

Crafting Products for the Masses: A stakeholder feedback-based approach for identifying key factors for product development

Himanshu Jain

Software Engineer, Meta Inc., San Francisco, California

Email: himanshukj17122000@gmail.com

Introduction

Software development can be challenging, especially when catering to a large consumer base. Developing a well-conceived product can be a time-consuming process, spanning from several months to a few years, contingent upon market dynamics and team size. Designing and developing a product for a large population requires an understanding of the diverse user needs, strong design principles, robust infra and well-managed communication strategies between the different people working on it. It requires delving deeper into each of these areas to deliver a strong product for a wide-ranging audience. This article identifies key factors for product development based on expert feedback through structured research among key stakeholders.

Literature survey

Product development is a dynamic process vital for businesses seeking to introduce new offerings or improve existing ones. Literature on this topic encompasses various perspectives, methodologies, and considerations.

The early stages of product development involve idea generation and conceptualization. Researchers emphasize the importance of creativity and market analysis to identify opportunities and meet customer needs (Biemans et al., 2018). Concurrently, scholars highlight the significance

of feasibility studies, emphasizing technical, economic, and operational viability (Koen et al., 2001).

As the process progresses, attention shifts towards design and prototyping. Design thinking, a human-centred approach, is often advocated for fostering innovation and user-centricity (Brown, 2008). Additionally, rapid prototyping techniques facilitate iterative refinement and validation of concepts (Gibson et al., 2015).

Effective collaboration among cross-functional teams emerges as a critical success factor throughout product development (Dahan & Hauser, 2002). Literature underscores the role of communication, shared goals, and interdisciplinary expertise in overcoming challenges and accelerating progress.

Moreover, considerations extend beyond the development phase to encompass aspects like marketing, distribution, and sustainability (Bellini et al., 2019). Sustainable product development frameworks emphasize environmental and social responsibility alongside economic objectives (Schaltegger & Burritt, 2018).

In summary, literature on product development offers insights into a multifaceted process, encompassing ideation, design, collaboration, and sustainability, vital for achieving competitive advantage and meeting evolving market demands

Research objective

The key objective of this research is to identify factors that contribute to product development.

Research Methodology

Research methodology for identifying the most important factors for product development typically involves a structured approach combining qualitative and quantitative methods. Here's an outline of such a methodology:

Literature Review: Conduct a comprehensive review of existing literature on product development to identify potential factors influencing the process. This helps in understanding the current state of knowledge and provides a foundation for the study.

Expert Interviews: Interview experts in product development, including practitioners, academics, and industry professionals, to gather insights on key factors they perceive as critical. These

Surveys: Develop a structured survey questionnaire based on insights from the literature review and expert interviews. The survey should be distributed to a representative sample of stakeholders involved in product development, such as product managers, engineers, designers, and marketers. Quantitative data collected through surveys can help in identifying the relative importance of different factors.

Data Analysis: Analyze the survey data using appropriate statistical techniques such as factor analysis, regression analysis, or importance-performance analysis. These analyses can help in identifying the most significant factors influencing product development and understanding their interrelationships.

Case Studies: Conduct case studies of successful and unsuccessful product development projects to explore how different factors contributed to their

outcomes. Case studies provide rich qualitative data that can complement the quantitative findings and offer in-depth insights into real-world experiences.

Delphi Method: Consider using the Delphi method to reach a consensus among a panel of experts on the most important factors for product development. This iterative process involves multiple rounds of structured communication and feedback until convergence is achieved.

Validation: Validate the identified factors through additional rounds of expert interviews or focus groups to ensure their relevance and applicability in different contexts.

Documentation and Reporting: Document the findings of the study, including the identified factors, their importance rankings, and any insights gained from the analysis. Prepare a detailed report outlining the research methodology, findings, implications, and recommendations for product development practitioners and researchers.

For the purpose of this research, expert interviews have been used as a methodology. By following this research methodology, an attempt has been made to systematically identify and prioritize the most important factors influencing product development, thereby informing decision-making, and improving the effectiveness of product development process.

Hypothesis

The following factors play an important role in product development: Market research, infrastructure and technology, pilot testing, Localization, scalability, user interface, performance optimization, community outreach, performance measurement, security, and privacy.

Research Design

This qualitative research is based on interviewing experts in product design and requesting them to identify the contribution of the factors identified, or any other factors they might identify in terms of their impact on quality of product development.

Data Collection

The responses to a structured interview questionnaire were collected from over 35 experts from the field of product development, and the data was analysed using factor analysis.

Data Analysis

The interview response data suggests that the factors impacting product development fall under the following 3 clusters:

Cluster 1: Market research, pilot testing, Localization, community outreach, user interface

Cluster 2: Infrastructure and technology, security and privacy, scalability

Cluster 3: Performance optimization, performance measurement

The first cluster could be referred to as the user-alignment cluster since it deals with understanding the customer and trying to make the product as per the preferences, demands, needs and feedback of the customer.

The second cluster could be referred to as the technology cluster since it deals with infrastructure and technology aspects of making the product scalable, secure, and safe.

The third cluster could be referred to as the outcome cluster since it deals with understanding the results and performance of the product.

This research finds that the first cluster is the most important in terms of its

contribution to product development with 80 per cent of the experts identifying this as the most important factor followed by cluster 3 and 2 which find support from 15 per cent and 5 per cent of the experts.

Analysis and Conclusion

This analysis and conclusion section discusses the importance of each of the factors that were considered in this research. Also included are some market practices.

Market research is the most important step of the process of product development and usually happens during the ideation phase itself. There is a need to conduct thorough market research through surveys, interviews, and data analytics in order to identify user features like demographics, preferences, behaviours and pain points. These qualitative and quantitative methods provide some insight into the user's demands and expectations. After this phase, there is a need to study the users to identify different user groups. These groups can be based on the demographics/behavioural patterns but can help identify features in our product to target different user groups. This also provides an idea about whether the product would succeed in the target market or not or what features would need to be modified in order to find a product-market fit.

To build products for millions/ billions, there is also a need to focus on the infrastructure powering the product. There is a need to build an easily scalable infrastructure that is capable of handling high traffic as well as data inflows/outflows and to estimate the maximum traffic for the product and build the infrastructure accordingly.

With the advent of cloud technologies, this step has been made much easier since technologies like AWS, Google Cloud and Microsoft Azure provide low-

cost solutions for scalable, reliable, and robust cloud infrastructure. Other than traffic management, there is also a need to focus on database designing and error-proof backend systems. For that, there is a need to have strong functional database designs that help in the quick retrieval of data, as well as backend systems that can handle edge cases and exceptions. This step is important since no one likes a product that breaks down frequently and more often than not, people would end up switching to other products because of this unreliability.

Experience (UX) and User Interface (UI) attract a customer and play an important role in customer acquisition. There is a need to prioritize product designing in order to create intuitive, accessible and engaging designs for the product. This is another area where market research would come in handy as research data can be used to design interfaces/experiences that cater to all the diverse user groups being targeted.

User testing (beta-testing) can also be used to iterate the designs based on feedback from the users. This would help to get feedback from a neutral population without launching the product to the entire target population. Based on the feedback, UI/UX challenges can be addressed and make it more usable.

To reach a wide population, there is a need to also include accessibility features for differently abled groups and other diverse user groups. There is a need to also understand the importance of each and every flow/design piece of their product and not undermine any colour, font style, and content change feedback. Even the slightest UI change has the potential to impact millions positively or negatively. Figma is the most common tool used by companies to design their products before even implementing them so using it to gain some initial design feedback would help

the product development process a lot.

Localization is the process of making something local in character. From a product development perspective, the process of customizing the product to suit the different cultural and linguistic requirements of the target audience is referred to as localization. This can also include the regulatory requirements (UI has a lot of requirements that the other regions may not have).

Translating content in different languages is the most common form of localization major products provide. It can also be in the form of cultural adaptation and regional customization. This should play a part in product design to have products that can expand into new markets without any significant design and engineering overhead.

As it has been mentioned before, there is a need to develop content and features while keeping in mind the different user groups and their preferences. Even while developing the product, there is a need to make sure it is scalable in terms of engineering efforts. This means that scalability and flexibility need to be prioritized to accommodate future enhancements, such as new features and product updates.

There is a need to keep on iterating on the product and use data-driven insights and feedback to develop new offerings. The product should continuously be refined, and different versions should be launched as new insight comes in and new features are developed. There are many development technologies that provide scalable frameworks like React, Angular and Dart. These provide the component's architecture and allow the re-use of the code as much as possible.

Nobody likes a super slow product that takes hours to load. Performance optimization is another in which the product can score big and get loads of customers.

In order to gain more customers, there is a need to identify the devices, platforms and network capabilities of the target population and optimize the product's performance accordingly. This means that the product shouldn't be computationally heavy if the target area is a hilly region with limited connectivity. There is also a need to estimate the maximum traffic expected and try to work on solutions to minimize loading times.

Performance testing is another way to identify loopholes and fix them before launching the product to the public. Error handling is also important in this field, as the product should be stable enough to handle edge cases as well as exceptions thrown. A good example of this is the launch of the FBLite product by Meta Inc. The product helps Meta tap into the lower-tier markets and is a very efficient product that stores everything on the server and renders everything using that. This makes sure that the app size itself is small and can be used on older and outdated devices. Cloud services like AWS offer tools like load-balancing in order to optimize resource allocation as well as loading times, so try to find out-of-the-box solutions in order to minimize the development times.

Since the product may work with a large customer base, it also needs to implement robust security measures to safeguard user data, data privacy and confidentiality. There is a need to be aware of the different industry and regulatory requirements such as DMA, GDPR or HIPAA in order to meet industry standards for security and ensure compliance with the legal authorities. Conducting internal audits, network vulnerability assessments and bug bounties are other effective ways to de-risk product launches. There are also many online tools that provide security to products, such as Cloudflare, which can be made use of to develop security and data privacy features.

Just having a strong product wouldn't help reach a wide consumer base; there would be a need to develop effective strategies to reach and engage with the target population. There is a need to make the most of online platforms like social media and cold emails to meet people and acquire new customers. Organizing events such as hackathons or bug bounties can also help reach out to a wider group and potential collaborators. It would also help to support community engagement through user groups and efficient customer service. Using AI tools like AI-powered chatbots here can help reduce costs while internal teams are hired for customer engagement and customer service.

It would be very rare that a product is launched without any future iterations if the aim is to reach a large population. This means that there will be continuously iterating of the product and working with other people to develop new features and improve the existing features based on customer feedback. As the team grows, this process can slow down the work and can affect product launch cycles. In order to mitigate this, proper project tracking and management must be adhered to.

It can help to make use of agile methodologies like Scrum and project tracking tools like Jira to facilitate rapid development cycles and frequent releases. These can be hard to ramp up at first but in the long term, they can really help with the development issues of the product. Continuously updating the product would make sure the product doesn't become obsolete and matches the market dynamics. It would also allow to continuously provide great customer experience. There is a need to encourage innovation and experimentation in the team to keep on continuously improving the product and to focus on maintaining a strong as well as diverse team in order

to gain unique insights and also to have experts focused on different parts of the product.

There is also a need to establish key metrics for the product and use them to form product decisions. These metrics can help acquire new users, retain old users, and also understand user satisfaction with the product. These indicators could be anything ranging from product performance to user impressions on different parts of the products. There is a need to make the most of data logging in order to log important features that would help with the next iteration of the product. All this data must be standardized by using data analytics tools like Power BI or by making their own dashboards. Data can be analysed to monitor user behaviour

and identify the latest trends in order to pivot the product accordingly. There is also a need to use this data to do research studies and highlight any positive impact as part of the community outreach efforts.

To conclude, building a product for a large population requires a mix of many different facets as mentioned before. This is not an exhaustive list of factors but prioritizing these should definitely help the organization develop products that resonate with diverse audiences, continuously grow and acquire new customers and are able to deliver value at scale. By inculcating these features in the product development lifecycle, the product development team would be setting itself up for success and launching an effective product.

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