

AI-Driven Product Management Assistants: Co-Pilot or Competitor for the Future PM?

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Abstract

The emergence of Artificial Intelligence has led to a big transformation in the field of product management. When AI first came into picture, it was limited to the routine tasks but now AI assistants are able to handle a lot of decision making and streamline the execution process involved in product management. A major question with this emerging technology: can these assistants now or in future handle the work of product managers and replace them? In this study, I am going to address this question, review the major functions of product manager like roadmap prioritization, product vision and strategy, data driven decision making and market research. This study will also define AI and its impacts and how product management can be made efficient by using the AI tools. This study talks about AI becoming copilot for product managers to make them more efficient or AI being a competitor. While AI can help PMs in many tasks, the field of product management is so much more than automating tasks. The core aspects of these roles are collaborating with the cross functional teams, human judgement, navigating through organizational dynamics, innovation and creativity and therefore, this study will go into the depths of impact of AI on product managers.

Keywords: Product management, artificial intelligence, task automation, copilots, AI-agents, artificial intelligence; sentiment analysis; data analytics; machine learning, product managers, product lifecycle management, product development lifecycle, decision making

INTRODUCTION

The emergence of Artificial Intelligence (AI) has profoundly influenced many fields, and likewise product management is also not immune. Although, initially AI was used to automate tasks, it has now transformed into cutting-edge technology capable of changing decision-making approaches and fine-tuning workflows [1]. As the AI has advanced, they possess the potential to redefine the way product managers carry out their operations, from roadmap prioritization and market research to strategy development and stakeholder collaboration. However, this evolution raises a critical question: Will AI be an essential co-pilot or can it completely replace product managers?

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This study examines the dual role of AI as both an enabler and an obstructor in product management. Analyzing large datasets, predicting trends, and automating repetitive tasks has been made easier by AI, the human aspects of the role, such as cross-functional leadership, creativity, and empathetic decision-making, remain irreplaceable.

By probing into AI's capabilities and its integration into the Product Development Lifecycle (PDL) [2], this discussion clarifies the interdependent relationship between AI and product

managers, highlighting how these tools can enlarge human efficiency while preserving the core essence of the profession [3].

ROLE OF PRODUCT MANAGERS

The “CEO of Product” is a term coined by Ben Horowitz for the product managers and it holds true in every aspect of the core responsibilities. A product manager is an individual (or can be a team of individuals) who is significant from ideation to the successful launch of a product [4]. One of the key characteristics, apart from the technical strengths, of a product manager is being highly driven, proactive and results-oriented with a strong sense of urgency in getting things done efficiently. The structured framework that describes different stages and key responsibilities of a product manager can be explained by Product Development Lifecycle (often called as PDLC) (Figure 1). Product manager’s role in the entire PDLC is dynamic making sure the timelines, stakeholder needs and user pain points are met by being proactive in all the below phases.

PRODUCT DEVELOPMENT LIFECYCLE (PDLC)

Ideation

Ideation is first stage of the product development lifecycle that involves a lot of brainstorming. This is the stage where product managers conduct market surveys, market research, take customer feedback and study trends to develop a new functionality/product or enhance the existing product. The main aim of this stage is to understand the pain points and needs of the users and cater to them accordingly by developing a product. The skills needed in this phase are data analysis, creative thinking, problem solving and stakeholder management, among others [5].

Validation

This is the phase where a product manager does a lot of deep research on multiple ideas that came out of the ideation phase and finalize one idea to move forward based on the same research [6]. This is a very important phase as validating your ideas at this initial stage can save you resources and time down the line. This milestone makes sure that your product is fit for the market and meets the vision and strategy of your organization simultaneously. Some organizations also launch beta programs or develop minimum viable product at this stage to verify the usability and performance of a product. Prototypes are generally a big hit to get user and stakeholder validation for a product as part of this phase.

Product Design and Planning

After finalizing on an idea, the planning stage starts where the product manager meets with the cross functional teams, namely UI/UX designers and engineers to plan, design, and discuss any architectural work needed for the solution. This phase also includes establishing a product roadmap with timelines, milestones and also allocating resources for the project. Most of the times, the product’s market launch strategy, pricing and its positioning is also finalized or at least starts in this phase [7]. The product managers also note down the requirements and break the product into multiple features and further into user stories for the development in the next phase.

Development and Testing

The actual implementation or development of the product starts in this phase. A close collaboration is required between product managers and engineers to make sure the product or functionality meets the standards [8]. PMs ensure the development meets the deadline, proper quality assurance is done and the product’s performance is up to the mark. They also make sure to solve any roadblocks that come while the development of the product. Usually, this is all managed by project management tools already available in the market.

Launch

This is the stage where the products are launched into the market after proper testing in the previous stage. As discussed, most of the times, the product and market strategy are discussed and finalized in the

validation stage but also can be finalized in this stage for certain organizations based on their workflows and processes. This involves coming up with the announcement plan, deciding the distribution channels, talking to sales team and getting the customer support team up to speed with the product and its functionalities, in case the users need any support. The main objective of this stage is to create a hype around the product and let the users know that the product is being introduced for its successful launch.

Post Launch Analysis

After the launch of the product, it is crucial to be on top of the user feedback and monitoring and managing any discrepancies that come up. The next focus then becomes product's growth, future enhancements and scaling it up for different demographics or audiences depending on organization's goals.

AI AND ITS CAPABILITIES

The capability of machines to imitate human skills such as decision making, reasoning, comprehension and learning is known as Artificial Intelligence (AI). The real-time capabilities of AI are revolutionizing, as it helps to explore data immediately, allowing decision-making and predictions at quicker speed than humans (Figure 2).

Data Analysis and Pattern Recognition

Analyzing large amount of real-time data, trends and patterns recognition has been simplified by AI. For example, Netflix uses an AI/recommendation system to detect user behavior and suggest shows depending on the type of show user is watching, doing collaborative filtering, increasing user engagement.

Predictive Analytics

AI can forecast trends and help predict outcomes with the help of advanced machine learning algorithm which has analyzed historical data and can take real-time inputs for future predictions [8]. This is widely applicable in fields like finance and real-estate. For example, in real-estate market, we can create a model which can predict the future price of a particular estate depending on multiple inputs like current price, type of locality, crime-rate and much more,

Task Automation

AI can also automate repetitive tasks, reducing manual work and allowing employees to put their time in more complex tasks. For example, chatbots and virtual assistants can handle customers inquiries, data entry and validation can be done by AI.

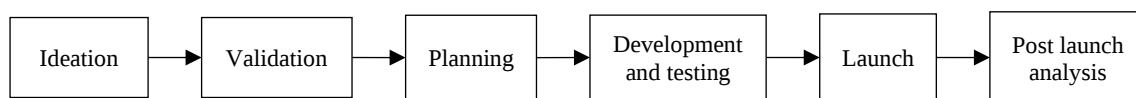


Figure 1. Product development lifecycle.

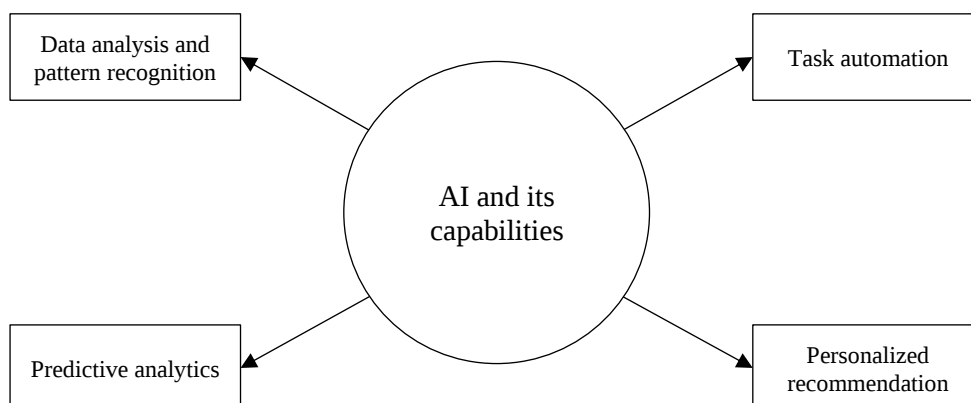


Figure 2. AI and its capabilities.

Personalized Recommendations

AI can offer personalized recommendations to users in real time based on their preference, past behavior and interaction. Netflix is a good example for this which is already explained [9]. One more good example could be amazon which uses similar model to suggest products to its users.

Product development, analysis, and optimization are changing as a result of AI's skills in product management. AI assists product managers in comprehending consumer behavior, spotting market trends, and prioritizing features by automating data analysis. Forecasting is enhanced by predictive analytics [10], allowing for more precise resource allocation and roadmaps. Product managers may concentrate on strategic objectives like product vision, innovation, and stakeholder collaboration by using workflow automation to automate repetitive chores like report preparation and performance tracking.

But as AI advances, it calls into question what product managers will do in the future. Certain facets of product management, like innovative problem-solving, team leadership, and comprehending complex user needs, are fundamentally human, even though AI can improve decision-making with data-driven insights. AI, for instance, may be able to forecast which features will work best, but it is still unable to replace the intuition and empathy needed to create an engaging user experience or motivate cross-functional teams.

In the end, AI is probably going to be a strong helper rather than a substitute, enhancing human skills while preserving the distinctively human elements of product management. The difficulty is in successfully incorporating AI while adjusting to its changing function in strategy and decision-making.

AI AS A CO-PILOT IN PRODUCT MANAGEMENT

Product manager responsibilities, some ai tools can do nicely, making it efficient for product managers to focus on other important aspects of the product development lifecycle. These include market research; prototyping mentioned in PDLC can be done via ai in following ways:

AI-powered tools have altered market research and analysis dramatically by providing suggestions with acute precision for organizations. Actionable insights can be extracted from large amount of data using machine learning and NLP. For example, social media is huge source of data reflecting public sentiments. AI tools can be used to examine this data to figure out what resonates most with the audience. One such technique is sentiment analysis where NLP algorithm is used to process social media hashtags, posts and comments to take public opinion on a service or product.

AI has restructured the creation of prototypes and detecting flaws in design in early stages by enabling faster, innovative workflows. AI-powered digital prototyping tools let engineers and designers see, test, and refine concepts instantly. Artificial intelligence (AI) reduces the amount of time spent on human modifications by generating many design iterations nearly instantly by assessing input parameters like material limits, functional requirements, and environmental conditions.

AI technologies give businesses data-driven insights to help them make more strategic and accurate decisions. AI tools suggest optimal pricing strategies, feature prioritization and much more by analyzing the large amount of data from customer feedback, sales records and market trends [11]. For example, Pricing algorithm analyze customer inclination to pay, competitor rates and demand elasticity to recommend pricing. Likewise, product features can be suggested by machine learning algorithm based on their impact on corporate objectives and customer happiness, making sure teams give priority to projects that yield the most benefit.

AI-powered tools like chatbots, recommendation engines, and personalization algorithms notably boost customer interactions, creating more responsive and personalized experiences. Chatbots yield immediate and precise response to customer inquiries, take care of regular duties like FAQs, and aid

with complex queries such as order tracking or issue resolution. Furthermore, recommendation engines analyze user preferences, behavior and past interactions to propose products or services that resonates with individual interests, increasing engagement and conversion rates. These tools guarantee customers receive timely, relevant assistance, improving satisfaction and loyalty.

AI AS A COMPETITOR TO PRODUCT MANAGERS

This section talks about the core responsibility that needs human intervention and it is near to impossible to replace a PM. AI systems have to evolve exponentially to take these responsibilities and therefore, as the title suggests AI has to become a competitor.

While the replacement of some of the jobs by AI stays in question, there are a lot of areas where AI technologies are catching up with traditional product management jobs. The evolution of AI technologies has extended to them acting more strategically and analytically limiting the intervention of the human needs [12] and it is certainly going to reshape the product management field, like any other field, in future.

AI is becoming better each day in predictive analytics and decision making. With each day passing, these algorithms are being fed with real-time data making them human-like in nature. The most important aspect of a product management job is decision making and it is going to get more challenging if the decision making gets accurate and automated. If this becomes reality, the AI systems would be able to prioritize features based on market trends and customer pain points. While it looks and sounds promising, the decision-making process entirely done by AI is not practical because of the inaccuracies in its response and training data.

As AI becomes better with market research and analysis, product managers may find their ownership of the product diminishing. PMs are the owners of the product and if at each stage, the stakeholders or engineers rely on these AI systems for any roadblocks, it can sideline PMs when driving innovation and maintain strategy.

The most challenging part about AI is that organizations cannot solely rely on AI because it introduces a lot of risks and ethical challenges. One of the use cases is that the training data has a lot of biases and gaps leading to incorrect responses sometimes. It is crucial to have product managers observing these systems and maintain their standards when it comes to responsibilities that needs human intervention as shown on Table 1.

LITERATURE WORK

There has been prior work related to the topics in the same space:

- The papers by Goyal *et al.* [13] and Siau *et al.* [14] explain the role of AI, robotics and machine learning and its impacts on Sales marketing jobs. As per their research, AI systems can improve personalization. One of the technologies, AI agents, can handle most of the customer service work and hence, automating the system. These also discuss the need for human interaction in all of these processes.
- The paper by Sazu talks about how the digital era and e-commerce uses AI and big data analytics [15]. These technologies help to study large datasets and hence send targeted promotions to customers, manage inventory according to the in-demand product, recommend product to users based on their search history.

Table 1. Strengths of artificial intelligence and product manager.

AI Strengths	PM Strengths
Market research and trend analysis	Decision making
Prototyping and design with AI	Product ownership
Decision-making support	Prioritization based on the goals of the organization
Customer engagement	Defining product roadmap

- The article by Nichols *et al.* discusses about the story telling systems integrated with AI [16]. There are research works being done on the story telling where AI and humans write a story together using a LLM on prompts and short stories. The quality of the story can be enhanced by optimizing latency.

CONCLUSION AND FUTURE WORK

AI's life-changing prospects in product management is both an asset and a liability. AI is a co-pilot that promotes creativity, boosts output, and simplifies processes. But as a rival, it calls into question the conventional function of product managers, requiring them to reconsider their value offer.

Achieving a symbiotic interaction between humans and machines is key to the future. Companies need to encourage human-AI cooperation, give ethical AI development a priority, and equip product managers with the know-how to use AI efficiently. By doing this, AI can act as a real co-pilot, promoting innovation and steady growth in product management.

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