



DEVELOPMENT OF MOBILE APPLICATIONS AND CUSTOMER SATISFACTION

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Abstract:

The purpose of the research is to identify characteristics of mobile applications that influence customer satisfaction. Interactivity, functionality, visual design, connection to social networks, and other features of mobile applications contribute to the user experience, impact customer satisfaction and influence their attitude towards the brand. Competition in the mobile application market is significant - consumers choose from thousands of mobile applications and it can be difficult to persuade them to shift to a new one. Therefore, for the investment into the development of a mobile application to be effective it is necessary to ensure that the application meets the needs of target users.

This paper presents the theories of consumer satisfaction in the digital environment and characteristics of mobile applications important for user satisfaction, considering the specifics of mobile application design. User attitudes towards specific mobile application were collected and analyzed in the context of Lidl company. Conducted survey included 100 participants, users of Lidl mobile application. The main finding is that majority of users appreciate many features of the mobile application as a part of the wider customer experience. Detailed results are presented and analyzed in the paper. Since there is always room for improvement, further development of applications with the use of AI is expected in the future, in line with the growing influence of mobile marketing

Keywords: mobile applications, customer satisfaction

1. Digital transformation and consumer behaviour

Digital transformation is the way to respond to the new emerging requirements that happen in the business environment. On the other hand, the requirements in the business environment change due to technological advancements and digital transformation. So, it is barely impossible to separate the influential nature of both processes. Digitalization now influences and transforms customer behaviour, expectations, and needs (Eckert et al., 2022). As a result of the digital revolution, society has witnessed an unprecedented shift away from an industrial to a digital orientation. A new customer generation born as a result of the Internet's democratization is more susceptible to technological advancements. As a result of the breakthrough development in tech solutions, digital transformation has become a requirement rather than a choice for today's organizations (Zouari & Abdelhedi, 2021).

Today, digital transformation has fundamentally altered consumer expectations and behaviours, putting pressure on traditional firms and disrupting numerous markets. Consumers have access to dozens of media channels, actively and effortlessly communicate with businesses and other consumers, and encounter a rapidly increasing number of digital touchpoints in their customer journey. The need for digital transformation is being driven by three major external factors. First, since the advent and widespread adoption of the World Wide Web, an increasing number of accompanying technologies have emerged, bolstering the growth of e-commerce (Verhoef et al., 2021).

Consumer expectations have always been the primary reason for conducting digital transformation. It started once a flood of innovative digital solutions such as (IBM, 2021): mobile phones, social networks, the Internet of Things (IoT) and clouds. Customers today want to conduct their tasks digitally, regardless of time and place, on any device, with all essential data and information at their fingertips, as a result of the digitalization process. Finally, the purpose of digitalization is to meet changed expectations of the customers.

Brands have seen a significant push toward automation as consumers have demanded contactless services more frequently, which has improved their capacity to provide this experience for customers. It is easier for brands to give their customers great, safe experiences when fewer processes have to be handled directly by personnel (Tovaglieri, 2021).

2. Customer satisfaction

New technologies have the great power to influence customer satisfaction. The way how digitalization influenced the competitive advantages of some companies can be best seen in the examples such as Amazon and Netflix. These companies have snatched market share away from their competitors by implementing these technologies to: reimagine business models such as: e-commerce, improve processes and constantly strive to improve the customer experience.

Some of the main requests of the consumers today are:

- 1) **Speed:** Today's consumer expects immediate satisfaction, with 80% of customers demanding faster responses from businesses. Customers who are kept waiting are more likely to switch to a competitor who can meet their needs faster. Customers expect a consistent experience regardless of the platform or channel they use to interact with your company.
- 2) **Omnichannel experience:** Businesses that provide strong omnichannel experiences will retain more customers on average than those that provide multichannel customer experiences. A consumer can pick up where they left off on one channel and carry on with the experience on another when they have an omnichannel customer experience, which

consists of separate customer touch points across a range of channels that interact seamlessly.

- 3) **Focus on mobile phones:** Most customers interact with your company via their smartphones, and they expect convenience and ease of engagement via favourite channels and mobile applications.

Applications that take care of ongoing updates and are free are more appealing to potential users. The thousands of currently existing applications present competition for application developers. Additionally, these applications promote brand and customer loyalty. Businesses are aware of the expanding mobile markets and wish to participate in emerging channels.

Regardless of the service delivery channel, such as in-store, online website, or mobile application, customers always have an experience, whether it is good, bad, or indifferent. When a customer buys a product or receives service from a retailer, they have this experience. The transition from static to dynamic and interactive e-commerce sites has increased the emphasis on the online customer experience. Similarly, mobile applications provide a new dynamic channel for customers to browse and purchase products, but little is known about how such software influences their experience. A variety of factors can have an impact on the cognitive and affective aspects of a customer's experience in both offline and online settings. Satisfaction, trust, re-visit intention, re-purchase intention, and loyalty have all been identified as positive customer experience outcomes.

3. Mobile marketing and mobile applications

Mobile marketing has emerged as a strategic priority for businesses. The two-way or multi-way communication and promotion of a product or service between a company and its customers via a mobile medium, device, platform, or technology is known as mobile marketing. The most recent mobile marketing research has concentrated on smartphone, tablet, and application adoption, the effectiveness of reaching in mobile promotions, the effect of mobile display and in-app marketing, and the overall impact of mobile devices and applications on retailing behaviours. Methods and data used to answer relevant mobile marketing questions have advanced, with large-scale field experiments, natural experiments, and structural models being employed. (Rindfleisch & Malter, 2019). Mobile marketing is becoming increasingly important in retail. Because of the time-sensitive and location-sensitive nature of mobile media and devices, mobile marketing has the potential to change the retailing paradigm (Shankar et al., 2010). Given consumer attitudes and behaviours, as well as segment differences, retailers engage in a variety of mobile marketing practices in order to profitably satisfy customer needs. These practices include mobile website creation and maintenance, mobile emailing and messaging, mobile advertising, mobile couponing, mobile customer service, and mobile social network management (Shankar et al., 2010).

Mobile application use has contributed to the rapid proliferation of mobile devices. McRae et al. (2013) examined consumer response times across all personal communication platforms and found that consumers have more positive emotional responses to site visits when they are conducted on a mobile platform, such as an application, than when they are conducted on other platforms. Consumers reacted positively to branded messages because they thought they were more trustworthy when delivered via mobile devices rather than other personal communication devices.

Mobile marketing is extremely cost-effective when compared to other marketing methods. Marketers can reach people all over the world using mobile marketing techniques because marketing message delivery is almost always guaranteed, unlike other forms of unsolicited direct marketing channels. Targeted content is personalized and tailored to the preferences of customers who have opted in to receive it. Customers who have expressly agreed to receive marketing messages will receive targeted marketing content directly on their mobile phones. Customers who

have previously received mobile marketing messages can easily share them with others. This increases the likelihood of free customer acquisition. Not only can content be personalized, but so can push notifications. User segmentation becomes easier with the collection of permissible data, resulting in powerful campaigns. Mobile marketing has the unrivalled advantage of promoting instant transactions for e-retailers. It gives the possibility to immediately meet the needs of the customers. The ability to easily track user responses is another powerful and beneficial feature of mobile marketing. This gives more information and insights to act on. Metrics such as acquisition cost, lifetime value, and user engagement can help to assess the health of the campaign and make any necessary changes. As a result, the campaign budget is more effectively spent.

3.1. Mobile applications

Mobile applications are pieces of software that are downloaded to a smartphone's operating system from an online store platform such as the App Store or the Google Play Store. Mobile applications are characterized in marketing as software that is downloadable to a mobile device and prominently displays a brand identity throughout the customer experience while using the application, often through the name of the application and the appearance of a brand logo or icon (McLean et al., 2018).

Some of the reasons why businesses need mobile applications include: Creating a direct marketing channel - providing information and reminders, product brochures, and customer service with just a few clicks; Adding value for customers who are loyal to the business - digitalizing the program for collecting points and rewards through developing a company mobile application will result in more downloads for the application; Building a brand for recognition - the mobile application can raise consumer awareness of your brand. Improving customer engagement - the ability to include features for quick and easy access to your business; Being innovators and progressive in thought and action - while mobile applications for small businesses are uncommon, developing them is a way to stand out from the crowd, be unique, and keep up with new technologies (Angelova, 2019).

According to the findings, mobile applications acceptance would contribute to a better customer experience by making it easier to place orders and make payments. Technology integration via e-commerce platforms ensures that businesses deliver services that meet or exceed customer expectations. Mobile applications, for example, allow customers to access products and services from the comfort of their own homes (Khrais & Alghamdi, 2021).

These platforms are highly customized; therefore, consumers are more likely to contact suppliers via mobile applications. Similarly, they shorten response times to requests, allowing customers to contact the brand at any time and providing comfort. Using a mobile application to make a purchase is always more convenient than using a responsive website. As a result, trust and user experience are enhanced when using them. When it comes to building a good corporate image, the consumer's opinion and level of satisfaction are critical. Showing your audience that you are approachable and attentive strengthens customer engagement.

The main goal of the Mobile Application is to provide simple, natural, and quick services and information. An effective Mobile Application can demonstrate desirable characteristics. The application provides data for various situations based on wants and needs. The following seven principles apply to goal-driven mobile application services: 1. Service usability is simplified; 2. Information and knowledge for nontechnical users; 3. Relevant data about technical people and users; 4. Terminologies for user identification; 5. FAQs for user convenience; 6. Support for both Android and iOS; 7. Maps available, store locations. These principles can be used in the

development of a mobile application for product calculations based on affordable prices and power factors (Gani & Maung, 2019).

3.1. Mobile applications in the retail sector

The mobile device has three main characteristics: portability, location and sensitivity. Moreover, the user's mobile device is unique. By definition, a mobile device is both a technological device and a cultural object. It is a cultural object embedded in daily routines and practices. While protecting the user's security and privacy, the mobile device facilitates or augments personal and social experiences. Most buyers want to be guided not only by the retail price of a product, but also by its true value. Users want the information in companies' advertising materials to be more trustworthy and honest, including information about the product's production, composition, and price formation, so that they can assess its true value more realistically. Companies must adapt to changing market conditions (Rahmanov et al., 2021).

In omnichannel retailing, the scope of retail store mobile applications is widening. Mobile shopping now accounts for roughly one-third of global e-commerce, with total sales revenue via cell phones (mobile commerce) in the United States approaching \$100 billion per year. More than half of all website visits are made on smartphones and tablets. Retailers can address this new mobile shopping trend by creating their own application (a self-contained software program dedicated solely to that retailer). Product information, customer feedback, and store location can all be found in retail store applications.

Customers can benefit from mobile applications that provide relevant/directed and location-based information. Additionally, retailer applications frequently provide experiential benefits (e.g., customer engagement, and rewards). Finally, the literature agrees that retailer applications have the potential to improve customer shopping experiences. However, little attention has been paid to comprehending the factors that influence customer use of retail store applications, as well as the potential consequences. In this study, we examine the factors that influence a customer's decision to use a retailer application and how that affects their overall loyalty intentions.

Mobile application quality depends on interface design, compatibility, simplicity, interactivity, memory optimization, and energy consumption (Khrais & Alghamdi, 2021). The extent to which product/retail attributes meet customer expectations in terms of utilitarian aspects is referred to as functional value. This involves the app's ability supply information, convenience, coupons, and discounts, among other things. Functional value includes product-related elements and investigates the primary performance of an app/retailer. Buyers use applications for a broad range of reasons, including managing/receiving coupons, discounts, or special privileges, continuing to improve convenience, and seeking higher levels of engagement with retail stores, with retail store applications gaining mainstream acceptance in recent years. Customers are hesitant to use retailer-branded applications, according to a recent study, if they believe the functional utility of these applications is limited. Previous research (Iyer et al., 2018) has investigated the relationship between the functional value of retail store applications and the app's purchase intentions. Buyers may be hesitant to use an application due to a lack of functional value, but they will continue to shop at the retailer's physical store because it fulfils a functional need. In the age of omnichannel retailing, mobile applications have become an essential element of a retailer's strategy, and the functional value of a mobile application in and of itself would influence perceptions of customers of the application and, as a result, customer loyalty motivations.

Based on literature review, three research questions were defined:

- How the characteristics of mobile applications affect consumer satisfaction?
- How the mobile application design affect user experience?
- How the functionality of mobile application affects user experience?

4. Methodology

Research was conducted among Lidl application users in Serbia. The survey included 100 participants on random basis with only requirement to purchase in Lidl and use its application. The time for collecting responses wasn't planned at the beginning. The idea was to collect 100 responses, the time needed for that was 5 weeks. The survey was distributed and returned via online channels. The Questionnaire included 26 closed questions. All data were collected anonymously. Questions from 1 to 3 were related to gender, age group and employment status of respondents. The following questions were as follows with defined groups of answers for each question: 4. How often do you purchase in Lidl? 5. When do you use the application? 6. Are you satisfied with the design of the application? 7. Does design influence your experience in the application? 8. What do you value most about the design of the application? 9. Do you think that you will purchase more easily from the brand whose application design you found appealing? 10. Do you think the Lidl application is well organized? 11. How design of the Lidl application influences the overall customer experience? 12. How would you rate the interactivity of the Lidl application? 13. If the application would be more interactive, will you use it more? 14. How higher interactivity of the application would influence your overall satisfaction with the purchasing experience? 15. Do you find the Lidl application easy to use? 16. If the application would be simpler to use, would you rate your customer experience better? 17. How would you rate the content on the application? 18. Do you make purchasing decisions based on the content on the mobile application? 19. Do you think that your data are secured when using this application? 20. Does your opinion about the security of the application influence the usage of the application? 21. How frequently do you have problems with the application? (Not responding, error, etc.) 22. How would you rate the responsiveness of the application? 23. How would you rate the influence of responsiveness of the application on overall customer satisfaction? 24. Does the application provide an opportunity for feedback? 25. How important is the opportunity to provide feedback for your overall satisfaction of you as a consumer? 26. Do you think that application responds to your needs as a customer?

5. Results and discussion

The demographic structure of Lidl application users that participated in this research was as follows: 67% female and 33% male, 27% in the age group 18-25, the majority 42% in the age group 26-40 and 22% in the age group 41-65. A half of the participants were employed, 30% were unemployed and 10% were retired. The great majority of the participants have responded that they go shopping in Lidl stores once or twice a week (74%), 12% once or twice a month, 11% from time to time and 3% go there to buy a specific product. The majority of participants, 41% use the application when the new weakly catalogue is published and 36% use the application before or during the purchase.

When it comes to overall satisfaction with the application, 93% respondents think that the application design is very good and they are satisfied with the design, while 18% are completely satisfied with the application and think that it doesn't need any changes. For the majority of the participants, design is relevant but not decisive feature of the application. The opinions about the most important element of application design vary. It is of great importance for developers to cover different aspects and to provide a unique and complete customer experience. Especially important are images and brightness which the majority of users see as the most important features of the application design. Also, the 19% responded that design has a major impact on purchasing habits,

while the 35% said that design has a great influence on it. It can be concluded that the design of the application has a great influence on purchasing habits.

It was also important to determine how users see the navigation through the application and the way how features are organized. The 68% of the participants think that the design of the application is good from the aspect of organization. The 32% think that the organizational aspect and navigation through the application can be improved. The majority of the participants in this research (65%) think that mobile application design is important for overall satisfaction with customer experience, but that is not the decisive factor. The 25% think that the design of the application increases the overall purchasing experience and satisfaction.

Overall satisfaction is on average same among gender. However, when it comes to the impact that the design of the application has on the overall customer experience different distribution of the answers can be noted. among 25% of the total number of participants who responded that design increases overall satisfaction of customers, 79% were female. For female customers design is more important.

Customers in the age group 41-65 and 65+ are less interested in the design of the application, while users in the age group 18-25 express a higher level of interest. Also, the importance of application design is recognized by the users in the age group 26-40 as a factor that can significantly contribute to the satisfaction of customers and the quality of purchasing experience. The Lidl mobile application interactivity is described by 22% of participants as highly interactive, and other 22% claim that this application has an average level of interaction. The 28% of the participants think that the application is not interactive enough and other 28% have the opinion that this application has the minimum level of interaction.

Based on the results of this question, it can be noted that the majority of the participants of this research don't perceive this application as interactive. The following question aimed to determine if participants think that a higher level of interaction would increase the level of customer satisfaction and if they will be using the application more frequently if the interactivity is increased.

The results show that customers in general would be far more satisfied if the application would be more interactive. The 85%, which represents the great majority, claims that interactivity will increase the use of the application. The majority of users think that interactivity within the application will lead to more pleasant purchases (42%). The 14 % of the users think that the major benefit is that they will be able to organize the purchase better. The 19% of the users think that higher interactivity will help them to save money during the purchase, while 13% think that with higher interactivity time would be saved. One of the listed options in the survey was that there wouldn't be any benefits of higher interactivity, but none have chosen this option.

One of the important characteristics for mobile application is that customers find it easy to use. Simplicity is a factor that influences the actual usage of the benefits – time and money savings, and also the accessibility and fully understanding of the features that the application provides. The 45% of the respondents stated the application is simple to use, for 26% application lacks simplicity. As the Lidl (loyalty) card is a new feature in the application for the Serbian market this is selected as a subject of a separate issue. The 22% said that they think that the application is easy to use but that the Lidl card is the part that confuses them. The results show that the Lidl application should be improved when it comes to simplicity as this aspect additionally influences all other aspects related to the application. Additionally, the focus of the following question is how users perceive the contribution of the simplicity of the application for overall satisfaction with the purchasing experience. The 45% of the users think that simplicity can increase overall satisfaction. The 37% of the users think that the simplicity of the application wouldn't change the overall satisfaction of the purchasing experience. The overall impression is that simplicity would contribute to the

improvement of overall satisfaction and that this is one of the future directions in which mobile applications should develop.

One of the important questions as well is to determine what is the role of the content of the application and how the current content is rated by the consumers. The 39% of users think that this application content is fine, while 25% of the participants don't like it. Only 8% of the users think that the content is great. The 28% state that content should be more directed towards benefits and purchasing discounts. The satisfaction with the current level of the content is average, and there are a lot of aspects that can be improved. In order to check if the priority should be on improving content, it is important to determine if users connect the content of the application with purchasing decisions. The impact that content has on the purchasing decision is mostly connected to the discounts. The 47% of users shared this opinion, while 18% said that they always make purchasing decisions based on the application content. The users in the age group 26-40 in majority responded that content shared in the application has a great impact on purchasing decisions.

The majority of users, 80% trust the application, 12% think that the application is not secure and 8% of participants don't think about that. The results of this question show that users mostly trust the application. Still, considering the importance of this aspect, there is a need for additional strengthening and improving security mechanisms, and informing customers about all ways and measures that are taken to secure data. Most users from age groups 41-65 and 65+ said that they don't trust the application with the data. While the majority of users who said that they don't think about data security are in the age group 18-25. The 45% of the application users said that they care about the security the same as about other characteristics. The 15% said that they care a lot about customer satisfaction, 28% said that they don't fully understand the application data security, and 12% responded that they care a little about it. The offered response was also "It doesn't have any influence", but none of the consumers responded that way. The majority of users that responded that they don't fully understand the application security belong to age groups 41-65 or 65+.

From the responses about problems with the application, it can be noted that the majority of users in this research (65%) rarely have a problem with the application and that 22% of them said that the problem never occurs. The 8% of users said that the problem occurs every second or third time they use the application, and 5% said that the problem happens sometimes.

As one of the main focuses of the customer is on the speed of the service they need, the responsiveness of the application is a very significant issue. The 42% of the users of the application think that the responsiveness is solid, 30% think that the responsiveness is great, while only 3% said that it is terrible. The 25% think that the responsiveness is tolerable. The results regarding responsiveness are not bad, but still, the more positive opinions in this field should be targeted. The 60% of the users think that the responsiveness of the application is very important for overall satisfaction.

The 65% of respondents think that they don't have opportunities to give feedback, 10% don't know and 25% are satisfied with the current situation. The 46% of the users said that feedback opportunity is important, while 35% said that this issue is very important for them. The overall impression is that consumers find it very important to be able to provide feedback. The 45% of users thinks that the application partially satisfies the needs of the consumers, while 25% thinks that it does it completely. The 17% think that application barely responds to the needs of the consumers, and 13% that it doesn't respond to the needs of consumers.

Each of the listed characteristics contributes to the experience that the consumer has, and many of the characteristics are connected. For example, the application must be easy to use and that is connected with its design and organization. The characteristics of the application can be perceived separately. In a case like this, when consumers don't underline one or two characteristics with

which they are not satisfied and provide responses that show that on average they have similar opinions about different characteristics of the mobile application it is hard to determine what aspects should be first to be improved. In this holistic approach to the application, improvements need to be incorporated and all characteristic modified to better suits the need of the consumers.

The interactivity of the application is one of the characteristics that has less favourable reviews compared to the other characteristics. It is stated that it can have a major impact on customer satisfaction, thus it should be improved. The same stands for the application content. Characteristics of the mobile application are of great importance for the overall impression that consumers have about the brand.

Two mobile characteristics are emphasized in this research – design and functionality. The users find that design is an important part of the customer experience. They think that design contributes a lot to their overall satisfaction with the customer experience and that design can contribute to deciding to purchase the products of the brand. In this case, it can be said that Lidl's mobile application design plays a significant role in customers' attitudes towards the brand. To analyse that further, the design of the application is the first contact with the brand. From it, the impression of what one can expect from the brand is created. The design also can contribute to the prioritization of certain aspects that are important for the brand image.

For brands such as Lidl, it is important to develop good communication with its customers and to present not only its products but also its values. Every aspect of the application can contribute to that. The design has a specific position as it creates a first impression on the customers and catches their interest to further navigate the application.

Lidl application developers should focus their efforts on design, not only to make a better impression on new customers but to improve the experience for existing ones. The responses of the research show that customers see the application highly connected to their needs in the great majority. They also share that opportunities to provide feedback and to have the application that correspond to their needs are of great importance for their overall opinion about the brand. Each of the aspects within functionality can contribute highly to the users' experience.

6. Conclusions

This research is focused on the aspects that influence the customers' experience with a special reflection on the features of mobile marketing. Mobile application features reshaped the way products and services are organized and that is to a great extent connected to the change in consumer behaviour.

The research was conducted to analyse customer preferences when it comes to mobile applications and their contribution to the overall user satisfaction. This research was conducted using online questionnaire related to users' attitudes towards Lidle mobile application. The Lidl mobile application was selected as the application of one of the major companies in the retail industry and the company that is recognized for care when it comes to its customers.

Users in this research valued the mobile experience and indicated the "weak spots" of this application. The main conclusion is that majority of users values a lot of the features on the mobile application as a part of the wider customer experience. The majority of users think that this application has solid results across all features. Still, there is always room for improvements and the benefits of these improvements could be great considering the importance of mobile marketing.

Users of the Lidl mobile application valued the following characteristics of the application that affect consumer satisfaction: organization, design, interactivity, simplicity, content, security, lack of problems, responsiveness and opportunity to give feedback.

In the future, mobile applications will develop and some of the potential courses of these changes are voice-enabled technologies and instant applications. Voice-enabled technologies enable users to interact with their applications without having to touch their phones. Complete conversations with voice assistants are still not possible at this time. Phone owners, on the other hand, can use voice controls to direct their applications to perform specific functions. While technology is still in its early stages, it is rapidly improving. Anyone can use a hands-free application with the help of voice-enabled technology. This is something that all smartphone users may come to expect from their applications shortly.

Instant applications are those that do not require downloading to the phone. They are also referred to as "progressive apps." The access to instant applications could be through the browser, or a button on the phone to make them function exactly like regular applications. They're a new concept, but they're an exciting option for developers because they can provide an app-like experience without requiring users to download a full application. This option may be appealing to users who want to save mobile data while still accessing the application when they are not connected to Wi-Fi. It remains one of the fields with great potential and with constant and rapid development. Increasing importance of mobile marketing can be expected in the future.

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