AI in Product Management

Prof. Zillur Rahman
Department of Management Studies
Indian Institute of Technology, Roorkee

Lecture - 19

AI Driven Customer Journey Mapping

Welcome to this NPTEL online certification course on Artificial Intelligence in Product Management. Now we are talking about module 19, which is on AI-driven customer journey mapping. So, this is what we are talking about. This is the last module in part 4, which is on category management and customer analysis using AI. So, to give an overview of this module, we will start with an introduction to AI-driven customer journey mapping.

Then we will discuss the application of AI across the customer journey. We will explain the various AI tools for customer journey mapping and understand the future of AI in customer journey mapping. So now let us start with the introduction to AI-driven customer journey mapping. Artificial intelligence-based apps increase functionality, and marketers have found that retail performance is subsequently improved. That leverage reinforces the customer experience.

Businesses' widespread application of AI is seen as necessary for determining the direction of doing business in the emerging technology era. AI can bridge the gap between business and the prospective client's needs. It can provide information and prompt a grievance redressal system. Hence, it is essential to understand the role of incorporating AI in the customer journey to better understand emerging markets. With multifaceted AI techniques, marketers can interact with the customer.

Apple uses Siri, a chatbot that helps iPhone users answer their voice queries and perform actions without typing instructions on their smartphones. AI speeds up the precision and effectiveness of human efforts with its powered technology, such as the Internet of Things, augmented reality, virtual reality, mixed reality, virtual assistants, and chatbots. MR or mixed reality combines real and virtual worlds to produce a new visual environment in emerging markets, where physical and digital elements coexist and interact in real time. Using augmented reality, it is possible to virtually experience products before going into the hassle of buying them in actuality. Thus, AI tools are helping emerging markets grow better. Microsoft has been offering a HoloLens device, a smart glasses headset showing

how the future looks without screens and hardware. The toy brand Lego offers AI functions for its products.

Its customers can set castles on fire virtually or play with virtual figures, thus improving their gaming experience in emerging markets. AI is capable of leveraging feeling and thinking without a human interface. Independently, AI can make and update smart choices propelled by self-improving algorithms. AI can address target markets and provide marketing managers with a combination of strategies to induce customers to make purchases.

For instance, AI can help marketing managers understand when and why a specific discount voucher is available to consumers. Increasing marketing efforts afford security in the determined market segments. The customer journey is the complete sum of experiences that a customer goes through when interacting with the brand. So, the customer journey focuses on customer cognitive, behavioral, emotional, and social responses to offerings during the entire purchase cycle. Marketers and organizations can use big data analytics and AI systems to collect consumer data from many sources and deliver important insights to support marketing decision-making.

Specifically, several areas of application are identified and further described. Now, we will start with understanding AI-driven customer journey mapping. So, we will start with customer profiling. Marketers can use big data and AI to support customer profiling. Customer profiling is possible due to the enormous availability of data that individuals voluntarily and involuntarily leave in almost all their online actions.

Due to advances in information and communication technologies, Consumers are capable of connecting with three components. People, other consumers, firm representatives, objects, and their physical environment. This framework, called POP, allows marketers to create customer profiles by aggregating and synthesizing very heterogeneous data coming from different sources, such as environmental sensors, smartphones, and wearables. Processing of the massive records

of user online activity coming from search engine website visits and display advertising enables the identification of the consumer behavioral profile. Unlike traditional retailers, pure-click companies such as Google, Facebook, eBay, PayPal, and Amazon have at their disposal specific apps that help them profile their customers and use data-driven marketing for decision-making. Next comes promotion strategies. The information obtained from customer profiling can be used to support sales promotion and other promotions in order

to reach potential customers. The adoption of micro-targeting techniques based on an ML-based click-through rate model to program display advertising campaigns can be used.

The information retrieved from the web. Processed through a specific algorithm, it is useful to configure the parameters of the campaign, such as age, time, browser, operating system, and device type. In this way, advertisers can increase the performance of online publicity, leading to more conversions by selecting a very specific audience. Next comes demand forecasting. Companies can utilize AI to forecast the sales of products and The information obtained from the analysis of online reviews, sentiments, customer questions and answers, and online promotional variables such as free delivery and price discount offerings can be used for developing models capable of predicting product sales online. Other information concerning demand forecasting can be obtained from the analysis of web traffic volume data. In the tourism sector, it is possible to predict the demand for hotel rooms at a destination

and potentially even local businesses' future revenue and performance by analyzing web traffic data. Huge amounts of data from consumers can also be collected through mobile apps. Data represents a powerful new source of value because companies can use it to predict consumer product demands and to build a deep understanding of customer needs and wants, as well as how products are used. New Product Development: Big data can support The product development process. Generally, product development (PD) is a very long and delicate process that requires as much information as possible on the target market's shopping preferences.

One of the main risks for companies belonging to sectors with a high rate of innovation is the long time it takes to develop a new product. The use of big data analytic tools offers the opportunity to reduce the PD time by 20 to 50% because it allows marketing managers to collect insights about customer needs and expectations, as well as competitors' new designs and key product features. By adopting big data analytic tools, firms can determine if a new product will become successful. For example, Netflix examined vast quantities of real-time data produced by its users to predict if a pilot

Will become a successful new show. To understand consumer preferences regarding the different features and configurations of a new product, the most commonly used method is Conjoint Analysis. However, the results obtained from this method sometimes do not provide clear indications. Today, we have a novel choice-based Conjoint Approach based

on Support Vector Machines, which is a branch of AI. This novel approach has superior predictive performance and computational efficiency.

Additionally, the method can be further extended to deal with clusters of consumers instead of a unimodal representation of preference heterogeneity. Next is the pricing strategy. Big data analytic techniques can be adopted to optimize the pricing strategies of specific products that are influenced by periods, trends, and fashions. For example, in the digital music market, It is possible to determine own and cross-price elasticities for songs and albums.

AI is powerful enough to inform decisions such as: Will person A like product B, and will consumer X purchase car Y at price Z? Using the automatic algorithm, It is possible to perform operations such as dynamic pricing, namely a pricing strategy in which companies adjust the prices of products or services in real time based on current market demand. The model for calculating the price would be difficult for a human being, but with the help of AI, this task can be automated and completed very quickly. The distribution choices AI approach can be adopted to analyze the competitiveness and profitability of specific distribution channels. For example, a franchise decision support system capable of collecting data from the external environment can help the franchisor in formulating marketing strategies.

Next comes AI-driven customer journey mapping, that is, customer service. Big data analytics can help firms understand how to serve customers better, specifically from a service delivery point of view. Big data analytics can help frontline employees interact with customers. Services are complex to define because they have many dimensions and differ from each other. For example, some services require low interaction and low customization, while others

are instead based on the customer's active involvement. Companies can utilize intelligent conversational bots to facilitate interaction with consumers on corporate or e-commerce websites. That is an implementation of artificial intelligence in the form of software or applications that users can interact with by having conversations. Such a tool can act as a salesperson to help companies advertise their products. Furthermore, consumers can pose simple questions to the bot to gain specific information.

Consumer Behavior Analysis: An examination of what is being said online can help marketers identify warning signs of consumer dissatisfaction, such as negative word of mouth. or complaints about the product, the services, or the brand in general. Furthermore,

text mining and other emerging technologies, such as automated sentiment analysis, offer the possibility to measure customer satisfaction, that is, loyalty and commitment. Linguistic-based text mining models can be used to capture details about customer experience that take into consideration the customer's perspective, such as emotions: joy, love, surprise, anger, sadness, fear, and cognitive responses to the different touchpoints that occur during the purchase decision journey, for example, complaints, compliments, and suggestions. Customer Relationship Management: The online context creates challenges and opportunities for customer relationship management, for example, e-commerce AI technologies like chatbots, avatars, and virtual assistants, and big data analytics used for generating enhanced customer insights that can be used to personalize products and services.

Constitute an important building block for online relationships. Brand analysis. Brand managers and marketers can adopt intelligent systems based on fuzzy logic and areas of AI for modeling and evaluating branding strategies. For example, Identimod is a decision support system appropriate for analyzing the intangible variables related to brands, such as brand loyalty and brand awareness. Perceived quality, brand associations, and other proprietary assets.

By inputting all available linguistic or numerical data into the system, Identimod can simulate different scenarios and support marketing decision-making. For example, this technology can help brand managers make important decisions, such as keeping the current brand image, rebranding the company, restyling the current brand, or reducing the size of the brand portfolio, etc. Now we will look at various AI-driven customer journey tools. One such tool is chatbots.

Chatbots embedded with AI can automatically extract customer experiences by engaging in narrative conversations with customers using pre-programmed algorithms. Trust in chatbots depends on many characteristics, such as competence, credibility, and informativeness. Chatbots solve customers' problems in real-time and assist them in purchasing processes. Chatbot marketing efforts

Directly impacts the quality of customer communication based on the interaction, entertainment, informativeness, accessibility, and customization, and has an indirect impact on brand relationships with customer responses. Toy manufacturer Lego's chatbot Ralph allows customers to choose the right gift with the gift bot. It provides personalized gift recommendations to users within the messenger. It gives gift recommendations based

on how a user answers questions within the bot. For example, it asks questions like location, budget, themes, adventure, travel, and the age of the person for whom you are buying the gift.

As users find the product they like, the link automatically adds the product to Lego's website shopping cart to make the purchase. Another tool is VoiceBot. Customer trust is an essential aspect to be considered by marketers in general in online shopping. The global e-commerce site Amazon understands this fact very well. Amazon has managed to acquire its customer base by creating customer trust in online shopping, offering services mediated through in-home voice assistants linked to the distribution system.

Chatbots and AI-based automation are changing the face of customer interaction in the 21st century. Creating new and innovative ways to chat and talk with your customers. According to predictions from Gartner, chatbots will become the primary customer service channels for roughly a quarter of organizations by 2027. A recent Gartner survey also found that 54% of respondents are already using some form of chatbots, virtual customer assistants, or other conversational AI platforms for customer-facing applications. There are multiple ways that these voice AI benefits can be used throughout the customer journey.

An AI assistant is a Swiss Army knife for customer support, with the custom tools needed to tackle whatever tasks are most urgent for the business. It is this ability to flex and scale to the needs of businesses that makes VCAs and conversational AI a bonus for an ambitious, customer-focused business. There will be multiple points along the customer journey where AI can lend a hand, whether it is winning customers, bringing those clients on board, or chasing up lapsed customers. So this is what your AI voice assistant can do. Help in onboarding: get customers up to speed by providing training and onboarding support. Next is support: handle basic customer issues and redirect complex queries to your team. Service: remind them about upcoming payments or offers. Convert: pass users onto your preferred payment platform for renewals. Connect: provide customers with additional information.

Answers, FAQs, etc. Promote: offer discounts or premium access to make your customers feel valued. And survey: ask for feedback to understand customers' perception of your brand and offerings. So these are just a few of the many ways that a voice AI can enhance your customer journey, but it is certainly not an exhaustive list. Your AI assistant can be programmed to deal with new tasks as and when they arise.

Whatever touchpoints on the customer journey are your focus, your AI can be customized to provide support, helping you future-proof your business. Next comes the recommender system. The recommender system, or RS of AI, portrays the mind preferences of the customers. The recommender system (RS) of AI means portraying the mind to preference of the customers. It has been used in many applications like social networking sites, movie recommendations, query log mining, and news recommendations, etc. YouTube's video recommendation system recommends a personalized set of videos to users based on their activity, like Netflix's 'Recommended for You' program. AI uses recorded data patterns to apply in new situations. Collaborative filtering is the most popular recommender system design approach among the recommendation methods' taxonomy.

The principle behind AI's success lies in providing personalized product recommendations. Under CF, when users interact, one user's interest is linked to another user's, say, a customer. For example, if Mr. A likes Lay's and Mr. B likes Lay's and Cheetos, Mr. A might also prefer Cheetos. That will be shown in the recommendation. The recommendation focuses on products with similar attributes in a content-based recommender system, relying on the product characteristics rather than other users familiar with the product before making a recommendation.

Using artificial intelligence, online retailers can analyze massive amounts of data to understand consumer behavior and preferences. This allows them to tailor the consumer shopping journey by recommending products that are likely to catch their eye and suit their taste. AI-powered recommender systems can consider a wide range of factors, including 1. Purchase history. What products have you bought in the past?

What categories do you frequent? 2. Browsing history. What products have you looked at? Even if you don't buy them.

Search queries: what keywords have you used to search for the products? And product ratings: how do you rate products you have purchased or viewed? Social media: what products do your friends and followers like and share? Demographics: what are your age, location, and other demographic characteristics? By combining these factors, AI-powered recommendation systems can create a personalized shopping experience that is tailored to consumers' unique preferences.

Next comes virtual reality. Marketers seek novel ways to design favorable customer perceptions and attitudes towards a brand. VR offers interactive encounters and helps

customers engage with brands. Using a headset and placing the user in another dimension leads them into a real-life experience, even when shutting out VR. VR as a brand interface

aims to optimize strategic customer outcomes and benefits in social interactions instead of static screen options. VR provides a 360-degree view. In the real estate industry, VR is employed rather than static photos. Clients can have an interactive 360-degree view, which is associated with a better visiting experience and creates a positive attitude towards the brand. In Figure 19.2, we depict a framework that outlines the unfolding of the customer experience through the pre-

Intra and post-VR interaction stages of the customer journey. This is Figure 19.2: Virtual Reality through the Customer Journey. So, here we have VR Archetype, Format, and Contents. It is Perceived VR Usefulness, Perceived Use of VR, and VR Readiness. Then we have Meaning-Making Motives, VR Engagement, and Brand Quality Relationships.

Making Motives include Understanding Motives, that is Comprehending, Being Informed, Learning, Experience motives, being entertained, aspirational, control, active motive, initiating, participating, learning, socializing motive, relational association, and all these are called pre-VR experience. Then we come to VR engagement. Cognitive engagement, emotional engagement, behavioral engagement, and social engagement, this is called intra-VR experience. And that leads to brand relationship quality, brand partner quality, commitment, self-connection, intimacy, and love and passion.

And that becomes post-VR experience, and this is the customer journey. The virtual reality through the customer journey framework identifies consumers' VR readiness as a key driver of their VR-based interactivity, which is shaped by the technology acceptance model's perceived VR usefulness and ease of use. In addition, consumers' meaning-making motives appear as co-drivers in the customer journey's pre-VR experience stage, which in turn incites consumer engagement at the intra-VR experience stage. On completing their VR interactions, users enter the post-VR interaction stage of their journey, where these interactions shape consumer-perceived brand relationship quality. The temporarily tied journey perspective thus comprises consumers' pre-VR interaction drivers with effective engagement at their journey's intra-VR stage.

Subsequently, engagement affects post-VR interaction brand relationship quality. Next comes AR interactions. AR or augmented reality marketing is defined as the strategic integration of AR experiences alone or in combination with other media or brand-related cues to achieve overarching marketing goals by creating value for the brand, its

stakeholders, and society at large. While considering Ethical implications along the customer journey, consumers are exposed to different touchpoints that determine the customer experience across pre-purchase, purchase, and post-purchase stages.

Augmented reality marketing is a promising approach for brands, companies, NGOs, destinations, etc. to interact with their target audiences, customers, internal stakeholders, and the public, etc. One way to understand the target audience is to study their journey and identify strategies for managing touchpoints. Touchpoints can be anything people associate with a brand, and marketers often classify them as either physical, for example, newspaper ads, or digital, for example, social media content. Augmented reality touchpoints are different.

They can be specified as hybrid since virtual content is merged with physical objects through digital technologies, such as smartphones, AR smart glasses, or stationary setups. Figure 19.3 depicts AR's roles in the customer journey. Now, this is Figure 19.3. Here, we have on the left-hand side AR's application in the customer journey.

Then we have the objective of AR, the potential role of AR, and illustrative themes. Next, we move on to the prior-to-purchase needs, wants recognition, and consideration. Point of purchase evaluation, purchase decision, and post-purchase. So, first, we have it provides potential benefits to customers in product searches and subsequent consideration sets. Then, in this stage, it provides the ability for consumers to visualize product combinations in a playful and engaging way.

And here, it enhances customer post-purchase evaluation by facilitating virtual trials. The objective of AR allows customers to discover, be inspired, and curate product choices and combinations. At the point of purchase, it is the balance of utility agents that see products and hedonic playfulness elements at the point of purchase. And at post-purchase, it facilitates the consumer's confidence beyond purchases. The third is the potential role of AI, which is identified themes.

Widens product consideration, narrows the choice set, and mitigates the value of the brand. At the point of purchase, AR's roles in curation drive hedonic value through playfulness, and at post-purchase, the consumer enjoys confidence and amplification of cognitive dissonance. The illustrative example at the prior-to-purchase stage is the iconic visualized way by Parker trial and try-on. At the point of purchase, it is maybe the line virtual makeover, IKEA place. And at post-purchase, the gap dressing room, etc.

So, now we will talk about the future of AI in customer journey mapping. So, it starts with enhanced personalization. AI's ability to analyze vast amounts of data allows businesses to create highly personalized experiences throughout the customer journey. By leveraging ML algorithms, companies can tailor recommendations, marketing messages, recommendations, marketing messages, and product offerings based on individual preferences and behavior.

This level of personalization ensures that customers feel understood and valued at every touchpoint, from initial awareness to post-purchase follow-ups. As AI continues to evolve, the potential for hyper-personalization will also increase, enabling brands to anticipate customer needs in real-time and deliver relevant content. that resonates with their audience. The next is predictive analytics. The future of customer journey mapping will heavily rely on predictive analytics powered by AI.

Unlike traditional methods that often depend on historical data and predefined rules, AI-driven predictive models can identify hidden correlations and trends in real-time. This capability allows businesses to forecast future customer behavior more accurately, enabling proactive engagement strategies. For instance, AI can predict when a customer is likely to abandon a cart or require assistance, allowing businesses to intervene with targeted offers or support before a potential loss occurs. Dynamic journey mapping AI facilitates dynamic journey mapping where customer journeys are continuously updated based on new data and interactions.

This real-time analysis enables organizations to adapt their strategies quickly, ensuring that the customer experience remains relevant and engaging. By automating the journey mapping process, companies can identify patterns across various touchpoints and adjust their content delivery accordingly. This agility not only enhances customer satisfaction but also optimizes conversion rates by aligning marketing efforts with actual consumer behavior. Next comes the automation of touchpoints.

By automating repetitive tasks such as data collection and analysis, businesses can free up valuable resources to focus on strategy and innovation. AI can also streamline communication across various channels, ensuring that customers receive timely responses and personalized recommendations and interactions. For example, AI-powered chatbots can handle customer inquiries in real-time, providing instant support while gathering insights that inform future interactions. How to address the challenges?

While the benefits of integrating AI into customer journey mapping are significant, organizations must also navigate challenges such as data privacy concerns and the complexity of implementation. Ensuring compliance with regulations like GDPR, while leveraging customer data for personalization, requires careful planning and transparency. Businesses must prioritize ethical data practices to build trust with their customers as they adopt these advanced technologies. So, to conclude this module, we have discussed the concept of AI-driven customer journey.

We have learned about the application of AI across the customer journey. Then, we have understood the various AI tools for customer journey mapping. And learned about the future of AI in customer journey mapping. These are some of the sources from which the material for this module was taken. Thank you.