

The Usability of ByaHero: A GPS-Based App for Navigating Public Transportation Routes in Iloilo City, Philippines

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Abstract

Global Positioning System (GPS) is essential nowadays. Some commuters who are unfamiliar with the place use systems like GPS to track the exact location. Other commuters rely only on asking directions. As a result, the researchers developed a GPS-based system that is different from the other GPS apps that determine the location, estimated time of arrival, and the transportation to be used by the commuters. With these, the researchers used descriptive and developmental research to develop a ByaHero, an app that helps commuters locate and use the exact transportation to their destination. The research study is based on the daily commuters' responses to the survey, which shows how the system helps commuters with daily commuting. The developed system was implied as superb in functionality and user-friendliness. The system developed has an impact on the commuters, showing the effectiveness of the system in helping them.

Keywords: GPS, Navigation, Public transportation

Date of Submission: 13-11-2024

Date of acceptance: 26-11-2024

I. INTRODUCTION

Nowadays commuting can be a daily challenge for people who are unfamiliar with the location and have trouble reaching their destination. New or long-time commuters are inconvenienced by public commuting because they have no idea what kind of transportation to use. Sure, asking for help can be a solution but there are times when it is inaccurate or they don't know either. There are various apps available that provide ride-hailing like Uber and Grab but it can be expensive and most people in the city of Iloilo don't need private cars or taxis to reach their destination. Reliability is regularly cited by users of public transportation as one of the most important qualities of service [5].

The integration of Global Positioning System (GPS) based applications in intelligent transport systems has demonstrated efficiency in identifying and tracking the geolocation of connected elements [1]. Nowadays, systems like the GPS play a large role in modern times. The GPS allows the accurate positioning of an object using satellite signals. In recent years, the rapid increase in the development of Geographic Information System technology (GIS) has led to the development of GPS/GIS applications. Therefore, the geometric and geographic information obtained by the use of GPS can be introduced to the GIS database and thus thematic maps can be produced [2].

Opportunity has risen for application developers, who support these devices and allow the full utilization of different features. The developed application fulfills the requirements of both demanding and casual users. Its big advantage is the fact that it is free, whereas most applications either have to be paid for to be used, or you are charged for the usage of maps that are necessary for their full usage. Effective management ensures accurate positioning and tracking of vehicles, efficient route planning, timely dispatching, and effective resource allocation [4].

An idea for an app is being explored called "Byahero" which is a GPS that provides routes for commuters and also informs them on what public transportation to use. It shows the user what time the first trip starts and when the last trip ends. The purpose of this research is to present the idea to the commuters and evaluate their feedback if the app can be effective and useful for them. The researchers will then gather information and remarks to further create more features needed on the app. The significance of this study is to further develop the idea of a GPS that will cater to the needs of public commuters having trouble with transportation. By adopting effective management practices, transportation systems can benefit from improved operational efficiency, reduced costs, enhanced safety, and better customer satisfaction [4].

II. METHODOLOGY

2.1 Research Design

A research design is the plan or framework used to conduct a research study. It involves outlining the overall approach and methods that will be used to collect and analyze data to answer the research questions or test hypotheses [6].

In this study, descriptive research was used. A descriptive study is one in which information is collected without changing the environment(i.e. nothing is manipulated). It is used to obtain information concerning the current status of the phenomena to describe “what exists” concerning variables or education in a situation [7].

2.1 Respondents

The Respondents of the study are individuals who use public transportation. A total of 27 participants responded to the survey provided. Commuters are the target respondents since they are also the expected users of the app.

2.2 Data Analysis

The researchers analyzed the information and user preferences. This will help future researchers and developers to further design and implement the Byahero app idea that will provide convenience and help to commuters.

III. PRESENTATION OF DATA AND INTERPRETATION OF RESULTS

3.1 Current Navigation Practices

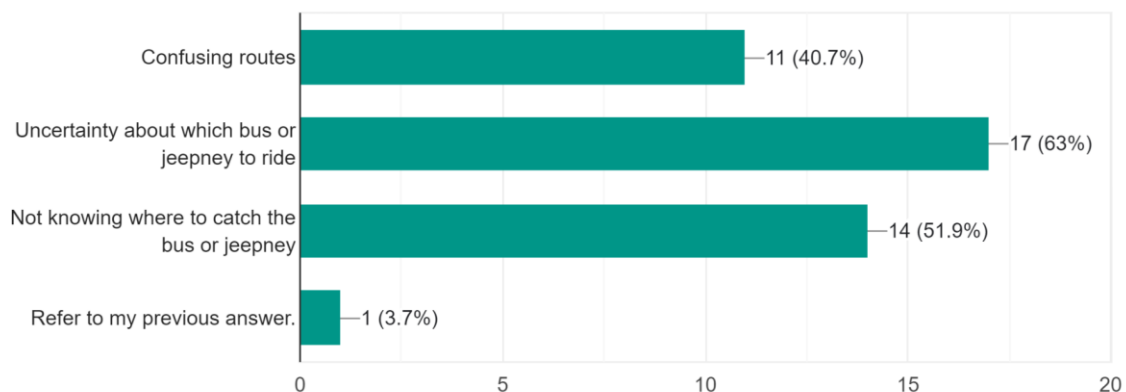
The survey results show how commuters currently navigate public transportation routes. The majority, 74.1% rely on asking locals for directions, indicating a strong reliance on community knowledge. Others rely on existing navigation apps like Google Maps and memorization of routes is less common. The gathered data highlights a significant dependence on technology, suggesting that an app like “Byahero” could further streamline and enhance the commuting experience.

3.2 Current Navigation Challenges

Graph 1 illustrates the main challenges commuters encounter when using public transportation. The most common issue, experienced by 63% of respondents, is uncertainty about selecting the correct bus or jeepney. Additionally, 51.9% struggle with knowing where to catch their transport, and 40.7% find routes confusing. These findings highlight a need for tools like “Byahero”.

What challenges do you face when navigating public transportation? (Select all that apply):

27 responses



Graph 3.2 Current Navigation Practices

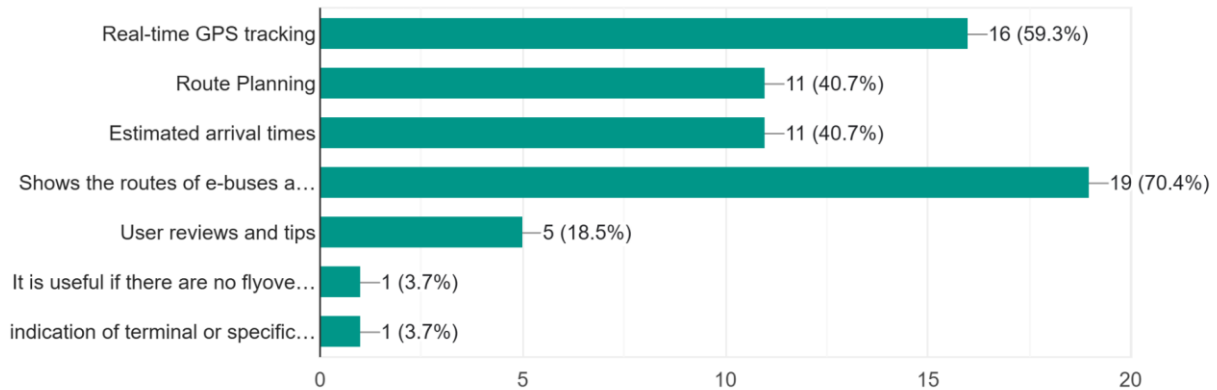
3.3 App Design and Features Preference

Graph 3.3 indicates the features commuters would find most valuable in a public transportation app. The most popular feature shows the routes of e-buses and jeepneys with 70.4% of respondents indicating its usefulness. Additionally, 59.3% expressed interest in real-time GPS tracking, while 40.7% valued estimated arrival times and route planning. This shows a strong preference for real-time and planning tools that enhance the commuting experience.

In-app design, an overwhelming 92.6% of respondents want a simple and easy-to-design app. In the range of 50%, the respondents give importance to intuitive navigation and the availability of help/support features.

Which features would you find most useful in a public transportation app?

27 responses



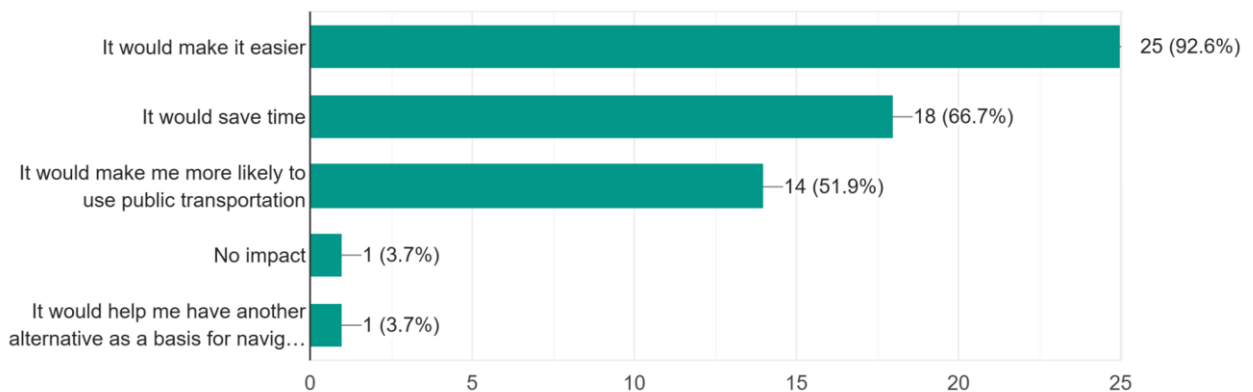
Graph 3.3 App Design and Features

3.4 Potential Impact

Graph 3.4.1 indicates that an app like Byahero could significantly enhance the public transportation experience for users. 92.6% believe that it would make commuting easier, while 66.7% feel it would save time. Out of 27 respondents, 77.8% find it useful as shown on graph 3.4.2 indicating a strong support for the proposed ap1p.

How do you think an app like ByaHero would change your experience with public transportation? (Select all that apply):

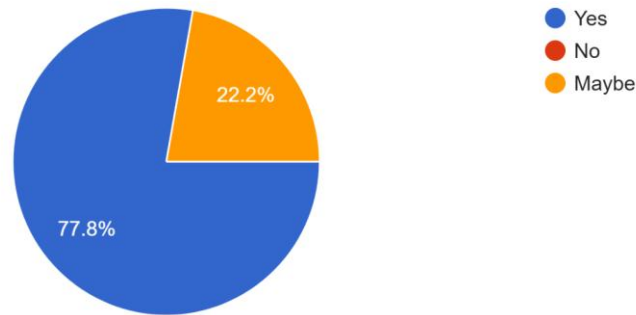
27 responses



Graph 3.4.1

Do you find the proposed app useful?

27 responses



Graph 3.4.2

IV. CONCLUSION

The problems of commuters based on our survey are confusing routes, uncertainty about which bus or jeepney to ride, and not knowing where to catch the bus or jeepney. The survey shows that they rely on asking locals or using navigation apps, which can be confusing and inefficient. ByaHero provides features that commuters need like route guidance, estimated time of arrival, and actual GPS tracking.

Furthermore, the majority of the responses show that they preferred a simple and intuitive app design, which recommended that the design should prioritize accessibility and user friendly. Respondents expect that the app will make their commuting experience easier and save time.

Future researchers could consider several applications and extensions like integrating real-time traffic data and service updates, which could allow commuters to plan around delays, rerouted buses, or canceled trips. By collaborating with local transit authorities to receive live data feeds, Byahero could keep users informed of current transportation conditions, making commuting more predictable. Accessibility features would also enhance usability by including options like voice navigation, larger text, and wheelchair-accessible route suggestions, creating a more inclusive experience. Offline navigation support could further extend Byahero's utility, enabling access to maps and route information without an internet connection ideal for users with limited data or unreliable connectivity.

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