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The Integration and Utilization of Mobile Application in Healthcare Consultation Services for Quirino Province

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Abstract: The use of mobile devices has been rapidly increasing because of its versatile and useful applications. As a result, its high-tech features and Users have ready-made and customizable alternatives thanks to open source platforms., making it particularly helpful for healthcare services at any time and from any location. Healthcare services for the rural areas are limited since hospitals are also limited and their location is also one of the problems in availing healthcare service in the province.

The main objective of this study focuses on the integration and utilization of mobile application as an alternative solution for healthcare consultation services.

The descriptive and survey method was used in the data gathered from the respondents which comprised a number of people from the six municipalities of the province specifically rural areas. A questionnaire-checklist was administered to determine the possibility of the integration of mobile application for healthcare consultation services. Statistical Package for the Social Sciences (SPSS) a statistical tool used to determine the number of interested respondents to avail such mobile platform and to determined economic aspect of the study.

The study proves that there is a possibility for the integration of mobile application as an online platform for healthcare consultation services. This will be beneficial to Quirinians and nearby provinces.

Keywords: Mobile Application, Healthcare Services, Rural Area

I. Background, Motivation And Objective

Healthcare innovation is the answer to the growing number of patients and limited hospital access, especially during a pandemic. Today every individual seems to be obsessed to be updated and to tract their fitness and health through mobile health. Mobile health technology has become important to improve quality of health (1).

These days android is one of the most desirable and widely used mobile operating system because of its features such as interactive user interface (UI) (2.). Mobile apps are made expressly to assist users in managing their own health and wellness. On the other hand, many mobile applications are designed to help medical professionals as tools to enhance and facilitate the delivery of patient care. [1]. Sample healthcare innovations is pocket-size ultrasound devices that cost 50 times less than the machines in hospitals (and connect to your phone). Virtual reality that speeds healing in rehab. Artificial intelligence that's better than medical experts at spotting lung tumors. These are just some of the innovations now transforming medicine at a remarkable pace (3). Chen Wang et.al (2021) stated that "It is not surprising that many organizations including medical organizations are moving towards mobile technology to improve their service deliveries"(4). The internet of things (IoT) wearable fitness or health tracking devices, smartbody sensors, clinical devices for monitoring vital signs, and other types of devices or clinical instruments are now readily available and used in healthcare by doctors and medical industries. These devices can easily predict a patient's health status, even for those who live in rural areas. Given that local telemedicine was established and sponsored by a state-run institution in a developing nation like the Philippines, there have been three main areas of concentration here: how to utilize telemedicine as a tool to increase access to high-quality healthcare; how to use telemedicine to improve patient outcomes; (especially for those living in geographically isolated and disadvantaged areas), maintaining reasonable costs, and providing acceptable quality of care. Despite the fact that NTHC has the most telemedicine expertise and skills of any local institution, other DoH agencies, as well as private health care facilities, have begun to offer telemedicine services(5).

The province only has one medical hospital to serve the health needs of the six municipalities. Even though we have one district hospital in Diffun, Quirino's gateway, and another in Quirino's last municipality, it is still unable to handle the large number of patients, especially during this epidemic. As a result of this predicament, there is a

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demand for low-cost, simple-to-use solutions that can be employed at home, anytime and anywhere. Furthermore, the growing trend in mobile applications motivates efforts to maximize mobile application integration and adoption for healthcare services. Furthermore, the mobile application will be a conduit for this problem because it will provide a way to contact with medical practitioners in order to address healthcare needs. Mobilization will no longer be an issue because traditional face-to-face consultations will be replaced with virtual mobile application consultations. The government's Piso WiFi, which is available in every Barangay, will also be a huge assistance in implementing this technology. The primary goal of this article is to offer a study plan for evaluating the integration and use of online healthcare consultation services to meet the needs of Quirinians and nearby province.

II.Statement Of Methods

Quantitative research design was employed in this research and this aided the researcher to identify The Integration and Utilization of Online Healthcare services consultation Services for the people of Quirino.

A non-probability sampling technique called "purposeful sampling" selects the sample's components based on the researcher's best judgment. The survey's participants are drawn from the province's rural areas.

A survey questionnaire was used as primary data gathering instrument while unstructured interviews were used to validate the respondent’s responses with Likert scale. Some of the questionnaire was adapted and modified form the Feasibility of a Mobile Phone App to Promote Adherence to a Heart-Healthy Lifestyle: Single-Arm Study (6). The questionnaire was created using online platforms and sent to respondents, while others completed the questionnaire in person in several municipalities throughout Quirino Province. The questionnaire has three sections. The first section contains information about the respondents' gender, age, address, civil status, and whether or not they have an Android phone/smartphone/tablet. The personal factor is discussed in the second section, and the socioeconomic factor is discussed in the third section. Data was extracted and put into statistical tools to help with data analysis.

The data collected from respondents in the six municipalities of Quirino province was examined using descriptive and survey approaches. To see how effective it is to integrate mobile apps into healthcare services. Based on the number of households in the province, the Raosoft formula was used to estimate sampling size. According to the Raosoft calculation, the sample size based on the number of households should be 381, with a 95% level of confidence and a 5% margin of error. The researcher only gathered 326 responders due of limited access to some places and to protect the population from the pandemic's spread.

III.Results, Discussions An Conclusions

The ultimate goal of the study focuses on the integration and utilization of mobile application as an alternative solution for healthcare consultation services.

Results that was gathered from the study and was properly tabulated using frequency and percentage, t-test and Analysis of Variance (ANOVA), here are the summary of findings:

I. Profile of the Respondents

Table 1. Distribution of the Respondents Profile (n=326)

Respondents Profile	Frequency	Percent (%)
Age		
20 BELOW	57	17.50
21-30	110	33.70
31-40	71	21.80
41-50	56	17.20
51 ABOVE	32	9.80
Sex		
Male	104	31.9
Female	222	68.1
CIVIL STATUS		
SINGLE	157	48.20
MARRIED	163	50.0
WIDOW/ER	6	1.80
ADDRESS		
DIFFUN	96	29.4
CABARROGUIS	61	18.7
SAGUDAY	46	14.1

AGLIPAY	32	9.8
MADDELA	50	15.3
NAGTIPUNAN	41	12.6

Table 1 shows the distribution of the profile of respondents. It shows the age, sex, civil status and address of the respondents.

Based on the data presented under age of the respondents, out of 326 respondents, 32 or 9.80 percent of them are 51 years old and above, which has the least number. Majority of the respondents are 21 to 30 years old comprising 33.70 percent or 110 out of 326 respondents.

The table also showed the distribution of respondents in terms of sex, 222 or 68.10 percent are female, while males comprise 104 heads or 31.90 percent of the respondents. This denotes that majority of the respondents were female.

The distribution reveals that half of the total number of respondents are married comprising 163 out of 326 respondents. In addition, there are 157 or 48.20 percent single respondents and only 6 respondents or 1.80 percent are widow/er. It can be noted that most of the respondents are married.

On the other hand, the table depicts the address of the respondents. There are 96 respondents from Diffun taking in the 29.40 percent of the respondents. There are also 61 respondents from Cabarroguis and 50 from Maddela. But the least number of respondents in terms of their address is from Aglipay which only covers 9.80 percent of the respondents. It can be gleaned on the result that most of the respondents are from Diffun.

Table 2: Distribution of Respondents having android/smartphone/tablet (n = 326)

I have android android/smartphone/tablet	**Frequency**	**Percent (%)**
NO	13	4.0
YES	313	96.0

The table shows the frequency distribution as well as the percentage of respondents who own an Android smartphone or tablet. As seen in the table, the majority of respondents (96 percent or 313 out of 326 respondents) use an Android/smartphone/tablet.

II. Factors in the Integration of mobile application in healthcare consultation services

Table 3: Mean Distribution of the integration and utilization of mobile application in healthcare consultation

Personal factors	**Mean**	**Descriptive Rating**
1. I am comfortable in using smartphones/android phones.	3.47	Strong Agree
2. Mobile consultation is not time consuming.	3.14	Agree
3. Using mobile application for consultation decreases on exposure to other illnesses.	3.23	Agree
4. I prefer traditional consultation (face to face).	3.19	Agree
5. I feel comfortable at home during consultation using mobile application.	3.02	Agree
6. It is easier to have an appointment schedule using mobile application for consultation.	3.24	Agree
7. I am able to have mobile consultation even without companion.	3.21	Agree
8. Consultation using mobile application is effective.	3.05	Agree
9. Mobile consultation can be access anytime.	3.14	Agree
10. I can freely express my concern using online consultation.	3.07	Agree
GRAND Mean	**3.18**	**AGREE**

Legend: 3.26-4.00 Strong Agree (SA)
2.51-3.25 Agree (A)
1.76-2.50 Disagree (D)
1.00-1.75 Strong Disagree (SD)

The Mean Distribution of the integration and utilization of mobile application in healthcare consultation services in terms of personal factors shown that the respondents agreed on the different factors presented for the integration of mobile application in healthcare consultation services with a grand mean of 3.18 which is agreeable.

The findings indicate that the respondents agreed on the many considerations offered for the use of mobile apps in healthcare consultation services. And the statement "I am comfortable using smartphones/android phones." has a mean description of Strong Agree, this further shows that respondents agrees on the use of mobile application on healthcare consultation specially during this time of pandemic.

Table 4: Mean Distribution of The integration and utilization of mobile application in healthcare consultation services in terms of socio-economic factors

socio-economic factors	**Mean**	**Descriptive Rating**
1. Traditional consultation (face to face) is costly in terms of travel expense.	3.25	Agree
2. Mobile consultation helps the government ease the issues of healthcare services.	3.27	Strong Agree
3. Hospital/clinics are inadequate in the province for consultations.	3.08	Agree
4. I am having a hard time having consultation because transportation is limited in our area.	3.06	Agree
5. Hospitals/clinics implement limited number of patients to cater per day.	3.15	Agree
6. I am aware that using mobile application for consultation requires online payment.	3.08	Agree
7. I am having hard time in having consultation because we are in rural area.	2.90	Agree
8. I am confident in using smartphone/android phone for online consultation.	3.07	Agree
9. I have internet connection using data/smart/globe/pldt/converges to use online consultation.	3.22	Agree
10. Using online consultation, healthcare providers can offer services even when they are at home.	3.23	Agree
GRAND Mean	**3.13**	**AGREE**

Legend: 3.26-4.00 Strong Agree (SA)
2.51-3.25 Agree (A)
1.76-2.50 Disagree (D)
1.00-1.75 Strong Disagree (SD)

The mean distribution of the Factor in the use of mobile applications in healthcare consultation services was found in Table 4. The statement "Mobile consultation helps the government ease the challenges of healthcare services." has a mean description of Strong Agree under socio-economic factor, that shows the positive result of the respondents in adapting the use of technology that will help the government ease the challenges of healthcare services most specially to the municipalities far from hospitals. On the other statement on r socio-economic elements have a mean description of Agree the findings indicate that the respondents agreed on the many considerations offered for the use of mobile apps in healthcare consultation services under socio-economic factor.

III. Significant differences on the integration and utilization of mobile application in healthcare consultation services when group by profile on Personal Factor.

The mean distribution when respondents are grouped by sex is “Agree” in terms of personal factor. The results indicate that both male and female respondents support the integration and use of mobile applications in healthcare consultation services. While among given statements, statement “Mobile consultation is not time consuming” and statement “Mobile consultation can be access anytime” has a p-value that is less than 0.05, which is considered to be significant. The result further shows the willingness of the respondents to use the healthcare consultation that should be given attention to the province of Quirino.

And when respondents are group by civil status. Single respondents are more likely to say "Agree," but married and widow/er respondents are more likely to say "Strongly Agree." It indicates that married and widowed people are more likely to agree on personal matters because they have more family members to be consider and concerned

with. While the result on the Analysis of Variance (ANOVA), it can be noticed that in terms of personal factor is not significant to the statements "I am comfortable in using smartphones/android phones", "I prefer traditional consultation (face to face)", "I feel comfortable at home during consultation using mobile application" and "Consultation using mobile application is effective" while other statements has a p-value that is less than 0.05, which is considered to be significant. This indicates further that in terms of the other statements, there is a significant difference on the integration and utilization of mobile application in healthcare consultation services in terms of personal factors when grouped by civil status.

When respondents are grouped by address the mean distribution on five (5) municipalities (Diffun, Aglipay, Maddela, Nagtipunan and Cabarroguis s a grand mean description of "Agree", while the municipality of Saguday has a grand mean description of "Strongly Agree". The Analysis of Variance (ANOVA) when grouped by address has a p-value lesser than 0.05 level of significance on the statements " I feel comfortable at home during consultation using mobile application", " I am able to have mobile consultation even without companion", " Consultation using mobile application is effective", " Mobile consultation can be access anytime", and " I can freely express my concern using online consultation". This indicates that the integration and utilization of mobile application in healthcare consultation services has a significant difference in terms of personal factors when grouped by address.

When respondents are grouped by aged the mean age distribution of respondents (on the integration and utilization of mobile application in healthcare consultation services) in terms of personal factors was, Ages 30 and below has a grand mean description of "Agree" while ages 31 and above has a grand mean description of "strongly agree". It indicates that generations of ages 30 and below agree to all the statements, while respondents ages 31 and above strongly agree to the statements because they are most likely vulnerable to health concerns. And the Analysis of Variance (ANOVA) on the integration and utilization of mobile application in healthcare consultation services in terms of personal factors when grouped by age was almost all the given statements portraying the personal factor has a p-value lower than .05 level which interpreted as Not Significant. But the statement "I prefer traditional consultation (face to face)" has significant value which implies that it does affect the integration and utilization of mobile application in healthcare consultation services in terms of personal factors when grouped by age.

IV. Significant Differences On The Integration And Utilization Of Mobile Application In Healthcare Consultation Services When Group By Profile On Socio-Economic Factor.

The mean distribution when group by sex has a descriptive of grand mean of "Agree". This implies that either sex has agreed to all the statements in terms of socio economic factors.

And all given statements portraying the socio-economic factor generated a p-value or level of significance higher than the 0.05 level of significance. This implies further that there is no significant difference on the integration and utilization of mobile application in healthcare consultation services in terms of socio-economic factors when grouped by sex.

On the other hand the mean distribution of respondents when grouped according to age. because they are subject to IATF restrictions. The Analysis of Variance (ANOVA) on the integration and utilization of mobile application in healthcare consultation services in terms of socio-ecomic factors when grouped by age can be noticed that the statement " I am having a hard time having consultation because transportation is limited in our area" and "I am having hard time in having consultation because we are in rural area." has a p-value higher than 0.05 level which is interpreted as Not Significant. But the other statements has significance p-value lower than 0.05 which is considered as significant. Hence, it implies that it does affect the integration and utilization of mobile application in healthcare consultation services in terms of socio-economic factors *when grouped by age*.

Respondents mean distribution when grouped by civil status was single and married respondents has grand mean description of "Agree" while married widow/er respondents answered 'Strongly Agree". It means that widow/er firmly agrees on socio economic factors because they are more health conscious because of fear that family members will be sick. While the Analysis of Variance (ANOVA) when grouped by civil status is not significant in terms of the statements "Hospital/clinics are inadequate in the province for consultations", "I am having a hard time having consultation because transportation is limited in our area", "I am having hard time in having consultation because we are in rural area" and "I am confident in using smartphone/android phone for online consultation " while other statements has a p-value lesser than 0.05 level of significance. This indicates further that in terms of other statements, there is a significant difference on the integration and utilization of mobile application in healthcare consultation services in terms of socio-economic factors when grouped by civil status.

When grouped by address, the mean distribution of respondents on municipalities of Diffun, Cabarroguis, Aglipay, Maddela and Nagtipunan has a grand mean description of "Agree", while municipality of Saguday has a grand mean description of "Strongly Agree". This means that municipality of Saguday firmly agree on statements for socio-economic factor because during the time of study Municipality of Saguday has the highest number of affected on COVID pandemic. The Analysis of Variance (ANOVA) on the integration and utilization of mobile application in healthcare consultation services in terms of socio-economic factors when grouped by address is not significant in terms of the statements "Hospital/clinics are inadequate in the province for consultations", "I am having a hard time having consultation because transportation is limited in our area", "Hospitals/clinics implement limited number of patients to cater per day." and "I am aware that using mobile application for consultation requires online payment. Other statements has a p-value lesser than 0.05 level of significance. This implies that in terms of other statements, there is a significant difference on the integration and utilization of mobile application in healthcare consultation services in terms of socio-economic factors when grouped by address.

IV. Conclusion

This study aims to determine the possibility of health care consultation services using mobile application in Quirino province and the practices of patients to meet their health care needs. Majority of the respondents are using android/smartphone and most of them are married female where in the t-test resuts when group by sex mobile consultation is very much needed in the province of Quirino.

The given result is positively provides the researcher an in-depth idea that the said mobile application is recommended and will support the government ease the challenges of healthcare services in the province and is beneficial to all Quirinians and to nearby province. It is further attested that an integration and utilization of mobile application in healthcare consultation services can be recommended and can be employed in Quirino province.

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