Business Analyst

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The judicious use of AI and Machine Learning capabilities can support and augment the process of business analysis. Large organizations expend considerable resources on the process of understanding their current business, defining the future state of their business, developing a plan to get from current to future, and identifying technology to support the future state. For example, the author worked on a project for Verizon to redefine their Quote to Cash business process. This involved over 40 business analysts working for more than ten months.

AI can be used to support the conversion of inputs to reports and the validation of completeness and consistency. Business analyst consultants will still conduct interviews and workshops to collect the inputs and will verify the correctness of the results. This will result in higher quality results that can be delivered sooner.

Initially, it is anticipated that Business Analyst will be used by individual business analyst consultants. Over time, larger teams will adopt it for collaboration. Ultimately, consulting firms and larger organizations will adopt Business Analyst as a core tool.

# Motivation for Using AI for Business Analysis

Business Analysis is a time-consuming process that requires multi-disciplinary expertise to do it well. In addition, it is a collaborative effort between multiple analysis teams and the people in the company being analyzed. To do it well, information is collected from all levels of the company from the CEO to the customer service representative to the factory floor worker. The result is a coherent integration and analysis of all these inputs.

At first, this problem may seem too complex for an AI based solution. The key insight is to look for specific areas where people face challenges but AI excels. For example, given the large number of inputs, humans have difficulty synthesizing all the material. There tends to be a focus on input from people with more authority in the organization and input that is more recent. A properly created AI will have neither of these limitations and can analyze the input in total.

# What is Business Analysis?

The terms Business, Analyst, Analysis, and Analytics are widely used and have common meanings. Based on my experience and recent searches, the most common meaning attributed to the various combinations of Business and Analysis refer to deriving knowledge from business data. In Gómez-Caicedo, et al. [2022] they focus on this definition. This is a large and important area but not what the company Business Analyst is focused on.

For Business Analyst, the concept is to focus on understand the business vision and goals to develop a plan to get from where the business is to where it wants to go. They are particularly interested in those cases where technology will be leveraged to enable the journey. This is a service offered by large and boutique consulting firms. Examples in McKensy, Accenture, and ghSmart.

In this paper, the term Business Analyst will refer to the company. The term Business Analyst Consultant will refer to any person that uses Business Analyst tools to do their job.

# Business Analyst AI Architecture

As with any AI system based on machine learning, we need to come up with an approach for training and an approach for use. This section covers the concepts. Later sections will cover details.

## Training Architecture

All machine learning involves a training process that is used to create models. In production, these models will be used to process real world data. The closer the training data matches the real-world data, the better the model will be.

There will be many models used in the Business Analyst system. They will be used to perform one or part of one of the following steps:

* Sources Conversion to formal language.
* Check formal language representation for completeness.
* Check formal language representation for consistency.
* Generation of reports from formal language.

The decision was made to convert to a formal language because human languages are imprecise. Therefore, notes from meetings and workshops can be inconsistent, overlapping, missing in detail, and have many other issues. The formal language will be carefully defined so that it captures the needed intent and is reasonably readable by a human being.

## Use Architecture

The Business Analyst tool will be able to integrate well into many business analysis processes. Below is an example sequence that shows one way that this integration could occur. The items in bold are the ones that are supported by the Business Analyst tool.

1. Plan meetings and workshops
2. Conduct meetings and workshops
3. **Submit meeting notes for analysis**
4. **Review formal description**
5. Follow up
6. **Resubmit notes**
7. All collection complete
8. **Run completeness check**
9. **Run Consistency check**
10. **Generate report**

# Challenges and Approaches

Below is a discussion of three of the challenges that Business Analyst will face as it develops, deploys, uses, and maintains its AI and Machine Learning Platform. These are not the only challenges that they will face but three important ones. For each challenge, there is a discussion of the problem and a potential approach to address it. The Business Analyst team will seek to implement these approaches.

## Data for training an AI Business Analyst

There are many aspects of data that Business Analyst will face. A few of them are listed:

* Where can good quality data be acquired? Since most Business Analyst projects are proprietary and involve trade secrets, it will be hard to get companies to provide it.
* In what format will the data be provided? For the most part, the data they are interested in is meeting notes. These could be handwritten or electronic. They may span meetings. The order of discussion is often chaotic. Notes are also taken on white boards, easel pads, sticky notes, and other mechanisms.
* How will the data be turned into features? This data is highly unstructured. For the most part, it can be considered a stream of conscious report on a companies inner workings.
* The results (i.e., the y value) are in some ways easier but less useful. That is, the result will be a detailed report in electronic format. The problem is that there will be no clear connection between the inputs and the results. There will be many missing pieces. Many of the missing pieces will be of great importance. For example, there could be conversations where no notes were taken. This will make it difficult to create a Model that has a low variability and high confidence in producing the correct results.

## Training Pipeline and Automation

The training pipeline will be focused on the needs of the Machine Learning Engineers. It will provide them with the IDE and associated tools that they need to do their job. The production environment will be focused on the needs of the Business Analyst Consultants. By necessity, there will be components in the production environment that interface with the facilities developed by the Machine Learning Engineers. To make this work a well defined pipeline will need to be created and maintained.

As discussed in Mui, Michael & Holler, Anne. (2019), Uber has addressed the pipeline need in their Michelangelo project. This is also described in several blog posts on the Uber web site. The Business Analyst team will look to leverage a similar integrated approach that takes the work from conception to production.

## Keeping Models Up to Date

Once a model has been deployed for production use, it will start to be out of date. This occurs for many reasons. The industry continuously evolves new ways to analyze and plan a business. Major publications such as the Harvard Business Review are full of articles each month that drive changes in analysis. Each industry has its own unique points. These will need to be considered as the tool is used in new industries. Counties have distinct ways of looking at, understanding, and measuring business. As new countries are added, they will need to be considered.

The machine learning engineers can take all of this into account and develop new or updated models. If they create new models, all the prior learning will be lost. In addition, the time to create and test the new model could take weeks. Alternatively, they could incrementally update the models with new inputs. The team will look into this and may start with a complete rebuild but change to incremental updates as the model gets too large.

In order to deploy updates to the model they need to perform some testing. The team has elected to take a canary approach. In this case, the new model will be deployed along with a copy of production. The load balancer will send a small percentage of requests to the canary or copy of production, the rest will go to regular production. The results of the production copy and the canary will be compared to ensure that things are working as planned.

As discussed in Zhang, Y., Sun, Y., & Liu, X. (2022, May 10), Netflix developed the Kenyata tool to automate canary testing. The team will use this tool to implement and run their canary testing.

# Conclusion

The Business Analyst company has embarked on an interesting and challenging path. They have undertaken to apply AI and Machine Learning to an area that would not generally be considered ripe for AI and Machine Learning. However, by understanding the issues involved and judiciously using state-of-the-art techniques, Business Analyst has a reasonable chance of being successful. They have also chosen to create a useful tool that can make people more productive and able to produce higher quality deliverables. This approach makes the best use of Human and Machine abilities.

References

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