How to deliver concrete business value with your data science team?

Rapid development in the space of machine learning and deep learning has resulted in advanced algorithms. These advanced algorithms are capable of transforming organizations to derive multi-fold business value. Organizations have started investing in data science teams to lead the digital transformation journey to be at the top of their game

Are most of the organizations geared for speed to market for digital transformation?

Digital transformation has been a very slow and painful transformation for many organizations. Per industry statistics, 70% to 80% of data science projects does not meet desired expectations.

Let us explore why…

This attempt to explore why data science solution fails to meet desired outcomes is based on my own personal experience, validated from other world experiences and with contributions

from my better half [Arshad](). I am sure there will be other point of views which I am open to learn.

Before diving in let me briefly explain data science

Data science is a multi disciplinary field to draw relevant insights from structured and unstructured data by understanding the data patterns to predict the future. Data science is an art and science that uses mathematics, machine learning, computer programming, statistical modeling, data engineering and visualization, pattern recognition and learning, uncertainty modeling, data warehousing, and cloud computing.

Do we know with fidelity the business pain points we are trying to solve?

Most of the data science projects start with high-level objectives without sufficient clarity of specifics. Let's examine with an example

High level objective - increase the sales of a business unit or a particular product assortment.

- **Is there a specific end user/business pain point we are trying to solve or what is the business expectation we**

addressing? A business *may be struggling to understand the levers to increase the sales of a product assortment based on dynamic market conditions.*

- **What is the intended usage, who will use the solution and how will they use the solution?** *Category managers would like to do a what-if analysis to understand if they increase/decrease an influencing factor how much will it impact sales.*

- **How will the success of the data science solution be measured?** *Sales prediction for product assortment for the quarter should be within 15%-20% plus or minus of the actual sales or does business want to understand the trends or they just want to understand the levers they can use to manage the sales better.*

Once we have the clarity on why we need a data science solution for a business problem, we then start to design the solution to work on what and how.

For data science solutions to be successful, we use **Extreme Collaboration** approach

Extreme Collaboration: Continuously moderate collaborative problem definition, solution designing

along with prioritization of business objectives with highest business value with all stakeholders

Collaboratively understanding and setting realistic expectations

Business/end-users have pain points or an expectation they want the data science solution to address. **We need to understand the expectations from different stakeholders even if the needs are in conflict**. This includes the end-users, anyone closely associated with the problem and also includes the leadership team.

We need to deliberate all the needs of stakeholders using extreme collaboration methods like interviews with different stakeholders to get different perspectives, understand customer journey by observing them and conducting designing workshops. These are mentioned in detail in tools and techniques to be employed to understand business needs below.

At times, stakeholders may have unrealistic expectations. Expectations need to be reset to set the right scope and success criteria. **All stakeholders should be in agreement on the scope and success criteria**. On certain occasions, we may figure that a small business process change solves the problem

rather than an elaborate data science solution. Hence this is a very critical step to set the right direction.

Collaboratively prioritize the business objective based on business value

After all, stakeholders have common and clear expectations, prioritize the pain points or expectations. This needs to be done collaboratively with all the stakeholders which I refer to as extreme collaboration. **Extreme collaboration is building on each others ideas, and strengths to achieve a common goal or an objective.**

After identification of business objectives, prioritize pain points or desired outcomes with the most business value, business value can be defined in terms of the

- **Digital transformation taking your organization to the next level.** This can be well understood by quantifying the cost of delay to market.

- **Business or process improvements**. What would be return on investment if the process improvement is done?

- **Ensuring the safety of living beings**. Safety of living beings and environment for sustainable living is as critical as business gains

When prioritizing collaboratively, we need to also consider issues like

- **Data sufficiency challenges:** *Availability of the right data is a challenge. We may not have all the necessary data elements critical for problem to be addressed or labeling of the data may be the issue*

- **Data quality issues:** *Missing data, incoherent data, incompatible data formats are a common problem across most of the non digitally born organizations*

- **Data security:** *Securing data from internal and external risks. Incorrect classification of the data sensitivity could later become a security threat*

Who is best suited to moderate business expectations and prioritization of business objectives?

This exercise is best done by someone who has an understanding of business, can talk their language without getting mired with technology details. Has a good understanding of the data, have a detailed knowledge of the data science and can talk the technical language. Mirroring the usage of the business terms when talking

to business is the key and similarly mirroring usage of data science terms to data science team is helpful to bridge the gap.

What are the tools and techniques can be employed to understand business needs?

Explore customer journey to understand the current problem and their expectations from the solution. This can be done by

- **Interviews with different but related areas of business**. Each group will have a different perspective that will help build the bigger picture. For Sales prediction of a product assortment, talk to sales and marketing team, category managers, production team, finance teams to build the bigger picture.

- **Observe the end-user in action, if possible**. This will help understand their current paint point and also help design the data science solution by knowing the data end users work with

- **Get different perspective outside the stakeholders**: Stirring the ocean to get the clarity by stating the problem to solve on the whiteboard. Let other people across the organization put forward their perspective. Filter out the perspective based on relevancy and facts after discussion in a common meeting with all stakeholders

- **Design or solution Workshops** to restate the pain points and the journey back to the business users in their own language. This is where we deliberate all conflicting requirements, take all different perspectives into consideration and agree on the expectation and the business value to be derived from the data science solution involving all stakeholders including leadership team

Advantage of the extreme collaboration are multitude

- Exchange of pain points, expectations and ideas help clarify the underlying issues with clarity.

- Everyone who is part of the problem as well as solution speaks the same language and understand each other's world better

- Clarifications are immediate as a result assumptions are reduced substantially

- Over-communication may happen but it is better than under communication and making false assumptions

Are their any rules of the engagement with different stakeholders?

- **Setting right expectations:** All stakeholders should have one common view of why a data science solution is required and what will be accomplished by it

- **Reduce/eliminate assumption:** Any assumptions made by the group will be discussed and validated. If the assumptions cannot be validated then let data tell the story.

- **Collaboration of multi disciplinary teams:** A team is only as strong as its ability to collaborate with one another and with other teams working for the business objective. Diverse disciplines working on data science solution has to work collaboratively to reduce rework

Collaboration eliminates the assumption, builds the trust among different teams and team members and creates an environment for building on each others strength

Always go for small, incremental, and iterative solution development

Short, quick, iterative incremental cycles to get data insights with business makes data science solution on steroids. **This is a fail fast and correct immediately approach**

This approach helps two folds :

- Quick and correct knowledge about data and business.

- Ability to understand what is relevant to the problem we are trying to solve and what is irrelevant. Not all data is good.

Benefits of fail fast and correct immediately

Business gets a clear picture of what will be accomplished, the data insights into changing market trends. Data engineering team gets a better understanding of what is the relevant data that needs to be provided to the data science team and data science team can build multiple models and then decide which model performs better for the problem at hand.

Attitudes for successful data science solution execution

Embrace failure for continuous learning

Failure is a good thing as it teaches you what you are missing. With every iteration understand what is working and what is not working for the solution. Conduct brainstorming discussions on what should be the next steps for improvements.

Failure is not fatal but failing to acknowledge and learn from failure is definitely fatal

"Success is not final, failure is not fatal: it is the courage to continue that counts." — Winston Churchill

Continuous learning, monitoring and improvements are the key to success. Failures are just stepping stones to success.

Continuous learning for all stakeholders on the data science fundamentals, data and model improvements to achieve success criteria.

When setting the expectation for a data science solution or being part of data science solution *"Ignorance is not at all a bliss"*.

It would be good for business to understand areas where data science could be leveraged.

Similarly, it is also very important for the data engineering, data science and data visualization team members to have a solid business understanding.

All stakeholders on the data science solution need to understand and talk the same language. This ensures

that everyone on the team understand each other with clarity which is very critical to success.

Summarizing the points to meet the expectations from a data science solution:

- **Clarity of the business expectation/pain points. Why are we going for a data science solution, who will use the solution and how will be used.**

- **Extreme collaboration to understand and set realistic expectations for all stakeholders**

- **Using extreme collaboration, prioritize the business objective based on business value**

- **Employ tools and techniques to get figure out the underlying problems and pain points**

- **Short, quick iterative incremental cycles to solve the problem. One step at time**

- **Embrace failure and keep learning from it using short, iterative cycles**

- **Ensure all stakeholders speak the same easy to understand language devoid on any technical terms that is not understood well by everyone on the team.**

- **Cross education between all cross disciplines is mandatory**