AI in Marketing
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Week 4
Lecture-17 What is Marketing Research - II

Welcome to this NPTEL online certification course on Artificial Intelligence in Marketing. And now we will talk about module 17. So, as you can see from this slide, we are talking about what is marketing research. So, this is part 2 of that issue of what is marketing research, and we are in module 17. Now, let us look at what are the things that we will cover in this module. So, we will start with the understanding of how AI helps to collect and analyze the information. What are the benefits of using AI in marketing research? And then we will discuss a case of Hindustan Unilever and see how AI helps to predict trends and turnover. What are the new challenges for market researchers? Will AI replace jobs in market research? And what are the ethical considerations of AI market research? So, these are the things that we will talk about in this module.

Now, let us start with understanding how retail chain FrankMatt leverages AI in data collection. So, let us create a retail company. We will call it FrankMatt and hypothesize how they leverage artificial intelligence to enhance their customers' shopping experience. FrankMatt employs AI-powered analytics to collect and analyze vast amounts of data from various sources including online transactions, social media, and customer feedback. Now, it uses natural language processing algorithm. FrankMatt's AI system processes customer reviews and social media conversations to identify sentiments, product preferences and emerging trends. This real-time analysis enables the company to understand its customers' needs, one and then adapts its product offering accordingly.

Using automation, they can also conduct customer satisfaction surveys at the most ideal times. But it does not stop there. FrankMatt's AI algorithm employs machine learning techniques to create personalized shopping experience. So, one is that it is customizing, adopting the product offering and then also personalizing the shopping experience of the customers. By analyzing customers past purchases, browsing behaviour and demographic information, the AI system can generate tailored recommendations and promotions and that will increase the customer satisfaction and increase the sales also.

With AI, FrankMatt can also forecast the market demand, allowing them to optimize inventory management and streamline their supply chain. By predicting upcoming trends, they can proactively stock in-demand products and respond to changing customer preferences promptly. So, that also reduces their inventory holding time and cost also, at

the same time. FrankMatt is fictitious but several businesses are using AI to grow their intelligence and ultimately the entire business exponentially.

Now, we will come to the third step of the market research process that is collection of information. So, it consists of collection of the information. One of the biggest obstacles to collecting information is the need to achieve consistency. Now, let us look at how AI can help us in collecting information. Mechanical AI can automate data collection about the market, the environment, the firm, the competitor and the customers. So, all data about the situation analysis is collected using this mechanical AI. Thinking AI can then predict trends in data and Feeling AI can make emotional data accessible. Different tools of AI can make the collection of information more feasible, accessible, consistent and accurate. So, now you see that this lady, a lady is on all these kinds of Apps and the data is being generated and collected by the AI. For example, product usage and consumption experience can be visualized with the internet of things. Product usage and consumption experience as you can see from this picture. Various advanced technologies and analytics can capture unstructured marketing activity data. In cars, sensors can track driving behaviour for determining insurance premium. So, how good a driver you are will determine your insurance premium. The better the driver you are, the less will be the premium. And retail technologies such as heat maps, videos, surveillance, and beacons can be used for profiling and recognizing the retail shoppers. So, now the two important things that that were there in the old retail setup, landscape and it was missing in the new, new retailing, organized retailing was the profiling and recognizing of retail shoppers. Now, now it is possible to profile and recognize the retail shoppers.

Machine learning algorithms and lexicon-based text classification can be used to analyze various social media datasets. So, now, now you see that the sensor is tracking all this. How much time you were drowsy, yawning, eye closure, joy. Also, big data marketing analytics is now a mainstream approach for generating marketing insights. Emotional data about customer sentiments, feelings and preferences and attitudes can be collected using tools such as Affectiva by Ford. So, it is collecting all this information on their driving behavior. Data can also be obtained by AI from the shadows consumers leave behind when they engage in daily activities. As in the case of a shopper pursuing a store equipped with facial recognition technology or from an eye robot Roomba creating a map of the residential space. So, this is Roomba, and it is creating the map of your house. These examples show that given the repetitive routine but high-volume nature of marketing data, AI can collect data efficiently and at scale.

The fourth step in this process is analyzing that data. So, it consists of analyzing of that information. The next to last step in the process is to extract findings by tabulating the data and developing summary measures. So, now we will extract the findings, tabulating the data and then developing summary measures. The researchers now compute averages and measures of dispersion for the major variables and apply more advanced statistical

techniques and decision models in the hope of discovering additional findings. So, what we are doing is to use more advanced statistical techniques because now we have lots of data and the the objective is to discover additional findings about the customers, the markets, the competitors, etc. They may test different hypotheses and theories applying sensitivity analysis to test assumptions and the strength of the conclusion.

Now, let us look at how AI will help in information analysis. One is AI generates and converts key features into predictive variables. AI models and tools can help analyze the information available. AI tools are not yet widely adapted by marketers and customer experience managers and those that are available tend to indicate only positive or negative sentiments, and these may not be good enough for the marketer. For example, a company can use a customer focused framework to extract and map keywords representing the customer experience to the following dimensions. One is the resources that is knowledge, systems, products, skills. Another is activities, fixing, ordering, service delivery. Context or situation affects the experience. For example, weekends, interactions, calling and chatting. The fourth is the customer role. Example provides suggestions or neutral and at touch points. Then identify both customer emotions, joy, love, sadness, anger and surprise and cognitive responses, compliments, complaints and suggestions. Example in application of this is the customer give out 10 out of 10 in CSAT that is customer satisfaction score. However, they also offered the following comment. The only thing that was a bit disappointing with it is to do with repairs. It seems that every time they come out, it is over dollar 1000 in services. The fitter seems to be struggling with diagnosing the issues and it always seems to be more expensive. So, marketers can use linguistic based natural language processing approach to extract and map keywords in these comments. Now, repairs are associated with touch points. So, that is the first lesson. Fitters are mapped to resources, that is the second lesson. Diagnosing the issue is classified under activities. So, that is the third lesson. A bit disappointed is considered a sadness emotion, fourth lesson. And over 1000 struggling, more expensive are categorized under the complaints. So, these are the five lessons that can be learned from these five lines. What are the touch points? What are the resources? What are the activities, emotions and complaints? So, these are how all the whole of this paragraph was categorized into five.

AI can generate and convert key features into predictive variables that can train the model to predict whether customers are satisfied, neutral or have a complaint without using quantitative survey scores. AI algorithms can capture specialized vocabulary used by the customers and combine their views expressed in their own words with the traditional rating scales to obtain deep insights. These insights can directly shape both short term and long-term actions to retain customers.

The next step is to present the findings. So, at this stage the findings of the earlier four steps are to be presented. So, as the last step the researcher presents findings relevant to

the major marketing decisions facing the management. Researchers increasingly are being asked to play a more proactive consulting roles in translating data and information to insights and recommendations. So, this data and information are no longer needed. What are needed are insights and recommendations and these can be supplied with the use of AI.

The sixth step is to make the decision. So, it consists of making the decision. Thanks to humans for AI, it can be in real time now. So, this decision making can be in real time. Now let us look at the case of Hindustan Unilever and see how AI helps to predict trends and turnover. In a different era, Steve Jobs famously said figure out what customers are going to want before they do. So, this is what is the challenge. Figure out what customers are going to want before they do, and he revolutionized the tech market with innovative Apple products. Now in an AI universe an FMCG company is reading customers' mind and then after reading the customers mind, they are developing a product that they would want and manufacturing it without the need perhaps for factory trials. From picking up a signal on a developing trend to the inception of an idea to producing it Hindustan Unilever is using its agile innovation hub to bring goods state into the consumer's home. So, lots of activities in between have been reduced. According to HUL the new age technology is not only cutting down the duration of the manufacturing process but also helping in predicting the expected turnover from the product.

At HUL's head office in Mumbai its agile innovation hub pivots around the three axes the consumers, the customers, and the operations. The hub, the facilities of which are also accessible by all location in Unilever across its global markets is part of the company's reimagine HUL journey. It falls under the consumer ecosystem and is integrated into the company's business processes and category innovation program. Once consumer signals are picked up at the AI hub, they are quickly assessed for their merit in being converted into product ideas. So, they are then converted into product ideas in real time.

This AI led digital transformation is an enabler. The need has always been there, the approach has evolved and HUL realized that in today's world doing more of the same does not help. And therefore, HUL uses data technology automation and artificial intelligence to fast track this product journey. But there was one problem the data available at one's fingertip is enormous. HUL realized the need for sense making to cut through the noise. So, because of this enormous amount of data now they thought of how to cut the noise from this data. Their teams filter through the noise to stay on top of relevant data. They have created a pathway that links up the disjointed data sets to make sense. So, these disjointed data sets are integrated. They put an AI based analytical layer on top creating value added data that helps the team unlock the trends. This helps HUL in targeting the biggest opportunities before they become mainstream. HUL can predict the expected turnover of a specific product if they were to bring it to full fruition. They can map out the future opportunities 5 years down the line.

Through their interconnected network of next generation capabilities such as AI hubs and advanced manufacturing centers they have been successful in bringing down go to market time lead time by a third. In some cases, innovations hit the marketplace in a matter of weeks and months instead of years. So, now you see how much ahead they are of competition. For instance, fragrance selection time has been reduced to hours using an in-house robot assisted library with over 2000 fragrances. On the other hand, detail design and 3D printing are used for rapid prototyping and pack testing. So again, to hours from this robot assisted library.

Before beginning the process of producing these innovations augmented reality is used to visualize packs on retail shelves and in consumers' homes. So, this augmented reality is used to see how their packs will sit on the retail shelves and at the consumer's home. To gauge consumer responses HUL works with an in-house panel of sensory experts and thousands of consumers who are on speed dial across India. After the formulations are perfected, HUL's AMC, which is also located at the headquarters stimulates manufacturing processes at the companies' digital factories to rapidly scale up production without the need for actual factory trials. So, this the need for actual factory trials, it is eliminated. It is only the second such center for HUL work globally and the first focused on soap bars. The next part is scaling up the technology into something marketable. HUL sees the AMC as part of our labs of the future.

Once the scale up happens they pass them on to their nano and digital factories. This way the always on process keeps feeding into their virtuous cycle of innovation scale up and digital operations. Scaling up a product that forms a new gram in a laboratory beaker to a few kilos or tons in a factory can be complex. The ambition behind some of this digital and automation capability is how do we avoid factory trials all together. The purpose of doing that is to speed up the innovation process. So, the whole of the factory trials are eliminated. Because these factory trials are important for converting a few grams in the laboratory to kilos and tons in the factory.

What matters to consumers is whether the product meets their needs, delights them and is available at the right price point. HUL now experiments with more products at the same time. It has launched over 20 innovations and new launches including certain direct to consumer brands in the last year alone. Additionally, multiple claims, e-commerce compliances of its specs and key saving products all happened using AI hub capabilities in the past 12 months. Now, let us look at benefits of capturing marketing insights using AI.

The first is AI can show you what you are missing. Companies often misjudge what their customers really want and that obviously leads to failures. So, when you are not, when you do not know what your customer wants and then you keep on launching products then obviously the products will not sell. The touch points that customers really care

about may not be the ones that firm expect. Importantly, this AI driven qualitative approach can show you what you are missing and therefore how to fix it. So, the first important thing is that you will know what you are missing, what customers want and then you will also know how to how to do that, how to fix it. The second benefit is to determine root causes. To fix a problem, the company needs to understand it. When it comes to customer experience, companies can use AI produced insights to glean not only where there are problems but also what is causing them. So, this is the root cause analysis. What are the problems? What and why? The third is to train employees based on what is actually important to the customers. Understanding how customer work with firm allows company to build a customized training program to educate employees on how to empathize more with customers, care about their issues and to interact with them seamlessly.

The fourth benefit is to spot and prevent decreasing sales. Firms can segment customers based on their monetary value by using net promoter scores with customers emotional responses spotting decreasing sales. The fifth benefit is to capture customers' emotional and cognitive responses in real time. So, AI can capture how customers feel about the service through discrete emotions. Discrete emotions are joy, love, surprise, anger, sadness, and fear. And then, extract cognitive responses conceptualized through customers evaluations, complaints, compliments, and suggestions in real time. So, they can find discrete emotions and then extract cognitive responses and then which are conceptualized through customer evaluations. Evaluations can come in the form of complaints, compliments, and suggestions and all of them is happening in real time. It is important to capture real time feedback as emotional and cognitive responses can dissipate over time and details of the interaction are likely to be forgotten. So, that is why it is important to capture them in real time. AI analysis allows firm to rethink their current customer experience measurement program.

The sixth is to prioritize actions to improve customer experience. Customer experience is now the major differentiation between competitors. So, that has become a competitive advantage. As many customers today use smart real time services and friendly apps, firms can increasingly gather more real time verbatim data about customer journeys instead of relying on simplified single metric ways of measuring customer experience. Combining these insights from different customer comments with analysis of customer transactions and other sources can provide companies with a bespoke 360-degree view of the customer experience.

So, it is not a one-sided view, one- or two-sided view. It is 360 degrees. Companies can see in real time how particular areas are performing, drill down and intervene on any emerging issues. The analysis also gives employees a view across the entire journey, enabling employees across the organizations to have the same view of the customer. So,

if a problem arises, all frontline employees are able to see what has happened and act accordingly. Now, the problem is that in companies, customers may be interacting with different people. So, here is employee 1, here is employee 2, here is employee 3 and these three do not know each other and what they have said to the customers. Now, with this, all frontline employees are able to see what has happened and act accordingly and in a unified way.

Finally, firms can use the insights generated from AI to diagnose the underlying factors causing pain for the customers and then prioritize which root causes need attention, which are to be eliminated first and which are to be eliminated later on. This enables managers to stop doing certain actions, start doing new actions and continue doing actions. So, what actions are to be stopped? So, that complaints are reduced. New actions that are incorporating the suggestions and then you continue to do good things, take the right actions and increase the compliments.

Now, what are the new challenges for market researchers? Some market researchers tend to view the automation trend very critically. They are rightly proud of the traditional methods which have been undergoing improvement for decades and are based on the wealth of experience from the entire sector. The concern that automation means compromising on quality is not unreasonable. If artificial intelligence cuts out humans from market research, will not a lot fall by the wayside? Not necessarily because there is little probability that AI will carry out market research without man in the future. Only humans can really consider all contexts such as emotions, culture influences the small yet significant differences. Here, artificial intelligence clearly reaches its limit. When selecting the data collected and interpreted, it in a target-oriented way, man will continue to play a decisive role. So, while the automatic analysis of data recognizes the behavioral patterns and characteristics due to the wealth of information, it is the task of modern market research to reason these behaviors from customer attitudes and opinions. So, now man is supposed to understand consumer's attitude and opinion and see why the consumer is behaving in that way.

This certainly confronts market researchers with new challenges. Automated processes cannot be applied without planning and testing. User friendly applications that facilitate use are on the rise. With them, valuable time and money can be saved to focus on the essentials. Asking the right questions leads to understanding the customer better, thus enabling even better strategic decisions. Therefore, it is a complex field which is by no means satisfied by using a machine instead of a man. Machine learning can however support good and creative research designs. In traditional market research, questions have always been tackled with the specific hypothesis. So, these initial ideas are also considered in evaluation and interpretation of the data. Thereby, sites can be lost of the useful result one would not have expected in the beginning. Machines, on the contrary

have no prejudice and draw conclusions without the biases. They can actually evaluate a wide variety of information and recognize unexpected events.

This is where market researchers come in and can creatively continue working with the additional findings, plan new strategies and refine the design of their studies. Used correctly, machine learning eases the workload of market researchers. So, they stay focused on the broader picture. Programming itself must be intelligent too. For example, causal analysis cannot be standardized fully. It must be drawn up, interpreted and maintained individually for each problem. Just like other AI systems, only to a high degree truly intelligent humans are required. Somebody who knows what the causal model represents in terms of the content, what the data means and how it was measured. If data is simply analyzed without knowing what it means, how it was collected and how the data was analyzed, then obviously the result will be the wrong interpretation. In summary, it can be said that true intelligence develops through the simultaneous and holistic knowledge of facts and analysis methods.

Now, let us try to understand this question that will AI replace jobs in market research. AI technology undoubtedly offers tremendous advancements and capabilities in the field of research. This raises the age-old technology question, will machines replace people? My argument is that it is unlikely to replace researchers but rather improve them. While AI excels at processing vast amounts of data, identifying patterns and providing insights, human researchers bring critical elements to the table that machines cannot replicate easily. Researchers possess domain expertise, critical thinking skills and the ability to contextualize and interpret complex data beyond what AI algorithms can achieve. They formulate research questions, design studies, make ethical judgments and apply creative problem-solving skills. Ultimately, the synergy between human researchers and AI technology will be the key, with researchers leveraging AI as a powerful tool to enhance their ability, validate findings and generate novel research ideas.

The bottom line is that artificial intelligence is a friend of research. Artificial intelligence is ushering in a new era of market research in several ways including automating data collection and analysis that is one, enabling predictive analytics, automating market segmentation, providing augmented customer insights, making informed decisions, based on rich insights derived from massive data sets with precision and efficiency. So, that is the key.

As artificial intelligence evolves, market researchers must embrace their transformative technology responsibly, ensuring ethical data practices and maintaining transparencies in their methodologies. With AI as a steadfast ally, market researchers are poised to gain in how we understand, engage with, and cater to the needs of the consumers.

Now, let us look at the ethical considerations of AI market research. As AI becomes more prevalent in market research, it is essential to address ethical considerations. Ensuring data privacy, transparency or fairness in algorithm decision making are the critical concerns. Market Researchers must use AI responsibly and adhere to ethical guidelines to build trust with the consumer and maintain the integrity of their research. In the future, AI advancements in market research are expected to focus on areas such as natural language generation, real-time data analysis and automated report generation enabling more efficient and insightful research processes.

To conclude in this module, we have understood how AI helps to collect and analyze information. Further, we have discussed the benefits of using AI in marketing research. We have also discussed the case of Hindustan Unilever Limited, in which we understood how AI helps to predict trends and turnover. We have discussed what are the new challenges for market researchers. Moreover, we have discussed that AI is unlikely to replace jobs in market research but rather improve them. Lastly, we have discussed the ethical consideration of market research. And these are the 5 books from which the material for this module was taken. Thank you.