



BIG DATA ANALYTICS AND ISLAMIC BANKING

Introduction

As the Fintech evolution transforms the banking sectors worldwide, the players in the market are hard-pressed to experiment the tremendous opportunities that the application of the likes of Blockchain, Big Data and Artificial Intelligence et cetera could have on the financial world.

As the volume of the data continue to expand, the possibilities that this raw data materializes in the form of opportunities lean towards limitlessness. Organizations such as financial institutions must be vigilant of the prospects that such data can reveal and the extend of leverage that they can exercise to build insights for their consumers, products, and services. Big data analytics have alone become the driving force for digital innovations and transformation of banks.

With the explosion of the amount of data that has been generated in the last decade alone encompasses enough insights that empowers banks to predict the future behavior of its consumers with more reliability.



By Dr Kinan Salim,
Mhd Osama
Alchaar & Neha
Sarah Noushad

As Islamic Financial Institutions strive to adapt to the Fintech ecosystem in order to remain relevant and competitive, the indispensable advantages that big data can offer to the banking sector is explored in the article.

What is Big Data?

The term Big Data refers to “the use of predictive analytics, user behavior analytics, or certain other advanced data analytics methods that extract value from large, huge or complex data to support a level of decision making that is timely more accurate.”

The insights and benefits that companies can derive from the available data, and the subsequent impact it can have on the decision-making process, is more significant than the actual size of the data.

Volume

The value and possible insights that can be derived from data is heavily dependent on the size of the data created and stored. The size also determines if the data in hand qualifies as “big data” or not. Companies gather data from an array of sources such as business dealings, social media and information from internet of things (IOT).

Variety

The kind and type of the data. Data could either structured data, taking the form of numbers in the well-known macroeconomic datasets or unstructured data, in the form of text, images, video or audio. In the case of unstructured data, big data draws from these sources, and can complete gaps and missing using data fusion.

Velocity

Generally, big data can be obtained in real-time. Data should stream at an extraordinary speed and should be managed and analyzed regularly.

Variability

Data flows can be very erratic with periodic peaks, for instance, the trends in social media.

There are four distinct characteristics of big data, known as the 4Vs-

Basically, big data aims at “digging out” the valuable information that remained untouched initially due to the absence of control they could exercise over the above features.

Importance of Big Data:

The size and the value of data is expected to keep increasing; for instance, the value of personal data of European citizens is expected to increase to €1 trillion a year

by 2020. By leveraging big data, companies have much to gain by cutting cost, saving time, developing products, personalizing marketing, optimizing offerings and so forth. According to the findings furnished by a special report, a company could witness an increased net revenue of USD 65 million by only increasing its accessibility of data only 10%¹. Big data analytics can also aid companies/banks to:

- Detect the main causes of failures, problems and weaknesses in near-real time.
- Create marketing campaign based on the data and information about the clients.
- Produce coupons at the POS in accordance to the client's purchasing patterns.
- Promptly recalculate risks in portfolios.
- Spot fraudulent behavior in near-real time.

Big Data in Banking Sector:

Adopting the big data analytics and imbuing it into the existing banking sector workflows is one of the key elements of surviving, prevailing and competing in the rapidly evolving business environment of the digital millennium. Banks leverage on Big data analytics as one of the key drivers of innovation and competition in the industry. According to IDC's guide on "big data and Analytics Spending" of 2016, banks have invested over USD 20.8 billion (and is more willing to invest) in big data analytics than in any other industry. Thus, forming a vital segment in the clientele of big data service providers.

However, this big budget for big data analytics goes beyond enhancing the marketing decisions and customer support system. According to the PwC Global FinTech Report in March 2016, the investment in big data also covers risk assessment, decision-making support system, the research for new profit opportunities, investment in new markets, lowering time-to-market and funding the blockchain projects among others. The chart below exhibits the current applications.

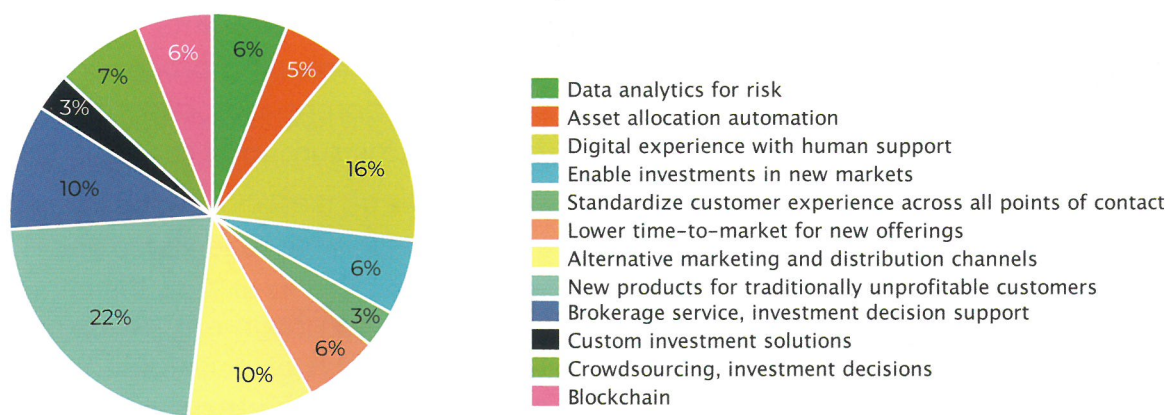


Figure 1 Current Application of Big data in Banking

¹ <https://www.dataversity.net/four-common-big-data-challenges/#>



Big Data can Help the Banks to Make Better Decisions by identifying:

1. Client Spending Patterns:

Banks own a treasure of data that entails information about the spending patterns of their clients. This includes the salaries and other incomes transferred to their accounts over the years along with the part of income that is directed towards saving accounts, term deposits and other investment vehicles. Additionally, the details of their purchases and payments through debit/credit cards and bank transfer are also possessed by the banks.

The data analytics experts in the banks can add macroeconomic variables and controls for trends and seasonal changes, to draw valuable insights from the combined dataset. These insights play crucial role in the screening process of the clients who apply for financing and offering financing for potential prospects. These can be used to evaluate mortgages and further as an instrumental tool in cross-selling of other banking services.

2. Market Segmentation and Profiling:

Based on the abovementioned information, the bank can segment customers based on their financial habits into accurate profiles such as “easy spenders”, “cautious investors” or those who payback financing fast.

The data that a bank can derive from estimating income and spending of each of its customers can help the bank in liquidity management, and consequently, profit maximization.

In this regard, classification algorithms such as neural networks or decision trees are used to determine what content the customer may or may not be interested in.

3. Product Cross-Selling:

Data analytics can help banks to cross-sell, with more efficiency by enabling them to approach customers with the right offers. For instance, banks could target cautious investors with products that suit them best or can identify easy spenders and ensure that short-term financing isn't extended to them.

4. Faster, More Reliable Fraud and Crime Detection

By understanding the spending patterns of people, banks would be able to detect unusual activities faster. For example, if a cautious investor who generally fulfils payments through the debit/credit card withdraws an unusual amount of money from ATM, it could be an indication of the card being stolen. Banks could verify by calling the customers and confirm the transaction. Thus, data analytics could help banks in detecting fraudulent behavior and minimize the risk.

Government agencies in Malaysia such as National Anti-Financial Crime Centre's (NAFCC), intent to use and analyze the big data to track the legal and illegal outflow of money, and to identify the modus operandi and the perpetrators of financial crime.

5. Application Screening and Credit Risk Assessment

Interpreting the spending patterns of consumers can further help banks to evaluate the creditworthiness of customers when deciding on their financing applications. Recent development in big data analytics support banks to make better credit decisions using psychometrics and social media information. For instance, many SMEs are not qualified to get financing because of their lack of collateral and low credit rating. Big Data analytics helps bank to analyse their transactional records of a POS machine which may help to improve their credit rating.

6. Client Feedback Analysis and product development:

The social media provides an indispensable opportunity to banks to receive/collect feedback of their customers. Big data analytics gather the relevant data and opinions of customers from the social media, sort them and analyze them, such that the banks can respond in a timely and effective manner. This enables the enhancement of the customer experience and eventually increases the loyalty towards the brand. Banks are able to derive actionable insights from real-time social media analytics which help them to improve their new products promptly.

Big Data analytics and Islamic Banking

For the benefit of the readers, the definition of Islamic Fintech is dissected into three key distinctions. Islamic Fintech entails

1. The employment of Fintech that delivers the objective of financial inclusivity or fulfils any financial need of the Muslim demography in the market.
2. The employment of any Fintech tools such as the Blockchain, Crowdfunding Platform, Big Data, Machine Learning in the field of Islamic Finance
3. Expansion of digital infrastructure or any economic development around the world through Shariah compliant Fintech fund investment

As a result, the use of big data analytics in Islamic Financial Institutions invariably becomes a part of the larger Islamic Fintech evolution. Such analytics could aid in the magnificent development and customization of the existing financial products and services that are offered by Islamic banks while paving way of creating more that adhere to the existing patterns and trends in the market.

With over 170 Islamic banks and 80 Islamic banking windows in operation, uncovering the potential that big data and other global Islamic Fintech channels hold shall enable the Islamic finance industry to reclaim its rightful place, inducing undeniable competition to the conventional banks.

It is of supreme vitality, however, that Islamic banks maintains its true essence of complying to the principles and values of Shariah, especially when conducting any activity using the customers' data.

Big Data and Policy Makers

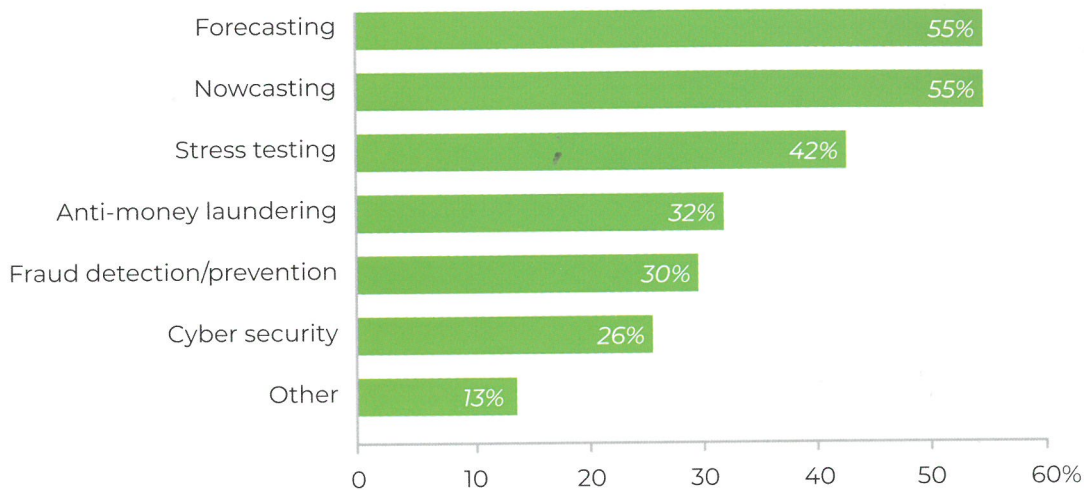
Big Data analytics is garnering familiarity amongst the circles of policy makers and regulatory bodies as well. Big data was identified to be a significant element in policy making and supervisory processes by a survey dedicated to understanding the role of big data in central banks. Over 60% identified big data either as a "core input" or an "auxiliary input" in developing policies.

The use of big data at central banks have joined the ranks of mainstream activities, with more than half of the respondents acknowledging the work of their respective central bank in the field of big data.

In the strive to pursue the anticipated benefits that big data could have upon the monetary policies, central banks around the world are advancing their understanding of the same.

Some central banks are relatively new to this endeavor and thus have their objectives immersed in research examining concepts and prototypes. While other central banks, that possess the advantage of being more advanced in the field, are immersed in comprehending the potential role big data could assume in policy making.

What does your central bank use big data for?



Source: centralbanking.com

Figure 2 What does your central bank use big data for?

Some Current Issues in Big Data

Banks must establish contingencies while using big data, from the beginning, to avoid potential issues, especially the ones that cement existing drawbacks of financial institutions.

1. Data discrimination

While the penetration of big data promises better user experience and the potential for financial institutions to become superior service providers, trepidations over data discrimination is a gigantic issue that confronts the industry. Would big data become a more concrete barrier to inclusivity?

For example, a technology that creates a credit scores based on the insights obtained from the social media networks of consumers, could exclude them on the account of their social network presence existing amongst those groups who are largely ignored by everyday lenders. Thus, further welding the disparities and difficulties that are combated by certain factions of the society from receiving their due service.

2. Data security

There exist multiple sources from which data is derived by enterprises. Not all of those existing sources are reliable on the grounds of security or on the grounds of being compliant to the organization's standards.

Many organizations do not yet possess the means to distinguish dubious channels of data from the genuine ones, thus increasing the risk of not detecting infiltration of hackers and the jeopardization of available data.

3. Inadequate Analytical Capabilities

The absence of a skilled professional to tap on big data currently in the industry is an issue that confronts most enterprises that are dedicating themselves in developing an effective data analysis system. This shortage poses a huge barrier currently to “crunching numbers” and building insights. Most companies cannot afford the expenses that training people at an entry level would entail.

Alternatively, pursuing other modes to build insights such as developing automation solutions through Artificial Intelligence or Machine Learning too are obstructed with the low availability of skilled manpower that eventually forced companies to outsource to skilled developers.

Conclusion

To conclude, the promise of the furthering efficiency and effectiveness that the use of Big Data analytics in the financial sector has resulted in financial banks embracing Big Data analytics rapidly to discern and to forecast the financial patterns, credit worthiness, the consumption and saving behaviors etc. of the existing clients. Parallely, even regulatory bodies and policy makers such as Central Banks have adopted the dynamic use of Big Data to execute their holistic policies, along their supervisory and regulatory work in the hope of exploring the potential for financial inclusions and positive impacts it promises. However, the employment of Big Data analytics is accompanied by several compelling issues that are inescapable and requires further deliberation.

For Islamic financial institutions, leveraging on Big Data analytics would help in the development of the existing and the creation of future Shariah compliant products. Thus, it widely advisable for IFI, especially the Islamic Banks, to develop the resources in terms of manpower et cetera to explore the potential that Big Data analytics dominate such that no Islamic values pertaining to respecting others' data and privacy are violated.