Digitalization of Local Business Information and Job Opportunities Platform: A Proposal for a Mobile-Based Business Directory Application

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Abstract*: In the digital era, the transformation of local business information and job opportunities into online formats is a promising development. The digitalization process has become a big factor to elevate the local workforce competitiveness by equipping them with digital skills and competencies that meet global standards thus fostering digital innovation and entrepreneurship. On the other hand, online business directory plays an essential role in the local economy because it assists consumers in discovering local businesses and understanding the services available.However, many consumers still encounter challenges when seeking out establishments in less familiar locations, particularly in Surigao City. The absence of a local digital directory means lack of visibility especially for Small-Medium Enterprise (SME) ownerswho may experience difficulty in attracting the customer base.It is for this reason that this study was conducted to address the gap. An explanatory research methodology has been applied on determining and examining the data that were gathered from the related literature and conducted survey questionnaire.Based on findings collected from 52 respondents of the survey questionnaires, majority of them have agreed that the identified challenges are valid in terms of identifying business establishments as well as the difficulty on contacting the business and comparing products and services among competition. Meanwhile, business owners, particularly those of start-ups, strongly agreed the difficulties in promoting their businesses locally and acquiring customers in the absences of an accessible platform. With the proposed digitalization of business information via a mobile-based application could significantly improve customer experience and bolster local businesses in the city. This means that the application is expected to address the challenges identified by customers and business owners. It also can also potentially create new job opportunities and contribute to the city's economic growth. The study has offered valuable insights and recommendations for the application's development, underscoring the need for ongoing feedback and enhancements to ensure its success and user adoption.*

Keywords: Digitalization of Business Information, Online Business Directory, Job Opportunities Platform, Mobile-based Application

I. INTRODUCTION

In today's rapidly evolving landscape, the digitalization of local business information and job opportunities holds immense promise. The digitalization process can enhance the competitiveness of the local workforce by providing them with digital skills and competencies that are at par with global standards. It can also encourage digital innovations and entrepreneurship.

An online local business directory helps consumers find establishments in their area and learn about the services they offer. It does not only facilitate consumers make informed decisions but also helps local businesses reach their target audience. The digital platform aggregates information about local businesses in a specific area. This can include business details such as the name, address, contact information, services offered, operating hours, and more. There are several online platforms that serve as directories for local businesses in the area such as Philippine Companies, Cybo, and PhilBizs. However, these platforms may not be widely available or used in the local community which could give

the impression of an absence of business directory. This has been the case of Surigao City, a small town located at the North eastern part of Mindanao in the Philippines, where consumers are still challenged in checking out for establishments that are situated in a not so familiar location. Added to that, business owners specially those on Small-Medium Enterprise (SME) businesses end up not getting the expected number of customers to sustain the business. There may also be a gap in terms of a dedicated mobile application that provides a user-friendly interface and additional features such as GPS-enabled maps, user reviews, and real-time updates.

This study explores the possibility on resolving the gap in technological advancement by creating an online platform where local businesses can list their services and products, while at the same time, job seekers can find employment opportunities. This digital application can be a valuable tool for local businesses to reach a wider audience and for job seekers to find opportunities that match their skills and interests. The development of such an application requires a deep understanding of digital technologies and their impact on business models. It also requires a clear understanding of the needs and preferences of the local businesses and job seekers who will be using the application.

II. OBJECTIVES OF THE STUDY

This study aims to achieve the following:
- To identify the challenges faced by the consumers in checking the availability of business establishments.
- To assess the problems encountered by business owners in promoting their businesses.
- To propose a Mobile-based Business Directory Application.\To formulate recommendations for further improvement for the digitalization of business information and job opportunities.

III. RELATED LITERATURE

3.1 Yellow Pages Advertising

Yellow Pages advertising in the Philippines is a popular method for businesses to promote their products and services. In Chiou's [7] study, he analyzed the impact of internet penetration on Yellow Pages advertising over 15 years, finding that while the number of competitors and average prices decreased, market concentration and geographic rescoping by remaining firms attenuated the price drop. An experimental study of Aker et al. [8] in Tanzania showed that a "Yellow Pages" directory led to increased business calls, mobile money usage, and sales for listed enterprises, with positive spillovers to unlisted businesses and households in treatment villages. However, in Anirvan's article [1], it was mentioned that the printing of physical copies did stop in January 2019 after announcing in 2017. With the advent of the internet and digital technology, consumer habits began to shift. This led to a decrease in the use of print listings like the Yellow Pages. The business had to adapt to new competitive conditions in the global market, which completely disrupted the long-standing industry standard.

3.2 Technological Advancements and Digitalization

Digitalization has enabled local businesses to move their information online, making it easily accessible to a wider audience. The business information includes details about their products or services, operating hours, contact information, and location. Thus, the idea of focusing the study to digitalizing business information has been realized. These platforms also allow businesses to engage with their customers through reviews and ratings, providing valuable feedback and improving customer service. Moreover, digitalization has also enabled businesses to leverage data analytics for better decision-making and strategy formulation.

Several studies of other authors and researchers were reviewed to provide basis and purpose of this study. Sani et al. [2] discussed the design of a web-based directory using geocoding and Google Maps API and highlighted the need for a centralized system to connect customers, business owners, and investors. Weaver [3] who also examined the online social enterprise DIRECTORIES, and their strategic development discussed the benefits of online directories for social enterprises. His study showed how online directories can facilitate research as well as enhancing resources for educators, students, and consumers. Okafor and Umeasiegbu[4] explored the design of a mobile GIS application for business directories, emphasizing the benefits of real-time data access and improved performance. Their research demonstrated the design and implementation of a mobile GIS application to locate businesses thus enhancing the accuracy and efficiency of fieldwork with features like map view, location querying, and attribute viewing/editing.Xu,

Hu, and Fang [5] proposed a deep learning-based method to enhance crowdsourced data on online business directory platforms, addressing data completeness and timeliness constraints.Constance Kalu and Umoren Mfonobong Anthony [6] introduced a system that integrates a Google Maps mashup application and a web-based volunteered information system. This system is designed to collect, process, and map spatial and non-spatial business directory data generated by users in Akwa-Ibom state. The system allows the host or facilitating organization to employ a software-as-a-service architecture to provide web-based business directory listing and mapping services to its users.Yana Hendriana et al. [9]instituteda concept for a Generic Shopping Mall Directory Mobile Application (GSMD). This application, supported by a web-based system, aims to simplify the process of finding information in a shopping mall. It serves as a constant guide for mall visitors, providing them with accurate information. A usability test carried out at AEON Taman University demonstrated that the GSMD enhances the efficiency of locating shops within a mall.

They emphasized the importance of leveraging technologies like geocoding, mobile GIS applications, and deep learning to enhance user experience, facilitate research, and ensure data completeness and timeliness.These advancements are crucial in the current digital age, where online platforms play a significant role in connecting businesses with their customers and other stakeholders.

3.3 Job Opportunities

In addition to assisting consumers and business owners in hiring and getting hired, this research also explored potential improvements for job opportunities. Zarrin Tasnim et al. [10] examined the development of an intelligent online job portal powered by machine learning algorithms. The study aimed to boost business intelligence and analytics to facilitate improved decision-making in the future. The system effectively groups similar job searches, dispatches targeted email alerts, and pulls job circulars from the web, thereby enhancing the job application experience for job seekers. This approach can help the study when applied.

3.4 Economic Impact and User Engagement

Research on the economic impacts of business directories is also part of the literature. For instance, Aker, Blumenstock, and Dillon [8] documented beneficial ripple effects from a trial of the Yellow Pages directory in Tanzania. This indicates that tools such as mobile applications, Geographic Information Systems (GIS), and machine learning algorithms can significantly contribute to closing the information gap between businesses and consumers. This suggests a promising future for the integration of advanced technologies in business directories.

3.5 Synthesis

To put in context, this chapter examined the process of digitalization and its effects on businesses and consumers. It highlighted the advantages of digitalization, such as the broadened accessibility of information, amplified customer interaction, and bolstered decision-making through data analytics. Furthermore, it emphasized the revolutionary influence of digitalization in altering the operational methods of businesses and their engagement with customers.

IV. METHODOLOGY

4.1 Research Approach and Design

The purpose of this survey is to gather insights into the digitalization of local businesses and job opportunities in Surigao City. A mixed-method approach was employed by combining qualitative and quantitative research methods. Quantitative questions imply the needs, challenges, and preferences of local businesses and consumers while qualitative questions are suggestions and recommendations made by the respondents for the outcome of the research. Both approaches offer valuable guidance to small business owners and consumers seeking effective digital transformation.

An explanatory type of research is used on this study starting with a comprehensive review of existing literature on digitalization in business for SMEs, consumers, and job seekers. This approach has provided a theoretical foundation about study. In addition to the context of this research, it involved surveys in both open-ended and close-ended questions with local business owners and consumers, as well as analyzing existing data and the current situation in Surigao City in terms of business information.

4.2 Data Gathering Procedure

The researchers of this study utilized both quantitative and qualitative data to ensure a comprehensive understanding of the research topic. The quantitative data were gathered directly from the respondents (business owners and consumers) through online surveys which were disseminated in various channels including social media platforms, direct visits to certain business establishments, and personal messages to potential study participants. The survey questionnaire included Likert scale for close-ended questions and an open-ended question for recommendation or suggestion. The online surveys incorporate the respondents' experiences, preferences, and behaviors related to local businesses and job opportunities. The data collection process approximately took two weeks to complete with 50 respondents who were selected via purposive sampling method. The data collected were used to understand current practices, identify challenges, and explore potential solutions. The findings contributed to the development of a mobile-based business directory application aimed at enhancing local business visibility and job opportunities. All responses were kept confidential and used solely for the purpose of this research.

The qualitative data were sought by conducting an interview with selected business owners and consumers to delve deeper into the impact of digitalization on local businesses and job opportunities. The insights gained by the researchers from this conversation were instrumental in understanding the current landscape, the challenges faced, and the potential solutions that can be implemented. These findings were contributed to the development of a mobile-based business directory application aimed at enhancing the visibility of local businesses and job opportunities. All information that were shared during this interview were kept confidential and used solely for the purpose of this research.

4.3 Data Analysis

In this study section, the researchers outlined the techniques employed to analyze both quantitative and qualitative data. The main objective of this analysis is to thoroughly comprehend the difficulties encountered by business owners and consumers in Surigao City. Furthermore, the study investigated the viability of creating a web-based business directory application.

The quantitative data gathered from the survey questionnaire, containing respondents' demographic such as gender, age, employment status and respondent classification, were analyzed using descriptive statistical method such as frequency distribution, weighted mean score, and verbal description. In addition to this, the researchersdetermined the average response through weighted mean in relation to the identified problems that helped achieve the objectives of this study.

With qualitative data analysis, a narratives approach was used to analyze the responses from business owners and consumers from the interviews. The researchers immersed in the data by reading and re-reading the responses to gain a deep understanding of the content. Table 1.0 presents the guide to determine the level of agreement among the responses of the participants involved in the study.

Table 1.0:The Interpretation of Range of the Weighted Mean

Range of the Weighted Mean	Interpretation
4.51 – 5.00	Strongly Agree (for the questions asked)
3.51 – 4.50	Agree (for the questions asked)
2.51 – 3.50	Moderately Agree (for the questions asked)
1.51 – 2.50	Disagree (for the questions asked)
1.50 and below	Strongly Disagree (for the questions asked)

V. RESULTS AND DISCUSSIONS

This chapter discusses the analysis and interpretation of the data gathered from participants' responses in answering the specific questions of the study.

5.1 Demographic Profile of the Respondents

Table 2.0: Profile of the Respondents in terms of Gender

Gender	Frequency	Percentage %
Male	20	38.5
Female	32	61.5
Total	52	100

The table 2.0 shows the gender distribution of a group of respondents. From the total of 52 respondents, there is a higher percentage of females (61.5%) compared to males (38.5%). This indicates that in this survey, females are the predominant respondents more than males.

Table 3.0: Profile of the Respondents in terms of Age

Age	Frequency	Percentage %
12-18 years old	5	9.6
19-30 years old	14	26.9
31-60 years old	30	57.7
61 years old and above	3	5.8
Total	52	100

This table 3.0 provides insights into the age distribution of the surveyed individuals. It appears that most respondents fall within the 31-60 age range, while the 12-18 and 61 and Above groups have smaller representation.

Table 4.0: Profile of the Respondents in terms of Employment Status

Employment Status	Frequency	Percentage %
Employed	25	48.1
Self-employed	11	21.2
Unemployed	16	30.8
Total	52	100

This table 4.0 provides insights into the employment status of the surveyed individuals. It appears that a significant proportion of respondents are employed with around 48.1%, followed by those who are unemployed and self-employed.

Table 5.0: Profile of the Respondents in terms of Classification

Classification Status	Frequency	Percentage %
Consumers	41	78.8
Business Owner	11	21.2
Total	52	100.0

The table 5.0 shows the classification distribution of a group of respondents. There is a higher percentage of consumers (78.8%) compared to Business Owners (21.2%). This implies that consumers are more interested than business owners in responding to the survey.

5.2 The Challenges Faced by Customers in Checking the Availability of Business Establishment

With the category value of 3.63, the data in Table 6.0 reflects a clear need for a local business directory in Surigao City to aid customers in locating, contacting, and comparing SMEs and other business establishments. Such a resource could significantly enhance the customer experience by providing easy access to business information.

Table 6.0 : The Challenges Faced by Customers in Checking the Availability of Business Establishment

No.	Question Statements	Weighted Mean	Description
1	Customers are having challenges particularly in identifying and locating Small and Medium Scale Enterprises (SMEs)/Business establishments within Surigao City.	3.56	Agree
2	Without any local business directory, customers will be having a hard time contacting Business establishments.	3.76	Agree
3	Customers are having difficulties to quickly check and compare the right product or services they are looking for with the absence of a local business directory.	3.56	Agree
	Average Mean Score	**3.63**	**Agree**

5.3 The Challenges Faced by Business Owner in Promoting their Businesses Online

Table 7.0: The Challenges Faced by Business Owner in Promoting their Businesses Online

No.	Question Statements	Weighted Mean	Description
1	As business owners, we are having difficulties promoting the business locally.	4.55	Strongly Agree
2	As business owners, acquiring customers will be a challenge if we don't have an easily accessible platform to promote our products and services.	4.55	Strongly Agree
3	It is a challenge to business owners specially to start-up businesses if the location is unfamiliar to the consumers.	4.82	Strongly Agree
	Average Mean Score	**4.64**	**Strongly Agree**

Overall, the responses indicate a strong consensus (category value of 4.64) among business owners on the need for better promotional tools and platforms, as well as the importance of location familiarity to attract and retain customers.

5.4 The Proposed Mobile-Based Business Directory Application

5.4.1 Assessment of Mobile-based Business Directory Application within Surigao City

The data from Table 8.0 suggests that there is a positive reception to the idea of a mobile-based business directory application for Surigao City. It suggests that stakeholders believe a mobile directory could address the challenges identified in previous objectives, such as locating SMEs, contacting businesses, and comparing products or services more efficiently.

Table 8.0: Assessment of Mobile-based Business Directory Application within Surigao City

No.	Question Statements	Weighted Mean	Description
1	Do you think a local Mobile-based Business Directory Application will be ideal for checking Business establishments within Surigao City?	4.08	**Agree**

5.4.2 Features of the Proposed Mobile-based Business Directory Application

The data from Table 9.0 provides insights into the preferred features for a proposed mobile-based business directory application, ranked by frequency and percentage from a survey. This ranking indicates that the proposed mobile-based business directory should prioritize features that enhance user experience, provide comprehensive business information, and facilitate community engagement.

Table 9.0: Ranking of the Features for the Proposed Mobile-Based Business Directory Application

Features of Mobile-based Business Directory Application	Frequency	Percentage	Ranking
Able to display business establishment's profile such as contact details, location and directions, and their available products and services.	43	19%	1

Allow customers to give feedback/recommendations or ratings to any business establishments listed in the app.	40	18%	2
Able to see a list of business establishments that will allow you to check and compare their products and services.	38	17%	3
Allow you to categorize your search based on the type of business or products and services.	37	16%	4
Allow customers to get the exact location or direction through available map technology.	37	16%	5
Allow business owners to add job postings.	32	14%	6
Total Responses	**227**	**100%**	

5.4.3 Conceptual Framework of the Proposed Mobile-based Business Directory Application
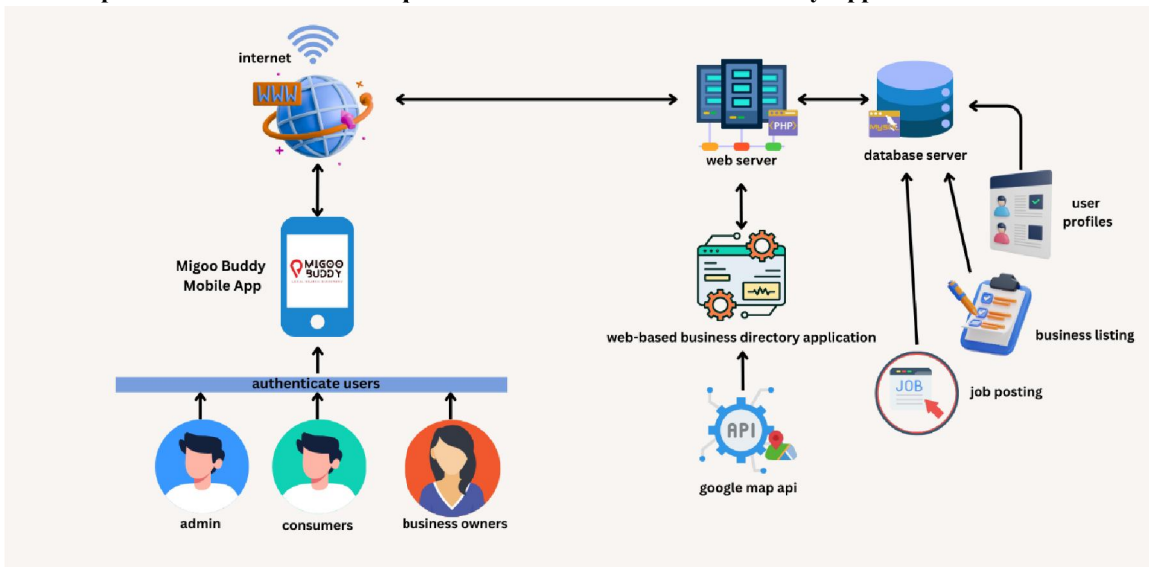
Figure 1.0 Conceptual Framework of the Proposed Mobile-based Business Directory Application

Figure 1.0 illustrates the conceptual framework for the proposed system, providing a comprehensive view of the system's components and their interconnections. The framework delineates the essential elements and their interactions within the system. The Mobile-based Business Directory Application is designed for use by consumers, business owners, and the admin users, each granted distinct rights and privileges concerning the system functionalities and data retrieval. The intended mobile application will be available for download from the leading app stores. Upon successful account creation and verification, users will gain access. Consumers will have the ability to search for business establishments, view locations and contact details, and find job postings. Business owners will be able to set up accounts and create detailed business profiles. The administrator will possess the authority to manage and oversee the entire system.

5.4.4 System Development Process of the Proposed Mobile-based Business Directory Application
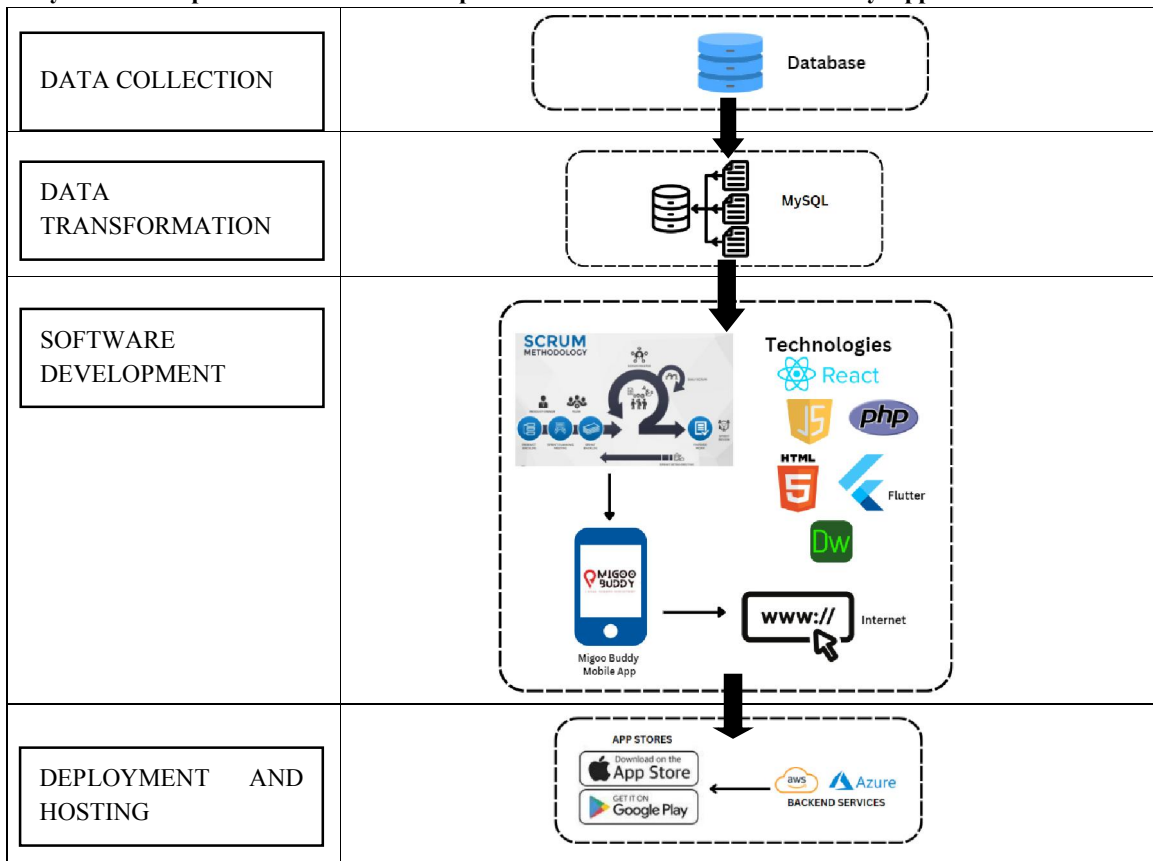

Figure 2.0 System Development Process of the Proposed Mobile-based Business Directory Application

The Figure 2.0 illustrates the developmental framework of the envisioned system. It shows the sequence of operations for the Proposed Mobile-based Business Directory Applicationto discern patterns within the current database. This framework is segmented into four distinct phases: data gathering, data conversion, software creation, and deployment and hosting.

Additionally, the figure considers various factors, data mining techniques, and instruments. It also depicts the array of technologies employed in system construction. The user interfaces are crafted utilizing Adobe Dreamweaver, HTML (Hyper Text Markup Language), and CSS (Cascading Style Sheet); MySQL serves the purpose of database manipulation and retrieval; PHP, React, and Flutter will be used for programming the mobile application system. Moreover, the diagram highlighted the app store for the intended application's launch, alongside cloud-based backend service technologies such as Amazon Web Services (AWS) and Azure.

VI. CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions, and recommendations for the study. This study aimed to identify key areas where digital platforms can enhance visibility and accessibility of business information.

6.1 Conclusions

Based on the results of the study, it can be concluded that there is a clear need for a local business directory in Surigao City. Both consumers and business owners face challenges in locating and contacting businesses and comparing products or services. This is particularly true for Small and Medium Scale Enterprises (SMEs). As business owners are struggling to promote their businesses locally, they believe that an easily accessible platform could help them attract and retain customers.

The idea of a mobile-based business directory application for Surigao City is well-received. Such application could address the challenges identified by consumers and business owners. The most desired features for this application include the ability to display a business establishment's profile, allow customers to give feedback, and see a list of businesses to check and compare their products and services.

In conclusion, the digitalization of business information through a mobile-based business directory application could significantly enhance the customer experience and provide a boost to local businesses in Surigao City. It could also open up new job opportunities and contribute to the overall economic development of the city. This study provides valuable insights and recommendations for the development of such an application. However, continuous feedback and improvement will be necessary to ensure its success and acceptance by the users.

6.2 Recommendations

Based on the findings of the study, the researchers would like to recommend on proposing the development of a Mobile-Based Business Directory Application. Given the clear need and positive reception for such application, it is recommended to proceed with its development. The application should prioritize features that enhance user experience, provide comprehensive business information, and facilitate community engagement.

To further improve the digitalization of business information and job opportunities, businesses should focus on enhancing customer engagement, introducing product innovation, ensuring promotional visibility, investing in digital technology, collaborating with tech startups, advocating for government support, and integrating job opportunity features within the app.

By implementing these recommendations, businesses can enhance their digital presence, improve customer satisfaction, and create a more dynamic and competitive digital marketplace in Surigao City. It is important to remember that these recommendations should be continuously reviewed and updated based on user feedback and changing market trends.

VII. ACKNOWLEDGEMENT

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