
DETERMINANTS OF DATA ANALYTICS MODELS TO IMPROVE CUSTOMER ENGAGEMENT

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Abstract: Organizations that turn data into insights are gaining competitive advantage through improved connections with consumers. Data analytics (DA) is the process of examining data sets in order to draw conclusions about the information they contain, aided by specialized systems and software. Data analytics technologies and techniques are widely used in commercial industries to enable organizations to make more-informed business decisions and by scientists and researchers to verify or disprove scientific models, theories and hypotheses. Our findings demonstrate a significant increase in the number of organizations that are using analytics to gain a competitive advantage and innovate — a key component of this shift is more effective use of analytics to improve customer engagement. Data and analytics allow organizations to use intelligence from feedback to tailor offerings that improve customer satisfaction. Several factors appear to be at work, including the use of a wide range of data sources, well-developed core analytics capabilities, and integration of artificial intelligence (AI) and the internet of things (IoT) into processes. Companies that have businesses as their main customers (business-to-business, or B2B) are gaining the most benefits from this shift, in part because they are able to share data with customers in a way that directly strengthens their relationship. Data analytics initiatives support a wide variety of business uses. For example, banks and credit card companies analyze withdrawal and spending patterns to prevent fraud and identity theft. E-commerce companies and marketing services providers do clickstream analysis to identify website visitors who are more likely to buy a particular product or service based on navigation and page-viewing patterns. Mobile network operators examine customer data to forecast churn so they can take steps to prevent defections to business rivals; to boost customer relationship management efforts, they and other companies also engage in CRM analytics to segment customers for marketing campaigns and equip call center workers with up-to-date information about callers. We assigned respondents to one of three categories based on their relative level of sophistication in adopting analytics: the Analytically Challenged organizations display limited analytical capabilities; Analytical Practitioners largely use analytics to track and support performance indicators; and Analytical Innovators incorporate analytics into virtually every aspect of their strategic decision making, including gleaned data from a variety of sources such as direct measurement and sensors, industry data, and third parties. One of the clear differences between Analytical Innovators and the other maturity groups is their ability to successfully use data and analytics to deepen customer engagement along several key dimensions. The most analytically mature organizations are twice as likely to report strong customer engagement compared with the least analytically mature organizations. According to this interpretation, Analytical Innovators' heightened awareness of customer and competitor behavior leads to a greater appreciation of the risks of customer loss as a result of their data-driven customer intelligence and engagement. To determine the relative analytics proficiency of an organization, we calculated the Analytics Core Index, based on the organization's core analytics capabilities in (1) ingesting data (capturing, aggregating, and integrating data); (2) analyzing (descriptive analytics, predictive analytics, and prescriptive analytics); and (3) applying insights (disseminating data insights and incorporating insights into automated processes).

Keywords: data analytics, ICT companies, customer engagement, Republic of Macedonia

1. INTRODUCTION – DATA ANALYTICS AND CUSTOMER ENGAGEMENT

Companies in all industries worldwide are using and benefiting from data analytics. Today, data analytics, especially big data analytics, advanced analytics, and predictive analytics are among the major trends for 2017 (Gartner, 2017) companies worldwide are facing. But, in spite how powerful data analytics is, almost every organization of every size is currently struggling with the challenges associated with building proper analytics team and becoming a data-driven organization. In the literature, there are a variety of explanations/definitions about what a data-driven company is and how one organization to become one? In general, a data-driven company is an organization where every person who can use data to make better decisions, has access to the data they need when they need it. Being data-driven is not about seeing a few canned reports at the beginning of every day or week; it's about giving the business decision makers the power to explore data independently, even if they're working with big or disparate data sources." (<https://www.infoworld.com>). There is no doubt that more companies will attempt to drive value and revenue from their data (Forester, 2017).

According to the latest Data and Analytics Global Executive Study and Research Report (2018) prepared by MIT Sloan Management Review, innovative, analytically mature organizations make use of data from multiple sources: customers, vendors, regulators, and even competitors. By using this data, companies are capable to improve not only the process of decision making in different business aspects, but customer engagement as well. In March 2006, the Advertising Research Foundation announced the first definition of customer engagement explaining the term as "turning on a prospect to a brand idea enhanced by the surrounding context". In general, customer engagement can be defined as the process of business communication connection between an external stakeholder (consumer) and an organization (company or brand) through various channels of correspondence. This connection can be a reaction, interaction, effect or overall customer experience, which takes place online and/or offline (https://en.wikipedia.org/wiki/Customer_engagement). In today's global, and highly competitive environment customer engagement cannot be neglected, since customer experiences become the most powerful differentiators in business environment. According to the Accenture report, 2015, 55% of consumers desire personalized experiences through every engagement channel – tailored to their needs and preferences. Finding the best way/strategy to improve it (customer experience and engagement), is important for companies of different sizes and industries since it enable organizations to build relationships with their clients and hence to increase revenue and efficiency.

Today, in a highly digitalized environment, it is not only to question of using data analytics, but how analytically mature organizations are, since the higher levels of analytical maturity provides better perspectives. In this sense, analytical maturity refers to businesses being able to get their business to its optimal potential from the application of use-case specific applications to full-scale analytics transformations. Using the maturity model can provide understanding of the current state and help management form a strategy of what level of capability is desired in order to support the achievement of organizations objectives. It is rare today for an organization to develop software and information systems, without striving to use the data in best way. In this sense, having an analytics strategy is very important. In the literature, there are several articles that stress the importance of analytic strategy. According to, Grossman (2018), analytic strategy is defined as the long term decisions an organization makes about how it uses its data to take actions that satisfies its organizational vision and mission; specifically, the selection of analytic opportunities by an organization and the integration of its analytic operations, analytic infrastructure and analytic models to achieve its mission and vision.

2. DATA ANALYTICS MODELS AND THE ANALYTICS CORE INDEX

Put simply, analytics is the practice of deriving insights from data to make better fact-based decisions. Businesses today have access to such a wide array of analytics applications and capabilities, with varying levels of sophistication and potential benefit. With more access to useful data, companies are increasingly using sophisticated analytical methods. That means there's often a gap between an organization's capacity to produce analytical results and its ability to apply them effectively to business issues. Efforts to create competitive advantage are leading to increased analytics sophistication; producers of analytics continue to use more data and more sophisticated techniques. Process and data evolve together. Finding the right approach in your own company or unit is one of the great challenges in applying data and analytics today. Too often, executives feel frustration because their data collection or their people (or both) are out of sync. Processes may have gaps, people may need training, or accountability may need to be put in place where it previously didn't exist.

The ability to derive new insights from data using different analytics techniques can enhance the decision-making process in companies. But, researchers have found that the actual application of analytics in companies is still in its

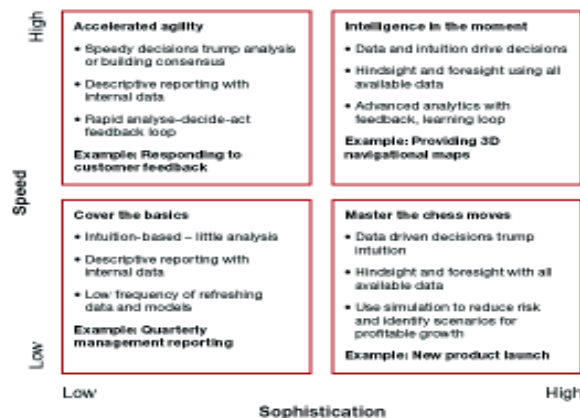
initial stages and strongly differ. (Lismont et al., 2016). According to Lismont et al., (2016), the application of analytics in organizations generally differs with regards to five different aspects like: data, enterprise or organization, leadership, targets or techniques and applications, and the analysts who apply the techniques themselves. In their research they found that the analytics organization in companies matures with regards to these aspects. Moreover, analytics is differently propagated throughout companies as they mature with a larger focus on department-wide or organization-wide analytics and a more advanced data governance policy (Lismont et al., 2016). Different authors and consulting groups propose different analytics maturity models/frameworks in order to reach predefined analytical maturity level. We will address the most influential methodologies. In order to assess the level of the analytical maturity i.e the level of usage of data analytics structured survey was performed in the ICT industry in the country, in selected companies.

One of the latest is the Analytic Processes Maturity Model (APMM) for evaluating the analytic maturity of an organization (Grossman, R., 2018). The APMM identifies analytic-related processes in six key process areas, defined as: 1) building analytic models; 2) deploying analytic models; 3) managing and operating analytic infrastructure; 4) protecting analytic assets through appropriate policies and procedures; 5) operating an analytic governance structure; and 6) identifying analytic opportunities, making decisions, and allocating resources based upon an analytic strategy. Based upon the maturity of these processes, the APMM framework of Grosseman (2018), organizations can differ i.e. reach five maturity levels defined as: level 1 -organizations that can build reports level 2 -organizations that can build and deploy models; level 3 -organizations that have repeatable processes for building and deploying analytics; level 4 -organizations that have consistent enterprise-wide processes for analytics; and level 5 - enterprises whose analytics is strategy driven. This model, is based upon the Capability Maturity Model - CMM that is the basis for measuring the maturity of processes for developing software. (Grosseman, 2018).

Another approach which provides estimation of analytics maturity i.e. analytical maturity levels differs organizations in three major categories based on their relative level of sophistication in adopting analytics i.e. 1) the Analytically Challenged organizations display limited analytical capabilities; 2) Analytical Practitioners largely use analytics to track and support performance indicators; and 3) Analytical Innovators incorporate analytics into virtually every aspect of their strategic decision-making, including gleaning data from a variety of sources such as direct measurement and sensors, industry data, and third parties (Ransbotham and Kiron, 2018, p.7).

According PwC (2016) there are two core dimensions of decisions: speed and sophistication. Speed is how quickly a firm moves – the time it takes to answer a question, make a decision, take action, and measure the value created as a result. On the other hand, sophistication is the breadth and accuracy of analytics used to inform decisions, which these days may not mean the lengthy cycles some executives have been used to, due to progress with data platforms and the ability to generate meaningful insights from them. More than 2,100 executives gave coordinates for where their firm's decision-making capabilities are today and where they need to be by 2020. Their responses show great ambition for change. According PwC(2016) of there are four models for data-driven decisions.

Figure1. PWC Data analytics model



Source: Pwc (2016)

Also there is an data analytics model develop by Deloitte (2014), where focus is put on workforce strategies. According to this model Analytics can fuel decision-making across many organizational domains Some of the most

common uses today include: customer strategies (pricing, predictive subscription and advertising, customer sentiment analysis, customer churn, and marketing), supply chain/operations strategies (supply chain network modeling and enhancement, supply chain risk, and geospatial analysis of key operation centers), workforce strategies (retention, workforce planning, safety, and recruiting), finance strategies (interactive financial visualizations; risk-adjusted planning, budgeting, and forecasting; and analytics for control, efficiency, and reducing working capital), risk strategies (risk sensing, reputational risk analysis, fraud, and anomaly detection and prevention) (Deloitte, 2014).

Figure 2. Data analytics and workforce strategies



Source: Deloitte Development LLC (2014)

According to the defined methodology, in order to determine the relative analytics proficiency of an organization, it is suggested to calculate the Analytics Core Index, based on the organization's core analytics capabilities in three major areas like: (1) ingesting data (capturing, aggregating, and integrating data); (2) analyzing data (descriptive analytics, predictive analytics, and prescriptive analytics); and (3) applying insights (disseminating data insights and incorporating insights into automated processes). In detail the Analytics Core Index is calculated by assessing how effectively the organization performs these seven analytics-related tasks and activities defined like: 1. Capturing data, 2. Aggregating/integrating data, 3. Using descriptive analytics, 4. Using predictive analytics, 5. Using prescriptive analytics, 6. Disseminating data insights and 7. Incorporating analytics insights into automated processes (Ransbotham and Kiron, 2018, p.9). The measurement process is based on a five-point scale ranging from very ineffective to very effective. The Analytics Core Index score represents the sum of the responses to the seven questions, scaled to a range from 0 to 100. As organizations mature analytically, their Analytics Core Index score reflects their increasing effectiveness at a range of fundamental analytics activities. The average Analytical Innovator organization, the most mature grouping, has an Analytics Core Index score twice as high as the score of the average Analytically Challenged organization. Not surprisingly, organizations that use analytics to achieve the highest levels of customer engagement tend to have the highest scores on the Analytics Core Index. The analysis offers clear evidence that organizations that make effective use of a wide range of data sources — from different types of technologies and different types of entities, such as customers, vendors, competitors, and publicly available sources — are more likely to use analytics to generate higher levels of customer engagement and gain a competitive advantage than organizations that use fewer sources of data.

Higher levels of analytical maturity are associated with higher levels of customer engagement, which in turn is associated with higher scores on the Analytics Core Index, which in turn is associated with greater use of diverse data sources. This means that organizations that make effective use of a wide range of data sources — from different types of technologies and different types of entities, such as customers, vendors, competitors, and publicly available sources — are more likely to use analytics to generate higher levels of customer engagement and gain a competitive advantage than organizations that use fewer sources of data. (Ransbotham and Kiron, 2018, p.9).

3. CONCLUSION

Large number of organizations today are in the process of improving their digital engagement with their customers. Their main effort is focused on deepening the understanding of their customers by improving the connection they have with them thereby improving service, increasing retention and strengthening relationships. In the literature it is recognised that the opportunities with the greatest value arise when organisations can combine data from their existing corporate systems with data associated with digital engagement (Nott, C., 2014).

According to the findings from the report of IBM Marketing Cloud, 90% of the data in the world today has been created in the last two years alone, at 2.5 quintillion bytes of data a day. Following the increasing use of new devices, sensors, and technologies emerging, the data growth rate will likely accelerate even more. Across all industries, organizations that have a higher ability to innovate with data are more likely to use data from mobile devices (47%) than those with a lower ability to innovate (24%). One of the most fascinating sources of new data is the entire mobile ecosystem, which is basically a combination of telecom providers, brands, publishers, advertisers, and ad exchanges on various networks coming together, mobile accounts for nearly 40% of all transactions (Ransbotham and Kiron, 2018, p.18). In this sense, organisations are facing both the pressure and the opportunity of adopting big data technologies and techniques in order to be able to take advantage of additional data and apply more advanced analytics. However, it is the ability to apply insight to act and improve business processes that builds business value from data analytics. This ability matures over time. In this sense determining the relative analytics proficiency of an organization, is the important indicator to improve analytics strategy. There are several models that can be used in order to assess the data especially from a customer point of view, and later to be used for improvement of customer engagement. The beauty of data is not just in what it tells you, it's in what decisions you make based on those insights. Successful companies will focus more on the end-game than on the data acquisition. Clearly, data can help dramatically improve the customer journey, but only for companies who are willing to be led where the data tells them to go. Those focused on holding on to legacy structures, or even past visions or products, will not find as much success in customer experience enhancements, simply because of their resistance to change. If you want to succeed in today's market, 1) embrace data and 2) follow where it leads you.

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