

Startup Kit Mobile Application

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Article Info

Volume 81

Page Number: 4058 - 4063

Publication Issue:

November-December 2019

Abstract:

Most of the time, when a person wants to start a business, the guidance in terms of the entrepreneurship ecosystem stakeholders is unavailable, and his/her business background is not enough, which eventually could cause the business to fail. This happens because that person does not know how to correctly start a business, or what the right next step is. This problem brings up the demand of developing the Startup Kit mobile application. Startup Kit is an Android mobile application that aims to help the potential startups and to-be entrepreneurs to start up their businesses rightly, and overall, contribute to the economic growth of the country. Joint Application Development and Rapid Application Development were used in analysis and design phases respectively. The final result of this project is a native Android mobile application that works properly and satisfies the business requirements that were gathered and analyzed in the analysis phase. The application takes the user to a step-by-step journey of initiating his/her startup business starting from testing the concept of the business, composing business and financial plans, to launching the project in reality.

Article History

Article Received: 5 March 2019

Revised: 18 May 2019

Accepted: 24 September 2019

Publication: 19 December 2019

Keywords:-Business, startup application, entrepreneurs, android mobile

1. INTRODUCTION

The entrepreneurship is identified as the vital tool for economic development and growth of any nation. Entrepreneurs are important to make money for themselves, create jobs for others and trigger the business activity to contribute to the economy of the country [1]. In order to create a political climate conducive to entrepreneurship growth and SME development, the governments should bring in SME /Entrepreneurship friendly policies and procedures, and promulgate laws, policies and procedures to provide guidelines to concerned stakeholders to initiate implement and manage the entrepreneurship growth in countries [2-3]. However, the problem is that there are many people with brilliant ideas, but cannot implement those ideas or sketch their concepts and bring it to reality due to unavailable guidance in terms of the ecosystem stakeholders, and lack of business background [4-7]. Although there are several agencies have been established in order to help these young and

new entrepreneurs to startup their business, some of them still reluctant to visit these agencies for advice. Thus, concurrent with the information system era, many mobile applications have been developed to assist in business startups. ‘Startup Advisor’ is an android mobile application that provides an intelligent ProfitMargin, Markup Calculator, Break Even Point Calculator, and a Startup Cost Calculator. If the entered numbers are good, the business provider will become impressed and give recommendations. If the entered numbers are not pleasing, the application lets the user know how to improve his/her numbers and figures. ‘Entrepreneurs’ Startups’ is an application developed by the famous publishing company Entrepreneur. It gives free issues of Entrepreneurs magazine, exclusive contents, videos, slide shows and other useful contents regarding business, startups, and projects. It also provides the users with all the information they need to start a business.

It works as the complete A - Z guide for business and startups. Another application available in the playstore

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is 'Business Model Canvas Startup'. As what the name says, this application is used to build business model in a smart way. It allows the user to quickly map, test, and iterate business ideas. The methodology this application follows in building business models is derived from the popular book Business Model Generation. It also tests the idea in terms of profit and loss. Also, the Business Model Canvas Startup application is based on a widely practiced visual business model template that includes the nine business model blocks; this model is called Business Model Canvas. The goal of this application is to help entrepreneurs to organize and build the business using that canvas [8].

In this study, 'Startup Kit' mobile application is developed that provides the needed assistance to the niche of startups. The difference between this application compared to the existing application in market is that, this application assists the startup entrepreneurs at each stage of the business initiation process by helping them to reach to information about the needed stakeholders to be contacted in order to start a business, and by providing ready-to-work-on templates for different purposes regarding the business initiation process, such as business plan templates and financial feasibility templates.

2. Analysis and Design Phase

2.1 Joint Application Development

Joint Application Development is a methodology where the application development is done through collaborative workshops between the system analyst and system stakeholders including the client, and those workshops are called JAD sessions. This methodology gives the analysts a big advantage by decreasing the costs and time required to gather and analyse the requirements [9]. The goal of using JAD approach in analysis phase is to gather the requirements of the system, understand them more, and to strength the customer –relationship with the client. JAD session can be held in one or more workshop meetings. The requirements can be gathered and built into process models at the same time during JAD sessions. In this project, a several JAD sessions were conducted with the client to get more understanding of the requirements. Throughout the sessions, the requirements became clearer and the customer-relationship with the client has been strengthened.

2.1.1 Functional Requirements

1- The application must allow the user to test the concept of his/her business by the following way:

- a. The application must allow the user to write the concept statement of his/her business idea by prompting the concept statement form to him/her.
- b. The application must save the concept statement.
- c. The application should show the concept test survey, which is a survey used to test the user's business concept. It includes questions about the product/service the user would like to provide in his/her business. Those questions are general so they can be used for any business idea.
- d. The user must collect at least 20 responses for the concept test survey.
- e. The application database must store the responses.
- f. The application database must perform queries to calculate the responses to provide the user with the summary results.
- g. The application must show the user the survey summary results when the number of responses is larger than or equals 20.
- h. If the summary results shows that the number of respondents who are not willing to buy the product/service are more than the respondents who are willing to buy the product/service, the application must provide the user the option either to proceed to the next stages with those results, or to redo the concept test stage with a modified or new business concept. If the user chooses to redo it, the database should delete all the old responses.

2- The application should check the user's need for modelling& planning services. After the user decides whether he/she need help, he/she is guided to Google Search web page according to the type of chosen option.

3- The user should write a business plan for his/her startup idea. It is gets completely written by filling up the following forms in order:

- a. Getting Started.
- b. Executive Summary.
- c. Owner's Background.
- d. Products and Services.
- e. The Market.
- f. Market Research
- g. Marketing Strategy.
- h. Competitor Analysis.
- i. Operations and Logistics.

4- The application should locally store the business plan filled-up templates.

5- The user can edit what he/she had written in the business plan templates.

6- The user can view what he/she had written in the business plan templates.

7- User should write a financial feasibility plan by filling up the following numerical templates in order:

- a. 12-month Sales Forecast Statement.
- b. Startup Expenses Statement.
- c. Profit and Loss Projection.
- d. Pre-startup Cash Flow Statement.

8- The application should calculate the numerical data entered into the financial feasibility templates.

9- The application should locally store the financial feasibility plan filled-up templates along with its calculation results.

10- The user can edit what he/she had written in the financial feasibility plan templates.

11- The user can view what he/she had written in the financial feasibility plan templates.

12- The application should check the user's need for loans by showing him/her options for loan sources. Then the user is guided to Google Search web page according to the type of chosen loan source option.

13- The application should check the user's desire to secure his/her business concept by showing him/her options for product/service security e.g. copyrights. Then the user is guided to Google Search web page according to the type of chosen security option.

14- The application should check the user's desire to get personal services by showing him/her options for personal services for startups e.g. coaching. Then the user is guided to Google Search web page according to the type of chosen personal service option.

15- The application should show a Google Search web page about distribution channels for the user's business idea. The user must specify the country and type of his/her business in the Google Search searching field.

16- The application should show a Google Search web page about supply chain for the user's business idea. The user must specify the country and type of his/her business in the Google Search searching field.

17- The application should show a Google Search web page about the governmental services provided to startups. The user must specify the country in the Google Search searching field.

18- The user can go back later to business plan and financial feasibility templates.

19- The application should show the user the goal and instructions of each stage of the application.

20- All Google Search web pages should be opened within the application.

2.1.2 Non-Functional Requirements

1. Response time for loading each page should be less than 2 seconds.

2. Processing time for each function e.g. loading up the business plan and calculating the feasibility should be less than 2 seconds.

3. The application should handle one transaction at a time.

4. The application should save the status of each finished step. So, if the user stops and exits the application in a certain part, he/she should find himself/herself at the stopping point of the application when opening it again.

5. The application should contain the following local storage units:

- a. Business plan data storage: to store the business plan filled-up templates.
- b. Financial feasibility plan data storage: to store the financial feasibility plan data.
- c. Database to store the answers of the concept survey.

6. The application can run offline.

7. The application must have access to internet to use it when opening Google Search webpages.

8. The user can only do one project with this app. If more is wanted, the application should be upgraded to a paid Pro account.

9. The application should be able to handle the mobile interruptions e.g. coming phone calls, and the phone notifications also by switching to run in the background, until the interruption is finished. Then the application is resumed.

10. The application should only run in touch-screen devices

11. The application can operate on Android operating system only.

12. The application can run only on Android-based mobile devices.

13. The application should be used only by one user.

14. The application can run on the following Android versions:

- a. Android 4.1, 4.1.1 (Jelly Bean).
- b. Android 4.2, 4.2.2 (Jelly Bean MR1).
- c. Android 4.3 (Jelly Bean MR2).
- d. Android 4.4 (KIT KAT).

2.2 Rapid Application Development

Rapid Application Development methodology or RAD was followed also to achieve the design phase. RAD is a software development methodology that is based on minimum planning and fast prototyping.

For this project, RAD approach has been selected to be used in order to build the start-up application efficiently and rapidly at the same time. So the client's submission deadlines can be met. Android Studio is an efficient RAD development framework for Android applications, because it provides various interface templates to be used for the application pages. Also, it allows developers to design the application interface by dragging and dropping user interface controls and do simple edits to their codes. Moreover, once the interface is designed, it is easy to connect it to its corresponding logic interface. Because of those features, the design and coding work were done together using Android Studio. As a result, a plenty of time that could be spent in coding each single interface was saved. The result is a rapid development for client's application.

2.2.1 Structure Chart

The structure Chart is a technique to design the application program. It is a visual graph that shows the coding modules that must be included in the application at a high level. It is formed in

a hierarchal arrangement that applies sequence, iteration, and selection along with input and output data throughout the modules. The modules are read from top to bottom, left to right. Also, they are numbered in a hierarchal way [10]. Figure 1 depicted the structure chart for this study.

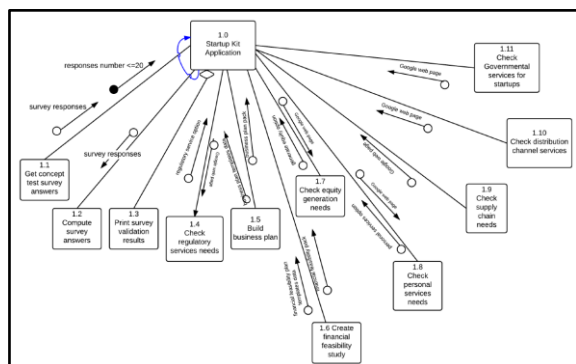


Figure 1. Structure chart

3. IMPLEMENTATION

Implementing the application required writing the application program with various coding instructions and techniques to successfully code each module of the application. These techniques are described below along with the application module they are implemented in.

3.1 Creating the Database

The database that was physically designed in the design phase is now programmatically built in SQLite database, which is built-in in Android Studio IDE. The database consists of four tables: ANSWER table to store the responses of the concept survey, COMPETITOR Table to store attributes of potential competitors, REASON Table to store a checkbox question in the survey, and SUPPLIER table to store data information about suppliers.

3.2 Creating User Interface

In Android applications, the most basic user interface components are the Views. Views always reside in rectangle areas. It extends the View class. Everything shown in activity's screen is a view. Also, Views can handle touch events and drawing to the screen. Creating user interface screens in Android involves defining the views and how they are used in Java within the application code, and in external XML files called Layouts. The layout code should be defined in those external XML files and not defining them programmatically in Java. This separation between the visual appearance part and the logic part of the application makes the code cleaner and easier to fix [11]. Screenshots of business plan templates, concept survey, WebView screen, and financial feasibility template are shown in Figure 2, 3, 4 and 5 respectively.

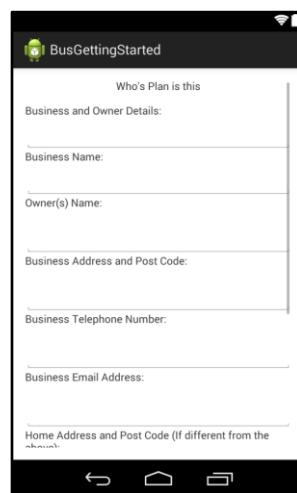


Figure 2. business plan templates

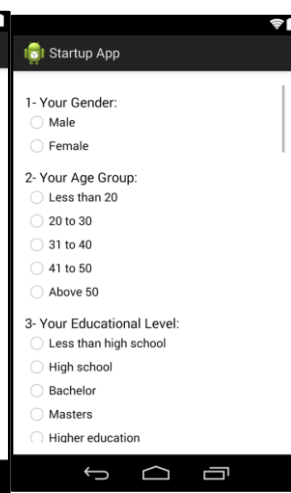


Figure 3. concept survey

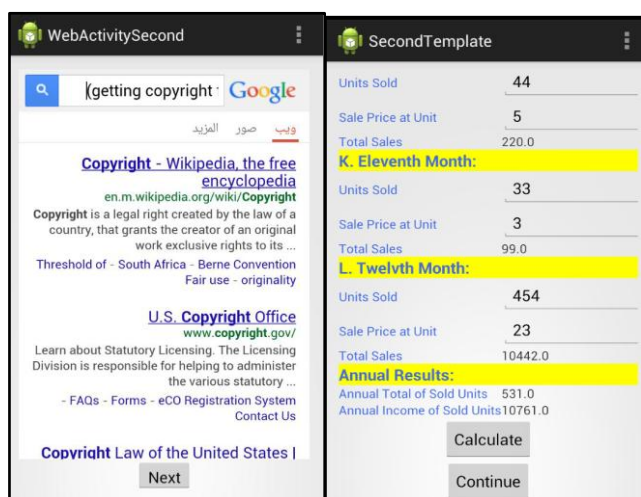


Figure 4. WebView screen Figure 5. Financial feasibility template

4. TESTING

The objective of testing the application is to verify that it meets the business requirements and works properly as it should do. Also, it aims to discover any errors within the application that might impact its performance. To achieve the testing objectives, four types of tests were applied on Startup Kit application: Unit test to test each module of the application individually, integration test to test the application as one unit after regrouping its modules, acceptance test to see whether the application is acceptable by end users, and lastly the mobile test that tests certain areas of mobile application environment such as compatibility and performance. For the test results, there were some improvement comments from the end users regarding the arrangement of some user interface components and navigation. They have been taken into consideration and changes have been made. In addition, some simple errors were discovered during integration test, but they were solved immediately. Overall, the test results show that the application had met the business requirements and achieved its purpose. In addition to testing, the user training is taken into account. Thus, each step of the application will introduce instructions of how to go through each step. Furthermore, the client of the application is going to have 60 days maintenance period to maintain the application. It starts after the official launch of the application. Table 1 shows the results of the performance test whereas Table 2 is the results of the compatibility tests done.

Table 1. Performance test results

Features	Execution test	Results
Install	1. Click on install button.	Pass

	2. Go to notification bar menu and click on the newly installed app.	
Uninstall	1. Go to settings. 2. Click on Application. 3. Click on manage application. 4. Click on the application then select uninstall.	Pass
Application Interruption by Calls	1. Open the application. 2. Use it for moments. 3. Make a call from another device to the device where the application is running. 4. Answer the call. 5. End the call.	Pass
Interruption by Messages	1. Open the application. 2. Use it for moments. 3. Send a message from another device to the device that is running the application. 4. Read the message. 5. Close the message application.	Pass
Battery	1. Click on application and open it. 2. Run the application until the battery becomes low.	Pass
Charging the Battery	1. Click on application and open it. 2. Plug the charging cable when application is running.	Pass

Table 2. Compatibility tests

API Level	Interface functionality	Application Functionality
4.4.2 KitKat	Pass: - Texts are in the right place. - Buttons are in the right place. - Input fields are in the right. - Activity scrolling works properly. Fail: - Cash flow template input fields: they are too small to hold large numbers.	All functions work properly
17 (JellyBean)	Pass: - Texts are in the right	All functions work

MR1)	place. - Buttons are in the right place. - Input fields are in the right. -Activity scrolling works properly. Fail: -Cash flow template input fields: they are too small to hold large numbers.	properly
19 (KitKat)	Pass: - Texts are in the right place. - Buttons are in the right place. - Input fields are in the right. -Activity scrolling works properly. Fail: -Cash flow template input fields: they are too small to hold large numbers.	All functions work properly
18 (JellyBean MR2)	Pass: - Texts are in the right place. - Buttons are in the right place. - Input fields are in the right. -Activity scrolling works properly. Fail: -Cash flow template input fields: they are too small to hold large numbers.	All functions work properly
16 (JellyBean)	Pass: - Texts are in the right place. - Buttons are in the right place. - Input fields are in the right. -Activity scrolling works properly. Fail: -Cash flow template input fields: they are too small to hold large numbers.	All functions work properly

5. CONCLUSION

The Startup Kit application that has been successfully developed is an Android mobile application that aims to help the to-be entrepreneurs to start up their own businesses with the right steps and procedures. It provides them with business plans templates and guides them to get information about needed stakeholders to initiate their business. The application starts from testing the business concept to launching it in reality. The importance of the application basically arises from peoples' lack of knowledge of the steps of the business initiation process. Also, from the literature survey, it was found that the economic growth of any country is strongly related to startups and entrepreneurship.

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