Topics in Business - Consumer Analytics (MGT 821)

MODULE 1 : WEEK 1 - DISCUSSION: The Impact of Big Data

When we talk about banking, credit risk is something that comes to our mind. However, any banker like myself can easily agree to the fact that operational risks pose an equally daunting challenge. There is a need for innovative approach like Big Data to tackle these challenges. Banks churn out huge amount of data at exponential rate that need to be dealt appropriately as per rapidly changing regulatory requirements. Again, the velocity of data pose challenge of timely identification of risks before they snowball into something major. Big Data allows financial institutions to acquire critical insights of data, both internal and external, through predictive modelling /scenario analysis and similar other ways, thereby yielding actionable insights. The ultimate goal is to create a robust operational risk management framework to minimize frauds.

The challenges associated with collection of data for financial institution is that these data set are massive and measured in petabytes and zetabytes. Another major challenge associated with data is to determine the time gap between data generation and data analysis for generating relevant and actionable insights. Data variety and its reliability and uncertainty is a big challenge in itself as well. Keeping the data safe and addressing all privacy related issues is another vital aspect of data gathering and storing.

Banking is experiencing a revolutionary change with respect to operations performed and services delivered. We are entering an era where Big Data has set the platform for digital-only-banks in the future. We can expect banks delivering services through online mode only. Such internet only financial services are known as Neobanks. Customers would be able to seamlessly avail all possible banking services without any human interaction. We probably won't bee seeing any physical bank branches in the near future.

MODULE 1: WEEK 1 - Netflix and Big Data

Netflix is one such OTT platform that has used Big Data in a big way to drive its growth over the years. Netflix has effectively gathered, stored and processed its data related to customers to gain useful insights and drive sales. It has used data processing software and business intelligence tools like Hadoop and Teradata to achieve these feet. Other opensource software like Lipstick and Genie were also utilized to process information that help in key management decision making. To gain a competitive edge, Netflix takes the help of Amazon's S3 to store data. The advantage of using S3 is that it allows for spinning multiple Hadoop clusters by accessing the same data set. There is a clearly defined framework for different type of activities. For example, for ad hoc queries and analytics, Hive is used; for ETL and algorithm, Netflix uses Pig in the Hadoop ecosystem. To handle ever-growing amount of data, Netflix creates its own Genie projects. These platforms provide Netflix a way to suggest and create contents that matches the interests of its users. Netflix put greater emphasis on data as a way to understand its users and this approach has paid-off well for them. The results are for all to see. About 90% of its subscribers have shown engagement with Netflix's original content.

When Netflix decided to launch “House of Cards”, they went against the standard practice and decided to commission 2 seasons without even a pilot launch. While it might seem like an audacious and risky decision, Netflix had actually taken a calculated decision backed by Big Data. The insights gained with the help of Big Data highlighted that Netflix’s existing 33 million subscribers prefer director David Fincher’s work. They also favour Kevin Spacey’s acting. Again, Big Data analysis also highlighted that British version of “House of Card” was a hit among its subscribers. So, based on all the available useful insights, they went ahead with the project knowing well the taste and preference of their subscribers. What seemed like a bold and somewhat rash decision was in fact a calculated and well-researched one, all thanks to Big Data. Right from the choice of actor and director to the genres, every aspect was well researched. The content based on a particular genre was matched with subscriber’s preference to look into the size of the target audience from the subscriber base. All this was possible because of Big Data and the results were fabulous. Within 3 months of “House of Cards” launch, Netflix added 2 million new subscribers in the US itself. The company earned a whopping profit of $72 million. So, basically, in three months’ time, it recovered its investment made for “House of Cards”. To add to this, there was 93% renewal rate for this show as well.

Netflix has extensively used Big Data to enhance user experience by focusing on key customer metrics like data content genre, device used, type of content watched, user location, duration, content paused, content watched again, preferred time to watch, metadata, social media data and others. These valuable insights help Netflix make relevant recommendation to its subscribers based on individual preferences. For example, any recommendation by Netflix is based on its overall popularity and user’s personal activities and interest as reflected on Netflix platform. Recently viewed content displayed by Netflix makes sure that the user is not bored and if that’s the case, the algorithm quickly replaces it with other interesting options. Again, if the content is interesting, Netflix is quick to suggest similar type of other offerings. So, choices and behaviour patterns are deeply analysed for better customer service. All these enhances user experience to a superior level and keep the users engaged in the platform. Since, this is an ongoing activity, every new or any slightest change in behaviour pattern of user is immediately captured on real time basis.

A data driven society that is hooked to internet and smartphones churns out astronomical amount of data every moment and hence the role of Big Data in assimilating, processing and providing useful insights to businesses is definitely going to take centre stage in times to come. Businesses increasingly rely on Big Data for competitive edge and enhance user experiences. Again, when we talk about machine learning and Artificial Intelligence as the future, then we can foresee Big Data playing a major role as well. Big Data simply cannot be ignored as it has changed the game for businesses. It has helped businesses increase sales, reduce costs and increased efficiency. As the society increasingly becomes an information seeking community, the role of Big Data in the future is going to enhance even further. Whoever has the better insight from the available data, will always have an edge over the other. We are living in a world where inventory data, transactions data, IT infrastructure, human resource all exists on the cloud in a virtual state and this is going to get even bigger in the future. A robust Big Data

approach helps create a holistic framework that assimilates data from multiple sources and provides useful insights. Big Data has a huge role to play in the future for sure.

Big Data raises a number of ethical issues that cannot and should not be ignored. Some of the major issues from ethical consideration are privacy of customer data. Privacy issue is related to consent. Is the customer aware that his/her sensitive data might be collected for analysis purpose? Another issue is that of confidentiality. Is there a legal framework that protects customers from unethical data practices? Customers are entitled to a transparent view on how their data is going to be utilized. Another ethical consideration is related to forced decision making. If customers are deliberately fed a certain content, that amounts to unethical practice as well. For example, there is growing concern related to social media contents shown to people as per their demographic, religious, sexual, racial characteristics. This has created an environment where even election results can be swung based on targeted campaigning. All these considerations need transparent and practical approach. Companies can take undue advantage of private data to manipulate customers into forced purchases of items. Companies can also sell sensitive data to a third party without the consent of the individual, thereby placing him/her at risk of malicious online attacks. A data driven ecosystem need to have systems in place that is reliable and instil 100% confidence among the general public.

Big Data has enhanced user experience to another level. It has successfully predicted users' choices and preferences and offered them solutions even before they had anticipated one. Big Data has made life easier for consumers by providing fast and efficient customer support services. By offering useful insights into purchase decision making, Big Data has turned an average customer into a smart one that evaluates multiple options before making the purchase. Since Big Data depends on actual data gathering, it has empowered the customer like never before. Companies encourage customers to provide feedback so that sufficient data points are gathered for better insights about customer preferences. This has, in turn, improved customer service to the highest level. Companies, these days, are wary of customers' opinion about companies and products on social media. Any comment made online is a data point that can have ripple effects in a matter of seconds. On the flip side, customers are vulnerable to data privacy breach and /or data theft that has detrimental consequences for any individual. Customers are susceptible to online frauds and scams. The multifold increase in digital financial frauds is a testimony of this fact. User data is gold these days and hence sold to parties without consent. These are then used against the users with malicious intent or to take undue advantage. Identity theft can jeopardize an individual's life to unimaginable extent. In absence of a robust data privacy framework, each and every individual is vulnerable to data hacks and cheating.

MODULE 2: WEEK 2 - "*A picture is worth a thousand words*."

I noticed some surprising changes in consumer spending habits due to Covid pandemic. While consumer spending on online groceries, gaming, food delivery services has drastically increased, spending on airlines, movie theatres, cruises, lodging etc plummeted and has almost decimated the

industry. Some figures are really mind boggling. For example, one can observe from the graph that there is atleast an 80% increase in spending on online groceries and almost 100% decrease for movie theatres. One can safely conclude that the stay-at-homes orders by authorities forced people to change their spending habits. Outdoor activities that involve travelling and congregation came to a standstill. People preferred indoor activities like gaming (increase of almost 75%) and opted for home delivery services like meal kits and food delivery (atleast 30% increase).

I wonder how much damage these sudden and forced changes might have caused to the economy? We know that consumer spending and employment rate is directly proportional to each other. So, when movie theatres, parks, clubs, concert halls, restaurants are ordered to close down and airports, cruises, hotels have a deserted look, it is anybody's' guess about the rampant unemployment in these industries. Covid pandemic has broken the back of retail and service industry. What is more worrying is that massive rise in unemployment has forced people to spend even lesser, there by creating a vicious circle for the economy to end its woes.

"Spending in times of Covid pandemic"

-*Categories showing a decline in spending are* -Airlines, Cruises, Movie theatres, Lodging, Apparel, Fitness, Fast food, Charitable giving, Mobile.
-*Categories showing an increase in spending are* -Online groceries, Gaming, Food delivery, Video streaming, Meal kits, Alcohols, Supermarkets, General merchandise and e-commerce, Home improvements.
-While online groceries have shown an 80% increase in sales, its overall sales figure is still lesser than that of Supermarkets as shown by the size of the bubble.
-Spending on Supermarkets and General merchandise & e-commerce have remained stable.
-Spending on Home improvement has increase by 12.5%(Approx) while spending on mobiles has decrease by 12.5%(approx.)
- Categories under negative spending rate also implies decrease in sales and profits and layoffs.

WEEK 2 ASSIGNMENT - Descriptive Analytics

A study was conducted that focused on the number of hours a group of consumers spent online in a given week. A sample of 95 consumers was taken.

The results in the form of a Minitab output are shown below. Use this output to answer the questions that follow.

Descriptive Statistics: HOURS

Variable	N	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
HOURS	95	16.6	0.318	3.10	6.0	15.0	16.0	18.0	24.0
