



# SerbisyoPH: An Android Application for Hiring Service Provider

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## Abstract

**Background/Objectives:** This project aims to lessen the hustle on looking for a service provider by easing up the search through an application that will search for a skilled worker that will fit on performing a specific task. Different level of access is applied depending on the purpose of their use, may it be the client, service provider or the admin. Job posting and searching for a specific service are the major concern of the application. **Methods/Statistical analysis:** Payments through a different transaction may be done using a PayPal account. This application is only available in the Philippines and can be used using Android devices with at least Lollipop or a higher version of Android OS. **Findings:** The application "Passed" the conformance, compatibility test, and functionality test. The application got a mean of "3.48" with the use of Mobile Application Rating Scale criteria (MARS) and "3.55" using Content Management System criteria (CMS). "Highly Acceptable" was the interpretation of the two evaluations. **Improvements/Applications:** The SerbisyoPH is an android application for hiring the service provider. Its advanced technology and focus on mobile development were done for the benefit the people living in the Philippines, the clients, service provider, and future developers.

## Index Terms

Android App, Hiring, Service Providers, Services, Jobs

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## **I. INTRODUCTION**

Nowadays, when people discuss Technology -- the sky is the limit as they say, people believed that most questions and facts can be found through this technology, and these are not just trends but more of a necessity.

Through the vast improvement of technology that we have nowadays, it may be a great help for us to maximize the use of it in looking for a skilled worker for a specific job (Job Definition, Job Challenges, Job Requirements, Job Street & Part Time Jobs, n.d.), that may help earn money for their family.

### **A. Project Context**

Every now and then service is being given, and a service is being sought by a client. A client looks for a service provider and a service provider look for a client. The dilemma is where and how to find a service provider or how will a client will look for a service provider that will match their needs, and that will qualify certain applicant, (Academic Degree, Achievement, & Education Definition, n.d., Gimenes, et al, 2012, & Hire Definition, n.d.)

Before, both providers and clients will just post it in front of their house or advertise it on leading newspapers, (Does anyone advertise jobs in newspapers anymore, 2016).

Recruiters give flyers in public for more opportunities for the applicant,(Flyer Distributor, n.d.) Communicating with each other takes weeks or months to receive one's messages so it is very inconvenient.

Many technologies are being used for finding a service provider these days, (Muthyala et al., 2017). Technology is continuously changing some of the old ways of finding a person with expertise in executing a service. A person had to pin some job offering posters on the wall or some uses electric postings. And with the wide usage of the internet, they can lessen the stress on searching for both the client and the provider, (Bogle and Sankaranarayanan, 2011).

Through modern technologies, developers created software application that would help many people to find and choose someone that can give them a quality service, (Muthyala et al., 2017).

Today's technology is very powerful. It only takes seconds to communicate with someone elsewhere in the world. Some establishments use automated system on their site, (Bachrach, 2015, pp. 1-10). People search and read the latest news on the internet using certain device, (Ashok, Lim, Prasetyo, 2018). Now, people can track the exact location of a place using Global Positioning System (GPS), (Zekavat and Bueher, 2019).

### **Project Description**

Hiring someone good on certain tasks may be difficult. That is why it is necessary to develop an application with a search engine that may help the user on finding a specific service provider for a certain job that may require a list of categories to easily search for. This application will allow the service provider to promote their field of specialization and expertise, and for the clients to easily look for a qualified service provider. By using the proposed application, clients who are looking for a skilled worker may find their search easily.

### **B. Objectives of the Project**

The general objective of the project is to develop "SerbisyoPH: An Android Application for Hiring Service Provider". Specifically, it aims to:

1. Design the mobile application that will manage and maintain a user account.
2. Create software using development tools such as Adobe Photoshop, Android Studio, and firebase database, (Alinday, et al, 2016, Anda, et al, 2017, Claudio, Dubiao, Flores, Sales, 2015, De Lara, Esteba, Monton, Primavera, 2015); Java as the programming language and Javascript as the scripting language for the web application (Administrator).
3. Test the application using Functionality, Compatibility and Conformance Testing.
4. Improve the application using a tool for customer satisfaction, (Maintenance definition, n.d.,).
5. Evaluate the software using Mobile App Rating Scale and Content Management System, (MARS, n.d., Sukoco, Marzuki and Cucus, 2012, Larco, Enriquez, and Mora, 2018)

### **C. Scope and Limitation**

The programming software application that the developers used to build the project in Android Studio, and Firebase database,(Android Emulator, n.d., Android Phone n.d., Development Tool, n.d.) Developers used Java as the programming language. Adobe Photoshop, (Adobe Photoshop, n.d.) for the design and creation of icons that will be used in the application.

The main purpose of the application is to hire a service provider that will work for the client,(Food Service n.d., Health Care n.d., Importance of Service n.d.). There are 3 user levels, the admin, service provider, and clients. A client and a service provider can sign in with their account, verify their email, change their password, recover their password, manage their bookings, message each other once the booking is accepted, claim rewards, and rate each other. The client can pay with cash or account

balance. The client can load their account balance through PayPal with a minimum of P200.00 and with a maximum of P20,000.00. The client can search for services using the search bar. A service provider can transfer credentials and ID's for him to be verified as a service provider. A service provider can also request a payout with a minimum of P500 that will be processed in 3 to 5 working days. The admin can manage the users, view payout requests, generate reports, accept or decline a service provider. The admin can add services based on the suggestion of the service providers. The admin can add and delete achievements.

The services of SerbisyoPH are limited for personal services and can be done within a day only. Serbisyo PH guarantees that the service providers are professionals and have certifications on their expertise. The application can cancel a booking schedule but there will be charges. However, the application cannot guarantee the service recovery, just in case that a problem arise after the service, the client's service provider will be responsible. It requires one account for every email. The service provider can only choose one category in an account. The client cannot set an appointment if the service provider is occupied on the day that he had an appointment, therefore, a service provider can only work one service a day. After the booking is accepted, it will automatically decline after 15 minutes, if not entertained. The availability of the service provider is 7 days ahead of the date when a client will set an appointment. The basis of time appointment in SerbisyoPH is from 7:00 AM to 9:00 PM.

The application can only run on Android devices with at least a version of 5.0 or Lollipop version or higher. The android phone must have an ability to connect to the WIFI or data so that the mobile application will function well. There will be an online payment, but it only through PayPal. SerbisyoPH will only be available in the Philippines because it uses a Philippine-based map.

**D. Significance of the Project**

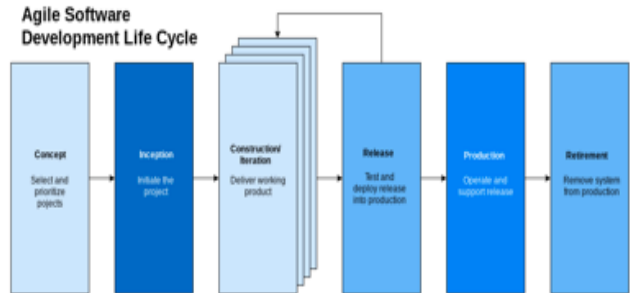
The SerbisyoPH is an android application for hiring the service provider. Its advanced technology and focus on mobile development were done for the benefit the people living in the Philippines, the clients, service provider, and future developers.

**II. METHODOLOGY**

In this chapter, the methodology of the development of the project was discussed. This provides several diagrams and representations of the inner workings of the software. The feasibility and

several screenshots of the software are also present in this chapter.

*System Development Process Model Used*

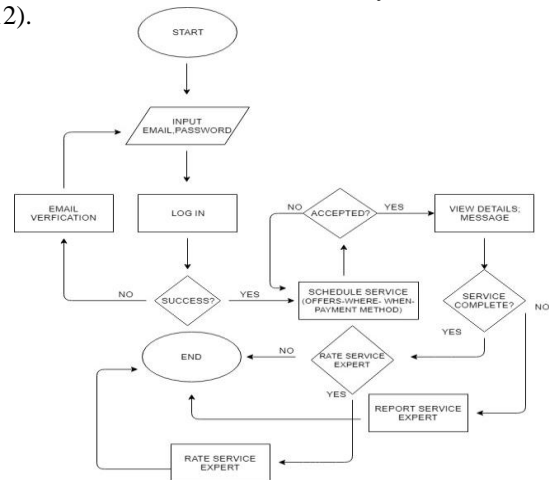


**Fig. 1.** Agile Software Development

The Agile software development life cycle is consists of several iterative processes,[10] which are significant in the project development. Several iterations may take place during the Agile software development lifecycle and each follows its workflow. In every iteration that may take place, it is important that the clients and/or the service provider must provide feedback to ensure that the features meet their needs. Each iteration results in the next piece of the software development, working software and supporting elements until the final product is complete. Each iteration depends on the level of difficulty of each process.

**A. Data and Process Modelling**

System Flowchart. It is a visualization of data flows in a system. It discusses how the system begins, what are the inputs, the decisions in it, and the control events. Every symbol is connected by lines that determine where the data flows, (Rahayu and Hartati, 2012).



**Fig. 2.** System Flowchart of Project Serbisyo PH

Fig. 1, shows the system process flow. To start with, the user must input his email and password on

the log-in form to access his account. If it is his first time to use the App, he will be prompted for email verification, after doing so and the account was already been verified, he log-in and may start navigating through the application.

The user(client) after logging- in can search and select a service that he is looking for, check whether there are other available providers to choose from, he may consider the location, availability and payment methods for a service rendered. Afterward, this request will be seen by the service provider and he has a choice to accept or decline the service request. A message will be sent to the client, either acknowledged or declined. If it was accepted, the request is displayed on the booking page and will also notify the client. Once the service was finished, the client has an option to rate the service rendered by the service provider.

### **B. Development**

**Software Specification.** The proponents used the Android Operating System as the main device in creating the SerbisyoPH application, Android 5.0 Lollipop up to the latest version 7.0 Nougat. The researchers also used Adobe Photoshop CC 2015 for the better graphics of the photos, and logo, firebase for the online database of the data, and Android Studio for coding the application.

**Hardware Specification.** The researchers used a Dell laptop with Intel Core i5 with 2.30 GHz to create the application. Android smartphone Galaxy J5 2016 Lollipop version to use and test the application with 2GB RAM Snapdragon 801, and Quad-core 2.5GHz.

**Program Specification.** "Serbisyo PH: An Android Application for Hiring Service Provider" has the following specification: Home Page – This section has different categories where the user can pick a specific service of he/she wants. Booking Page – This feature enables the user to view the current records and transactions that the user has made. Update Profile Page – This feature is to enable the user to edit his/her profile details. Achievements – When the user wants to view the bonuses he/she want to get. Register page –this page is where the user will fill his/her information to have an account in the application. Log-in Page – where the user will access his/her account. Log-out – when the user wants to be log out in the application.

### **C. Test Plan**

This section discusses the analysis of testing the application to recognize and attempt to find the errors in the application and able to address it for the development of the overall quality of an android application. This section also states the procedures of testing conducted by the developers to know the satisfactory of the project. Test Plan helps whether

the application is prepared for future use. Checking the application if it is running properly without encountering any problems and buttons are well functioning.

**Test Data.** The mobile application has used Compatibility Testing, and Conformance Testing. Compatibility testing will confirm that the application is compatible with various Android version and different screen sizes. Conformance testing is based on the standards of the Android Core App Quality the visual design and user interaction, functionality, performance, and stability and adherence of the application through Google Play. The respondents are the people who always seeking for a worker, other capstone team and the proponent's technical adviser. The goal is to deploy the "Serbisyo PH: An Android Application for Hiring Service Provider". This confirms that the functions of the developed application are well functioning. This also helped the proponents on testing and maintaining the developed application and making sure that the application is working on an Android Operating system platform version 5.0 Lollipop to 8.0 Oreo and compatible to specific screen sizes.

### **D. Verification, Validation, and Testing**

This is the method of evaluating the conditions imposed at the start and the specification requirements for the application. The proponents did testing if it meets objectives and its purpose to target users.

**Verification and Validation.** The verification and validation testing were done through 3 consultations and evaluations conducted by the proponents with the guidance of their Technical adviser, the application was tested using the consultation log sheet that indicates the modules that the software need. It was also supported by the Functionality Testing.

**Conformance Testing.** The proponents used the conformance test to confirm the usefulness and basic aspects of requirements based on the fixed quality of standards of the Android Core App Quality (Android Emulator n.d., Android Phone n.d.). If the application satisfies Android standards for visual design and user interaction, functionality, performance, and stability, and if the application is prepared for promotional opportunities in the Google Play.

**Compatibility Testing.** The proponents used the compatibility test to confirm if the application will run properly with different android versions. The researchers tested the application in android smartphones with versions 4.4 (Kit Kat), 5.0 (Lollipop), 6.0 (Marshmallow), 7.0 (Nougat), and 8.0 (Oreo). The screen resolution, screen sizes were also tested by installing the application on different devices.

Test Criteria. The criteria were used to evaluate the acceptability of the mobile application based on android developers. If the application conforms to the core quality of the Android standard. Functionality testing to check if all the functions are well functioning. Make sure that the application is ready to be published in Google Play, (Google Playstore, n.d.), using Conformance Testing. Compatibility testing to test the application to android devices with an android operating system 5.0 Lollipop up to 8.0 Oreo with different screen sizes.

### **E. Evaluation Plan**

This part presented gathered data and feedback through evaluations used a particular criterion. The developers sought out for testers in the application to test the application software if it is suitable for the usage of the users for future use by using evaluation instrument based on Mobile Application Rating Scale (MARS), (MARS, n.d., Larco, Enriquez and Lujan-Mora, 2018) and Content Management System (CMS), (CMS, n.d.). The testers for MARS are (10) it experts, (15) android users, and (10) service providers. The tester for CMS is (20) it experts, and (15) web users.

Evaluation Data. The developers used different smartphones with different android versions and a laptop with Windows 10 OS during the evaluation period and used provided evaluation sheets from the research adviser to ensure its standard based on the criteria of Mobile Application Rating Scale and Content Management System. The evaluation respondents in MARS were as participated by (10) IT experts, (15) android users, and (10) service providers. The evaluation respondents in CMS were as participated by (20) IT experts, and (15) web users in the CMS evaluation.

Statistical Treatment of Data. After the collection of the evaluation sheet and analysis of data, the developers made use of the coding scheme to distribute all data that were gathered from the respondents. The organization of data was very important because the conclusion would be based on these data, and it would ensure that an appropriate conclusion would be reached.

Weighted Mean. The weighted mean is a like 'average', which was, instead of each data point contributing equally to the final mean, some of the points contribute more 'weight' than the others.

The mean is the arithmetic average of the scores that were given by the respondents.  $\Sigma$  is the summation of the total scores, with X being the score proper weight, and N is the total number of evaluators or respondents.

Standard Deviation. This is a measure that was used to quantify the amount of variation or dispersion of a set of data values.

The standard deviation is a measure of the dispersion of a set of data from the mean if the data point was further away from the mean, there was a higher deviation with the data set. This was calculated as the square root of variance by determining the variation between each data points relative to the mean.

Likert Scale. This is a psychometric scale that was commonly used in research that employs questionnaires, like evaluation sheets. It was the most widely used approach to scaling responses in survey research.

Evaluation Procedure. The evaluation procedures discussed the step by step actual evaluation. Here are the procedures during the actual evaluation:

1. Evaluation instruments were prepared for the evaluation.
2. The evaluators were invited to participate in the application and website evaluation.
3. Distributed the questionnaire to a group of people consisting of (10) it experts, (10) service providers, and (10) android users for MARS and (20) it experts, (15) web users for the CMS.
4. The Android device and laptop were also presented to run the application and website.
5. The proponents discussed the concept of the application and website to the evaluators.
6. The developers demonstrated the function of the application and the website.
7. The evaluators tested the application and the website.
8. Each part of the application and website was evaluated accordingly.
9. The evaluation sheets were collected.

Evaluation Criteria. The evaluation criteria are accomplished to specify the modules of the application. The criteria are the 'Engagement' which has sub-criteria the entertainment, interest, customization, interactivity, and target group. 'Functionality' which has sub-criteria the performance, ease of use, navigation, and gestural design. 'Aesthetics' which has sub-criteria the layout, graphics, and visual appeal. Lastly is the 'Information' which has sub-criteria the Accuracy of App Description (in App Store), goals, quality of information, the quantity of information and visual information. The criteria and sub-criteria for mobile application is based on Mobile Application Rating Scale, (MARS, n.d., Sukoco, Marzuki and Cucus, 2012, Larco, Enriquez, and Mora, 2018)

### III. RESULTS AND DISCUSSION

This section discusses the overview of the test results conducted by the developers using Compatibility Testing, Conformance Testing, and Functionality Testing as the test case instruments and for evaluation, quality based on the criteria for mobile application using Mobile Application Rating Scale (MARS) and Content Management System (CMS).

#### A. Test Result

The application went through a series of tests. The testing instruments that were conducted are compatibility, conformance, and functionality and tested by the other Capstone team and the proponents' technical adviser. Below is the overview of data gathered in conducting the system test.

**TABLE 1.A** SUMMARIZED TEST RESULT FROM OTHER CAPSTONE GROUP

System Testing	Pass	Fail	Total Number of Test Criteria	Percentage
Compatibility	8	0	8	100%
Conformance	32	2	34	94.1%
Functionality	32	0	32	100%

Table 1.A depicts the result on the compatibility, conformance and functionality test that was conducted by another capstone group, consisting of 5 members.

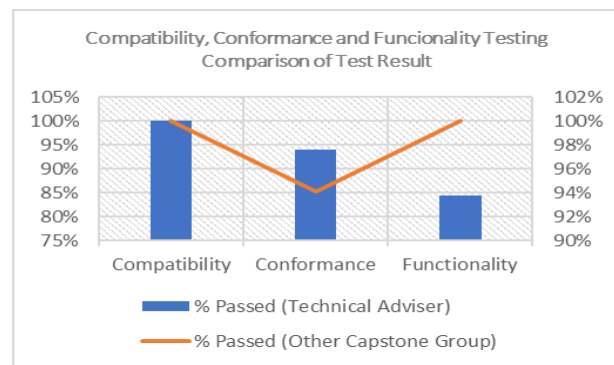
**Table 1.B** SUMMARIZED TEST RESULT FROM THE TECHNICAL ADVISER

System Testing	Pass	Fail	Total Number of Test Criteria	Percentage
Compatibility	8	0	8	100%
Conformance	32	2	34	94.1%
Functionality	27	5	32	84.4%

Table 1.B depicts the result on the compatibility, conformance and functionality test that was conducted by the Technical Adviser.

**Table 2.** COMPARISON OF TEST RESULT

System Testing	Total Number of Test Criteria	% Passed (Technical Adviser)	% Passed (Other Capstone Group)
Compatibility	8	100%	100%
Conformance	34	94.12%	94.12%
Functionality	32	84.38%	100%



**Fig 3.** Comparison of Test Result for the Technical Adviser and other Capstone Group.

Both Table 2 and Fig. 3 depicts the comparison of tables 1.A and 1.B, which shows that there is a slight difference in the result with regards to conformance and functionality. The same result was given by both the technical adviser and the other group under compatibility and conformance but have a different observation on the functionality of the capstone project, this may be brought by the difference in the schedule of test and evaluation.

#### B. Evaluation Result.

The application went through a series of tests. The testing instruments that were conducted are compatibility, conformance, and functionality and tested by the other Capstone team and the proponents' technical adviser. Below is the overview of data gathered in conducting the system test.

**Table 3.** OVERALL EVALUATION (MARS) RESULTS

Level of System Acceptability	Mean	Standard Deviation	Interpretation	Rank
Engagement	3.52	0.09	Highly Acceptable	1
Functionality	3.48	0.07	Highly Acceptable	3
Aesthetics	3.38	0.10	Highly Acceptable	4
Information	3.52	0.05	Highly Acceptable	2
Average Mean and SD	3.48	0.08	Highly Acceptable	

The overall evaluation results for the application composed of (10) I.T. experts, (10) service providers and (15) android users a total of 35 respondents displayed in Table 5.

The researcher computed the overall mean and standard deviation by summing all the gathered raw data of each set and divided it to the number of respondents which has the total of (35) evaluators, (10) IT experts, (10) service providers, and (15) android users. The overall mean is 3.48 and the standard deviation is 0.08 which has an interpretation of “Highly Acceptable”.

**Table 4.** EVALUATION RESULT (CMS) FROM ALL RESPONDENTS

Level of System Acceptability	Mean	Standard Deviation	Interpretation	Rank
Content Creation	3.50	0.19	Highly Acceptable	4
Content Management	3.54	0.15	Highly Acceptable	2
Publishing	3.54	0.12	Highly Acceptable	3
Presentation	3.63	0.15	Highly Acceptable	1
Average Mean and SD	3.55	0.15	Highly Acceptable	

The result of the evaluation drawn from (35) respondents to the admin panel of SerbisyoPH shows in Table 6. The website is in an integrated authoring environment that the author has easy access to the full range of features provided by the CMS, (CMS n.d., Content Management n.d.). The researcher computed the overall mean and standard deviation by summing all the gathered raw data of each set and divided it to the number of respondents which has a total of (35) evaluators.

#### IV. CONCLUSION AND FUTURE WORKS

The developers met the specific objectives of the project, that is to successfully develop an Android application for hiring service provider which managed user accounts and profile, uploaded valid ID's and other credentials of the service provider, searched services, booked and set an appointment to a service provider, organized bookings of services, sent and received a message to a service provider once the booking was confirmed, loaded on account balance, paid thru PayPal and managed account balance/payouts, rated the client, wrote a review and rated the service provider, claimed rewards, requested new services, viewed transaction history of the client, filtered, searched,

and viewed data of the application, accepted and declined service providers on the admin and generated reports.

The project was tested and was improved with the help of the different testing that was conducted by other capstone group and the Technical adviser, the difference in the result of their evaluation made a way for the researcher to further enhance the functionality of the application. Under compatibility testing, the developers tested the application in different mobile devices with a different operating system. The developers got a percentage of 100% in compatibility testing. The Android application runs smoothly in Android Operating System with versions 5.0 Lollipop up to 8.0 Oreo and different screen sizes from 4-inch up to 6-inch.

The evaluation was conducted to achieve the system's acceptance of the user based on the Mobile Application Rating Scale (MARS), (MARS, n.d., Sukoco, Marzuki and Cucus, 2012, Larco, Enriquez, and Mora, 2018) that uses the following criteria: 'Engagement', 'Functionality', 'Aesthetics' and 'Information'. and Content Management System, (CMS, n.d.) with these criteria: 'Content Creation', 'Content Management', 'Publishing' and 'Presentation'. These evaluation procedures conducted leads to the success of the application. The evaluation was participated by twenty (20) IT experts, and (15) web users a total of 35 participants. The overall results have a mean of "3.55" and an average standard deviation of "0.15" that was interpreted as "Highly Acceptable" which means that the web application can be an effective tool for managing users of the Serbisyo PH application.

To further enhance the project recommendations made for the future researcher the following feature are applicable: a. the interface should be improved and may have its' iOS version, notifications should be sent through SMS or Email and not only with the use of the app. There should be a reschedule option for the client just in case he wanted to change the booking schedule. An option of loading or reloading should not be limited only to what the current application can handle. Encryption and decryption may also be applied to data retrieval as a future enhancement for better data security, (Contu, Popovici, Franu, Berceanu, 2016).

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