**Problem solving and continuous improvement**

My role involves gathering and reporting on the number of positions in the Consumer area of BT Group. This relates to the structures of occupied or vacant roles and relevant data points associated with those positions. I primarily used MS Access & Excel to produce reports and a very basic dashboard. This method was very time consuming to maintain, run and process. It also had a very limited audience. The numbers were taken from the dashboard and reported back out to the stakeholders with very little transparency, often causing confusion and queries.

The data I use consists of a number of .csv files, the main being a report from the HR system containing each current position and a variety of data points for that position. From this I can ascertain key measures such as the size of the organisation, the number of vacancies, the type of role and skills assigned to that position etc as well as being able to calculate key Workforce management measures such as average span, role compression, depth of organisation etc. This data is used in planning future Organisational Designs in line with operating models as well as reviewing the current state of the organisation for scorecards and cost efficiency programs. This year alone the data has been used to identify, track and report on £20m in savings. Therefore the data set and ability to report accurately and consistently is very important to business operations.

We had a new tool made available to my wider team, Power BI, that I saw could benefit the whole monthly process making the reporting repeatable, distributable to a wider audience Using Power BI would reduce queries by making all the data available in a self-serve format.

The first version of the dashboard was simple, based on existing data extracts and some basic Excel formulas. Over time, more measures and dimensions were required and a change of system. With the change in system came a change in the data I could pull from the source. All the while, the Excel sheet was becoming more unwieldy and resource heavy.

Every reporting cycle took at least 6 hours to complete with manual intervention and formula updates at every stage. Often mistakes were made dragging formulas resulting in revisits and corrections. It became apparent that stakeholder trust in the reporting was being eroded to a point that I couldn’t trust the data without double checking it line by line. Operationally, this was leading to questions over business decisions in Organisational design.

Using the inbuilt workbook analysis tool, the first dashboard showed 27k formulas included in 14 tabs. This was just for 1 month of data. Much of the data was duplicated and shown in tables rather than easily readable charts.

A colleague on my team was working on different datasets (people data rather than organisational structure data) and was introducing a new method for presenting his data using Power BI. I saw what he was able to do with the data and could see some parallels and opportunities to use this to greatly simplify the transformations and calculations and presentation of my data.

Considering sustainability, I believe this would the increased in efficiency when transforming the data (decreased time and number of re workings). Duplication of effort has also reduced for users who didn’t previously have access may have all been working separately to answer the same questions (downloading and transforming their own data sets). By publishing to an existing MS Teams site as a dashboard, this also reduce the amount of download traffic of the original file. The MS Teams site already had permissions set up so I could restrict access where/if necessary.

After some experimentation I broke down the end requirements (i.e. the measures we currently used) and noted the datapoints needed to show those measures. From a fresh start, I created a new access database to transform the various datasets into one single dataset. I could then link that dataset into Power BI, along with other reference tables to build out a simple version of the dashboard.

I shared this with my manager to get a view on whether this could act as a replacement. She was very excited about the potential and gave me the go ahead to build out the full data model and dashboard.

I made the decision to use an Access database to store and transform the data, extracting this into Power BI to create a data model (shown in Fig. 1).

A screenshot of a computer

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Figure 1 – The data model behind the dashboard

Using the access database as the repository Power BI would be able to read all data, not just one month at a time. The ability to drill down into each measure would make the data more transparent and accessible to more stakeholders. It also gave greater potential for combining this data with other data models later. The new method shows all the previous measures in 1 easily readable screen, with the ability to filter/slice data in situ (figure 2.)

A screenshot of a computer

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Figure 2- The single page dashboard

I discussed parts of the data model with my colleague on various parts of the build, mainly on transforming the data in the data model e.g. Pivoting/un-pivoting data, linking tables and trying to align visuals with his dashboard to offer a unified look and feel to both.

Since the initial publication, I’ve added to and changed the report based on feedback received and inefficiencies I found. For example, the first version had multiple tabs showing the same information for different units, requiring monthly changes to bookmarked views. I changed this to just one screen with a slicer for the units.

The experience highlighted the need to document and analyse both the end requirements and the available data before trying to work on the mechanics of a project. As this was new technology to me, my first few attempts failed as I went straight in and tried to solve the problem. Understanding how the technology works with data sources and where to store those data sources, access rights and data types.

Whilst the new method is by no means perfect, its certainly improved on the prior one. The whole process takes roughly 1 hour per month including gathering data whereas the prior method could take upwards of 6 with additional revisits and corrections adding to that time. Data gathering is from the proprietary HR system where prebuilt reports are designed and available to run/export so at present the opportunity to automate this part of the process is unavailable. There are plans to integrate the system into GCP which would open up the possibility of scheduling and importing data or linking directly to the data model. Queries about the data and ad hoc requests for information have dropped considerably due to the self-serve nature of the method.

Because the dashboard is now available on Power BI, it is now visible to a wider audience including operational managers, HRBP’s and the finance team who can use it to enhance their own work.

However, there is plenty of room for improvement. There is an opportunity to add value by making chronological visualisations available , tidying and de duping some of the transformations.

There is also the opportunity to use my data in other dashboards. There are some datapoints that are common to another dashboard in use that concentrates on people rather roles. By creating unique identifiers in each dashboard, we could provide even more insight to stakeholders.

As Power BI was new to me, everything was a learning experience although some aspects such as table relationships were already familiar to me. By building the dashboard and speaking to more experienced people I gained a better understanding of the best practises when using tables and relationships.