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MOBILE TECHNOLOGIES AS A TOOL FOR INCREASING DIGITAL LITERACY AND ACCESSIBILITY OF SERVICES IN RURAL AREAS

Abstract

Developing a mobile app for rural delivery is one of the most important challenges of our time. Rural residents often face difficulties in adapting to new digital technologies due to the lack of IT infrastructure, small population, and poor internet quality. This article examines the key aspects of implementing such a project, with a particular focus on creating a user-friendly and intuitive app tailored to the needs of rural users. The study highlights both challenges, including infrastructural limitations and digital literacy gaps, and opportunities, such as promoting digital inclusion and meeting the needs of rural residents. The study identifies key factors for successful implementation, such as simplifying navigation, ensuring accessibility, and taking into account the socio-economic characteristics of rural areas. By focusing on an intuitive interface and a clear structure, the project aims to bridge the digital divide, allowing rural users to enjoy modern delivery services without the barriers they face every day.

Keywords: rural areas, mobile app development, IT infrastructure, digital literacy, rural residents.

Introduction

In our age of digital technology, the development of mobile applications for the convenience of users has become an integral part of everyday life. The development of a mobile application for delivery for rural areas plays an important role in the development of digital technology and

its implementation, since the development contributes not only to the expansion of knowledge of residents, but also to the mastery of new technologies.

Rural residents are constantly faced with the problems of adapting new technologies associated with the constant growth of new information. Mobile delivery applications do not always cover all points of the city, so there is a need to create mobile applications that focus on sparsely populated regions that would be actively used by rural residents.

In many cases, it is difficult for rural residents to master the full functionality of a particular application, due to its complex design and interface. Therefore, our main task in creating such a mobile application is to develop an intuitive and simple interface to provide users with full and effective use. The main effective approach in this factor is to reduce complex tasks, and increase the simplest tasks, with unobtrusive color schemes.

The main hypotheses that were developed during the creation of this study were:

- The development of a mobile delivery application stimulates local economic growth, expands opportunities for rural entrepreneurs and increases the digital literacy of residents.
- The application with a user-friendly and intuitive interface will remove barriers to use.
- Using a mobile delivery application will allow residents of remote areas to reduce the time and cost of obtaining necessary goods, which will improve the standard of living and access to goods.

Based on these hypotheses, the following main objectives of our study were set:

- Identify approaches to simplify the lives of local residents in rural areas.
- Explore research findings to improve the digital literacy of residents in rural areas.
- Identify methods to learn to improve the local economy, such as supporting the development of local businesses by creating opportunities for farmers and producers to sell their goods through the application, expanding their market.

Research on the topic of «Empowering Rural Communities: Mobile Solutions For Delivery And Digital Literacy» mainly emphasizes how important the conditions of limited IT infrastructure in rural areas are to adapt to new technologies. As an example, the RulProvider website discusses the key aspect of creating a mobile application with a simple and intuitive interface due to low digital literacy in sparsely populated areas. Such a simple design includes a minimalist structure and basic and easy-to-readcolors, which will help the user get used to the application faster [1].

Also, an important aspect is the creation of routing functionality. This takes into account the specific features of rural regions, such as the lack of accurate maps and difficult weather conditions. To solve these problems, recent studies propose solutions related to the integration of GPS and machine learning, this will allow, in conditions of weak IT infrastructure, to optimize routes easier than it is now. For example, we can take notification systems for users of such applications that will provide timely information about delivery. This is a decisive role in improving the IT infrastructure in rural areas [2].

Developing a mobile delivery application for rural areas can be useful for economic and social inclusion, with such functionality as a platform for selling local products, it will facilitate access to fresh goods. The implementation of such a platform requires sustainability, these are factors such as minimizing mobile data consumption and adding different languages.

In reviewing the literature on rural mobile app development, we identified many key aspects. For example, research by Marie Bjerede (2018) highlights the common challenges rural residents face in adopting new technologies. The researcher point out issues such as insufficient infrastructure and high costs of supporting new digital services [3].

And research by Rosa Maria Fanelli (2021) examines various mobile platforms that allow rural residents to sell and buy their goods. The author conclude that such applications significantly help increase economic activity and facilitate access to fresh and homemade goods. This highlights the relevance of creating mobile applications that focus on the basic needs of users [4].

Nikola M. Trendov, Samuel Varas and Meng Zeng (2019) also focus on the basic needs of residents, such as improving the digital literacy of rural residents. The authors write that the use and implementation of new digital technologies in rural areas requires training in basic digital skills. This

can be helped by applications that include video tutorials on the basics of digital literacy, so that users can more easily master new technologies [5]. And the key aspects of the research can be seen in Table 1.

Table 1 – Key aspects of research and functions

Study	Key aspects	Recommendations for the application
Marie Bjerede (2018)	Lack of infrastructure and high costs: the main problems in the adopting technology.	Reducing usage of mobile data, developing a robust architecture.
Rosa Maria Fanelli (2021)	Platforms for selling and buying goods in rural areas, enhancement of economic vitality in rural areas.	Setting up a platform for the marketing of local products, enhancing access to fresh produce.
Nikola M. Trendov, Samuel Varas and Meng Zeng (2019)	Raising the level of the digital literacy of people in the villages.	Inclusion of video lessons in digital literacy fundamentals.
General conclusions	Accounting in problems of IT-infrastructure, user requirements, and limitations of digital technologies.	Integrating several functionalities towards improving overall well-being of the rural population. Табл

Table 1 provides a structured overview of key research and aspects related to the development of mobile applications for rural areas. The table highlights key challenges such as insufficient infrastructure and the need for digital literacy. It also suggests solutions to improve the quality of life of rural residents. Overall, the table demonstrates the relationship between research and functional recommendations for creating an effective application.

Creating such a mobile application, which requires so many different factors, is a complex process that requires taking into account the problems of IT infrastructure in rural areas, user needs and limited digital technologies [6]. Therefore, developing such a mobile application will help improve the quality of life of rural residents, providing access to goods and services. This literature review highlights the need for continuous improvement and innovation in the development of such mobile applications to fully exploit the potential of implementing different functionalities.

Materials and methods

To develop a mobile application for rural areas, we have chosen a comprehensive methodology that includes: A mixed method of data collection, demand analysis in rural areas, testing and results illustration. This approach includes the following steps:

Formulating research questions:

- How important do you consider digital literacy education to be for schoolchildren and local residents?
- What problems do you encounter when searching for and using taxis, transportation, and delivery?
- How would you rate the idea of an online market for local goods where you could sell or buy products from local manufacturers?
- How can maps, navigation services, and online taxis affect your daily life, and what benefits do you expect from using them [7]?

Hypothesis development:

- The development of an online taxi system targeting rural areas can provide residents with access to transportation services, which will solve the problem of lack of public transport and improve mobility.

◆ The organization of a network of local couriers providing home delivery of goods and services can reduce time costs and increase the availability of service even in remote villages.

◆ The introduction of educational programs on digital literacy, including training webinars and simple instructions for working with mobile applications, will increase the trust and willingness of rural residents to use digital technologies.

◆ Creating a simplified application interface with a minimum number of elements and support for offline functionality (for example, the ability to place orders with a weak Internet connection) will increase usability for residents with low digital literacy [8].

◆ Collaboration with local manufacturers and stores to integrate their products into the app will increase economic activity in rural areas and stimulate local businesses.

Data collection methods:

◆ A survey of 120 respondents from various rural areas to study their needs and problems.

◆ Conducting focus groups to gain a deeper understanding of barriers and expectations.

◆ Analysis of technical documentation of existing applications operating in regions with low IT infrastructure.

◆ Testing the prototype on a pilot group of 50 people to evaluate the usability and convenience of the interface.

Analysis of the obtained data:

Based on the collected information, we compared the existing applications to find out their weaknesses and strengths, and then compared them. We identified conclusions based on the identified factors, such as the in-demand features and solutions to common problems in the implementation of such applications in rural areas.

Recommendations for improvement:

The results of the analysis showed that in order to create and implement a mobile delivery application for rural areas, it is necessary to consider factors such as the needs of rural residents, optimization of a simple interface, accessibility in low-level network conditions, and adding various functions for the convenience of users [9]. The percentage of readiness to use the mobile application depends on the level of digital literacy in Table 2.

Table 2 – Correlation of digital literacy with willingness to use

The level of digital literacy	Willingness to use the app (%)
Low	25
Middle	55
High	85

In order to identify potential opportunities for adaptation in conditions of low IT infrastructure of existing mobile applications, we conducted an analysis to understand the strengths and weaknesses of the implementation of such applications.

Thanks to the analysis, we came to the conclusion that in order to successfully implement the adaptation of the application for rural residents, both technical solutions and consideration of social factors, such as access to the Internet, are required. Therefore, such future projects should focus on the integration of local features to help create sustainable and in-demand services [10].

When analyzing existing solutions, materials such as UML diagrams were used, showing the external structure and operation of a mobile application. An example can be seen below in Figure 1.

This diagram shows the server part of the project, where the request from the user interface is accepted and processing begins. At this stage, the database is accessed to obtain the necessary information or update existing data. The server checks whether the requested product is in the database. If the product is in stock, the server retrieves information about its cost, characteristics, and availability in the warehouse. If the data changes (for example, adding a product to the basket), the

server updates the corresponding records in the database. And the provision of stability of operation can be seen in Figure 2.

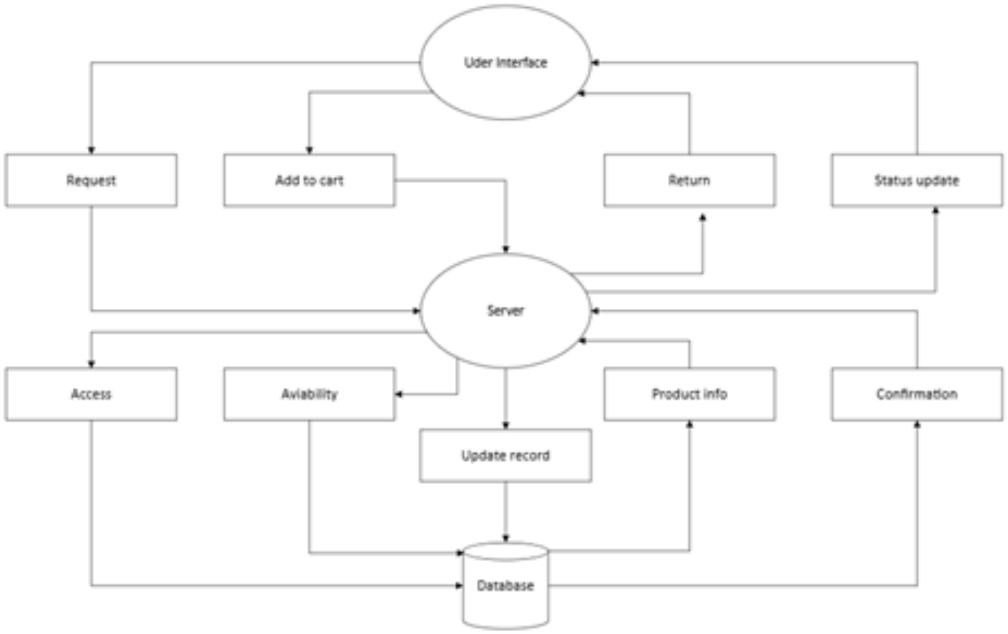

Figure 1 – Server part of the mobile application

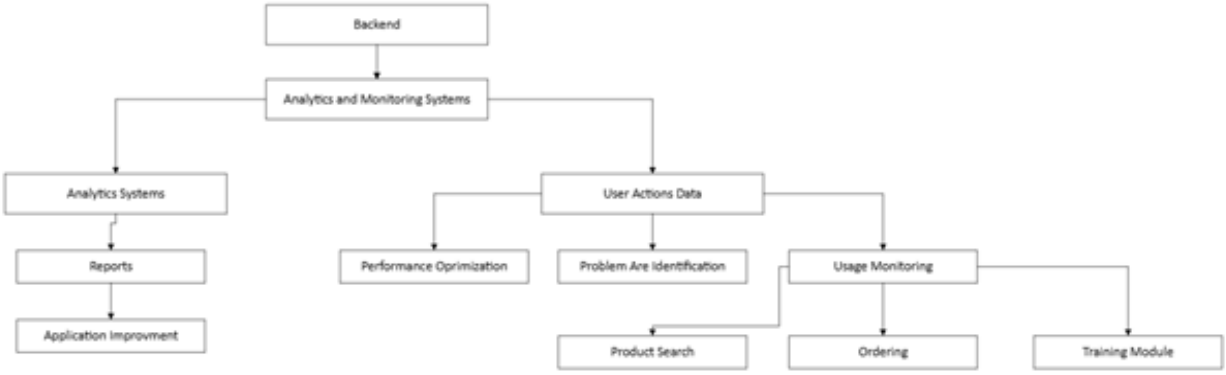

Figure 2 – Mobile application analytics and monitoring systems

The diagram demonstrates ensuring the stability of the application, where the server transmits data about the user's actions and requests to the analytics systems. This helps to control the use of functions, identify problem areas and optimize performance. Each user action (search for a product, order, completion of a training module) is recorded and analyzed. Analytics systems (for example, Firebase Analytics) generate reports that are used to improve the application.

Thus, developing a mobile application for rural areas is not an easy process, but it has great potential, since the project is aimed at improving the quality of life and developing economic and social infrastructure. The study revealed key aspects and stages of creating such an application,

including the formation of hypotheses, data collection, analysis of results and recommendations for improvement. The analysis emphasized that the successful implementation of a mobile application for rural areas requires an integrated approach that takes into account both technical and social factors. In the future, such projects can become an important step towards the digital transformation of rural areas, providing access to necessary services and promoting their sustainable development.

Results and discussion

It is convenient for users to choose from various products when they use an app for delivery. Let's take as an example the Yandex mobile app, which serves as an online store for essential goods. Using the app, one can purchase everything from snacks to gadgets right at their doorstep. This shows how well the app works in delivering all kinds of goods to people, saving them from having to go to nearby stores [11].

From the study, it was clear that most delivery services are not suited to the needs of rural areas. The situation is complicated by a number of major challenges, including sparsely populated areas without reliable roads or buildings, and the cost of delivering goods over long distances. Rural areas often face obstacles to their growth because of built-in barriers. Starting with economic problems, these relate to old-fashioned management practices and outdated basic settings of materials and technology. However, rural areas can be found to face their own set of challenges, including declining quality of life, rising unemployment, weakening social infrastructure, and deteriorating demographics [12].

It should also be kept in mind that many applications have complex layouts that are not easy for everyone to navigate, especially those who are not very tech savvy. In places far from the city, the Internet operates at the speed of a snail [13].

The survey conducted among 120 participants revealed the crucial role of digital literacy training for schoolchildren and local residents. The majority of respondents (69.2%) emphasized that this is an extremely important factor for improving the quality of life in rural areas. In addition, 16.7% of participants recognized the importance of this initiative, noting its usefulness for many users. Only 10% rated this question as having medium importance, indicating that digital literacy training is largely seen as a vital activity. Less than 5% of participants considered it insignificant, and very few completely rejected the importance of training. These results emphasize the need to introduce digital literacy training modules and illustrate their potential to increase digital awareness in the local community. The survey result on the question «How important do you think digital literacy training is for schoolchildren and local residents?» is presented below in Figure 3.

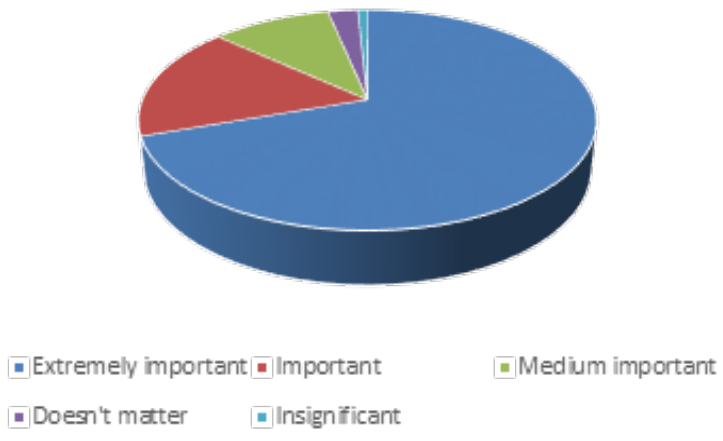

Figure 3 – Results of the survey

A survey of 120 respondents in rural areas on their use of cab, transportation and delivery services revealed some interesting trends. Some 28.3% of participants reported using these services several times a week, while 25.8% said they book or travel once a week. In addition, 15% of respondents indicated that they use these services on a daily or almost daily basis, emphasizing the significant demand for convenient travel options. On the other hand, 17.5% of participants use these services less than once a month, and 10% indicated that they never use them. This may be due to limited availability of such services in their region or lack of awareness of available options. The results for the question "How often do you have to order delivery of goods or products to your locality?" can be seen below in Figure 4.

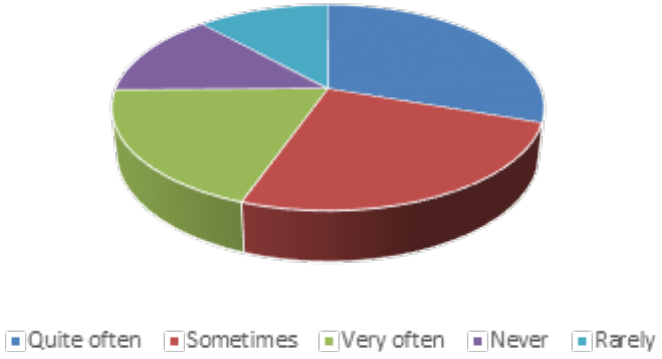

Figure 4 – Results of the survey

The Figure 4 below shows the results of a survey conducted among 120 participants on the frequency of orders for the delivery of goods or products to a locality. According to the survey data: 30% of the participants order delivery very often (several times a week), which underlines the high demand for delivery services. 25% of respondents use delivery quite often (once a week), which indicates a regular need for such services. 19.2% of the respondents' place orders 1–2 times a month, which indicates a periodic need for delivery. 11.7% of participants place orders rarely (once every few months), mostly in exceptional cases. 13.3% of respondents never order delivery, preferring other ways to purchase goods. The next result for the question "How can the availability of maps, navigation services and online taxis affect your daily life and what benefits do you expect from using them?" is presented in Figure 5 below.

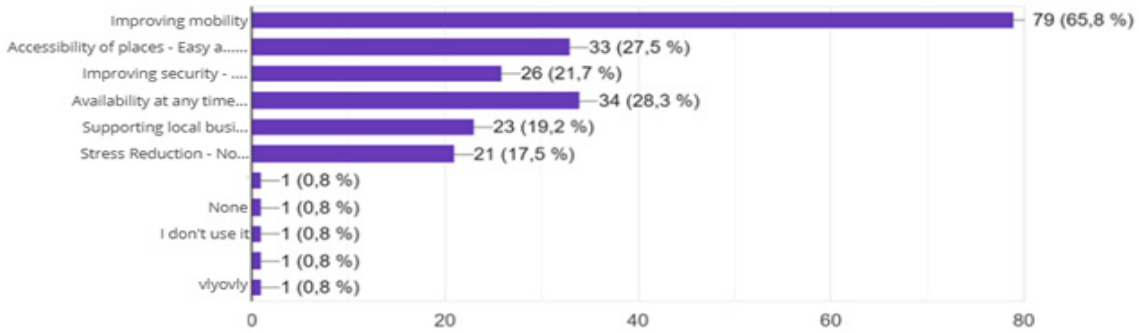

Figure 5 – Results of the survey

The survey, which was attended by 119 people (Figure 5), revealed several problems that one has to face when searching for taxis, vehicles and delivery services in rural areas. The main conclusions are as follows: Lack of affordable services: This problem was expressed by 56 participants (47.1%), who pointed to the lack of taxis or delivery services in their regions, emphasizing the need to increase the availability of services in remote areas. High cost of services: According to 58 respondents (48.7%), high prices for taxis and delivery services for regular use are a significant obstacle, indicating a demand for more cost-effective alternatives. Limited payment options: Only 9 participants (7.6%) cited the lack of cashless or convenient payment methods as a problem, indicating a smaller but important area for improvement. Lack of information: 22 respondents (18.5%) expressed difficulty tracking the order status or obtaining information about the cost of services in advance, emphasizing the need for transparency and user-friendly tracking systems. Limited coverage area: As noted by 28 participants (23.5%), this problem reflects the inability to provide services in remote or hard-to-reach places, which once again underlines the need to expand the geographical coverage of these services. These results highlight the urgent need for targeted initiatives to address these challenges, improve service quality, and improve access to vital transportation and delivery facilities in rural areas. The results confirm the importance of investing in digital infrastructure and optimizing services to address existing gaps and promote sustainable regional development. The next result for the question «What problems do you encounter when searching for and using taxis, transport and delivery?» is presented below in Figure 6.

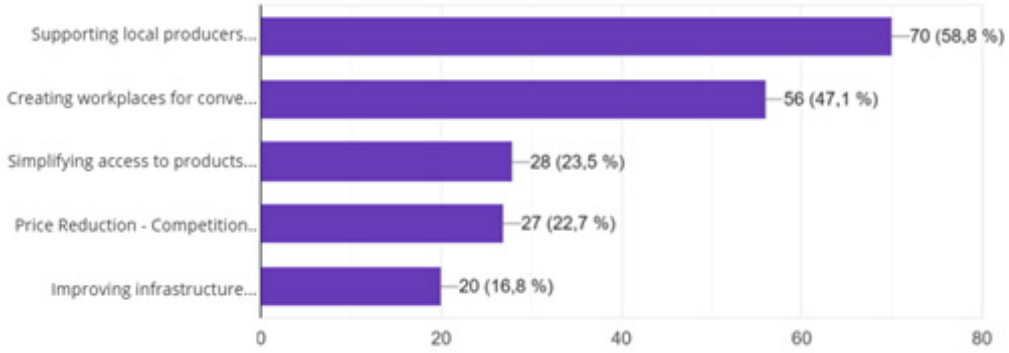

Figure 6 – Results of the survey

This chart shows the results of a survey on the potential benefits of online commerce. It visualizes the responses of respondents assessing the various positive effects that the development of online commerce could bring to the region.

Key findings:

- The most significant benefit of online commerce was identified by respondents as support for local producers. This indicates that respondents view online commerce as a tool for developing the local economy.
- The creation of new jobs was also highly rated, indicating that respondents understand that the development of online commerce can help reduce unemployment.
- Easier access to goods and lower prices were also noted as important benefits, indicating that respondents associate the development of online commerce with an improved quality of life.
- Respondents considered improved infrastructure to be a less significant benefit. This may be due to the fact that respondents believe that infrastructure development is a consequence rather than a cause of the development of online commerce [14].

All the obtained results and their significance can be seen in more detail below in Table 3.

Table 3 – The significance of the survey results

Survey Area	Significance of Results	Key Findings
Digital Literacy Training	High importance for rural development and the quality of life.	69.2% of the respondents pointed to the importance of digital literacy training. A majority consider it crucial for improving living standards in the rural setup.
Use of Transportation and Delivery Services	Demonstrates demand for services, with variable frequency of use.	28.3% of them use services several times a week, 25.8% once a week, while 15% use services almost daily. However, 10% never use them, showing the limited availability or awareness in certain regions.
Frequency of Delivery Orders	This reflects its high relevance, especially among rural areas where access to store locations is limited.	30% of order deliveries frequently, 25% on a regular basis, 19.2% do occasionally and 13.3% never. It just points to the high demand of the countryside with fewer shopping options.
Impact of Navigation and Online Taxi Services	Much better quality of life relating to improved mobility and accessibility.	65.8% of respondents mentioned improved mobility. 27.5% found it useful for accessing places, while 21.7% emphasized increased safety. This shows how important navigation and taxis are in enhancing the quality of rural life.
Problems with Taxi and Delivery Services	It pinpoints the most critical problems limiting service utilization in rural areas.	Correspondingly, 47.1% mentioned lack of affordable services, 48.7% referred to high costs, and 23.5% referred to limited coverage. These problems stress that there is a dire need for more accessible and cheap services in the remote areas.

The table below summarizes the importance of the survey results regarding the necessity of rural delivery and transportation services. It underlines important roles being played by digital literacy training, frequent demand for delivery services, and the effects of navigation and online taxi services for improving the quality of life. However, difficulties in high costs, lack of supply, and sparse service coverage remain big obstacles. The data underline the need for focused initiatives aimed at expanding access to services, improving affordability, and adapting technology to the unique needs of rural communities. All in all, the findings point to the potential role of technological innovation for sustainable rural development.

Taking into account the survey results, when developing a mobile application for delivery to rural areas, functional solutions were created for the convenience of users. For example, the integration of features such as GPS tracking, notifications, and online payment support makes the app intuitive and reliable to use [15]. The ability to track orders and interact via built-in chats minimizes risks and increases trust in the platform. A demonstration of the key modules and services of the app in code form can be seen in Figure 7.

This code snippet is an interface for choosing a fare and calling a taxi. When the user gets to this page, the fare selection screen is displayed first, where he is offered various options: “Together”, “Economy”, “Comfort” and “Minivan”. Each tariff can be selected by clicking on the corresponding button. After selecting a fare, the user can enter the departure and destination addresses, and then call a taxi by clicking on the “Call a taxi” button. When you click on the button, a message appears confirming the taxi call. If the tariff has not been selected yet, the user must first select it. If necessary,

the user can return to the previous page using the Back button. The selection of courier type and delivery procedure is shown below in Figure 8.

```
) : currentPage === "taxi" ? (
  taxiRate ? (
    <View style={styles.taxiContainer}>
      <Text style={styles.headerTitle}>Такси ({taxiRate})</Text>
      <TextInput style={styles.input} placeholder="Введите адрес отправления" placeholderTextColor={"#808080"} />
      <TextInput style={styles.input} placeholder="Введите адрес назначения" placeholderTextColor={"#808080"} />
      <TouchableOpacity style={styles.button} onPress={() => alert(`Такси '${taxiRate}' вызвано!`)}>
        <Text style={styles.buttonText}>Вызвать такси</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalBackButton} onPress={() => setTaxiRate(null)}>
        <Text style={styles.minimalBackButtonText}>Назад</Text>
      </TouchableOpacity>
    </View>
  ) : (
    <View style={styles.taxiContainer}>
      <Text style={styles.headerTitle}>Выберите тариф</Text>
      <TouchableOpacity style={styles.minimalButton} onPress={() => setTaxiRate("Вместе")}>
        <Text style={styles.minimalButtonText}>Вместе</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalButton} onPress={() => setTaxiRate("Эконом")}>
        <Text style={styles.minimalButtonText}>Эконом</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalButton} onPress={() => setTaxiRate("Комфорт")}>
        <Text style={styles.minimalButtonText}>Комфорт</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalButton} onPress={() => setTaxiRate("Минивэн")}>
        <Text style={styles.minimalButtonText}>Минивэн</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalBackButton} onPress={() => setCurrentPage("main")}>
        <Text style={styles.minimalBackButtonText}>Назад</Text>
      </TouchableOpacity>
    </View>
  )
```

Figure 7 – Fare selection and taxi call page

```
) : currentPage === "delivery" ? (
  courierType ? (
    <View style={styles.deliveryContainer}>
      <Text style={styles.headerTitle}>Доставка ({courierType})</Text>
      <TextInput style={styles.input} placeholder="Введите адрес отправления" placeholderTextColor={"#808080"} />
      <TextInput style={styles.input} placeholder="Введите адрес доставки" placeholderTextColor={"#808080"} />
      <TouchableOpacity style={styles.button} onPress={() => alert("Доставка оформлена!")}>
        <Text style={styles.buttonText}>Оформить доставку</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalBackButton} onPress={() => setCourierType(null)}>
        <Text style={styles.minimalBackButtonText}>Назад</Text>
      </TouchableOpacity>
    </View>
  ) : (
    <View style={styles.deliveryTypeContainer}>
      <Text style={styles.headerTitle}>Выберите тип курьера</Text>
      <TouchableOpacity style={styles.minimalButton} onPress={() => setCourierType('Машина')}>
        <Text style={styles.minimalButtonText}>Машина</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalButton} onPress={() => setCourierType('Мопед/Велосипед')}>
        <Text style={styles.minimalButtonText}>Мопед/Велосипед</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalButton} onPress={() => setCourierType('Пеший')}>
        <Text style={styles.minimalButtonText}>Пеший</Text>
      </TouchableOpacity>
      <TouchableOpacity style={styles.minimalBackButton} onPress={() => setCurrentPage('main')}>
        <Text style={styles.minimalBackButtonText}>Назад</Text>
      </TouchableOpacity>
    </View>
  )
```

Figure 8 – Choosing the type of courier and the delivery procedure

This code creates an interface for selecting the type of courier and arranging the delivery. When going to the page, the user first selects the type of courier that will deliver: «Car», «Moped/Bike» or «On Foot». Buttons with corresponding options are available to select the type of courier. After the user has selected the desired type of courier, a form appears for entering the shipping address and delivery address. After entering the data and clicking on the «Arrange delivery» button, a message appears confirming the delivery. If the user decides to change the courier type, they can go back and choose another option. In addition, it is always possible to return to the main page via the Back button.

To sum up the code implementation, the proposed modules and services make a significant contribution to improving the quality of life in rural areas, reducing barriers to access to services and goods. The application also contributes to the development of the local community, providing people with tools for interaction, trade and training. This approach reflects a strategic focus on improving social and economic sustainability in remote communities.

The functions that are presented in the code were created in a visual version in the form of mockups, and how it should look. Also, the preferences of the survey participants, who are rural residents, were taken into account. Thanks to the survey results, a convenient design was created that meets the wishes of users.

Creating a user interface is an important part of app development, as the first impressions of users determine how they will perceive and trust the service. That is why UX is the key to creating a seamless and enjoyable user experience that can further increase the number of users many times over. At this stage, the goal was to create an intuitive interface that is accessible and convenient for rural residents with limited experience with mobile devices. To eliminate such barriers, important factors such as ease of perception of the interface and limited technical capabilities were taken into account. The application is oriented towards rural areas, and the main users are rural residents. For their convenience, the application was developed with a minimalist and clear interface, where all elements are easily distinguishable and accessible. The Figure 9 below shows the main pages that appear when entering the application.

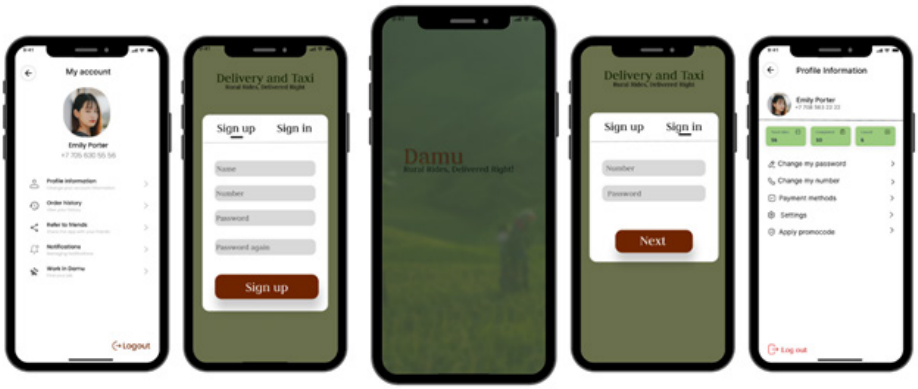

Figure 9 – Design of main pages upon entry

Figure 9 shows the main page displayed when logging into the application. In the center is the screen that users encounter when launching the application. To the right of the central layout are the registration and authorization pages, which contain fields for entering a name, phone number, and password. The interface is organized in such a way that the login process is as simple and convenient as possible, without requiring unnecessary information. Next comes the screen displaying the user account and personal data, including data such as name, phone number, order history, the ability to change the password, and other options. All pages are designed using easy-to-read and intuitive interface elements, which helps users quickly adapt to the application. Figure 10 shows the layout of the delivery module.

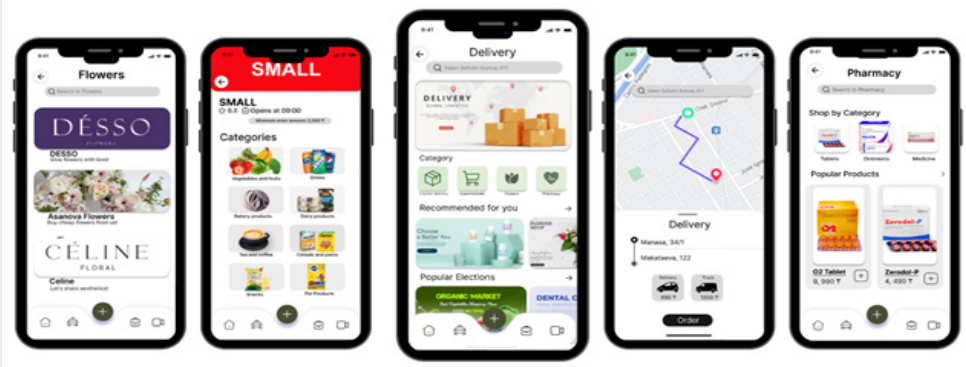

Figure 10 – Design of the Delivery module

Figure 10 shows the mobile app pages showcasing the various features and service categories in the Delivery module. The first screen displays the Flowers section, where users can browse stores offering flower products and use the convenient search bar to quickly find the desired offers. The second screen displays the Grocery category with bright and clear icons for subcategories such as vegetables, drinks and dairy products, allowing users to quickly and easily find the desired products. The third screen shows the general Delivery section, offering personalized recommendations and popular products to simplify the selection process. The fourth screen displays the delivery tracking page on a map, showing the route and the departure and destination addresses, as well as a button to confirm the order. The next screen focuses on the Pharmacy section, showcasing categories such as tablets, ointments and popular medical products with prices. All screens have a clean and minimalist design with bright and intuitive icons, which ensures a comfortable and pleasant user experience.

In conclusion, it should be noted that the development of a mobile application for the delivery of goods to rural areas is an important process for improving the quality of life and overcoming existing barriers. The results of the created study showed how significant the need for such services is among rural residents, which is confirmed by the high rates of frequency of use of delivery, as well as the importance of introducing digital education.

The proposed functional solutions, such as online payment and notifications, as well as a user-friendly interface focused on the needs of rural residents, contribute to increasing the availability and ease of use of the application. One of the most important solutions is the creation of a minimalist design that will be intuitive and easy to use for people with limited experience in mobile technologies.

Thus, the creation of a mobile application in rural areas not only helps to improve transport and trade services in rural areas, but also helps to develop local communities, providing rural residents with new opportunities for education, trade and interaction.

Conclusion

The results of this study showed that using mobile phones to improve rural livelihoods is making life easier for rural residents [16]. From this perspective, achieving sustainable rural development is not only a major challenge for rural development, but also a vision and goal for the future of rural development [17].

This study was conducted to identify key aspects that would improve the lives of rural residents. To identify these aspects, we conducted a comprehensive review of existing literature and conducted a survey among residents of rural communities. Through a rigorous review of the retrieved articles and survey results, we interpreted and analyzed solutions that could address the barriers that rural residents face every day [18].

Despite the advances that exist in the market, significant challenges remain, including low digital literacy, unreliable internet connectivity, and systemic socioeconomic limitations. Addressing these challenges requires a multifaceted approach that combines technical innovation with strategies to increase community engagement and economic participation. Developers should prioritize simplicity of design, offline functionality, and culturally inclusive features to bridge the digital divide. Looking ahead, successful rural delivery apps will need to balance technical complexity with local relevance. By developing partnerships with local businesses, leveraging new technologies like AI, and investing in community education, developers can create sustainable, scalable solutions that empower rural residents and improve their quality of life [19]. This holistic approach ensures that technological advances benefit everyone, promoting inclusion and reducing inequality between urban and rural areas.

Recommendations for further research and development

The results of the survey demonstrate that the development of mobile applications adapted to rural areas can become the basis for meeting the unique needs of their residents. Given the results of the survey, where the main desires of rural residents were identified, it is possible to create a convenient application that helps solve the problems of low availability of services, providing convenient

and cost-effective solutions for the delivery of goods and the organization of transport services. Such solutions contribute to social and economic integration, allowing residents of remote areas to actively participate in the modern digital economy. According to the survey results, it turned out that supporting local entrepreneurs through platforms for selling goods to residents of rural settlements is a good solution. In order to develop local business and expand sales markets. Improving access to goods and services not only improves the standard of living, but also helps to reduce economic inequality. The implementation and introduction of such applications helps to optimize logistics and minimize costs, which makes them sustainable and in-demand tools for long-term use [20]. Such results clearly show how important digital solutions are for the sustainable development of rural regions.

In conclusion, the creation of such applications or projects is an important step towards improving the quality of life of rural residents and their integration into the modern digital economy. The introduction of accessible and functional mobile applications in rural areas will help to reduce the significant gap between urban and rural regions. It is also a solid foundation for the further development of rural regions and increasing their competitiveness in the digital era.

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МОБИЛЬДІ ТЕХНОЛОГИЯЛАР ЦИФРЛЫҚ САУАТТЫЛЫҚТЫ ЖӘНЕ АУЫЛДЫҚ ЖЕРЛЕРДЕ ҚЫЗМЕТТЕРДІҢ ҚОЛЖЕТІМДІЛІГІН АРТТЫРУ ҚҰРАЛЫ РЕТІНДЕ

Аңдатпа

Ауылдық жерлерге жеткізуге арналған мобильді қосымша әзірлеу – қазіргі заманның маңызды міндеттерінің бірі. Ауыл тұрғындары АТ-инфрақұрылымның жоқтығынан, халықтың аздығынан және интернет сапасының төмендігінен жаңа цифрлық технологияларға бейімделуде жиі қиындықтарға тап болады. Бұл мақалада мұндай жобаны жүзеге асырудың негізгі аспектілері талқыланады, ауылдық пайдаланушылардың қажеттіліктеріне бейімделген ыңғайлы және интуитивті қосымшаны құруға ерекше назар аударылады. Зерттеу екі қиындықты да, соның ішінде инфрақұрылымдық шектеулерді және цифрлық сауаттылықтағы кемшіліктерді, сонымен қатар цифрлық инклюзияны ілгерілету және ауылдық қауымдастықтардың қажеттіліктерін қанағаттандыру сияқты мүмкіндіктерді көрсетеді. Зерттеуде навигацияны жеңілдету, қолжетімділікті қамтамасыз ету және ауылдық жерлердің әлеуметтік-экономикалық ерекшеліктерін ескеру сияқты табысты іске асырудың негізгі факторлары анықталған. Интуитивті интерфейс пен түсінікті құрылымға назар аудара отырып, жоба ауылдық пайдаланушыларға күнделікті кездесетін кедергілерсіз заманауи жеткізу қызметтерін пайдалануға мүмкіндік беру арқылы цифрлық теңсіздікті жоюға бағытталған.

Тірек сөздер: ауылдық аймақтар, мобильді қосымшаларды әзірлеу, АТ-инфрақұрылымы, цифрлық сауаттылық, ауыл тұрғындары.

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МОБИЛЬНЫЕ ТЕХНОЛОГИИ КАК ИНСТРУМЕНТ ПОВЫШЕНИЯ ЦИФРОВОЙ ГРАМОТНОСТИ И ДОСТУПНОСТИ УСЛУГ В СЕЛЬСКИХ РЕГИОНАХ

Аннотация

Разработка мобильного приложения для доставки в сельской местности является одной из важнейших задач нашего времени. Сельские жители часто сталкиваются с трудностями в адаптации к новым цифровым технологиям из-за отсутствия ИТ-инфраструктуры, малочисленности населения и низкого качества Интернета. В этой статье рассматриваются ключевые аспекты реализации такого проекта, особое внимание уделяется созданию удобного и интуитивно понятного приложения, адаптированного под нужды сельских пользователей. В исследовании освещаются как проблемы, включая инфраструктурные ограничения и пробелы в цифровой грамотности, так и возможности, такие как содействие цифровой инклюзии и удовлетворение потребностей сельских жителей. В исследовании определяются ключевые факторы успешной реализации, такие как упрощение навигации, обеспечение доступности и учет социально-экономических характеристик сельских районов. Сосредоточившись на интуитивно понятном интерфейсе и четкой структуре, проект направлен на преодоление цифрового разрыва, позволяя сельским пользователям пользоваться современными услугами доставки без барьеров, с которыми они сталкиваются каждый день.

Ключевые слова: сельские регионы, разработка мобильных приложений, ИТ-инфраструктура, цифровая грамотность, сельские жители.

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