The Impact of Data and Analytics on Business and Finance

PRASHANTH SOUTHEKAL, PH.D., MBA, MS
AND
STEVE ROSVOLD, BS, MBA

Contents

Foreword

Thank you very much for your interest in our research: **The Impact of Data and Analytics on Business and Finance.**

The world's economy will dramatically transform in the coming years. According to International Data Corporation (IDC), a premier global provider of market intelligence, 50% of the world's GDP will be based on data-related products, services, and experiences by 2025. This means organizations will be leveraging digital technologies and data more than ever before and therefore companies need to be better prepared for that future state.

Data Analytics is especially important to the Chief Financial Officer and their finance teams who have been called on to deliver better decision-making techniques at their companies. Yet, there is evidence that finance is behind in using advanced analytics to accomplish this.

Additionally, not many analytics projects are successful. Studies by Gartner, McKinsey, and many more organizations have shown a dismal success rate of analytics projects. In this regard, we at DBP-Institute and CFO University have carried out a research to understand the **impact of Data and Analytics on Business and Finance.** We hope, you will find **this** report i.e., the **DBP-CFO Insights report** useful to you and your organization. For any questions or clarifications, do not hesitate to contact us

Regards and Thank you

Prashanth Southekal, Ph.D., MBA, MS
Founder and Managing Principal,
DBP Institute
E: psouthekal@dbp-institute.com

Steve Rosvold, BS, MBA
Founder and CEO
CFO University
E: steve.rosvold@cfo.university

The Contributors

The DBP-CFO.University Insights report is researched, analyzed, and prepared by the following members

Dr. Prashanth H Southekal, Ph.D., MBA, MS, is the Founder and Managing Principal of DBP – a Data Analytics Consulting and Education firm. He brings over 20 years of experience consulting for over 75 companies such as SAP, Shell, Apple, P&G, and GE. Besides, he has trained over 2500 professionals the world over in Analytics. Dr. Southekal is the author of 2 books - *Data for Business Performance* and *Analytics Best Practices* and is an adjunct faculty of Data Analytics at the University of Calgary (Canada) and IE Business School (Spain). Dr. Southekal holds a Ph.D. from ESC Lille (FR) and an MBA from Kellogg School of Management (US).	
Steve Rosvold, BS, MBA is the Founder CEO of CFO University, a global professional development community dedicated to growing finance leaders. Steve began his professional career with Cargill and moved into leadership roles, including the Senior Financial Officer of Cargill's Global Energy business. In 1999 he was named the CFO of ConAgra Malt, a global leader in the malt industry. He ran a CFO advisory practice, KRM Business Solutions for 13 years before launching CFO.University in 2017. Steve is a graduate of Augsburg University, Minneapolis, and has an MBA from the University of Chicago's Booth School of Business.	

1. Introduction

Today, data is a key resource for improving business performance for enhanced insights, operations, and compliance. It is not only the data-driven companies such as Facebook, Google, Uber, Netflix, and Amazon, but also companies like Domino's Pizza, Goodlife Fitness, Lego, John Deere, Novartis, and many more that are leveraging data and technology for better business performance and results. A report from MIT says, digitally mature firms are 26% more profitable than their peers [MIT, 2013]. McKinsey Global Institute indicates that data-driven organizations are 23 times more likely to acquire customers, six times as likely to retain customers, and 19 times more profitable [Bokman, 2014].

> *"ANALYTICS IS USING DATA FOR GAINING INSIGHTS BY ASKING THE RIGHT QUESTIONS"*

Before we go further, let's see at what exactly Data Analytics is? Though there are many definitions of data, fundamentally, **analytics is using data for gaining insights by asking the right questions [Southekal, 2020].** There are three main types of analytics that provide business insights as part of the "Analytics Continuum": Descriptive Analytics, Predictive Analytics and Prescriptive Analytics. Descriptive Analytics i.e., insights on historical performance, Predictive Analytics i.e., insights on what will happen in the future, and Prescriptive Analytics i.e., throws light on the best course of action.

2. Current State of Data and Analytics

2.1 The General State

Given the potential of data for improved business performance and results, business enterprises today from Retail to Financial services to Energy sectors across the globe are looking at ways to derive insights from data analytics and make good business decisions. Global market intelligence firm International

Data Corporation (IDC) estimates the spending on data and analytics to reach US$ 274.3 billion by 2022 [Haller and Satell, 2020]. However, not many organizations are successful in transforming their data into insights. Andrew White of the research advisory firm Gartner reported that 80% of analytics insights did not deliver business outcomes [White, 2019]. Mckinsey consulting says, fewer than 20% of the companies have maximized the potential and achieved analytics at scale [Miranda, 2018].

However, every industry type is different and each has its own challenges in leveraging data and analytics. To understand the current state of Data and Analytics, we ran a few surveys to understand the impact of data and analytics on business and finance better. We at DBP and CFO.University started our survey at the highest level – the business domain or function, and we found that the business domain that has the highest impact on data and analytics is Sales and Marketing including Customer360.

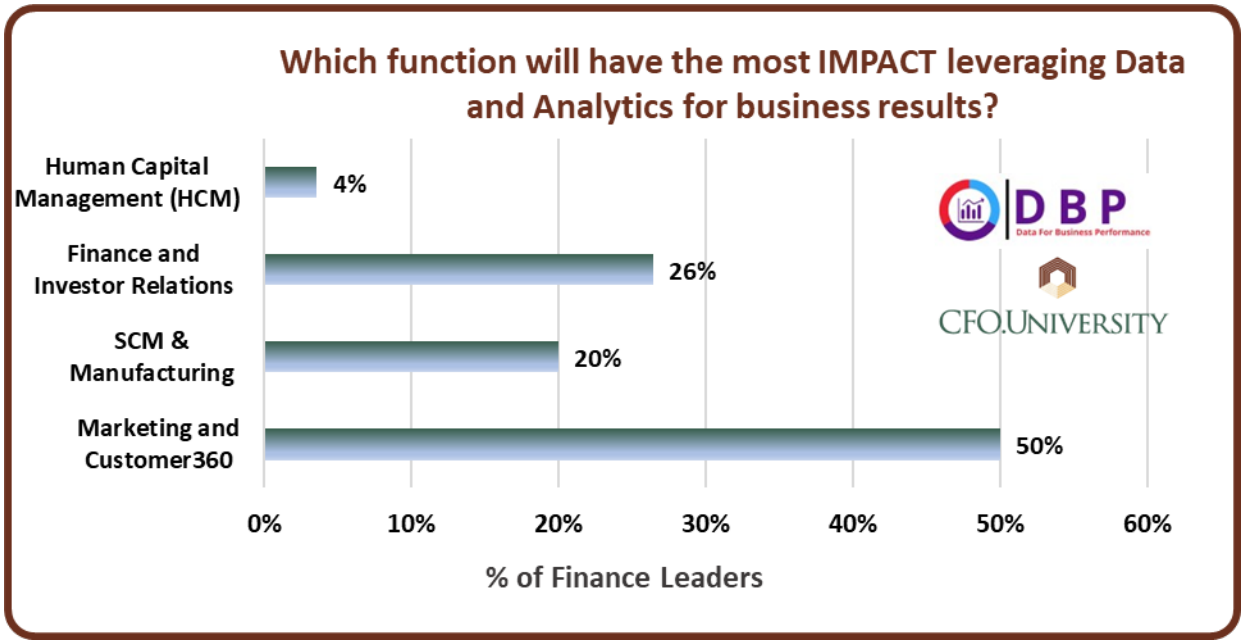

Figure 1: Impact of Data and Analytics on Business Domain

Data and analytics in Sales and Marketing can help a business gather customer, product and channel data in driving sales and marketing efforts so that the business can grow, protect its market share, and expand into new geographies. Given that Marketing, SCM, and Finance are the most popular domains for Data and Analytics, we went a step further to see which of the KPIs each of the top 3 business domains i.e., Sales/Marketing, SCM, and Finance are important considering that KPIs link the business performance to data and analytics

The following visual shows the KPIs that are important in Sales and Marketing.

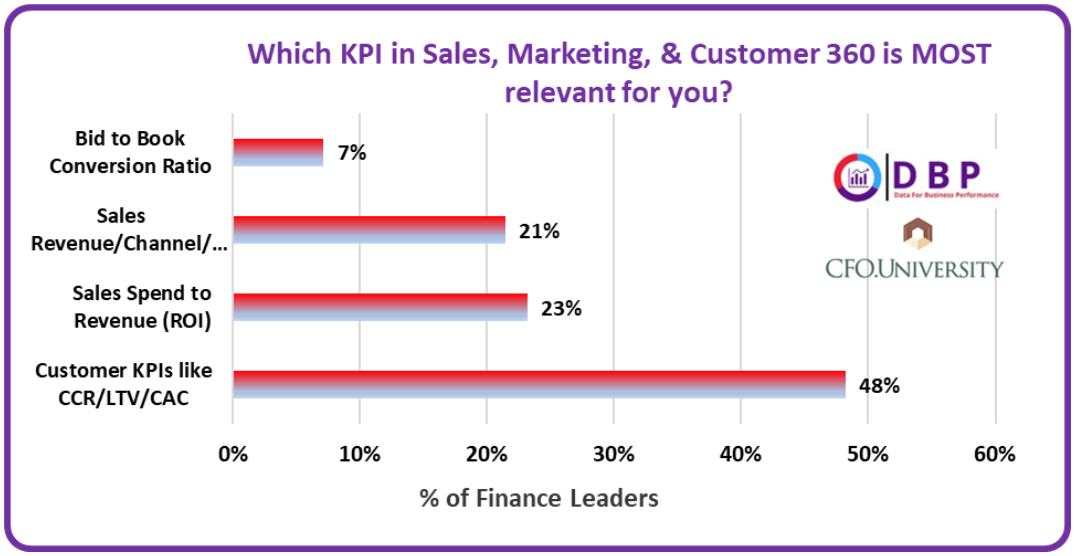

Figure 2: Sales and Marketing KPIs

2.2 The State of Data Analytics in Finance

Leading data and analytics expert Gary Cokins made this observation recently, "regarding advance analytics the CFO and accounting community are 5 to 10 years behind other functions such as marketing and supply chain management." This indictment of finance leaders is supported by recent polls. First, 80% of respondents indicated they have seen no tangible results from their finance transformation projects and nearly 50% have only just begun.

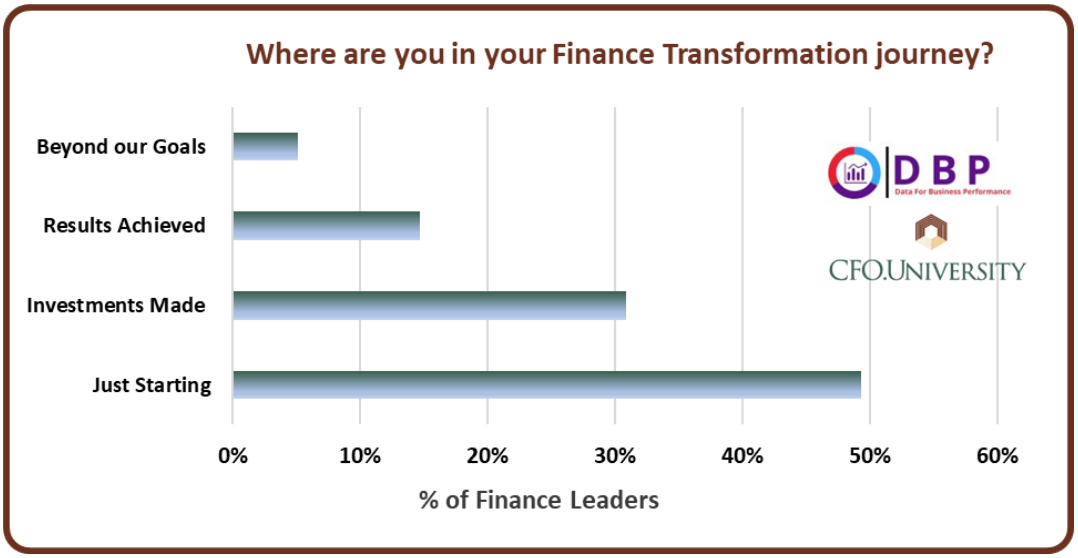

Figure 3: Finance Transformation Journey

However, there is also recognition that data analytics will play a key role in the success of finance teams with over half the finance leaders responding to our poll selecting data analytics as the transformative initiative that will have the most impact on their business.

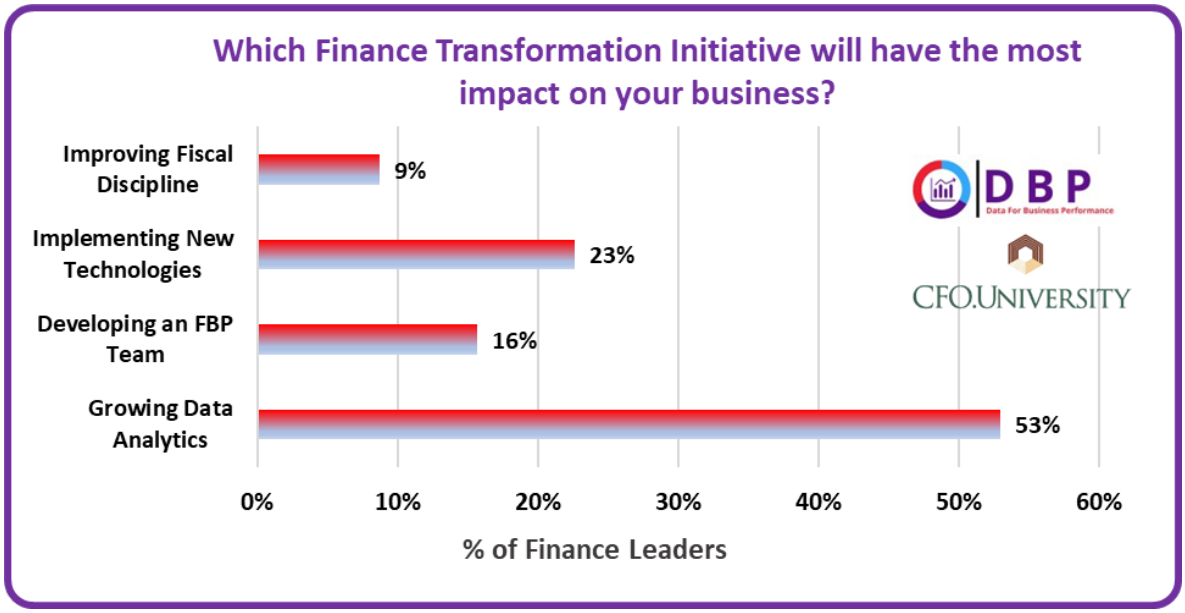

Figure 4: Most Impactful Finance Transformation Initiatives

Furthermore, the chart below highlights the weighting of two sets of KPIs that are critical to the CFO function. The common denominator in all these measures is the high dependence on data analytics to effectively derive insight from these KPIs.

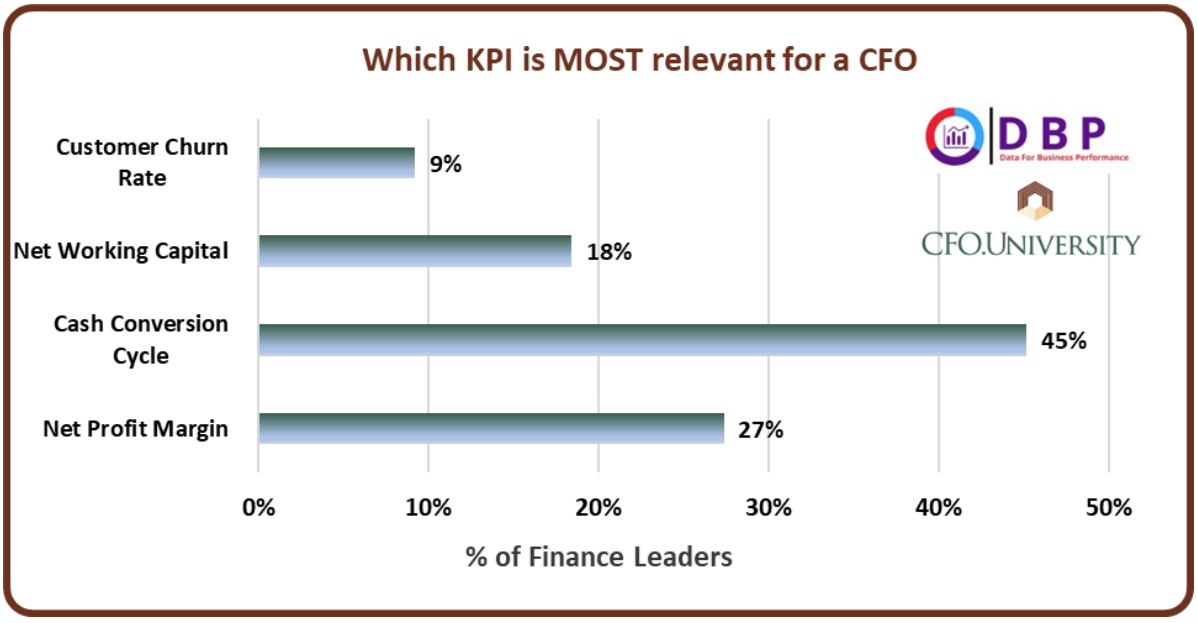

Figure 5: CFO KPIs

The following visual shows the KPIs that are important in SCM.

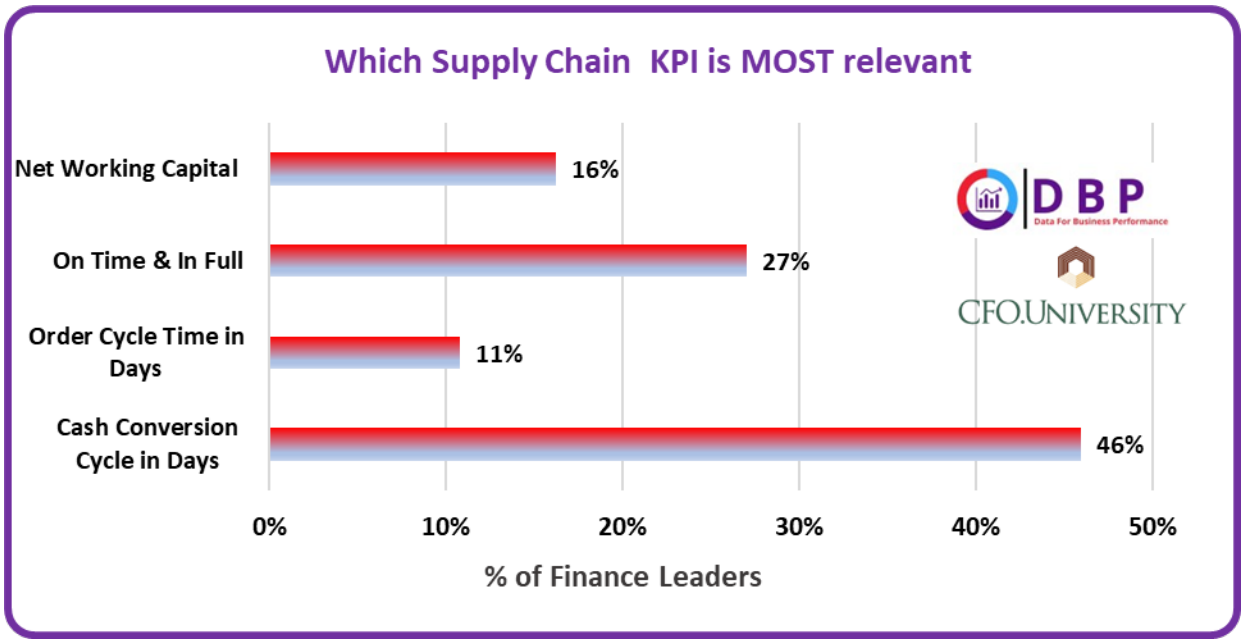

Figure 6: Supply Chain KPIs

The KPIs selected by various professionals across Finance, Supply Chain, and Sales and Marketing across the globe reflect two common themes.

1. **Importance of transactional data in data and analytics.**
   With the pervasive use of IoT (Internet of Things), Social Media, Block chain, Mobile technologies and other data capture technologies these days, data is being generated at scale. Fundamentally, transactional data, such as purchase orders and invoices, which records business events are important are they offer insights on the interactions or the financial transactions that take place among organizations and counterparties for the accomplishment of a business objective and process.
2. **Importance of customer master data**.
   No business enterprise practically exists without a customer. If a business does not know and understand the customer well, it is missing out several business opportunities. A comprehensive view of customer master data i.e., Customer 360 makes segmentation easier and more accurate because you have the insights gained from their combined historical behavior and buying patterns across various channels.

The finance function may be lagging behind in adopting advanced analytics but given our poll and recent experience in the demand from finance leaders on the topic, finance is positioning to lead their businesses in the art and science of data analytics.

3. Key Enablers in Implementing Data and Analytics

Though there are many challenges in implementing data and analytics in business, we see three main enablers in implementing data and analytics. The following section explains the three enablers in more detail.

3.1 Education (Data and Analytics Literacy)

As data and analytics become a core part of digital business, employees must have at least a basic ability to communicate and understand conversations about data. But what exactly is data literacy and how can organizations achieve it? At a high level, **data literacy is the ability to derive insights from data and implement them.** Gartner defines data literacy as the ability to read, write and communicate data in context, including an understanding of data sources and constructs, analytical methods and techniques applied — and the ability to describe the use case, application, and resulting value [].

> *"DATA LITERACY IS THE ABILITY TO DERIVE INSIGHTS FROM DATA AND IMPLEMENT THEM."*

Specifically, this means enabling the organization to have competencies in the following 12 domains of the data lifecycle (DLC).

1. **Data Acquisition**

   This domain covers the knowledge and skills required to navigate internal and external systems to locate, access, organize, protect and store data related to the organization's needs.

2. **Metadata Management**

   The domain entails the correct usage and interpretation of the data as metadata holds the underlying definitions and descriptions of data.

3. **Master data Management (MDM)**

   MDM is knowledge and skills to ensure the uniformity, accuracy, consistency and accountability of the key master data elements like customers, products, and vendors.

4. **Data Cleaning and Engineering**

   The knowledge and skills to search, identify, locate, access, and format data from a range of sources using various data integration techniques pertaining to data transfer (to the Data warehouse), data transformation, and orchestration of data.

5. **Statistical Analysis**

   The competencies required to formulate a range of questions using data including applying statistical and ML techniques for deriving insights from data.

6. **Data Presentation**

   The knowledge and skills required to create meaningful tables and charts to visually present data.

7. **Data Driven Decision-making**

   This competency includes thinking critically when working with data; formulating appropriate business questions; identifying the right datasets; prioritizing insights garnered from data; converting insights into actions; and weighing the merit and impact of possible solutions and decisions.

8. **Data Storytelling**

   The knowledge and skills required to describe the insights from data. This includes identifying the audience's needs, establishing the business context, and selecting effective visualizations to support the KPIs in the reports and dashboards.

9. **Data Ethics**

   The knowledge that allows a person to use data in a legal, secure, and ethical manner in line with the organizational policies, procedures, and standards.

10. **Data Stewardship**

    Data Stewardship is the knowledge and skills required to effectively lead and manage data assets. This includes the oversight of data to ensure fitness for use, the accessibility of the data, and compliance with policies, directives, and regulations.

11. **Data Governance**

    Data governance is a set of principles and practices that ensure high quality through the complete lifecycle of the data.

12. **Data Architecture**

    Data Architecture is the practice of designing, building and optimizing data-driven systems by incorporating the company's vision, strategies, business rules, standards, and capabilities to manage the data in its entire lifecycle.

The following image illustrates the 12 important data literacy competencies required in business enterprises.

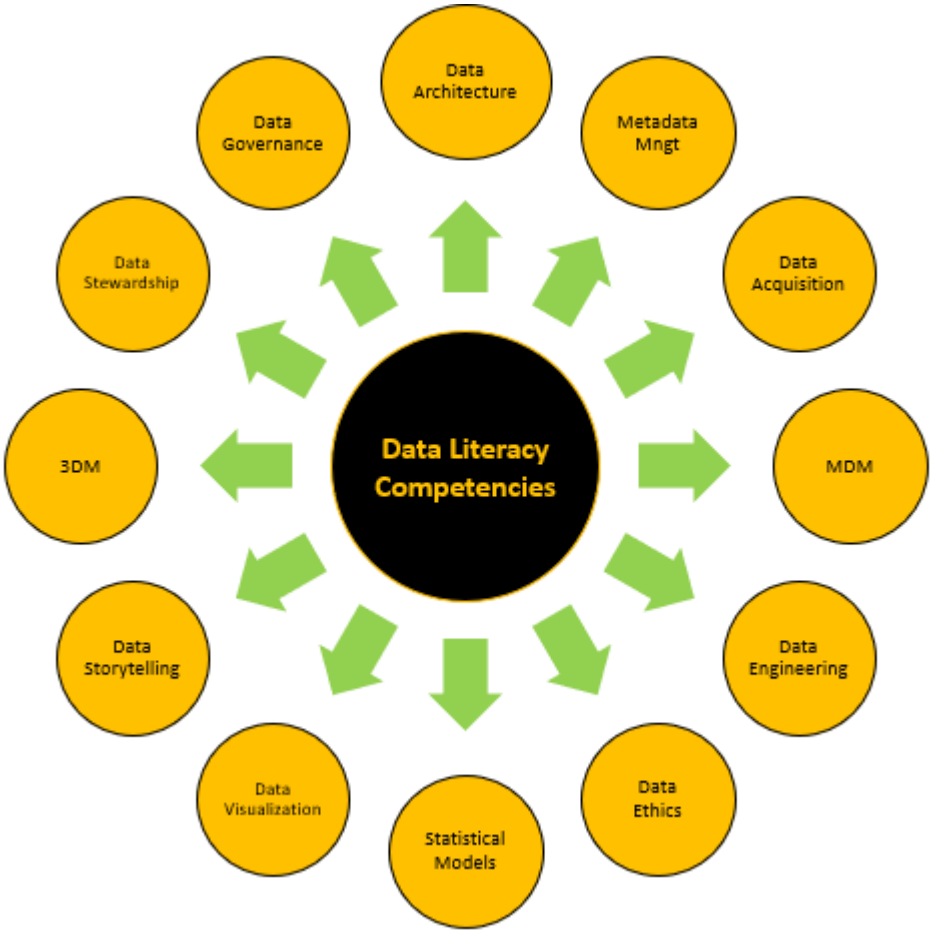

Figure 7: Data Literacy Competencies

3.2 Quality Data

Fundamentally, data analytics has the potential to improve the company's revenue, reduce expenses, and mitigate risk. While data can be a valuable business asset, we derive tangible business results from, data also has serious limitations and can become a huge liability if not managed well. In addition, data quality is a vast problem in most enterprises. A Harvard Business Review article reports just 3% of the data in business enterprises meet data quality standards {Nagle, 2017]. So, what can organizations do to have quality data for analytics, given that data quality is contextual? Below are three key recommended strategies for productively using data for analytics.

- **Data management should be purpose driven or use-case driven**.
  A data analytics use case is the manner in which the business user leverages data and the analytics system to derive insights to answer tangible business questions for decision making. If the data does not clearly associate itself to the analytics use case, there is a good chance that the data will eventually become dark data i.e., information assets organizations collect, process and store during regular business activities, but generally fail to use for other purposes) which consumes valuable business resources and provides little or no value [Gartner, 2021].

- **Data for analytics should be structured**.
  Structured data refers to data that resides in a fixed field within a file or record. Over 80% of the business data is unstructured i.e., there is no predefined data model and data type [Davis, 2019]. When data is structured properly, it enables efficient data access and processing. From the analytics perspective, data structure provides the right data type i.e., nominal. ordinal or numeric.

  But, why does data type matter in analytics? Data type is important as it holds the key in facilitating the selection of the right statistical technique for insight derivation. Structuring the data enhances the utility of data. For example, in predictive analytics, if the response data type is numeric in nature, Linear Regression is the preferred technique. But if the response data type is nominal or categorical in nature, the recommended predictive analytics technique to be applied will be Logistics Regression.

- **Data should complement Intuition.**
  Businesses are constantly searching for resources that are cheaper to procure, faster to deploy, and more reliable to consume. From the analytics or insights point of view, insights can be derived from intuition or data. If the data and analytics literacy in the company is low, intuition precedes data as the main option for deriving insights. While intuition per-se has some advantages, what is needed in today's VUCA (volatility, uncertainty, complexity, and ambiguity) business environment is deriving insights holistically by combining both intuition and data.

3.3 Adoption

Adoption of insights is the third important challenge in realizing the value from data and analytics. According to IDC, one major reason data and analytics projects fail is the lack of stakeholder buy-in, in other words, adoption [IDC, 2020]. Below are four key recommended strategies businesses can take to increase the adoption of data and analytics.

1. **Focus on the right KPIs.**
   Data and Analytics solutions are centered on KPIs. KPIs simplify performance management by enabling the enterprise to set targets and objectives. Hence align data and analytic solutions to strategic enterprise goals and KPIs; especially on customer-centric or revenue generation outcomes.

2. **Promote decentralized decision-making**.
   We live in a knowledge-based economy and this translates to decentralized decision making. Business professionals who are closer to data and business should be the ones to derive insights to reduce the cycle time in converting insights to actions. This improves throughput, creates faster feedback and facilitates more innovative solutions. In other words, every business person is a data scientist and the future is Citizen Data Scientist, "a person who creates or generates models that use advanced diagnostic analytics or predictive and prescriptive capabilities, but whose primary job function is outside the field of statistics and analytics." [Idoine, 2018]

3. **Leverage the use-case library.**
   Start with use cases driven roadmap and with existing data to achieve immediate results and measurable outcomes. The analytics roadmap is a flexible planning technique that matches short-

term and long-term goals with specific data and analytics solutions. The roadmap allows you to think big, but act fast and deliver in small increments.

4. **Deliver iteratively and incrementally.**
   Data and Analytic solutions have end-of-life (EOL) as business goals, needs and priorities, and user preferences are constantly changing. Many organizations have numerous reports and dashboards that are never used as the business goals and priorities have changed. In that case, these unused reports and dashboards should be retired. Hence analytic solutions should be delivered like a product with release management, one that is constantly refined and improved for each user persona [Southekal, 2020].

5. **Support business users.**
   This service not only offers accurate and timely data, but also with the right analytics tools and frameworks.

The image below is a framework for implementing and adopting data and analytics solutions.

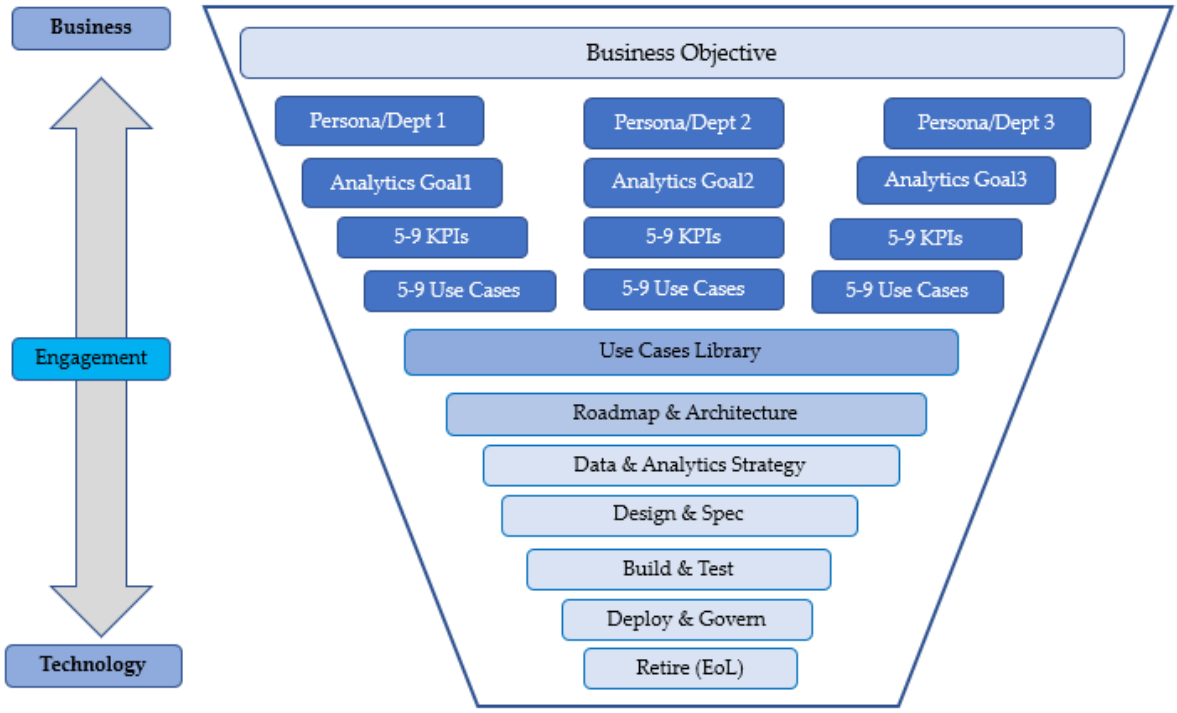

Figure 8: Implementing and Adopting Data Analytics Solutions

4. Top Opportunities for Data and Analytics in Business

In general, revenue generation functions such as Marketing in Retail, Production in Upstream Oil/Gas offer great opportunities for Data and Analytics. However, there are specific scenarios where Data and Analytics can play a significant role regardless of the industry type or function.

Opportunity 1: Integrate Predictive and Prescriptive Analytics

The future of data and analytics is going to be more on integrating Predictive and Prescriptive Analytics. Predictive and Prescriptive Analytics are like the two wings of the bird – you have to optimize what you predict given that there will be constraints on business resources and companies can optimize (maximize and minimize) the limited resources they have at their disposal.

Prescriptive Analytics can complement Predictive Analytics in all functions in any industry. For example, the Finance Manager in a Retail company might predict the SG&A (Selling, General and Administrative**)** expenses for 2024 as $750 Million using Regression techniques. However, if the Finance Manager is looking at factors that will help in minimizing or further optimizing the SG&A expenses, she/he can complement Predictive Analytics with Prescriptive Analytics. Oil companies can also use prescriptive analytics to identify factors affecting the price of crude oil to get the best terms and hedge risks.

Fundamentally, Prescriptive Analytics is evaluating existing business conditions and considering the consequences of each decision to determine how the future would be impacted. Moreover, it can measure the repercussions or pay-off of a decision based on different possible future scenarios. These decision factors can be determined using Prescriptive Analytics techniques such as Optimization and Sensitivity Analysis given than Prescriptive Analytics focuses on finding the best course of action in a given scenario.

Opportunity 2: ESG based EPM Dashboards

According to Investopedia, Environmental, Social, and Governance (ESG) criteria are a set of standards for a company's operations [Chen, 2021]. The economic forecast over the next few years i.e. in the post COVID-19 scenario is dependent on governments investing huge investment into infrastructure, industries, education, healthcare, social welfare and more. This means more scrutiny of taxpayers' money. In order to access these programs, companies need to make provable claims on ESG fronts. Hence, there is an opportunity for business enterprises to build the EPM (Enterprise Performance Management) dashboards and KPIs more centered on ESG.

Opportunity 3: Analytics Talent will not be determined by Location.

Global consulting firm McKinsey says, there is a big shortage of data analytics professionals [Manyika, 2017]. When the COVID-19 pandemic hit in early 2020, many companies allowed employees to work remotely. Gallup poll in mid-March of 2020 found that only 31% of U.S. workers had ever worked remotely. But by the beginning of April 2020, the proportion of workers who worked from home had risen to 62% [Brenan, 2020]. With improved internet connectivity and better features in unified communication tools such as Zoom and Microsoft Teams, today many jobs could be done from home than before.

Generally, these days, knowledge workers and individual contributors can accomplish most tasks remotely without a significant drop in productivity. Remote work popularly called work-from-home (WFH) is likely to continue, at least for the foreseeable future. The employee could be working remotely from his/her home – whether it is in Boston or Barcelona or Bangalore. In other words, hiring top analytics talent will not be determined by location.

Opportunity 4: Proliferation of Best-of-Breed Analytics Solutions

Today, data is inexorably linked to function, process, and idea. Hence, the best-of-breed OLTP solutions are more preferred over monolithic ERP applications as organizations are favoring the agile type of best-of-breed transactional applications. This means the enterprise can harness exceptionally good features along with potentially reduced cost and saved time!

Opportunity 5: Emergence of Cloud Data Warehouses (CDWs)

One of the time-consuming activities in data engineering is the creation of canonical systems and OLAP cubes for multi-dimensional data analysis. But the advent of CDW technologies like Snowflake, Azure Synapse, and Google BigQuery, have questioned if the businesses need expensive on-premise Data Warehouses and cubes. So, leverage CDWs as part of the best-of-breed solutions and do not restrict the best-of-applications only to transactional applications. While there are many drivers in selecting a CDW, in a recent survey we conducted, Costs and Elasticity/Scalability are the most important factors when selecting a CDW.

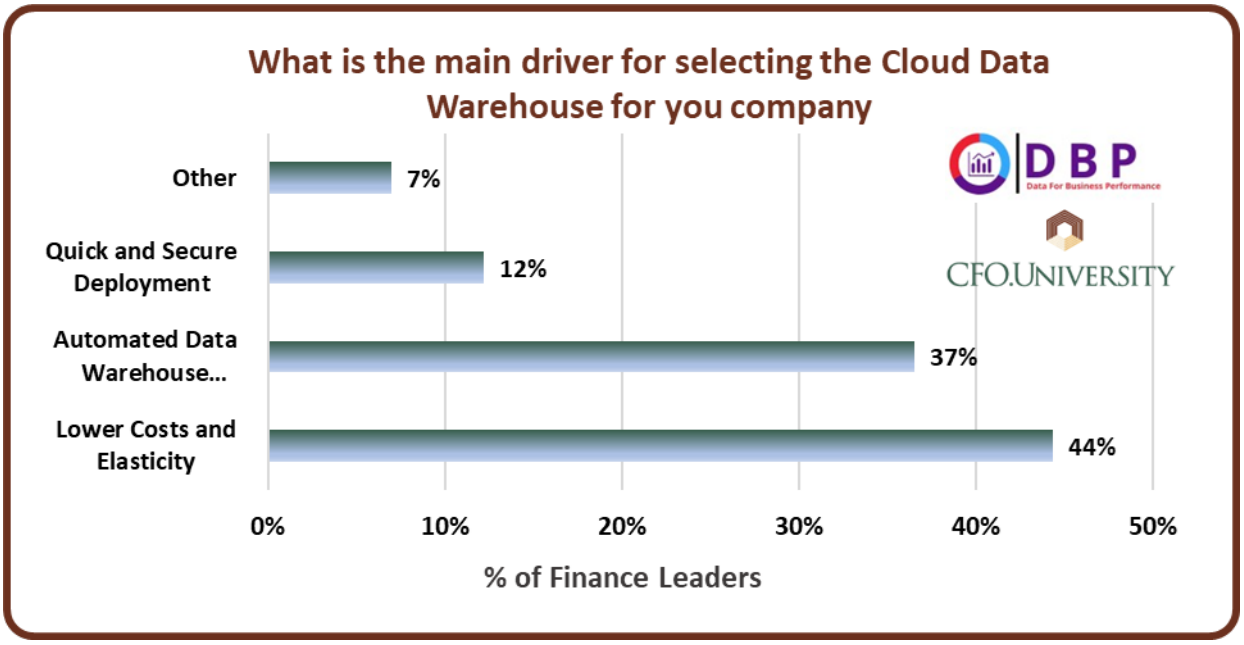

Figure 9: Business Drivers for CDW

And when it comes to selecting the CDW, Snowflake is the most popular CDW.

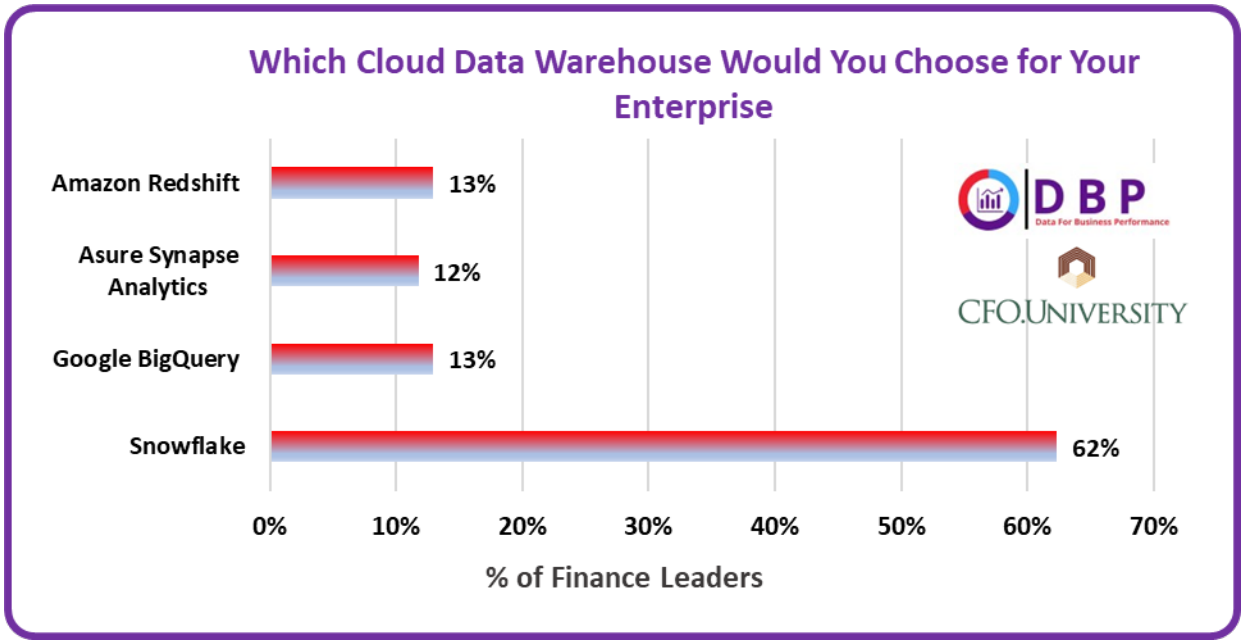

Figure 10: Popular CDW

5. Conclusion

Fundamentally, the purpose of data and analytics is to offer insights to **know** or to **act** for the organization. If the purpose of analytics is to just **know**, ask

- Why do you want to know?
- How much do you want to know?
- What is the time horizon?
- What is the value of knowing or not knowing?

But, if the purpose of insights is to **act**, use the insight from predictive analytics to answer these questions,

- What events are adversely affecting the organization's ability to plan, respond, and control?
- Who will own or consume the derived insights?
- How can you realize the change?

CFOs and their finance departments are normally the best positioned teams to facilitate the move to data driven decision making. Broad business exposure, ability to link corporate strategy to financial results, comfort deriving insight from data and growing communication skills are qualities these teams can leverage to transform their businesses through effective application of data analytics.

Finance leaders, consider applying the concepts in this paper to 3 key areas of your business. Doing so will have a profound impact on business operations and financial performance:

1. Operational Finance Efficiency
    - Operational systems and processes like P2P, O2C, Close to Disclose, Forecasting
2. Fact/Data Based Decision Making
    - Coming up with the right questions, developing the right data to deliver the right answers
3. Creating New Revenue Streams
    - Using proprietary data with enough scale and outside demand to generate new sales channels, even data driven product lines

We trust you have found our report, **The Impact of Data and Analytics on Business and Finance** enlightening and helpful. Please reach out where we can help your grow your analytics and finance disciplines.

Good luck creating a team that drives the use of data analytics and its benefits in your business.

Appendix 1: References

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Appendix 2: Abbreviations

- AI - Artificial Intelligence
- CDO - Chief Data Officer
- CDW - Cloud Data Warehouses
- CFO – Chief Financial Officer
- COTS - Commercial-off-the-shelf
- DLC - Data Lifecycle.
- EPM – Enterprise Performance Management
- ESG - Environmental, Social, and Corporate Governance
- IT - Information Technology
- IoT - Internet of Things
- KPI - Key Performance Indicator
- MDM - Master Data Management
- ML - Machine Learning
- OLAP – Online Analytical Processing
- OLTP – Online Transactional Processing
- ROI - Return on Investment
- SCM – Supply Chain Management
- SG&A - Selling, General and Administrative
- TCO - Total Cost of Ownership
- VUCA - Volatile, Uncertain, Complex and Ambiguous

DBP INSTITUTE

PRASHANTH SOUTHEKAL

https://www.dbp-institute.com

psouthekal@dbp-institute.com

CFO.UNIVERSITY

STEVE ROSVOLD

https://cfo.university

steve.rosvold@cfo.university