to use embedded analytics

within a familiar business environment as in house tools for a business.

3. Rich Personalized dashboards that are so easily customized to suit preference.

4. With Power BI embedded there are no memory constraints and also no speed constraints which can be a very big problem with other BI systems, data can be collected instantly in real-time.

5. Security with Power BI is also a big benefit whilst publishing reports. Accessibility is controlled well.

6. Power BI's Integration setup is second to none allowing businesses to combine already existing environments.

7. Cost is another big factor in Power BI for small businesses using the free Desktop version can save a great deal in terms of their budget.

8. Support for all data sources like data collected in CRM for sales data appear with Power BI, new datasets can be created from various data sources which increases connectivity.

9. A lot of BI systems do not support live querying so sometimes data cannot be u to date and results could be misleading, this is not the case with Power BI with rapid reporting.

10. No real support is needed.
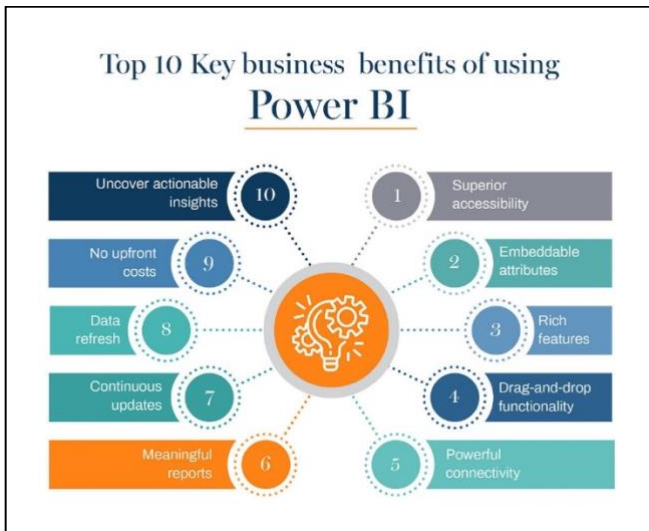
Figure 2. Top 10 key business benefits using Power BI.

II. BALANCED SCORECARD

A Balanced Scorecard (BSC) is a strategic planning and management system used to align business activities to the goals and strategies of the organization by examining performance against these goals and objectives [1]. Identifying specific strategic measures with traditional measures to produce a balanced performance outlook. This is because many traditional measures are focused on external data which can be obsolete. The Balanced scorecard was first designed and implemented in 1992 by Kaplan and Norton, available in the mainstream by 1996 in book format.

Balanced scorecards are used globally by major corporations as well as non-profit organizations. Over half of the big businesses in America, Europe, and Asia use balanced scorecards. But why? Let us look at the benefits of using BSC [3].

- It will improve organizational skills by identifying what is and is not important. Measures Priorities.

- Increases focus on results and what strategy to get these results.

- Aligns the strategy with the workforce on a daily basis.

- Drivers are focused on key future performances

- Improve Communication of the businesses main vision and goals

- Great practice of prioritizing projects.

With all these advantages, it's no wonder why so many organizations opt to use BSC's.
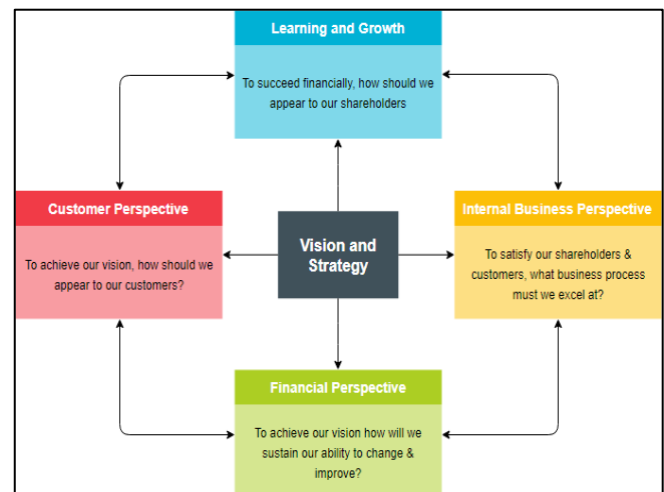
Figure 3. BSC Diagram

When looking at this approach there are four main perspectives used within this approach, you may ask why only these perspectives, well it's because over a long period of time these are the ones that have worked in this framework. Another factor is that these perspectives share similarities and can be connected better than most others. With these 4 perspectives, we can develop metrics, collect data, and analyze it relative to each of these perspectives [2].

The first Perspective is Financial. This is usually the easiest to measure out of all of the perspectives like for example a financial objective could be to boost income over the next year, however, how do we do this? By our relationships with other perspectives in this model, we can highlight key areas to invest in and devote time to.

The second Perspective is the Customer. This is all about understanding your audience, who exactly is your

target audience, and what does your customer want vs what they need. Plan strategies around these thoughts on the best way to provide them.

The Third Perspective is the Internal Business process. This is how do we please our stakeholders what levels should we be reaching in certain areas. What the productivity levels should be, quality levels we are looking to reach, can a business focus on a new creative idea, all of these fit into this process.

Learning and Growth is the final perspective. How we look at our employee performances, are we managing this correctly in terms of the system. This would include feedback to employees, do this support the high levels of performance we need.

III. GENERATING DATA

We have generated our mock data from the Qualtrics platform. Qualtrics is the world's first experience management platform. The business has plenty of data such as sales figures, leads, analytics, HR data, and plenty more. It is also called operational data or O-data. Operational data tells you what happened in the past. At Qualtrics, they take O-data and combine it with experience data and a combination of such data they called X-data. This data suggests the companies why the things happened and identifies improvement that will have the biggest impact on your business. This all comes together at Qualtrics Experience Management Platform. So, businesses can design and optimize customer employee, brand, and product experiences that deliver back to business.

This platform is used to build a survey. We have also programmed a survey to generate our mock data. We used this platform because we can have our mock data more realistic. Figure 4 shows our company's sales database structure.
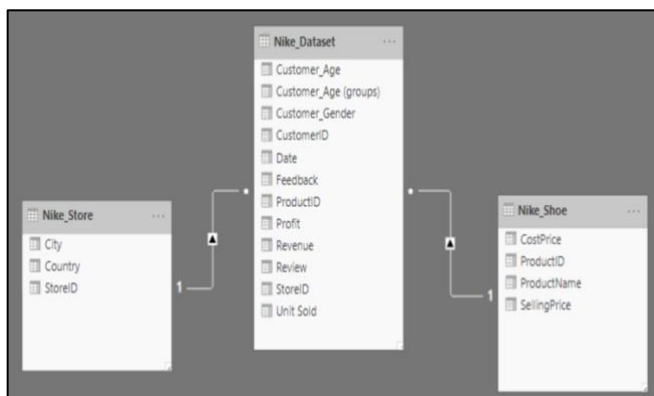
Figure 4. Database structure

While planning the dataset, we started from the variables which will be constant, so we had produced two tables first which are 'Nike_Store' and 'Nike_Shoe'. Nike_Store contains StoreID, City, and Country data of all stores. Nike_Shoe contains ProductID, ProductName, SellingPrice, and CostPrice (Manufacturing Price) of all shoes. We will capture StoreID and ProductID in the main table which we named a Nike_Dataset'. Nike_Store and

Nike_Shoe tables are related to the Nike_Dataset table. In the Nike_Dataset table, we had decided to capture the data of the following fields (Date, Store_ID, Product_ID, Customer_ID, Customer_Age, Customer_Gender, Unit_Sold, Ratings, and Feedback.

We can now move to the data capturing process since we finalized our database design. For capturing the Date, Qualtrics gives us an option to enable validation. This validation will ensure that the Date entered in our database will always in range between January 2019 and April 2019. We will now capture the StoreID. Since we know StoreID's already we can use a single select question type in the survey to capture the StoreID's data. Once StoreID's data is captured in the survey we have programmed embedded variables like City and Country such that appropriate data will store in them programmatically. For example, if StoreID 'S101' is selected then by using the logic we have implemented we can observe that Dublin and Ireland are captured in the City and Country columns respectively. This process was easily implemented on the Qualtrics platform and it is very easy to use because of GUI based coding. The next single choice question inserted was of ProductID. ProductName and SellingPrice were filled appropriately based on the selection of ProductID. For example, if ProductID 'P001' is selected then using the logic mentioned, ProductName will be Air Max and SellingPrice will be 150 Euros. Figure 5 shows this implementation.
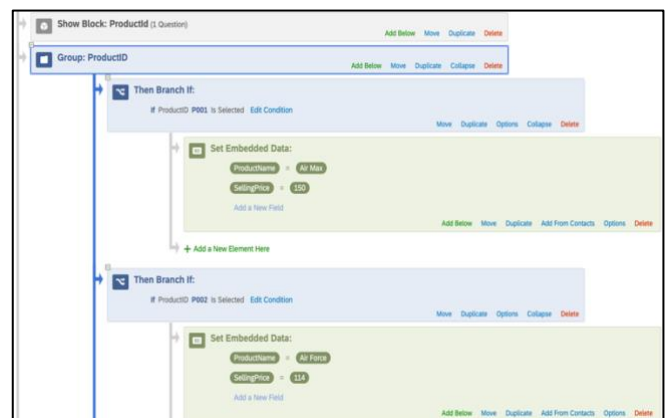

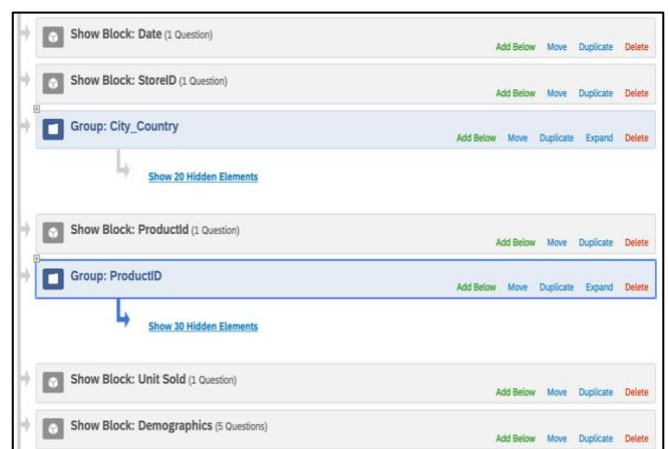Figure 5. Logic implement for ProductName and SellingPrice

Figure 6. Questionnaire Flow

Next, we have a number of units sold which we have framed as an open-end numeric question. After these questions, we have framed a few demographic questions like the age and gender of the customer. We have also framed two questions for rating and feedback of the customers. Figure 6 shows the flow of our questionnaire.

Figure 7. Example of question framed on Qualtrics.

We have now finished implementing the survey, now we can proceed with the data capturing. Qualtrics allows to generate test data and this data can be downloaded in various file formats such as Excel, CSV, SAV, and many other formats. We had generated up to 7000 responses and downloaded this data as an excel file. We had three tabs in the excel file which are Nike_Dataset, Nike_Store, and Nike_Shoe. We will add all mock data in the Nike_Dataset tab. Now we have finished generating the mock data and we can use this file for our dashboard implementation.

IV. CRM

It is important to maintain satisfied customers to maintain a sustainable business operation. CRM plays a vital role in such operations. CRM provides is support for business operations. It gives you an overall overview of the service that you are providing it allows you to take orders and also it is a great marketing tool. It gives the organization a strategy ending overall it gives us an analysis so that we can increase sales. All of these important pieces of the business lines of the business do you put in your customer relationship manager to assist in the growth of your business.

Fig. 5. CRM (Customer Relationship Management).

According to research in 2012, Nike launched a new division called Nike Digital Sports. This helped Nike to meet its customer's needs by analyzing the stored data of their customer performances. Nike is also very active on social media which helps them to build a relationship with their customers. Nike promises to stand behind all of the company's products for both consumer and retail accounts (Nike, 2014). Nike's web site enables its customers to use the search function to search for information related to Nike's customer service policies. The answers are provided by the use of intelligent automated response technology. The website also provides customers with answers to Frequently Asked Question (FAQ). Through the implementation of this program, Nike is able to have an open communication line with and a better understanding of customers [4].

Now we will build a CRM which will help the store manager to contact the customer directly and communicate with them. We have used Microsoft dynamics 365 to create this CRM. Dynamics 365 is a solution for CRM systems. We will explain the steps of data collections will the help of screenshots
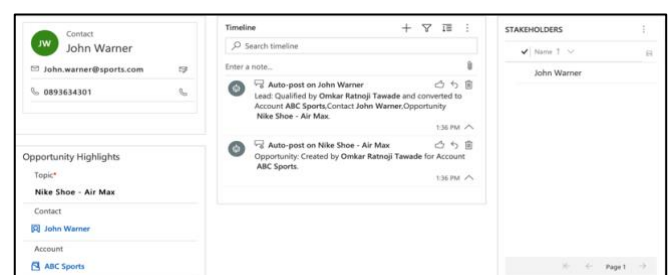

Figure 8. A lead was created by filling in the respective customer details, we have marked it as a qualified lead based on the customer details. Since the lead is qualified which suggests that opportunity has been created.

Figure 9. The price of the product ordered by John which is Nike Air Max has been updated in the system. System generated revenue is selected and the euro is selected in the currency.

Figure 10. Now we are ready to pitch our estimated price to John and this process is known as the quote.
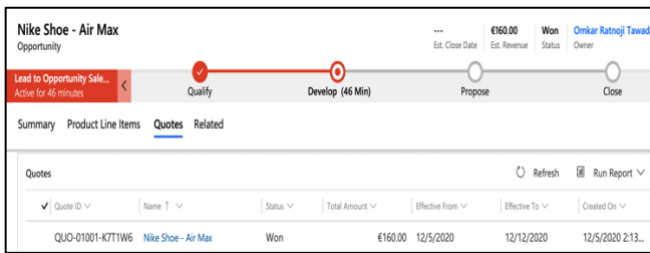
Figure 11. Once the invoice is paid, we have then converted the lead status as 'Won'.
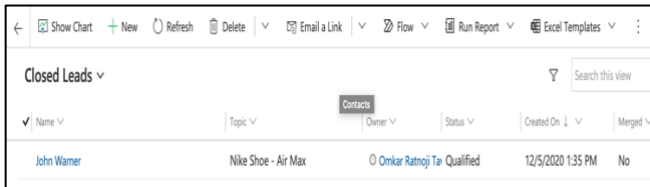

Figure 12. We can export all closed leads in the excel file. We can also view these leads on the dashboard.

V. DASHBOARDS

As shown in the figure, we have two dashboards for our systems that are easy to understand and interact and they both are very useful to gain some knowledge about how our company is performing in the market.
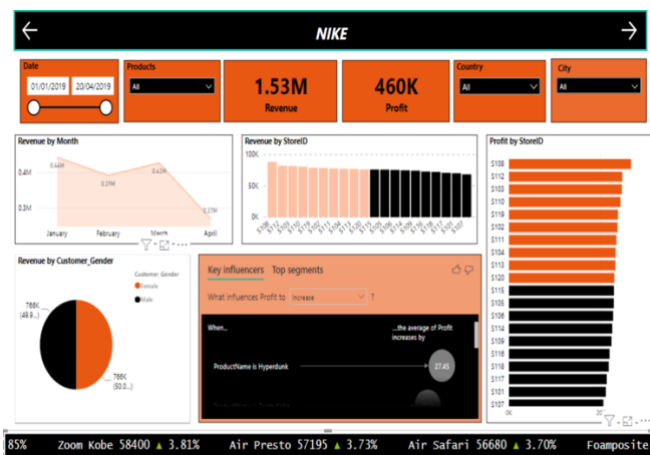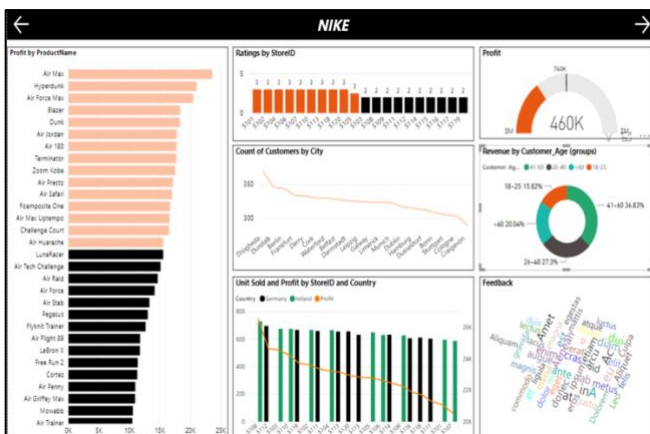

Figure 13. Page 1 of the Report.

Figure 14. Page 2 of the Report.

A. Dashboard Elements:

We have used many types of charts, cards, and graphs on our dashboard. Here we will try to explain them all.

1. Area Charts (Basic and Stacked):
   Area Charts are used to represent the changes in one or more quantities over time. It is like a line graph.

2. Bar and column charts:
   It displays data in rectangular bars. Bar charts plot the variable value horizontally and a column chart plot the variable value vertically.

3. Combo Charts:
   Combo chart is a type of chart which display multiple sets of data in different ways on the same chart.

4. Doughnut Charts:
   Doughnut Chart is a type of chart that is used to express a "part to whole" relationship where all pieces together represent 100%.

5. Funnel Charts:
   Funnel Charts are used to visualize the progressive reduction of data as it passes from one phase to another.

6. Gauge Charts:
   Gauge charts are very similar to pie charts, with the needle which is used to indicate the data points.

7. Key Influencers:
   The key influencers visual helps to understand the factors that drive a metric you're interested in.

8. Pie Charts:
   It is used to visualize the contribution of different values to a total.

9. Slicers:
   It is used to filter a portion of the dataset which is shown in other visualizations.

B. Dashboard Explanation:

There are two dashboards in our project, so we'll explain them one by one.

First Page:

1. Products:
   We have used slicer visual which will allow the user to filter out the dashboard depending on the products selected. We have 30 products in our database, and all are displayed in this visual. We can select multiple products at a time

2. Date:
   Again, for this attribute, we have used slicer visual which will allow us to select any range of date and to filter out the report based on this selection.

3. Revenue:

For this attribute, we have used the card visual in the Power BI. We have added the new column name 'Revenue' in our dataset under the modeling tab of Power BI. We used the query to calculate revenue with the help of the unit sold and the selling price of the product.

4. Profit:
   This visual is similar to Revenue visual. We have added the Profit column in the dataset using unit sold and cost price. Also, we have set a margin of 60% on the product of unit sold and cost price.

5. Country:
   We have used a slicer visual for this attribute. This visualization is used to select a particular country to see country-specific information. In our dataset, we only have two countries which are Germany and Ireland.

6. City:
   This visual is similar to Country visual. We have a list of 10 cities where our company's stores are present. We can select multiple cities to filter out the dashboard accordingly. It can be used to analyze the reports city-wise.

7. Revenue by month:
   We have used an area chart to show the distribution of revenue across the months. We can observe a trend which suggests that revenue increases in an alternate month. Our data is small, it is the data for one quarter. So, we cannot strongly conclude about this trend.

8. Revenue by Store ID:
   We have used a line and stacked column chart for this attribute. We have plotted revenue against StoreID's which will help us to analyze which store performs better in sales and which stores performed poorly in the sales. Based on the chart we can say S108 performed better and S107 performed poorly compared to others. This analysis will help the company and will give them an idea of how to allocate their man-force wisely.

9. Profit by Store ID:
   We have used the clustered bar chart visual for this attribute. It will analyze which store is making more profit compared to others and then we can know the reason behind that by analyzing which product was most sold in that store.

10. Revenue by Customer Gender:
    This can be one of the important visual to strategize the sales. Our company's database has a few demographic variables and one of them is gender. Based on our report, we can say that our brand's shoes are used by both genders equally.

11. Key Influencers:
    Via this, we can check which product is in trend, or we can say via this we can check which products are performing well in the market.

12. Scroller:
    We have used this custom visual of power BI at bottom of page 1 report. We can see such scroller in stock markets. In our study this will indicates whether particular shoes are in profit or loss.

Second Page:

1. Profit by Product Name:
   We have used the clustered bar chart for this attribute. This visual will help the user to know which products generate more profit. It will help the company to strategize the manufacturing of products. It can also indicate which product is popular in the market.

2. Ratings by StoreID:
   We have used a stacked column chart for this attribute. We have ratings recorded by each customer. This visual will help the company to know which store performs better in terms of hospitality. The maximum rating point is 5. We have taken the median of ratings for every store.

3. Profit:
   We have used a gauge chart for this attribute. User can set a target and then can gauge where the company stands in terms of profit.

4. Count of Customer by City:
   We have used the line chart for this attribute. This visual will help to know which store engages more customers. Since we have CustomerID in our dataset we have used to count of the CustomerID for this visual.

5. Unit sold and profit by store ID and Country:
   We have used the line and clustered column chart for this attribute. This visual will help to analyze how profit is influenced by the number of units sold.

6. Revenue by Customer Age:
   We have used a pie chart visual for this attribute. We will be using our second demographic variable Customer Age in this visual. This visual will help the company to strategize the manufacturing and marketing of the product to respective groups. We have formed a bucket like 18-25, 26-40, 41-60, and greater than 60 based on the Customer Age variable.

7. Feedback:
   We have used word cloud visual for this attribute. It can be used for sentiment analysis. The company can also get an idea of customer's requirement based on the feedback.

VI. BENEFITS OF THE SOLUTIONS

The total profit of the company is quite fluctuating over the first four months of 2019. This can be easily inferred from the dashboard. The finance team can look at this data and can decide to estimate the pricing of products such that they will have a more constant spread of profit across the months. The marketing team can also verify whether any of their marketing strategies leads to a rise in profit. If it's true they can think to continue this strategy.
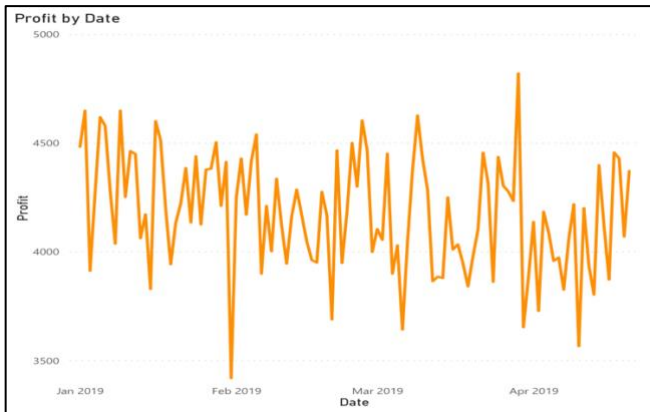

Figure 15. Profit by Date

By observing the plot of product vs profit Figure 15 and unit sold vs product name   Figure 17, the sales team can help the production team to increase the production of which particular shoes. When the production of shoes which generates high profit and shoes which are purchased often more by customers is increased then this can solve the problem of unavailability of shoes. But Nike is known for innovation so they cannot stop the production of new shoes or modifying old shoes with better performance. It is very important to check this dashboard as it gives an idea to the sales team to control the production of particular shoes and customer will not get with empty hands from the store.
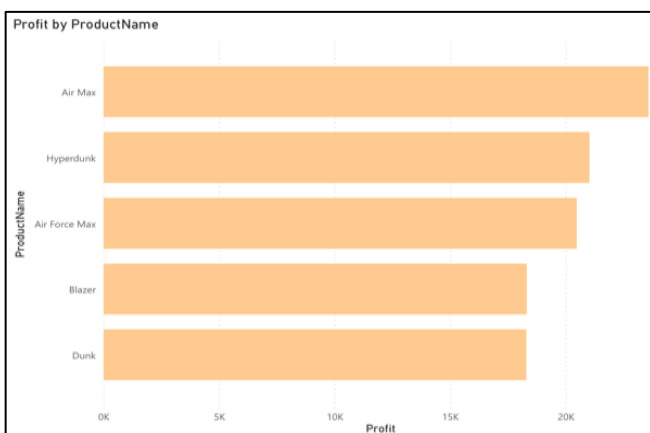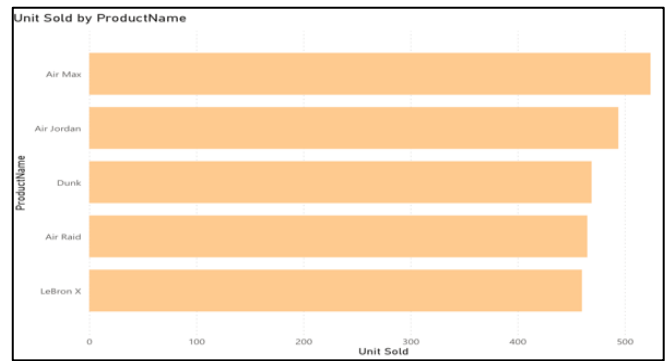

Figure 16. Top 5 products by profit

Figure 17. Top 5 products by unit sold

VII. CONCLUSION

We came to know how revenue is generated across the stores of respective cities and countries. These dashboards are easy to implement and, in less time, the company can know what the trends are going in the market. It makes the business process dynamic because we need to just feed the data in the Power BI and since these visuals are already implemented, the company can understand know their sales history of quarter or month or year in less time. Power BI is a great tool to analyze the sales figure and since it is very easy to use it avoids businesses to invest more in the training process.

VIII. FURTHER WORK

1. We can introduce the Microsoft dynamics at the store level which will help the company to analyze which store manager is generating more leads.
2. We can introduce a cloud service such as Microsoft Azure in this project so that project will become more dynamic.

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