Development of a Data-Driven Prototype for Consumer-Centric Product Development and Issue Resolution in the Telecommunications Industry (Case Study: Smartphones)

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ABSTRACT

In today's world of digital evolution, the need for data-driven decision-making cannot be over-emphasized. This need is especially crucial in the telecommunication industries, where competitors are neck deep in competition churning out various products for various price categories daily, and where transfer of ideas and innovations from company to company is prevalent. The importance of Data-driven decision-making in end users' experience in the smartphone world cannot be under-utilized, as this enables the telecommunication companies to understand their end-user needs, leading to delivering an experience that resonates with the end users. This research seeks to address the methodology the telecommunications industries utilize in gathering data that inform product improvement, customer satisfaction rating and how direct input from the end consumers of their product can directly impact the upgrade/evolution of the next product. The research seeks to build a new model that utilizes data inputted by end users to impact an update or upgraded device. Presently the use of smartphones has no direct customer feedback integrated into them for various interactive features the consumers use daily, so the companies depend on third-party application ratings, surveys and a list of other methods which does not include a provision for direct feedback on applications within the smartphone.

LITERATURE REVIEW

The importance of Data-driven decision-making in end users' experience in the smartphone world cannot be under-utilized, as this enables the telecommunication companies to understand their end-user needs, leading to delivering an experience that resonates with the end users.

Telecommunications industries rely heavily on generic feedback, and also feedback from online influencers to build their next model or upgrade, a lot of end users have no direct opportunity to contribute to the building of the next device.

Personalised service offerings employ data analytics to tailor services to each customer's individual requirements and preferences. Telecommunications companies can gain valuable insights into customer behaviour and preferences by evaluating usage trends, service history, and feedback(Nneka Adaobi Ochuba et al., 2024) For example, the Internet has become an indispensable tool in all aspects of our lives. As a result, this has had a big impact on how individuals make commercial purchases today. This close encounter with the digital world has resulted in a shift in people's expectations and wants, which cannot and must not be ignored. As a result, in order to fulfill these new market demands, businesses are increasingly being obliged to adapt their strategies to the conditions of the Internet, giving a broader service targeted to their clients by extending traditional services through digital ones(Misischia et al., 2022). Technological advancements have improved data processing speed and storage capacity. Tech-savvy organisations are utilising big data to enhance decision-making, agility, and customer-centric methods(Camilleri, 2020).

Data-driven methodologies, such as predictive analytics, machine learning, and artificial intelligence, are increasingly being used to automate processes, identify trends, and predict customer needs(Sarker, 2021). These methodologies when used right to gain the end users' insights into applications built into a smartphone, how they

interact with it and what features they would want to see improved upon will go a long way in revolutionizing the smartphone industry.

The ability of the telecommunications industry to key into the application of a data-driven approach to tailor customer needs will greatly benefit both the company and the end user, this research seeks to address the contributions of the end users and how they will affect the creation or upgrade of a new product. For example, in the telecommunications industry in the United States, churn rates have been carefully monitored due to their direct impact on revenue and customer retention strategies (Costanzo & Spotts, 2015). According to recent statistics, telecom providers in the United States face an average annual churn rate of around 1-2%, influenced by factors such as competitive pricing, service quality, and customer service responsiveness.(Anderson, 2024). These go to further emphasize the need for developing a data-driven prototype for consumer-centric product development and issue resolution which in turn should lead to core customer loyalty and retention.

STATEMENT OF THE PROBLEM

The smartphone industry is at the forefront of innovation, with yet a lot of room for improvement, the industry has yet to fully evolve with aligning its products with the end user preferences. As integral to everyday life of the user as smartphones are, it still lack the mechanisms to gather and analyze real-time feedback, this can be due to large data collation, processing, cloud storage and also ethical borders. This now results in updates and upgrades being based on assumptions, delayed feedback, online influencers feedback which often leads to user dissatisfaction and opportunities lost in utilizing important user feedback.

Currently, there is no standardized system embedded in smartphones that enables users to provide immediate feedback on features, usability, and connectivity. This gap hampers the ability of telecommunications companies to:

Identify and Address End users Concerns: with lack of real-tome insights from end users, the telecom companies will encounter challenges in promptly resolving issues or ensuring solutions are tailored to the user needs

Integrate User Suggestions into Product Development: without dynamic feedback systems, the industry is limited in its ability to co create and bring alive millions of end users suggestions, which often result in products not fully meeting market demands.

Enhance Customer Retention: Delayed responsiveness to consumer issues can erode brand loyalty, as users may turn to competitors offering better user experiences. Also if the users are aware they have a voice that counts that will be such a huge game changer in today's world

This research seeks to address these challenges by developing a data-driven prototype that integrates real-time feedback mechanisms into smartphones. By enabling users to rate features, provide suggestions, and share preferences seamlessly, the proposed solution aims to revolutionize how the telecommunications industry designs and improves its products, it also seeks to revolutionize targeted advertising as the end users will fully feel like a part of the design process and hold great pride in the end product.

AIMS AND OBJECTIVES

The aim of this research is to develop a working prototype model which will be embedded in smartphones to collate real-time consumer feedback through a data-driven framework to enhance the decisions on updates to the device and upgrade to a new device by the telecommunication industry and in turn ensure customer loyalty and satisfaction.

Analyse the acquired data to discover the patterns and trends for developing consumer-centric smartphone features and gain valuable insights.

Create a workable prototype that combines user feedback with machine learning to provide actionable insights.

Collaborate with a smartphone production company to implement the prototype.

To validate how effective the model implemented will be in making the end-user experience satisfactory and to drive innovation in the telecommunication industry in how smartphones are produced

RESEARCH STRATEGY

Approach:

Literature Review:

Conduct extensive research on the methodologies already proposed or are used for data-driven insight's consumer feedback in smartphones

Explore what the current data analytics techniques are in use and development and their applications in product development.

Examine ethical and regulatory frameworks for processing user data, such as GDPR.

Data Collecting Framework:

Develop a prototype feedback system that integrates with smartphone settings and apps.

Collaborate with a smartphone company on internships and data collecting.

Create rating pop-ups for frequently used features like connectivity settings, app interfaces, and built-in functionality.

Include a suggestion input area where users can propose desired upgrades or suggestions.

Prototype testing:

Small-scale testing of the embedded feedback system with a representative sample of users, in conjunction with an organisation.

Obtain comments on the system's usability and effectiveness.

Data Analysis and Model Development.

Apply machine learning algorithms to assess feedback, discover trends, and provide recommendations.

Use visualisation tools like as Tableau and Power BI to present results and insights.

Validation:

Using iterative testing and refining, assess the impact of the feedback system on user satisfaction and product performance.

EXPECTED OUTCOMES

Develop a completely functional prototype of a smartphone feedback integration system for real-time user input.

Analyze consumer preferences and satisfaction with the product.

Improved product development decisions by incorporating data-driven recommendations from end-users, creating a sense of pride for them.

Improved consumer satisfaction and retention with targeted smartphone feature updates and innovations.

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