

AI in Product Management
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Lecture- 5
AI-Powered Market Research

Thank you. Welcome to this NPTEL online certification course on artificial intelligence in product management. Now, we will talk about the fifth module, which is AI-powered market research. So, as you can see from this slide, we are now talking about part two, which is market research using AI, and this is the fifth module.

To give an overview of this module, we will explore how to effectively integrate AI into market research to enhance product management. Then, we will discover how to leverage AI for more efficient data collection, uncover customer insights, achieve precise market segmentation, conduct thorough competitive analysis, and develop optimized product strategies. In this module, we will also explore how AI-powered market research can be applied to product management using Starbucks as a case study. So, to introduce, market research is an essential element of product management. It provides the insights necessary for informed decision-making throughout the product lifecycle.

It encompasses a systematic approach to gathering, analyzing, and interpreting data related to market needs, customer preferences, and competitive dynamics. So, this is the role of market research in product management. First is to identify customer needs. Second is to assess market opportunities. Third is to analyze competitors. Fourth is data-driven decision-making, influencing product strategy, guiding product development, and seventh is supporting product launch. Now, let us look at the introduction to AI in market research. AI has revolutionized market research by automating data collection, analysis, and interpretation. It allows companies to analyze vast datasets quickly and accurately, uncovering insights that inform strategic decisions.

Industries such as healthcare, finance, and retail are increasingly leveraging AI to enhance customer engagement and optimize marketing campaigns. The integration of AI technologies enables businesses to gain a competitive edge. Through improved accuracy and cost-effectiveness in their research efforts. Now, we will look at AI technologies that are transforming marketing research. The first such technology is machine learning.

Algorithms analyze data patterns to predict future trends, enhancing the ability to tailor marketing strategies effectively. The next is natural language processing. This technology enables sentiment analysis and understanding of consumer feedback from various sources. Providing deeper insights into customer perceptions. Now, further slides will delve into the utilization of artificial intelligence in understanding customer behavior, market segmentation, competitive analysis, and AI-powered product development, and more.

Now, we will talk about the applications of AI in market research. The first of these applications is sentiment analysis. AI-powered sentiment analysis enables market researchers to analyze the emotions, opinions, and attitudes expressed in large volumes of text data, such as social media posts, customer reviews, and survey responses. Natural language processing algorithms categorize the sentiments as positive, negative, or neutral. Providing valuable insights into customer perceptions and preferences. For example, cosmetic businesses can use AI in market research to quickly analyze thousands of social media posts to gauge customer sentiment toward their latest product launches, allowing them to make informed marketing decisions and improve their products. The next is predictive analytics.

AI algorithms can analyze historical data, identify patterns, and make predictions. about future market trends and customer behavior. Predictive analytics helps market researchers forecast demand, optimize pricing strategies, and make informed decisions about product development, marketing campaigns, and inventory management. For example, e-commerce retailers can analyze historical customer data market trends, etc. to accurately forecast future demand for products and optimize marketing campaigns. Now let us see how AI can help in consumer segmentation.

AI-driven market research clustering algorithms group customers into distinct segments based on similarities in their demographics, behavior, and preferences. Market researchers can then tailor marketing strategies and messages to each segment, improving campaign effectiveness and enhancing customer targeting efforts. For example, fashion brands can analyze diverse datasets to identify distinct customer segments based on demographics, behavior, and preferences, enabling them to tailor marketing strategies and create personalized experiences. The next is image and video analysis.

With the rise of visual content on social media and other platforms, AI-powered image and video analysis tools have become invaluable for market researchers. These tools can

automatically analyze and categorize visual content, detect brand logos, and recognize objects, scenes, and emotions depicted in images or videos. Thereby providing deeper insights into how customers interact with visual media. For example, a travel agency can automatically analyze user-generated content to identify popular destinations, detect visual trends, and gain insights into market preferences, enabling them to create targeted marketing campaigns with captivating visuals. The next application is in voice and speech analysis.

Voice and speech-enabled AI marketing research tools allows market researchers to analyze and extract valuable insights from recorded phone calls, customer support, interactions, and voice-based survey responses. Natural language processing algorithms transcribes and analyze the audio data, identifying key topics, sentiments, and customer satisfaction levels, enabling businesses to improve customer service and identify the issues for example telecom companies can analyze customers call recordings to identify key topics sentiments and satisfaction levels enabling them to enhance overall customer experience then there are social media listening tools ai powered social media listening tools monitor and analyze conversations on various social media platforms in real time. These two tools can identify trending topics, monitor brand mentions, track sentiments, and provide valuable insights into consumer preferences, behavior, and emerging market trends.

For example, beverage companies like Coca-Cola use AI in market research to monitor real-time conversations across various social media platforms to track brand mentions and make data-driven marketing decisions and engage with their audience effectively. The next application of AI in marketing research is the use of chatbots and virtual assistants. AI-driven chatbots and virtual assistants are increasingly used in market research to engage with customers, collect data, and provide personalized recommendations. Used by 80% of marketers already, these conversational chatbots can conduct surveys, answer consumer

and capture valuable insights from interactions, enabling organizations to gather data at scale and improve customer engagement. For example, e-commerce platforms can use chatbots to make personalized product recommendations, offer 24x7 support, and enhance customer engagement, which drives sales and improves overall customer satisfaction the next application is in consumer journey analysis ai algorithms can analyze multiple touch points and interactions throughout the customer journey to identify critical moments pain points and areas of opportunities by understanding the customer journey in

detail market researchers can optimize marketing strategies improve customer experience, and drive customer loyalty. For example, a retail brand can analyze various touchpoints and interactions across multiple channels to identify key moments in the customer journey and optimize its marketing strategy to not miss out on conversations.

The next application of AI in market research is in the area of demand forecasting. AI-based demand forecasting models leverage historical sales data, market trends, external factors, and even patterns to predict future demand for products or services. Accurate forecasting helps organizations optimize inventory levels, production planning, resource allocation, and reduce costs. It also helps boost the customer experience by reducing delivery times and ensuring there is always stock for popular items.

For example, a consumer electronics company can use it to balance the demand for products based on historical sales data, market trends, and external factors like chip shortages. This allows them to optimize warehousing and supply chain costs while maintaining suitable inventory levels. Then comes concept testing and product innovation. AI-powered concept testing tools enable market researchers to test and analyze and evaluate new product concepts or features before the launch of the product.

Through advanced algorithms, consumer feedback, and predictive analytics, these tools help assess market acceptance, identify potential improvements, and guide product innovation strategies. For example, tech startups can gather consumer feedback, analyze preferences, and predict market acceptance of a new product concept to guide their product development. Now, let us talk about how AI can enhance market research. AI can significantly streamline and enhance the market research process through various applications. By integrating AI into market research processes, organizations can enhance efficiency, accuracy, and the depth of insights.

ultimately leading to more informed product management decisions. This strategic use of AI not only saves time but also allows for a more agile response to changing market dynamics. The data collection and analysis, so there can be automated surveys. Tools like Survey Sparrow allows for the creation of AI-driven surveys that can gather data efficiently. Web scraping, tools like Browse AI automate data extractions from websites.

for competitive analysis. Sentiment Analysis AI tools such as Insight7 can analyze qualitative data from interviews or social media to extract sentiments and themes, provide deeper insights into customer opinion. Predictive Analytics AI algorithms can analyze historical data to identify trends and predict future market shifts. helping businesses stay

ahead of the competitors. Competitive intelligence platforms like Crayon provides real-time insights into competitor activity, aiding in strategic decision making.

Natural language processing tools like ChatGPT facilitate conversational analytics, enabling researchers to generate insights from unstructured data sources, such as interviews or focus groups. Then we will talk about data collection using AI. Integrating AI into data collection can significantly enhance the efficiency and effectiveness of gathering information for various applications. by employing these ai driven strategies organizations can streamline their data collection processes improve the quality of their data sets and ultimately enhance the performance of their ai applications here are some key strategies and methods the first is web scrapping ai driven web scrapping tools automate the extraction of data from websites allowing organizations to gather large data sets quickly and accurately.

So these tools can filter out irrelevant information, focusing on pertinent data points. The next comes surveys and crowdsourcing. AI can optimize survey design and distribution, making it easier to gather insights from diverse populations. Crowdsourcing platforms can also be utilized to collect data, From a broad audience, although care must be taken with sensitive information.

Then there are application programming interfaces that is APIs. Leveraging the APIs allows for the automated collection of data from various online services and databases. This method is efficient for integrating real-time data into applications. The next comes sensor networks. For industries like agriculture or logistics, sensor networks can collect real-time data on environmental conditions or assets location, which AI can analyze for actionable insights.

Automated data labelings. AI can enhance the accuracy and efficiency of data labeling, a critical step in preparing datasets for machine learning models. Techniques like active learning prioritize which data points need human annotation, reducing workloads while improving quality. Data augmentation When existing datasets are insufficient, AI techniques can generate synthetic data to expand datasets. ensuring diversity and robustness in training AI models.

Natural language processing tools that utilize NLP can extract insights from unstructured data sources such as customer feedback or social media posts, providing valuable qualitative insights. Next, we will see how to conduct competitive analysis using AI. AI in competitive analysis refers to the use of artificial intelligence and machine learning

techniques to gather, process, and analyze data related to competitors, market trends, and consumer behavior. By leveraging AI, businesses can automate the collection of vast amounts of data from various sources such as social media, websites, and market reports.

We will discuss some of its key features in the next slide. So the key feature, the first is automated data collection. AI tools can continuously collect data from various sources, including social media, websites, and news articles, providing up-to-date insights into competitor activity. This process not only saves time but also enhances the accuracy of insights, allowing marketers to make informed decisions.

Enhanced insights: AI processes large datasets to identify trends, consumer sentiments, and competitor strategies, enabling businesses to make informed decisions. Some of its benefits are, first, improved accuracy in understanding market dynamics. Second, faster response times to competitive actions. The next is product analysis. AI tools assess competitors' product features, pricing models, and customer feedback to pinpoint strengths and weaknesses.

By also analyzing competitors' marketing campaigns and sales strategies, businesses can effectively benchmark their own performance. This analysis enables organizations to refine their product offerings and optimize marketing strategies by leveraging deep insights into competitors' strengths, gaps, and market positioning. Next comes market trend monitoring. AI technologies enable continuous tracking of market trends by analyzing data from various channels. This includes monitoring social media discussions, customer feedback, and industry reports.

By utilizing platforms like Brandwatch, Crayon, Aylien, Exploding Topics, IBM Watson, and YouScan, companies can enhance their strategic decision-making processes and adapt quickly to evolving market conditions. Next comes forecasting capabilities. Predictive analytics powered by machine learning algorithms can forecast future market conditions based on historical data and current trends.

This allows businesses to anticipate changes in consumer behavior and adjust strategies accordingly. Real-time insights can help organizations adapt quickly to market shifts, ensuring they remain competitive. Now we will look at how AI-driven customer behavior and market segmentation work. AI in Customer Profiling and Behavior Prediction
Definition: Customer profiling involves creating detailed descriptions of different customer segments based on their behavior, preferences, and demographics.

AI applications and AI models analyze historical data to predict future behavior, such as purchase intent or likelihood to churn. The benefits are enhanced customer profiling, which leads to improved targeting, increased customer loyalty, and more effective marketing campaigns. Next, we will talk about using machine learning for market segmentation. Definition: Market segmentation is the process of dividing a broad consumer or business market into subgroups based on shared characteristics. Here, we can use machine learning techniques.

Algorithms like K-means clustering and decision trees are used to analyze large datasets and identify distinct customer segments. These techniques can uncover hidden patterns that traditional methods might miss. The benefit of doing this is that by segmenting customers more accurately, businesses can create tailored marketing strategies that resonate with specific groups, improving engagement and conversion rates. Next comes personalization at scale using AI. By targeting the right customer segment, AI enables dynamic content generation and product recommendations based on

individual consumer behavior. For example, e-commerce platforms use AI to analyze browsing history and previous purchases to suggest relevant products. Predictive models forecast customer behavior by analyzing data such as purchase frequency, product preferences, and cross-selling opportunities. This allows businesses to engage customers with personalized offers at the right time. Next, we will look at AI-powered product development insights. Leveraging AI to identify product opportunities and gaps. The first is market analysis.

AI tools analyze vast data sets to identify market trends and customer needs. By processing data from various sources such as social media, customer feedback, and sales data, AI can highlight unmet needs or emerging trends that may represent new product opportunities. For example, Netflix uses AI to analyze viewing habits and preferences, allowing them to develop original content that caters to specific audience segments. So the first is market analysis.

The second is opportunity identification. Machine learning algorithms can uncover patterns that suggest potential gaps in the market. For example, analyzing customer reviews may reveal consistent complaints about existing products, indicating an opportunity for improvement or innovation. Using AI for A/B testing and optimizing product features. A/B testing involves comparing two versions of a product feature or design element to determine which performs better.

AI enhances this process by automating the setup, execution, and analysis of tests. Tools like Evolve AI allow for continuous optimization, where multiple variations can be tested simultaneously. This approach reduces the time needed for testing cycles and provides clear insights into user preferences, enabling faster decision-making regarding product features.

Predicting product demand and customer needs using machine learning algorithms. So, this is the third, and this is the fourth one. Machine learning models can analyze historical sales data, seasonality trends, and external factors, for example, economic indicators, to predict future product demand. Accurate demand forecasting leads to better resource allocation and minimizes the risk of overproduction or stockouts.

By leveraging customer behavior data, AI can identify shifts in preferences or emerging needs before they become apparent through traditional research methods. Product roadmap creation with AI-assisted insights. Roadmap development. AI tools can assist product managers in creating strategic roadmaps by analyzing market trends, competitor activities, and customer feedback.

This ensures that the roadmap aligns with market demand and business objectives. Prioritization of features. Machine learning algorithms can help prioritize features based on predicted impact on user engagement and satisfaction. As new data becomes available, AI systems can continuously refine the roadmap based on changing market conditions or emerging consumer preferences.

The case study: In the next slides, we will explore how AI-powered marketing research can be applied to product management using Starbucks as a case study to demonstrate the transformative potential of AI in making data-driven decisions. So, now we will look at Starbucks' use of AI and predictive analytics. Starbucks has revolutionized its customer engagement and marketing strategies by leveraging AI-powered predictive analytics and customer data. Its loyalty card program.

By collecting and analyzing vast amounts of customer data, Starbucks is able to make data-driven decisions to enhance customer experience, optimize product offerings, and increase sales. This case study explores how Starbucks integrates AI and predictive analytics into its marketing research and product Leveraging loyalty card data for customer insights. Starbucks' loyalty program is one of the most valuable data sources, providing rich information on customer purchasing habits, preferences, visits, visit frequency, and spending patterns.

By tracking every transaction made with loyalty cards, Starbucks gathers detailed data on individual customers, including their preferred drinks, food items, and seasonal choices. The data allows Starbucks to segment customers into various categories, such as frequent or occasional buyers, and target each group with personalized promotions. AI-powered customer insights. Using AI, particularly machine learning algorithms, Starbucks can analyze patterns and trends in customer behavior. Predictive analytics enables Starbucks to anticipate needs and make personalized product recommendations based on past purchases, weather conditions, time of day, and location.

For example, a customer who frequently orders iced beverages in the summer might receive promotions for cold drinks when the temperature rises. Next comes Personalized promotions. Starbucks uses predictive analytics to create personalized marketing campaigns based on individual customer behavior. By analyzing loyalty cards, Starbucks can predict what a customer is likely to buy and send personalized offers through their mobile apps, email, or in-store notifications.

For example, if a customer has not visited for a few weeks, Starbucks might send them a special offer to encourage a return visit, such as a discount on their favorite drink. Next comes the behavior prediction models. Starbucks has built sophisticated behavior prediction models that allow them to forecast customer preferences and behavior with a high degree of accuracy. These models consider factors such as historical purchase data, current promotions, and customer lifetime value.

and social trends to predict future purchases. The ability to anticipate customer needs not only improves sales but also enhances customer satisfaction by offering timely and relevant information. Next comes customization. With the help of AI, Starbucks tailors its menu to match customer preferences and local trends. By analyzing loyalty card data,

Starbucks identifies popular products and trends within specific regions or stores. Predictive analytics helps Starbucks optimize its product mix by determining which items to promote or introduce in certain locations and which items might need adjustments or removal from the menu. Then comes inventory management. Predictive analytics is also applied to Starbucks' inventory and supply chain management. By forecasting demand for specific products, Starbucks ensures that stores are stocked with the right ingredients at the right time, minimizing waste and maximizing efficiency.

For instance, Starbucks can predict that more iced beverages will be sold during the summer and adjust its inventory. Accordingly, to ensure availability across stores. Then

comes customer loyalty and retention. Starbucks' use of predictive analytics has significantly enhanced customer loyalty by making each customer feel valued through personalized experiences. The ability to predict customer preferences and behavior has allowed Starbucks to boost customer retention, leading to increased sales and strong brand loyalty.

Data-driven decision-making: Marketing research at Starbucks is increasingly data-driven, with AI and predictive analytics providing deep insights into customer behavior, product preferences, and market trends. This data-driven approach enables Starbucks to make more informed decisions regarding product launches, marketing strategies, and customer engagement initiatives. So, the key takeaways here are: Starbucks' success with AI-driven marketing research showcases the transformative role that artificial intelligence can play in marketing research. By leveraging customer data to predict behavior, personalized marketing, optimized product offerings, and improved inventory management, Starbucks has strengthened its competitive edge and deepened customer loyalty.

This case exemplifies how AI can enhance decision-making and strategic marketing in the product management lifecycle. So, to conclude, this module offers a comprehensive understanding of how AI can be seamlessly integrated into marketing research, to elevate product management. By harnessing AI for more intelligent data collection, deeper customer insights, precise market segmentation, and competitive analysis, businesses can refine their product strategies and enhance decision-making. The Starbucks case study highlights how AI-driven marketing research delivers critical insights across the product lifecycle.

fueling greater market success. In the next module, we will explore how AI is transforming market research with advanced tools and techniques, changing the future of product management. These are some of the references from which the material for this module was taken. Thank you.