AI in Product Management

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Lecture - 37

New Product Development using AI (Part2)

Thank you. Welcome to this NPTEL online certification course on Artificial Intelligence in Product Management. Now we are talking about module 37, and it is part 2 of this new product development using AI. So, to start with, I will give you an overview of this module. We will examine key aspects of product development essential for successful market entry.

Then we will explore forecasting methods to predict market trends and consumer demand, ensuring our strategies are data-driven. Then we will understand the new product development process to refine existing offerings and create impactful solutions. To start with the introduction, understanding the basics of really new products involves recognizing their unique challenges, especially in the context of AI. These products often disrupt existing markets and carry high uncertainty regarding customer acceptance. To navigate this, iterative testing and prototyping are crucial.

Allowing developers to define AI models based on user feedback. AI can enhance demand forecasting through data analysis, helping businesses anticipate consumer needs. Educating potential users about the functionality and benefits of innovative AI solutions is vital for fostering adoption and trust. By examining these aspects, we can better grasp the complexities of launching really new products in the rapidly evolving landscape of AI. So, what are really new products?

So, really new products are fundamentally different in several key ways. They create or expand new categories, making cross-category competition essential, like fruit teas versus soft drinks. They introduce concepts that may require significant customer learning regarding their users, competitors, and benefits. They raise broad considerations such as appropriate distribution channels and organizational responsibilities. They can sometimes necessitate the development of infrastructure, software, and additional components.

While potential customers can express satisfaction with current offerings, actually gauging their likelihood of purchasing a new product can be challenging. Mature products typically focus on maximizing a combination of profits and market share, while really new products often aim to gain insights from the experiences or to keep the option open for participation in a potentially large market. In terms of marketing strategies, there is less emphasis on competitor and share acquisition and more focus on generating primary demand. Advertising and sales efforts shift from targeting current customers or those of similar products to engaging new customers and enhancing awareness, trial, and eventual usage among non-customers.

Each category of product, ranging from existing products in mature markets to quite new products in emerging markets, has distinct approaches for competitive analysis, customer insights, forecasting objectives, pricing, advertising, promotion, and sales strategies. For existing products in mature markets, the focus is on retaining current customers and maintaining market share through competitive pricing and frequent advertising reminders. The consumer base is well established, and promotional efforts are primarily aimed at reinforcing brand loyalty and inducing occasional switching. In a dynamic, growing market for existing products, strategies shift through

Capturing new users and fending off potential entrants. Customer acquisition becomes a key goal, and businesses emphasize new users for the product to expand market share. Competitive pricing, particularly in line with the experience curve, and promotional strategies to drive increased use are common tactics. While introducing a slightly new product, that is, an upgraded version of an existing product, Companies focus on differentiating the product from current competitors.

This involves experimenting with pricing strategies, such as adding value features, and conducting customer acquisition efforts through targeted experiments and data-driven insights. Advertising highlights the new features to appeal to both current and potential customers. For quite new products, the challenge lies in educating customers and positioning the products against established alternatives. Here, the focus is on creating awareness and providing trial opportunities. Pricing often follows an economic value to customers (EVC) model, which seeks to communicate and justify the added value in comparison to cost.

Sales and support are geared towards educating customers, with emphasis on establishing distribution channels and offering training to facilitate product adoption. Now, this table

provides the structured framework for analysis and programs for new versus the old product. So, here we have the analysis, and here we have new product, mature market, existing product, dynamic market, slightly new product, and quite really new product, and then here we have competitor identification and focus. So, first, what happens is current same as last year product form category, then current plus entrance

Current producers of product categories and possible entrants. So, then we can have customer analysis, potential and forecasting, objectives, programs, price, advertising, sales promotion, and sales and service. Now, how to get ideas for a really new product? So, ideas for truly new products can stem from the same sources discussed in module 36. But they often possess a radical quality.

The emphasis for generating these ideas may include engaging with dissatisfied customers to understand their pain points, consulting with non-representative customer segments, utilizing open-ended qualitative methods instead of structured surveys, and involving customers as co-developers, particularly in industrial contexts. Listening to insights from scientists and newcomers rather than solely relying on engineers and established experts. Scanning literature and technological advancements for intriguing possibilities. The approach for searching for ideas also differs.

For less innovative products, the focus tends to be on refining and improving existing offerings, methodical continuous improvement. In contrast, the mindset for truly new products encourages taking an outsider's perspective, challenging the status quo, and employing different technologies. According to Nike, 60% of individuals wear shoes that don't fit correctly, and over 500,000 people admit to purchasing the wrong size each year. Nike blames the problem.

On obsolete two-dimensional shoe sizing procedures. In May 2019, news revealed the business defined shoe sizing as a gross simplification of a complex problem. NikeFit scans clients' feet with a smartphone camera to offer exact shoe size suggestions. This technology seeks to minimize return rates and increase customer satisfaction by tackling the problem of inaccurate shoe sizing. Visual data points create an accurate 3D model of the foot, which aids in selecting the optimum size.

So, this is how it is done. So, now what I get is a 9.5, not a 9 or 10. The next is evaluating truly new products. The development timelines for truly new products are often lengthy, sometimes spanning 20 years from conception to mass sales. Therefore, patience is the crucial requirement, an attribute that can be scarce in many organizations.

While considering a new product, it is useful to analyze characteristics defined by Rogers in 1983 and the perceived risk dimension introduced by Bohr in 1960. So, the first dimension of that is relative advantage. Is the product a better mousetrap compared to what it replaces? Compatibility. Can consumers use it in ways that align with their past behavior?

This includes not only the procedures users employ but also the ability to integrate existing software and complementary products. Incompatibility often serves as a significant barrier to adoption. Perceived risk can encompass financial, physical health, and social aspects, all of which can hinder adoption. Additionally, three other dimensions can indirectly influence adoption.

First is complexity; greater complexity typically hinders adoption. Observability or communicability, the clarity and simplicity with which benefits can be explained, positively impact adoption. Triability or divisibility, the ability to sample the product without significant commitment, encourages adoption. Nestlé utilizes AI to analyze information on trends, ingredients, flavors, and health benefits from social media, online publications, and various web sources. Their innovation clusters the captured insights, leading to the discovery of new ideas or trends that can be swiftly translated into compelling product innovations.

For instance, this approach facilitated the launch of Nescafé Dalgona coffee mixes and Nesvita plant probiotic supplements for adults in China. To enhance their innovation process, Nike is piloting tools that allow for the creation of virtual product prototypes, which can be quickly tested using virtual reality, including a Metaverse and Web3 environment. While developing and testing physical prototypes, These virtual capabilities enable product developers to assess whether they have successfully met customer expectations with a new product, thus saving time, effort, and materials.

For example, by employing virtual reality during the evaluation phase, they can analyze how consumers or retail customers interact with new concepts for coffee systems, ensuring a new, informed, and efficient product development process. Next comes adoption and expansion. The initial purchase of a new product is critical, but adoption signifies a deeper commitment to using the product over the long term. Many basements are filled with exercise equipment and other items that see only brief use. Before being stored away or repurposed as clothing hangers.

Consequently, products that are frequently purchased are often regarded as truly adopted only after the second repeat purchase, which helps to filter out novelty-based trials. Now let us look at this example of Starbucks mobile order and pay. According to Numerator survey data, nearly two-thirds of Starbucks guests use the Starbucks app. Though 18.5% said that they only used it to review the menu, the majority used it to order ahead or pay in-store. In-store payment was the top feature used by 31.7% of guests, followed by order ahead used by 21.1%.

Both features had high repeat rates, as 64.4% of guests who used the pay-in-store feature used it every time they visited Starbucks, and 35% said the same of order ahead, with an additional 54.1% who used order ahead at least half of the time. Starbucks utilized AI and machine learning to analyze customer data. Including order history and preferences. This analysis helped them understand which features would be most appealing and how to tailor the experience to different customer segments. After the initial launch, Starbucks expanded the mobile order and pay features across various markets.

The success in the US prompted the rollout in international locations, adapting to local preferences through AI-driven insights. AI analysis Of ordering patterns showed Starbucks introducing seasonal items and limited-time offers more effectively. The company can now quickly assess customer interest and adjust offers accordingly. Starbucks also expanded its loyalty program using AI, offering tailored promotions and rewards to engage customers more effectively, further driving the adoption of the mobile app.

The next comes forecasting. Forecasting sales for really new products is inherently challenging. One approach is to apply the BaaS model to develop category-level first-purchase estimates. Which combines historical patterns with actual sales data or to identify an analogous product and assume similar sales trajectories. The BaaS model, which predicts the adoption of new products based on innovators and imitators, can be refined using AI.

By feeding AI algorithms historical sales data and demographic information, the model can be adjusted to account for real-time consumer insights and trends. Decking the aisles with data: how Walmart's AI-powered inventory system brightens the holiday. Walmart has been assisting customers and members in celebrating the holidays for over 60 years by continually enhancing its inventory management processes. Recently, the company has tested and Integrated AI and machine learning models into its systems,

complementing its reliance on historical data to optimize the flow of holiday items through its supply chain. With these advancements, Walmart expects to achieve stronger performance during the holiday season. In building its AI and ML frameworks for holiday forecasting, Walmart starts with a solid foundation of data and business constraints to create a comprehensive array of machine learning models. During the training phase, these models are fine-tuned using historical data.

Such as past sales figures, along with online search trends and page views. Walmart also incorporates future data, including macro weather patterns, macroeconomic trends, and local demographics, to anticipate demand and identify potential fulfillment disruptions. Now, let us look at the story of Coca-Cola and its AI-powered vending machine. Let us now discuss the case of Coca-Cola and understand how Coca-Cola leverages advanced AI technologies to enhance its product development and marketing strategies, resulting in significant improvements in sales and operational efficiency.

The case highlights how data-driven insights and AI-powered technologies can drive innovation and streamline the product development process. Coca-Cola, the world's largest non-alcoholic beverage company, operates in over 200 countries and was ranked among the top five most valuable brands in 2019. alongside tech giants like Apple and Google. The company invests approximately $4 billion annually in advertising, focusing on emotional branding and cultural relevance to engage consumers. However, Coca-Cola recognizes that innovation is crucial for sustaining growth in a saturated market.

By continuously developing new flavors and embracing sustainability through eco-friendly packaging and integrating technology like the Coca-Cola Freestyle machine, the company adapts to changing consumer preferences. Additionally, strategic partnerships with startups foster creativity and new product development. This multi-faceted approach ensures Coca-Cola remains relevant and competitive in the evolving beverage landscape. Coca-Cola's quasi-founder Robert Woodruff's motto that a Coke should always be within an arm's reach of desire reflects Coca-Cola's commitment to accessibility and customer satisfaction.

To achieve this in today's fast-paced marketplace, The company is heavily focused on product innovation, exploring new flavors and healthier options, while also developing alternative distribution channels to reach customers more effectively. A significant step in this direction has been the decision to connect its vending machines to the internet, transforming them into smart machines. This connectivity allows Coca-Cola to monitor

inventory in real-time, track consumer preferences, and optimize restocking processes. Data gathered from these machines informs targeted marketing strategies, enhancing customer engagement and ensuring that products are readily available when and where consumers want them.

This innovative approach not only improves operational efficiency but also strengthens Coca-Cola's position in a competitive landscape. Coca-Cola's analytics journey took a significant leap in 2014 with the Big Data Open Innovation Challenge organized by Coca-Cola Founders Platform. During this initiative, entrepreneurs Franki Chamaki and Jason Hosking leveraged Coca-Cola's supply chain data from 60 vending machines in Newcastle, Australia, by feeding it into their self-learning AI algorithms. This innovative algorithm analyzed transaction patterns and provided actionable insights tailored to each machine.

By determining optimal product selections based on local consumer preferences, Coca-Cola could stock the right product at the right location. This data-driven approach resulted in a remarkable 15% increase in transactions for the selected machines, demonstrating the effectiveness of targeted inventory management. The need for restocking visits dropped by 18%, highlighting improved operational efficiency and resource allocation. This successful pilot not only underscored the power of AI in enhancing vending machine performance but also set the stage for broader implementation of analytics across Coca-Cola's extensive network, ultimately driving revenue growth and enhancing customer satisfaction.

Placing the right product at the right location, Reyes Coca-Cola Bottling, a key distributor of the Coca-Cola brand on the West Coast, has embraced advanced technology by embedding telemetry tools in its highest-performing vending machines. This integration enables the collection of real-time data on product performance and consumer interaction. By combining this data with sophisticated vending management software and an AI tool, the company can analyze sales patterns with remarkable precision. The AI tool identifies trends based on specific locations and distinct consumer demographics, allowing for tailored inventory management. This proactive approach not only optimizes product stocking but also enhances the overall customer experience by ensuring that popular items are readily available.

As a result, these Coca-Cola bottlers can make data-driven decisions that improve efficiency, drive sales, and maintain a competitive edge in the dynamic beverage market.

The AI tools used by Reyes Coca-Cola Bottling exemplify their effectiveness in optimizing product placement based on consumer behavior. For instance, the algorithms identify that energy drinks like Monster are rarely purchased in hospital emergency rooms. Prompting the company to reduce stock levels in those machines. This targeted approach prevents wasted inventory and enhances profitability.

Conversely, at sports and entertainment stadiums in Sacramento, the AI recognizes a strong demand for lemonade, leading to the allocation of two rows of Minute Maid lemonade in the vending machine. By tailoring inventory to specific locations and consumer preferences, these Coca-Cola bottlers maximize sales opportunities and ensure that popular beverages are readily available. This strategic application of AI not only streamlines operations but also fosters customer satisfaction by providing the right product in the right context, ultimately reinforcing Coca-Cola's market position across diverse environments. Reyes Coca-Cola Bottling utilizes an AI tool to conduct what-if analysis, allowing the company to simulate

Various scenarios without needing to place products on-site for real-world testing. This predictive analytic capability enables the company to forecast how specific products will perform at different locations, helping them make informed stocking decisions. By leveraging the insights gained from these analyses, the company can strategically plan restocking visits to coincide with maintenance services. This integration enhances overall operational efficiency, reducing unnecessary trips and optimizing resource allocation. As a result, Ries Coca-Cola bottling can ensure that machines are stocked with the right product at the right time, improving both service delivery and profitability while minimizing operational costs.

The actionable consumer insights. In 2009, Coca-Cola revolutionized the beverage experience with the introduction of its touchscreen soda fountain, Freestyle. This innovative machine allows consumers to mix and match flavors from a selection of over 100 beverages. Offering a highly personalized drinking experience. Freestyle machines are equipped with cloud connectivity and AI capabilities, enabling Coca-Cola to gather valuable data about consumer preferences and behaviors in real-time.

This data not only enhances the customer experience but also informs Coca-Cola's broader marketing and product strategies. The Freestyle machines' mobile apps further enhance consumer engagement by allowing users to pre-order Their drinks, make payments, and collect their beverages from the nearest fountain. By requiring consumers

to register using their social media accounts, Coca-Cola can tap into rich social data, providing deeper insights into consumer preferences. This information enables the company to analyze consumption patterns based on factors such as location, time of day, and specific demographic characteristics.

As a result, Coca-Cola can tailor its offerings to match local tastes and optimize inventory management. Coca-Cola's use of AI extends beyond Data collection; it actively analyzes social media content to gain insights into how and when products are consumed. This analysis helps identify trends in consumer behavior, allowing the company to discern which products are favored in particular regions. For example, if a certain flavor becomes popular in one area, Coca-Cola can adjust its marketing and distribution strategies accordingly.

Ensuring the demand is met and enhancing overall customer satisfaction. Another innovative application of AI in Coca-Cola's strategy is the development of a chatbot platform available through Facebook Messenger. The vending bot engages users in conversation, personalizing interactions based on location, data, and user activities on the platform. By customizing its tone, and dialect to match each user, the bot creates a more engaging and interactive experience.

This level of personalization not only enhances consumer engagement but also fosters brand loyalty as users feel more connected to the Coca-Cola brand. The insights gained from both the Freestyle machines and the chatbot platforms enable Coca-Cola to create targeted marketing content that resonates with specific consumer segments. The cloud connectivity of the Freestyle machines allows Coca-Cola to easily configure beverage prices remotely. This capability is particularly useful for implementing promotional strategies tailored to specific locations or events. For instance, during a local sports event, Coca-Cola can adjust prices dynamically to encourage higher sales and drive customer traffic to the vending machines.

Then we'll let us look at the global business operating on a local scale. Coca-Cola serves as a prime example of a global business adept at operating on a local scale, understanding that each market comes with unique preferences and cultural nuances. The company's success hinges on its ability to tailor its offerings to diverse consumer needs. To achieve this, Coca-Cola has embraced data-driven strategies, utilizing sophisticated analytics to gain insights into local tastes and trends. By leveraging AI and advanced data analytics,

the company can discern patterns that help shape product development and marketing strategies specific to each region.

The introduction of AI-powered vending machines has become a game-changer for Coca-Cola in terms of market research. These smart machines collect real-time data on consumer interactions and product performance, providing invaluable insights into which beverages are popular at specific locations and times. This immediate feedback allows Coca-Cola to make informed decisions about inventory management, ensuring that the right products are available to meet local demand. Consequently, the company can respond swiftly to changing consumer preferences, enhancing its competitive edge.

With the ability to analyze transaction data, Coca-Cola can identify trends that might otherwise go unnoticed. For instance, if a particular flavor sees a spike in sales during a local event, the company can adjust its marketing strategy accordingly, capitalizing on that momentum. This proactive approach minimizes the risks associated with product launches and helps ensure that Coca-Cola's offerings resonate with consumers. By harnessing the power of AI, Coca-Cola can not only keep pace with market changes but also anticipate them, positioning itself ahead of the competition. The integration of AI into vending machines allows Coca-Cola to develop a deeper understanding of consumer behavior.

By tracking how different demographics engage with its products, the company can create targeted marketing campaigns that speak directly to local preferences. This level of personalization fosters a stronger connection between its brand and its consumers, ultimately driving customer loyalty and repeat business. The insights gathered also inform broader strategic decisions, from new product development to promotional initiatives. Now let us look at the impact of AI on Coca-Cola's business. By strategically stocking the right products at specific locations, Coca-Cola experienced a 15% increase in vending machine transactions and an 18% reduction in restocking visits.

AI-driven predictive analytics help forecast product performance at various sites, optimizing inventory management. The analysis of social media content through mobile app interactions provides insights into consumer consumption patterns—where, when, and how products are enjoyed. This data empowers Coca-Cola to tailor its offerings and marketing strategies to align with local preferences, ultimately enhancing customer satisfaction. The chatbot utilizes location data to tailor its dialect and tone, creating a personalized and engaging interaction for each user. By analyzing local preferences,

Coca-Cola can generate geo-targeted marketing content that resonates with specific regions.

This approach enhances the relevance of promotional messages and strengthens brand loyalty by making consumers feel recognized and valued within their local context. So, to conclude, in this module, we have examined key aspects of product development essential for successful market entry. Then we have equipped forecasting methods to predict market trends and consumer demand, ensuring our strategies are data-driven. We have also discussed new product development processes to refine existing offerings and create impactful solutions. Finally, we have discussed the case study of Coca-Cola and its AI-powered vending machines.

These are some of the sources from which the material for this module was derived. Thank you.