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Development of a Motorcycle Parts Search Platform with a Design Thinking Approach

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ABSTRACT

In the motorcycle industry, finding spare parts is a big challenge for vehicle owners. This research aims to apply the Design Thinking method in designing a motorcycle parts search and gain a deep understanding of the needs and challenges faced by users, as well as create better solutions that are by these needs. This research applies a Design Thinking approach that involves a series of stages such as Empathize, Define, Ideate, Prototype, and Test. Data was obtained through direct observation, interviews with related parties, and analysis of existing problems. The results of the study show that the majority of users are men (80%), with the dominance of entrepreneurs (43.3%) and Generation Y (76.7%). The app is also attractive to Bachelor's graduates (43.3%) and users with high needs (53.33%). Important factors that increase the app's benefits include a search feature by name and complete product details. The implementation of motorcycle parts search using Design Thinking is expected to help the company strengthen its brand image as a service provider that is responsive to user needs and increase customer loyalty through a better experience in the parts search process.

Introduction

The automotive industry is one of the sectors that has a vital role in the global economy. Vehicles such as cars and motorcycles have become an integral part of modern life (Ahadi & Amrulloh, 2023). The automotive industry creates millions of jobs around the world, including in manufacturing plants, dealer networks, service centers, and related industries such as logistics and workshops. The automotive industry makes a significant contribution to the Gross Domestic Product (GDP) of countries around the world (Ahmelia, Herlin, & Rahman, 2022). This includes revenue generated from the sale of vehicles, parts, and related services.

The complexity of the automotive industry involves many components and spare parts that must be manufactured, distributed, and replaced periodically (Yusdinata, Setyabudhi, & Putra, 2019). The problem of the availability of components and spare parts in the automotive industry is a source of inconvenience, additional costs, and even

safety risks for motorcycle users if not addressed properly. One of the main problems is the availability of stock of necessary components and spare parts (Biki, Mendo, & Hilala, 2021). Inefficient inventory policies or disruptions in the supply chain can result in the unavailability of critical components, which can slow down the process of repairing or producing vehicles. Components and parts in the automotive industry often have to be compatible with various vehicle models and brands (Theissler, Pérez-Velázquez, Kettelgerdes, & Elger, 2021). Mistakes in choosing unsuitable components can lead to serious problems in the functioning and safety of the vehicle.

Spare parts are parts that cannot be separated from everything that uses the machine, this fact is of course because spare parts are one of the important parts or components that cause the machine to work (Almahfud, Primajaya, & Rizal, 2024). The composition of an engine consists of several main components that can mostly work if the parts are complete in addition to other components such as fuel and so on. Spare parts are not just any component. The quality of spare parts plays a big role in the performance of machines and equipment. Poor-quality parts can result in decreased performance, engine damage, and even the risk of accidents. On the other hand, high-quality genuine parts ensure optimal performance and operational safety (Aryata, Marendra, & Afgani, 2023).

The discussion about the use of original parts with aftermarket parts is noteworthy. Original parts are specifically designed for full compatibility with equipment and meet the highest quality standards (Gallico, 2021). Aftermarket parts are often more affordable, and they can be a good alternative if they are chosen wisely. It is necessary to be careful because not all aftermarket parts are of the same quality (Darmawan, Anwar, Rahmatulloh, & Sulastri, 2022). Likewise with motorcycles that use an engine as the driving motor, this of course makes motorcycle spare parts very important to be able to support the performance of an engine on a motorcycle. Spare parts that are components of a motorcycle and are widely circulated on the market include:

1. Tyre
2. Brake Shoe
3. Oil
4. Sparkplug
5. Battery
6. Drive Chain
7. Fan Belt
8. Throttle Cable

Based on the observation of researchers from respondents with several motorcycle repair shops in the DKI Jakarta area, all of these spare parts are components that greatly determine the maximum performance of a motorcycle (Gemawaty & Yuliani, 2023). Judging from the level of use, the spare parts mentioned above are components that quickly suffer damage due to continuous consumption factors so that they are quickly damaged. As a result of parts that wear out quickly (shrink due to rubbing) or experience damage, the need for these parts is increasing. This, of course, has an impact on the

production process of motor vehicle spare parts manufacturers (Spare Parts), especially motorcycles, so that consumer needs for spare parts can be met (Utami & Retnowo, 2023).

On the other hand, the impact caused by the increasing consumer need (motorcycle users) for these parts is the presence of rogue manufacturers or certain business actors who, without obtaining official permission from the manufacturer who officially produces a spare part, have deliberately made and produced similar parts and even used the same brand to profiteer from the spare parts brand. Some motorcycle parts components that are not spared from the practice of counterfeiting, the most counterfeited parts are oil and brake pads. In practice, some rogue manufacturers who market fake parts deliberately sell at prices below the market price so that many consumers think about immediately buying without looking at the quality of the goods purchased on the other hand consumers are more interested in fake parts than original parts that are of higher quality. The use of these substandard parts will have an impact on further damage and even potential danger for motorcycle users.

An owner of an H brand motorcycle named Anton who is also the owner of a used motorcycle sales garage in the Matraman area of East Jakarta said his experience in finding original spare parts at official workshops is quite difficult, sometimes he is directed by the owner of the workshop to look on the official website of the H brand, still, the goods needed such as Kiprok (Regulator Rectifier) are always empty and not available which finally Anton looks for in the online shop for similar items that are easy to get But the price is much cheaper and there is no guarantee of its strength and durability yet. Looking at some of the descriptions of the problems above, the author sees that there is still a lack of information on the search for spare parts that are on the performance needs of motorcycles and the needs of motorcycle users themselves. Good information about spare parts gives motorcycle users the freedom to decide on the purchase of spare parts wisely. For the workshop side, good spare parts information helps them from buying fake goods that cause workshop owners to face complaints and losses from consumer distrust of motorcycle users. Authorized distributors who distribute original spare parts also play an important role in providing and informing the availability of goods according to the needs of motorcycle users, shops, or workshops.

There needs to be a platform that is the best search system that prioritizes motorcycle users, according to the author, the workshop owner and the workshop mechanic are motorcycle users as well, who also have the same feeling as a user of spare parts, which is clear that good experience in using spare parts itself will be good information for the trust of its customers. In this research, the author will develop a platform that can be used for motorcycle users from various circles, professions, and ages. The research will use the Design Thinking Model approach because it is by the theory revealed that this approach focuses on a deep understanding of user needs and the development of user-centered solutions (Kelley & Brown, 2018). This approach has proven successful in designing products and services that can meet the needs and desires of users as optimally as possible (Wahyuni, 2023). This research aims to develop a

platform that prioritizes the needs and desires of customers, in this case, motorcycle users in the search for spare parts, and provides solutions for motorcycle users themselves.

Method

The research design used in this study is a case study that is included in the category of qualitative research. This approach uses interviews and document analysis to describe, explain, and analyze a suitable business model, which is relevant to the context of designing a motorcycle parts search model. This research adopts the approach as an innovative method to solve problems and design user-focused solutions in the context of designing a motorcycle parts search model. The Design Thinking approach is human-focused in creating innovation. This approach integrates user needs, technology potential, and business success requirements. The Design Thinking method involves 5 stages, namely empathize, define, generate ideas, make prototypes, and test.

Results and Discussion

In the prototype testing process of the Motofast parts search application using a remote testing system through the app. maze. Co platform, 30 prospective users from workshop owners, motorcycle mechanics, and spare parts consumers will follow a series of predetermined task missions. They will face various tasks such as finding parts for motorcycles with specific models, managing the shopping cart by adding and removing parts, entering shipping information, choosing a payment method, viewing purchase history, as well as using the search results filter feature, and leaving reviews. The goal of this trial is to validate the functionality, user experience, and ease of use of the app before it is officially launched, in the hope of gaining valuable input for further improvements and customizations.

Based on the results of the stages of design, creation, and testing in the development of user interfaces using design thinking to make it easier for users to learn and use the Motofast Application, the following conclusions are obtained:

1. Customer satisfaction factors in searching for parts through the Motofast App include several key elements, namely intuitive navigation to make it easier for users to explore the application, speed in presenting search results to minimize waiting time, accuracy and completeness of information provided so that users get relevant and correct data, and ease of using advanced features such as filters and notifications to adjust their experience. Understanding and meeting these aspects effectively will not only improve user satisfaction but also help maintain their loyalty to the app, ensuring that users return to using the parts search service and recommend it to others.
2. The right strategy for a parts search model that suits the needs of all users includes improving intuitive navigation to make it easier for users to navigate the application, optimizing search speed to provide results quickly and efficiently, and ensuring the accuracy and completeness of the information provided to increase user trust in the application. Additionally, it is important to provide advanced features such as filters

and notifications with an easy-to-use interface so that users can customize their experience as needed. By implementing this strategy, parts search applications can meet the expectations of diverse users, increase their satisfaction, and strengthen user engagement with the application in the long run.

For workshop owners, the use of a parts search app can provide many significant benefits. Integrating this application with a workshop management system can improve operational efficiency through real-time stock monitoring and order automation. Providing training to employees on the use of the app ensures that they can search and order parts quickly and accurately. Additionally, utilizing advanced features such as search filters and stock notifications can help in finding parts more efficiently. Gathering feedback from mechanics and customers will provide insights for application improvement, while data analysis from the application can help in better inventory planning. Finally, collaborating with suppliers who also use the app can speed up the process of ordering and shipping parts.

Motorcycle mechanics are advised to make the most of parts search applications to improve work efficiency and service quality. First, learn and familiarize yourself with the app's features, such as search filters and purchase history, to ease the process of searching for and ordering the necessary parts. Second, take advantage of the stock notifications available in the app to ensure the availability of frequently used parts, to avoid delays in repairs. Third, use the app to track parts that are being ordered and set work schedules based on the availability of those parts. Fourth, provide feedback to workshop owners regarding the experience of using the application, as well as suggestions for improving features that can help with daily work. Finally, keep your knowledge up to date on new technologies related to parts search applications, to improve your skills and adaptability in an increasingly digital work environment.

For spare parts consumers, it is recommended to take advantage of parts search applications to ensure that they get the right parts according to their needs. First, use the search and filter features provided by the app to find specific parts according to the make and model of the motorcycle. Second, take advantage of the complete and accurate information that the app provides regarding the specifications and compatibility of parts to avoid making mistakes. Third, check reviews and ratings from other users to get an idea of the quality and performance of the parts you want to buy. Fourth, take advantage of notifications or stock notifications to stay informed about the availability of spare parts that you often need. Finally, provide feedback and reviews about your experience using the app and the product you purchased, so that it can help other users make better decisions.

For future research, it is recommended to expand the scope of the study by involving more respondents from various circles, including workshop owners, mechanics, and parts consumers. This will provide a more comprehensive picture of their experience and needs in using the parts search application. Research can be focused on in-depth analysis of factors that affect user satisfaction, such as user interface, advanced features, and customer service support. The research can also explore the impact of integrating

parts search applications with workshop management systems and e-commerce on operational efficiency and customer satisfaction.

Conclusion

The development of a motorcycle parts search platform using a Design Thinking approach has resulted in an innovative solution that is responsive to user needs. Through this approach, the research managed to understand the main problems faced by users in searching for motorcycle parts, such as difficulty in finding the right parts, limited information, and inefficient purchasing process. By applying the stages of empathize, define, ideate, prototype, and test, the developed platform can provide a user-friendly interface, more accurate search features, and a simpler purchasing process. Test results show that users find it easy to find motorcycle parts that suit their needs, and experience increased efficiency in the search and purchase process. The Design Thinking approach proved effective in creating a user-driven solution that can improve the motorcycle parts search experience. As such, this platform has great potential to improve accessibility and convenience for bikers and repair shops in finding the parts they need.

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