Creating a Data-Driven Culture in a Startup Environment

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Abstract

This paper explores the process of implementing data-driven culture in a startup environment, specifically focusing on an organization in early stages of data maturity. The paper also underscores the impact of implementing data-driven decision making in a startup environment while acknowledging the challenges inherent in this process of transformation. This paper presents an innovative approach that incorporates an iterative framework, fostering the development of a robust data-driven culture within the unique context of a startup environment.

Keywords: *Data-Driven, Culture, Startup, Decision-Making, Challenges*

I.   INTRODUCTION

In recent years researchers have focused on how startups can explore to create a data driven culture within the organization. This research paper focuses on what it means to have a data driven culture and the factors that influence the cultural change in a startup. This paper proposes a new method to approach building a data driven culture. It also discusses the benefits and challenges faced by startups in executing the data driven culture.

II.   WHAT DOES IT MEAN TO HAVE A DATA-DRIVEN CULTURE?

Over the span of several years, researchers have investigated the data-driven culture in organizations from different perspectives. [1] presents a comprehensive study of how researchers view the notion of data-driven culture differently, delving into the key central themes of each of their studies. Comparing these research studies presented in [1] gives us an idea that some studies point to the notion that the essence of a true data-driven organization is having a 'large number of stakeholders who are vested in data, data quality' to leverage data for effective decision-making, while others believe in placing focus on the value of digital practices and platforms.

A data-driven culture ought to start from the leaders and management within the organization, as they are the ones who have the ability to empower the organization's employees to adopt a data-centric mindset. Establishing a data driven culture implies that the organization treats data as a valuable asset rather than as a byproduct of business processes. An organization may encounter situations when the data contradicts opinions or assumptions. Nonetheless, acknowledging its failures and learning something along the process still contribute to a data-driven culture [2]. The study in [2] discusses several factors that aid in the enablement of a data-driven culture. In the context of creating such culture in the startup environment, the following factors are pertinent:

A. Management

As we discussed above, the top-level management plays an important role in creating a data-driven culture- when leadership sets the tone for an organization, it sends a clear message to the organization that making data-backed decisions is the top priority. One of the initial steps for fostering a data-driven culture is bringing on board a Chief Data Officers, or data strategizers. However, a study from Harvard finds that only 40.6% of the reported companies have leveraged this role successfully in the organization. This is one of the challenges in implementing a data-driven culture in the organizational structure.

B. Data

Data quality and integrity is integral to establishing a data-driven culture. Also, depending on where a startup organization is in this journey, they may lack processes that measure data reliability metrics. Consequently, this may affect upper management's perception of the credibility of generated data insights. Apart from data reliability metrics, startups must have robust data storage

infrastructure and warehouses capable of supporting future data-driven decision-making objectives.

C. Tools

For startups to incorporate data-driven culture, it is imperative that they invest in setting up end-to-end infrastructure. This involves acquiring tools to facilitate data collection from diverse sources, conducting data profiling, generating insights, and performing advanced analytics functions including ML algorithms and artificial intelligence. Contingent upon the startup's journey in this endeavor, and their short-term and long-term objectives, the scope of the tools would significantly.

III.   AN APPROACH TO BUILDING A DATA-DRIVEN CULTURE

In reference to the maturity model delineated in study [2], the authors outline four levels of data maturity. Each of these levels is characterized by factors of analytic capability. It represents the organizations' position in their analytics implementation journey. We take the Level 1 organization as an example to explore a possible approach to building a data-driven culture. A Level 1 organization exhibits the attributes as detailed in the table below:

TABLE I.   A STARTUP AT LEVEL 1 MATURITY. ADAPTED FROM [1]

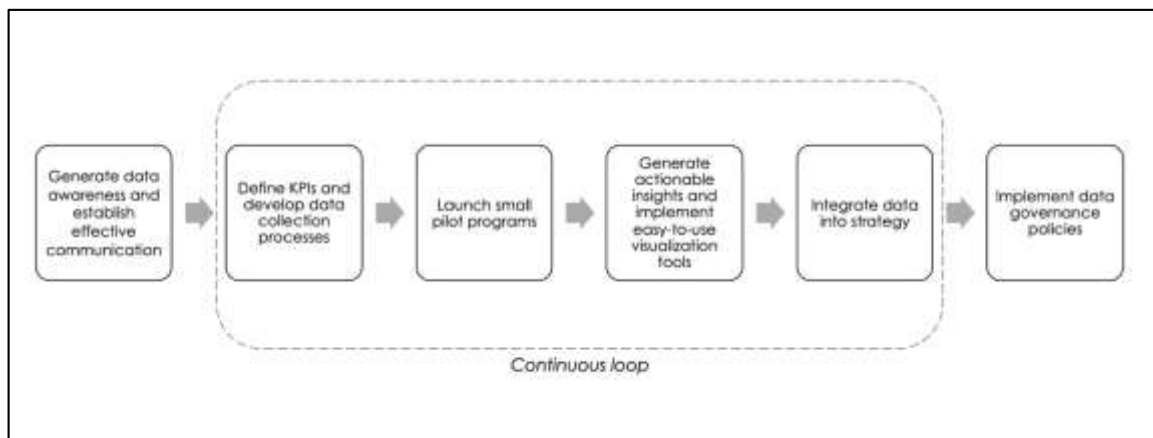| Level 1 maturity	
Analytic factor	*Organization's analytic proficiency*
Organization	No explicit BI or analytics unit
Technology	Mostly spreadsheets
Decision Process	Hippo-culture
People	Little trust in data and analytics
Analytics	Descriptive

Fig. 1. Approach to implementing a data driven culture in startup environment

As the authors in [2] mention in their paper, organizations at Level 1 do not have an infrastructure set up for data analytics. These organizations have just begun to consider exploring data to derive insights and make informed decisions. Additionally, they also lack processes and policies for data collection, data management, and insight generation. Since there is little to no data available, departments often defer their decisions to the dominant leaders. This approach of decision-making, termed as the HiPPO (Highest Paid Person's Opinion) culture, was first coined by Avinash Kaushik [4]. Furthermore, since the startups belonging to this level do not have robust data governance in place, the stakeholders exhibit minimal trust in the analyses presented to them.

Fig. 1 shows a proposed approach that a startup company at Level 1 maturity can benefit from. It is important that the organization's employees are data aware, and that the data is democratized. Data democratization does not imply unrestricted access to the organization's employees at all times. Rather, it signifies that people who don't directly work with data are empowered to incorporate data in their activities [7]. Startups can create centralized catalogs or marketplaces to simplify data access as well as provide elaborate documentation outlining how this data can be utilized. Additionally, startups should come up with ways to foster effective communication for utilizing this data. This can be achieved by conducting sessions where near-future strategies are communicated to employees, coupled with brainstorming sessions to discover how data can be leveraged to contribute to the strategy.

Startups often have the aspiration to approach their "north star" metric- this necessitates the formulation of Key Performance Indicators, along with strategy definition outlining how to achieve the objectives. Level 1 maturity organizations do not have a process to collect data from various sources and usually rely on traditional tools such as spreadsheets. Initiating data pipelines to ingest data from various sources represents one of the first steps towards building a data infrastructure. Once the data collection processes have been established, it is crucial that this data is cleansed, processed, and made fit for analyses. In the research conducted by the authors in [8], one of the interviewees emphasizes their desire to gain better insight from the collected data, characterizing it as 'added processing power'. These insights should then be integrated into the business strategy, aligning with overall business objectives. The process from defining KPIs to integrating data into business strategy is iterative.

Nevertheless, startups face limitations and constraints in terms of resources, in terms of time, technology, and workforce. Taking these factors into consideration while implementing a data-driven culture is essential. Iterative small deliverables for data collection and integration, small process changes, and adaptive data governance can help startups to deliver data insights faster. The idea of a lean startup focuses on experimentation and iterative design [9]. The concept of iterative design, originating from the software industry, can be adapted for data-driven decision making through the implementation of pilot programs with focused objectives.

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The last step in implementing a data-driven culture is instilling a sense of data ownership through the establishment of policies, procedures, and technology to govern data. Effective data governance is crucial not only for compliance and regulatory adherence, but also to instill trust and confidence in the generated data insights. The study mentioned in [10] shows that 66% of data analytics professionals experienced an increased data quality as a benefit of implementing data governance policies in the organization. This addresses the "People" analytic factor mentioned in Table I.

IV.   THE IMPACT OF DATA-DRIVEN CULTURE ON A STARTUP'S PERFORMANCE

Data analytics can certainly help improve startups performance than traditional thought processes. Creating a data driven culture will bring many benefits to the organization. Technology innovation enhanced the need for a data driven culture to match up to the fast-paced business culture. Below are some of the key benefits to the startup performance by executing data driven culture.

A. *Better Decision-Making*

Data driven culture will help startups in making better decision making through trends, charts, and analysis. Past data about customers and also the organization can help startups make better decisions.

This will help the startup in reducing the error prone decisions and guide in taking better steps.

B. *Organization Optimization and Efficiency*

Utilizing data analytics enables startups to pinpoint areas requiring improvement or those that are not yielding optimal results. This, in turn, facilitates enhancements in organizational structure and individual productivity, contributing to overall operational efficiency.

C. *Customer Insights and Relationship:*

Data analytics will enable the startup to gain more customer insights than relying on individual thoughts and past experiences inside the organization. Customer insights can also help in identifying the efficient channels and also provide better end to end experience of customer decision making.

D. *Data Analytics and Technology*

The past decade has seen a dramatic increase in how technology is collaborating with data analytics to improve the overall efficiency and capture quality & accurate data. Technological advancements such as chatbots, audio & video analytics, big data analytics have shown that technology can help startups huge amounts of data coming from multiple sources/channels and establish better customer 360 within the organization.

E. Competition Within the Industry

Data analytics helps startups be ahead among other industry players by improving decision making. Companies can predict in advance the needs of customers and can improve the products and experience.

F. Risk Culture

Data analytics will enable improved organizational accountability. Tracing the footprints through data can help understand the risk indicators within an organization and thus improve efficiency. Data analytics will also help the startup in being audit proof through robust risk and controls. Validation of the controls can be assessed through data. Risk culture through data analytics will help the startup in securing customer privacy, operating within regulatory controls of the country.

G. Product Improvement & Alternatives Products:

Data analytics will help us understand the utilization of each element within a product and thus help the startup understand the essential elements of the product. This will help improvise the product and create a better customer relatable product. Data analytics however can also identify better needs of the customer. This can help the startup in creating more alternative products catering to better needs of each customer and also create more business opportunities.

V.   CHALLENGES IN CREATING A DATA-DRIVEN CULTURE IN A STARTUP ENVIRONMENT

Startups face many challenges in adopting a data driven culture. In addition to a cultural change required within the organization, [5] and [6] presented additional challenges faced by startups in executing a data driven culture. Below are the key challenges:

A. Data Collection and Testing

Startups face huge challenges in collecting the customer data. This might be due to lack of data driven culture or short-term goals within the organization. Goals & Objectives set up by startups are dynamic in nature and might change in short periods of time. Due to this fast-paced nature of startups, data collected now might not be utilized or useful in future. This uncertainty is a challenge in the startup environment.

B. Data Quality

Organizations with a data driven mindset however are limited due to lack of quality in data. This can happen due to the type of data being collected which might not meet the needs of analysis, inability of product not meeting the initial objecting thus attracting wrong customer base etc.

C. Data Privacy

Startups need to set up information security and privacy culture within the organization. Without proper guidelines, customers' data might end up on public platforms which might raise questions about the product and also put the startup under government setup regulatory breaches.

D. Talent and Skill

Startups also have huge trouble in establishing the data driven culture due to the lack of skills and talent. This might result in lower standard practices and will slow down the growth prospects of the company.

E. Regulatory Challenges

Startups might face restrictions in collecting certain types of data due to the regulatory framework setup by the Government. This might be challenging as the scope of data is limited to startups.

F. Limited Customer Insight

Companies need more data to understand the results of their experimentation of the product. According to the research paper by xxx, testing of the product might vary by type of product such as digital product vs hardware product. Prototyping a hardware product to test on a large customer base might be a challenge.

G. Systematic Integrity

Startups need to ensure that all the digital products or hardware products developed within the organization are connected systematically to ensure the data is aggregated. This will help the organization in having a consolidated view of all the data generated through multiple systems/products.

VI.   CONCLUSION

Establishing a data-driven culture in a startup involves navigating various stages and challenges. This paper delved into what it means to have a data-driven culture and explored an approach to building such a culture tailored for a startup at an early stage in the data analytics maturity journey. The paper also explored the significance of having an iterative component in the implementation of data-driven culture. Stepping into this journey of data-driven decision making can be challenging for startups but can also bring significant benefits when implemented correctly.

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