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A Barcode Scanner Application Framework Using Android Phones for an Enhanced Shopping Experience

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Abstract
Looking for the right price label of the product and its location inside the store is quite inconvenient and time-consuming. This is often encountered by most customers during shopping. Aside from that still other factor to consider is lining up in a long queue for checkout. Hence, to address these inconveniences, the researchers devised an application called BarCroid Scanner. BarCroid Scanner is a mobile and a web application that aims to aid time-consuming and inconvenient shopping. It was developed for better enhancement of shopping experience and shop owners as well. BarCroid is capable of generating reports and inventory of a store which could be of great help for store owners. It has the following features: Barcode Scanner, product's information, product's availability, location inside the store, money budgeter, history, inventory, generated reports, and mobility.
Based on the evaluation results conducted by the researchers, the application performance was very functional, easy to access, and reliable.

Keywords: Barcode Scanner, Android Application, Mobility, Inventory, Enhancement, Shopping, Money Budgeter, Generated Reports

INTRODUCTION

Barcode Scanner is an electronic device that can read and output printed barcode to a computer. Verified Label & Print, Inc. in 2015 stated that there are plenty of advantages of using Barcodes in the manufacturing and materials handling Industries. Specialized equipment and supplies represent significant investments for manufacturing and materials handling businesses. These assets are also often spread across multiple locations. Barcoding offers the ability to track these assets, which can save much time and money.
The ease of using a barcode scanner makes it an appealing alternative to traditional paper-and-pencil processing. Not only do barcodes streamline processing time, but they also enable tracking individual items within a shipment. Using barcodes can save time in several materials handling situations. Thus, Barcode Scanners can Improve Time Management. Ultimately, the time saved with barcode-based tracking systems allows employees to spend their time on other activities that generate income. In addition to the time saved on internal and external tracking, barcodes provide a valuable opportunity to improve operations in ways that translate into significant savings and increased income over time.
The unique needs of the manufacturing and materials handling sectors are best met with a comprehensive barcode tracking system. Due to the sheer quantity of materials, supplies, and machinery used in these industries, barcodes offer a particularly beneficial solution. Not only do barcodes help reduce time spent on common activities like inventories and shipping, but they also improve revenue. With such advantages, barcode scanner can be a great help for Business owners and for the industry. However, barcode scanners are quite expensive.
According to Garg (2012), one of the latest pieces of technology that you can use to improve logistics is the wireless barcode scanner, which is extremely beneficial for a business. Early prototypes were customized hardware devices; later pocket computers or personal digital assistants (PDAs) were the preferred platform to implement software prototypes; and beginning in 2003, prototypes moved to by being implemented as software applications on mobile phones. In 2003 the Metro Group Future Store initiative presented the personal shopping assistant (PSA), a system consisting of a tablet PC with a touchscreen, wireless network connection, and a barcode reader. The tablet PC could be attached to the top of a shopping cart and personalized by scanning loyalty cards (Karpischek, 2012), an early prototype of a mobile shopping assistant implemented and operated on a mobile phone presented in the iGrocer system.
Not only do mobile barcode scanners were for shopping purposes but it was also used for libraries. Applications like the ISBN and QR Barcode Scanning Mobile App which was developed by Graham McCarthy and Sally Wilson were developed for the Ryerson University Library. The application provides for International Standard Book Number (ISBN) barcode scanning that results in a lookup of library copies and services for the book scanned, as well as QR code scanning.
Nowadays, technology has been greatly utilized through mobile phone which gives us mobility and more enhanced business techniques and other opportunities. Business has been defined as the activity of making, buying or selling goods or providing services in exchange of money. We can see business around us every day most commonly inside a grocery store or any other stores.
With the technology we have in business today, specifically inside a grocery store, there are still aspects that couldn't be ignored when a customer is having a hard time during grocery. Some of the product prices are not properly labeled and searching for the product's location inside the store are the common problems encountered mostly by the customers. Aside from the common problems encountered, long line payment in the counter area is another problem that is quite time-consuming. In addition to the problem, receipts being issued crumple and fade easily since they are printed in a thermal paper. Thus, customers cannot easily track their transactions.

Problems such as these, can affect both the customer and the entrepreneur, thereupon, affecting the economic arousal and time management.

This study focuses on implementing barcode scanner application in an android phone that could help both the businessman (shop owner) and their customer ease their shopping experience by utilizing technology with the use of their android phones. This study aims to help enhance shopping experience of every customer inside a store and at the same time help the owner lessen their expenditure on buying expensive barcode scanners.

METHODOLOGY

This section presents the process of designing and developing the system.

Data Gathering

The researchers conducted a survey with regards to the customer's shopping experiences. The data collected will be utilized as the primary information used in developing the application.

System Architecture

The System Architecture of a Barcode Scanner Application Framework Using Android Phones for an Enhanced Shopping Experience.

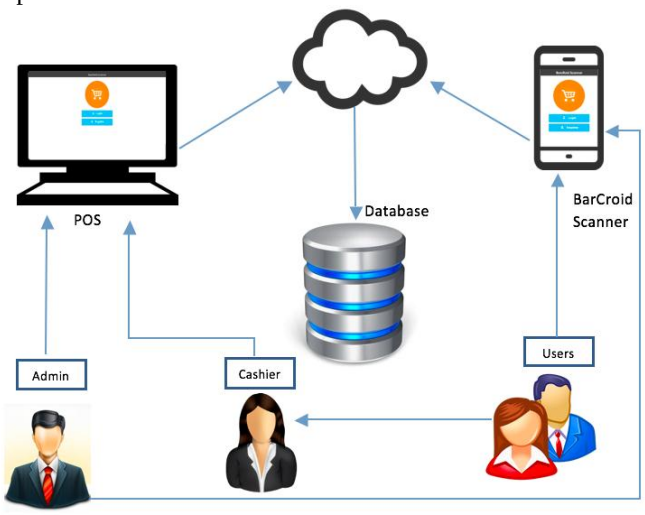

Figure 1: System Architecture

Figure 1 shows the interaction of users with the system where there are three actors which represent the different user privileges. The system consists of three users which are the Admin, Cashier, and Normal Users .

The Admin has utmost all the privileges of the system. They can add, edit, delete, and view product and store updates or promos using web and mobile application. They also have access to the inventory feature and user management where they can add users of the system. The cashier can receive submitted transactions made by the normal users and can approve the transactions via web. Normal users or the customers of the store can access the application through their mobile phone. They can create transaction, input budgeted amount, locate the product inside the store, and submit their transaction to the cashier.

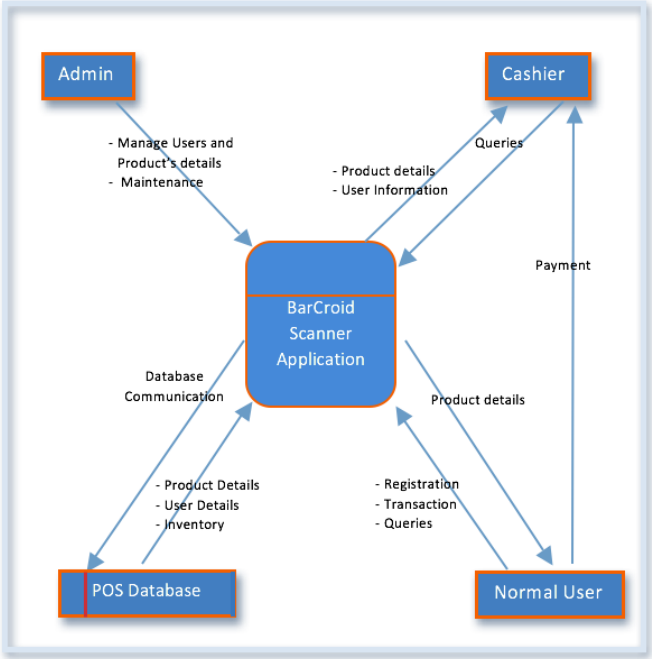

Figure 2: Context Diagram of the Application

Figure 2 shows the logical design and whole process of the proposed Barcode Scanner Application Framework.

Mobile and Web Application Development

Barcode Scanning

Users should have an android phone jellybean version and up to be able to use barcode scanning. Camera with an autofocus feature is another hardware requirement for using barcode scanning feature of the app. Lower resolution of the camera may affect time deficiency of capturing the product's barcode. Before users can scan product's barcode, they must be a registered user on the specific store that uses this app. They need to log in their username and password in the login form before accessing the application. Users will be redirected in the home page after they logged in where they can view updates of the store. In the navigation menu, they need to choose transaction to create new transaction. Users can either use barcode scanner or search box in creating their transaction. If users choose to scan product's barcode, they need to click scan barcode button and place the barcode inside the view finder rectangle to scan it as shown on figure 5.1. Barcode scanner can read product's barcode horizontally or inversely but not vertically. When users are done creating transaction, they can submit it to cashier and pay their bill as shown on figures 6.1 and figure 6.2. Receipt will be displayed at the history menu of the application.

Adding Budgeted Amount

Users can add their budgeted amount by clicking transaction under the navigation menu and clicking budgeted money button. By inputting their budget and clicking save, their budgeted money will be saved in the database. Users will be

notified whether they have exceeded their budget during shopping.

Payment Method

After users have finished creating transaction and click "Submit to Cashier" button as shown in figure 6.1, they will be notified of their transaction ID. Transaction information will be queued at the cashier area. For payment, transaction id will be the basis of the billing information.

Adding Products in the Database

Admin has the only access of this feature. By logging in, click the admin options and list of products. Admin can add a product item by clicking "*add item*" button at the rightmost side of the menu and fill up all the needed information. After filling up, click "*save*" button to save new item. Admin can also edit or delete the item they have added.

Managing User

The admin is the only user that can add cashier and view user details. By logging in, the user clicks the admin options and user menu. Admin will be redirected to the list of users. They can choose either cashier or normal user menu they wanted to manage. By clicking "*add user*" button, admin should complete all fields needed and click "*submit*" to add cashier.

Inventory

Admin can manage the inventory of the application via web. By clicking the "*Inventory Menu*" under the navigation bar, the admin can manage the products inventory.

Programming Tools

This study uses the following tools to develop the mobile barcode scanner application and a web application.

Ionic Framework – This is a complete open-source SDK for hybrid mobile app development. This tool will help build mobile application using web technologies like CSS, HTML5, and Sass.

AngularJS – It is a structural framework for dynamic web apps. It will allow the use HTML as template language and allows the programmers to extend HTML's syntax to express the application's components clearly and succinctly.

PHP – This is a server-side scripting language designed for web development. This tool is used as the general-purpose programming language.

Code Igniter – This is an open source rapid development web application framework. It is used in building dynamic web sites with PHP.

CSS3 – This is the latest evolution of the Cascading Style Sheets language and aims at extending CSS2.1. This tool helps in designing the web side of the system.

HTML5 – It is a W3C specification that defines the fifth major revision of the Hypertext Markup Language (HTML). This tool helps in including specific functions for embedding graphics, audio, video, and interactive documents.

Cordova – Formerly called as Phone Gap, it is a platform to build Native Mobile Applications using HTML5, CSS and Java Script. This tool helps build mobile application.

Node JS – It is an open-source, cross-platform runtime environment for developing server-side web applications.

CORS – Cross-origin resource sharing is a mechanism that allows restricted resources on a web page to be requested from another domain outside the domain from which the resource originated.

Security Compass – This is an automated test result that evaluates the application's security whether it is secured from any threat or malfunction. This serves as a tool for the researchers in testing the application's security form any form of threats from other resources.

RESULTS AND DISCUSSION

This section elaborates more on the findings gathered in this study.

Mobile Graphical User Interface

For the researchers to achieve in creating a Barcode Scanner Application Framework Using Android Phones for the Enhancement of Shopping Experience, the application should have the following functionalities:

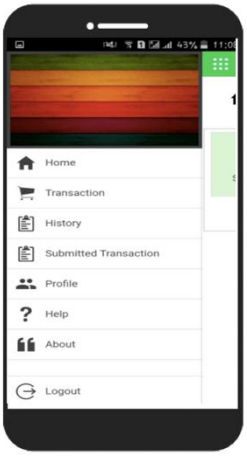

Figure 3.1: Interface of Normal User

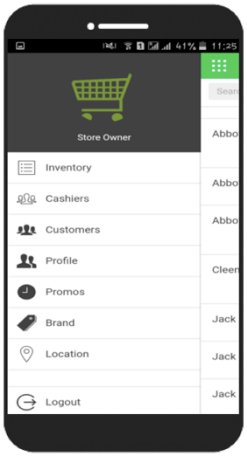

Figure 3.2: Interface of Admin

Figure 3.1 and 3.2 shows the mobile interface of the navigation menu of the Normal User and the Admin of the mobile application.

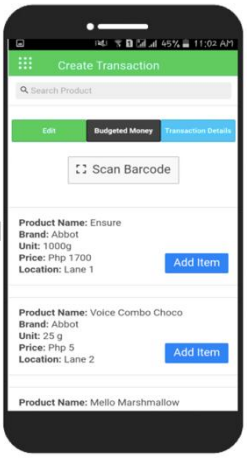

Figure 4.1: Interface of Transaction

Figure 4.2: Interface of Amount

In figure 4.1, the normal users can create their transaction during shopping by either scanning the product's barcode or by searching the product with the use of search box. They can also see the entire product's stored in the database of the store.
While in figure 4.2, users can input their budgeted amount during shopping for them to manage properly their money and to avoid shortage.

Figure 5.1: Interface of Capturing Barcode

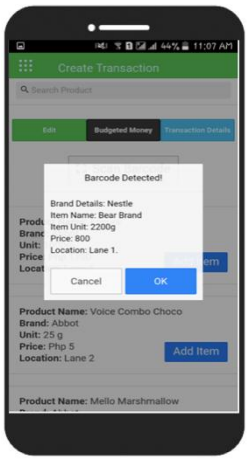

Figure 5.2: Interface of Product Details

Figure 5.1 shows the interface of capturing the product's barcode. After the application has detected the scanned barcode, the product's details will pop-out as shown in figure 5.2. Product's details includes brand details, item name, item unit, price, and its location inside the store.

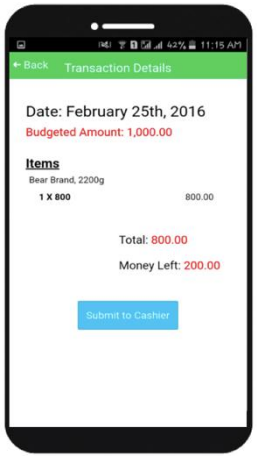

Figure 6.1: Transaction Details

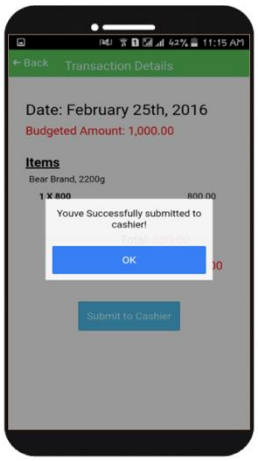

Figure 6.2: Transaction Submitted to Cashier

In figure 6.1, the users can check what they have added into their cart and how much money left into their budgeted amount. And by clicking "*Submit to Cashier*" button, they will be prompted that the transaction was successfully submitted to the cashier if they wanted to check-out as shown on Figure 6.2.

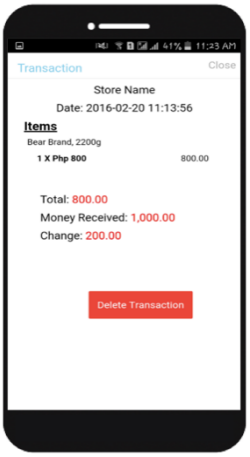

Figure 7: Interface of Transaction History

Figure 7 shows the history feature which serves as an electronic receipt where customers can check their previous transaction on the specific date and time they have made the transaction.

Web Application Interface

A web application is a client-server software application in which the client runs in a web browser. The web application of the system can be accessed by the Admin and Cashier but is not accessible by the Normal Users or the store customers. For the researchers to achieve creating a web application that can manage users of the system and product's inventory, the application should have the following functionalities:

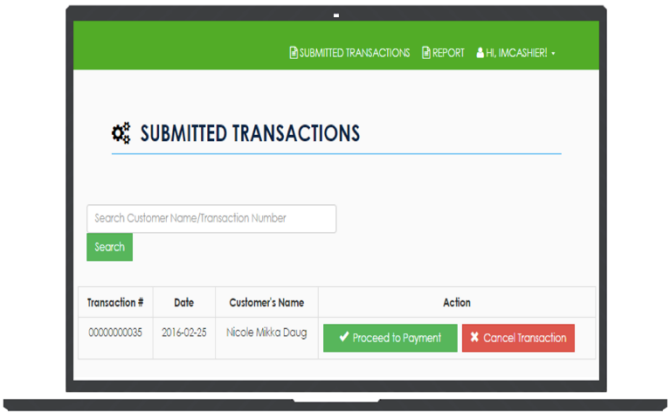

Figure 8: Interface of Cashier's Menu

Figure 8 shows the interface of Cashier's Menu. Cashier of the store is one of the web users of the application. They are the ones who manage submitted transactions of the customers.

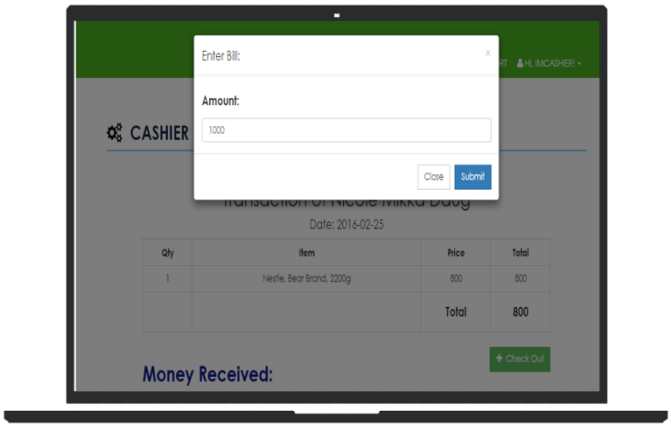

Figure 9: Entering Check-out Bill

Figure 9 shows the interface of Cashier's Menu where cashiers can view all the submitted transaction. Cashier can view customer's transaction by clicking proceed to payment button and check out the transaction after customer pays the bill as shown in the above figure.

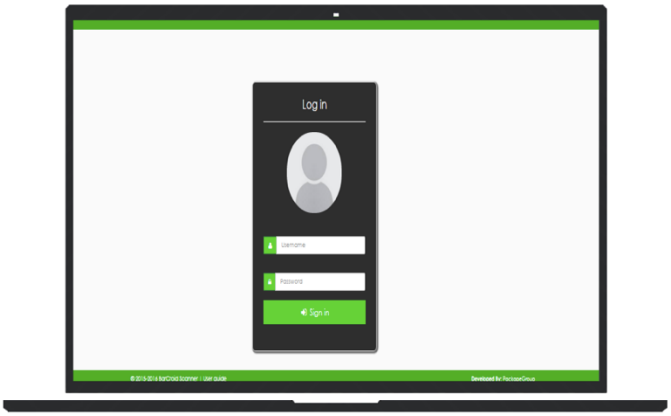

Figure 10: Login Menu of the Web Application

Figure 10 shows the web application's login menu interface of both admin and cashier. Before cashier can login, they should be a registered cashier of the store which uses this application. The Admin is the only user who can add cashier.

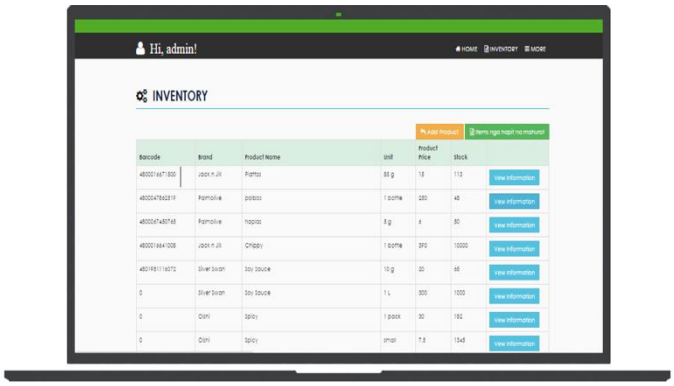

Figure 11: Inventory Feature of the Web Application

Figure 11 shows the Inventory Feature which can be accessed by the admin. This feature can help the admin in managing the stocks inside the store.

SYSTEM EVALUATION

The researchers used usability scale in evaluating the application with real users. According to the previous study of Pasaol, et al. (2015), usability scale is a technique used in user-centered interaction design to evaluate a product by testing it on users. It also focuses on measuring a human-made product's capacity to meet its intended purpose.

The main goal of testing or conducting system evaluation is to evaluate application's functionality, ease-of-access, and reliability. The researchers conducted 3 types of evaluation for its real user who were the admin of the store, cashier, and shoppers. The respondents were asked to answer the system evaluation form where the first scale covers the scale of the application's functionality; second scale covers the accessibility or the ease-of-access of the user through the application; and third scale covers the reliability of the application.

Table 1: Mode Responses in Terms of Functionality based on the Normal Users Evaluation

FUNCTIONALITY	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. The menus function properly.	16	64	9	36						
2. It responds immediately after a click is made on a link or a button.	17	68	4	16	4	16				
3. Proper organization of user's information.	10	40	11	44	3	12	1	4		
4. Proper organization of product's information	12	48	12	48			1	4		
5. Management of viewing, adding, editing, or deleting new transaction.	13	52	10	40	1	4	1	4		
6. Barcode Scanner reads the product's barcode correctly.	13	52	6	24	4		2	8		

Table 1 shows the mode response in terms of functionality based on the Normal Users Evaluation. The result shows that sixty-four percent (64%) of the respondents strongly agreed that the menus function properly. Such response signifies that the functionality of the application was achieved. A further look at the table indicates that sixty-eight percent (68%) of the twenty five respondents strongly agreed that the application responded immediately after the click was made on a link or a button. In terms of proper organization of information, forty-four percent (44%) of the respondents agreed that user's information was properly organized while forty-eight percent (48%) of the respondents strongly agreed that product's information was properly implemented. Furthermore, fifty-two (52%) of the respondents strongly agreed that viewing, adding, editing, and deleting of transaction was well manageable and that barcode scanner read the product's barcode correctly. With the mode responses of the application's functionality based on the normal user's evaluation, the result shows that the application was functional.

Table 2: Mode Responses in Terms of Ease of Access based on the Normal Users Evaluation

EASE-OF-ACCESS	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. Overall, the application is easy-to-use.	18	72	5	20	2	8				
2. It has an easy-to-use format in creating new transaction.	18	72	4	16	2	8	1	4		
3. It is easy to navigate from the current page to another.	14	56	8	32	3	12				
4. The designs and color combinations are pleasant.	13	52	8	32	2	8	2	8		

The result in table 2 shows that the overall application was easy-to-use based on the system evaluation where seventy-two percent (72%) of the twenty-five (25) respondents strongly agreed that application was easy-to-use. Fifty-six percent (56%) of them strongly agreed that the application was easy to navigate from current page to another and fifty-two percent (52%) of them strongly agreed the designs and color combinations were pleasant.

Table 3: Mode Responses in Terms of Reliability based on the Normal Users Evaluation

RELIABILITY	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. Stock's information is reliable.	13	52	10	40	2	8				
2. Generated reports are reliable.	15	60	9	36	1	4				
3. The application satisfies the needs of information for the user side.	14	56	8	32	2	8	1	4		
4. Barcode scanner is useful and reliable.	20	80	4	16			1	4		
5. Creating transaction is useful and manageable.	14	56	10	40	1	4				
6. Needed feature for shopping enhancement was properly implemented.	16	64	9	36						

Tables 3 illustrates the mode response in terms of reliability. As shown on the table, fifty-two percent (52%) of the normal users strongly agreed that the application was reliable, specifically on the stock's information. Sixty percent (60%) of the respondents strongly agreed that generated reports were reliable. Fifty-six percent (56%) of the respondents strongly agreed that the application satisfies the needs of information for the user's side and creating transaction was useful and manageable. Eighty percent (80%) of them strongly agreed that barcode scanning was useful and reliable. Sixty-four percent (64%) of them strongly agreed that needed feature for shopping enhancement was properly implemented.

Evaluation Result of the Web Application

The researchers conducted an evaluation to eight (8) random admin and cashier of a store. Evaluation included questions with regards to the application's functionality, ease-of-access, and reliability. The following are the results of the system evaluation based on the admin and cashier's response.

Table 4: Mode Responses in Terms of Functionality based on the Admin Evaluation

FUNCTIONALITY	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. The menus function properly.	2	66	1	33						
2. It responds immediately after a click is made on a link or a button.	3	100								
3. Proper organization of user's information.	3	100								
4. Proper organization of product's information	2	66	1	33						
5. Management of viewing, adding, editing, or deleting new product item.	3	100								
6. Management of viewing, adding, editing, or deleting cashier.	3	100								
7. Management of viewing, editing, or deleting normal user.	3	100								
8. Barcode Scanner reads the product's barcode correctly.	3	100								

Table 4 displays the result of the evaluation with regard to the system's functionality conducted on 3 random admins of the different store in Cagayan de Oro City. The result shows that sixty-six percent (66%) of the admin agreed that the application menu and proper organization of product's information were functioning well. One hundred percent (100%) of the admin strongly agreed that the application responded immediately after a click was made on a link or a button, proper organization of user's information, viewing, adding, editing, or deleting of new product item and normal user was manageable, and barcode scanner read the product's barcode correctly.

Table 5: Mode Responses in Terms of Ease of Access based on the Admin Evaluation

EASE-OF-ACCESS	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. Overall, the application is easy-to-use.	1	33.3	2	66.7						
2. It has an easy-to-use format in adding information.	2	66.7	1	33.3						
3. It is easy to navigate from the current page to another.	3	100								
4. The web and mobile designs and color combinations are pleasant.	3	100								

Table 5 shows that sixty-six point seven percent (66.7%) of the respondents agreed that overall, the application was easy-to-use. One hundred percent (100%) of them strongly agreed that it was easy to navigate from current page to another and it has pleasant designs and color combination.

Table 6: Mode Responses in Terms of Reliability based on the Admin Evaluation

RELIABILITY	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. Adding stock's information is reliable.	3	100								
2. Generated reports are reliable.	2	66.7	1	33.3						
3. The application satisfies the needs of information for the admin side.	2	66.7	1	33.3						
4. Inventory and user management of the application is useful and manageable.	3	100								
5. Needed feature for shopping enhancement was properly implemented.	3	100								

Tables 6 shows that one hundred percent (100%) of the respondents strongly agreed that the application was reliable in terms of the following: adding stocks, management of inventory and users of the system, and needed features for shopping enhancement was properly implemented. Sixty-six point seven percent (66.7%) of the respondents strongly agreed that the generated reports were reliable and the application satisfied the needs of information for the admin side of the application.

Table 7: Mode Responses in Terms of Functionality based on the Cashier Evaluation

FUNCTIONALITY	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. The menus functions properly.	2	40	2	40	1	20				
2. It response immediately after a click is made on a link or a button.	4	80	1	20						
3. Proper organization of product's information	3	60	1	20	1	20				

Table 7 shows the results on system's evaluation on functionality based on the Cashier's response. The result shows that forty percent (40%) of the cashier strongly agreed that the application's menu was functioning well and eighty percent (80%) strongly agreed that the application responded immediately after the click was made on a link or button. Sixty percent (60%) of the respondents strongly agreed that the product's information was properly organized.

Table 8: Mode Responses in Terms of Ease-of-Access based on the Cashier Evaluation

EASE-OF-ACCESS	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. Overall, the application is easy-to-use.	3	60	2	40						
2. It has an easy-to-use format for transactions.	4	80	1	20						
3. It is easy to navigate from the current page to another.	4	80	1	20						
4. The designs and color combinations are pleasant.	5	100								

Table 8 shows the cashiers' response on evaluating system's ease-of-access. The result shows that sixty percent (60%) of the cashiers agreed that the overall application was easy to use. Eighty percent (80%) of them strongly agreed that it has an easy-to-use format for transaction and navigating from current page to another. While one hundred percent (100%) of the cashier answered that they strongly agreed that the application's designs and color combinations were pleasant.

Table 9: Mode Responses in Terms of Reliability based on the Cashier Evaluation

RELIABILITY	Strongly Agree		Agree		Fair		Disagree		Strongly Disagree	
	5	%	4	%	3	%	2	%	1	%
1. Transaction information is reliable.	4	80	1	20						
2. Generated reports are reliable.	4	80	1	20						
3. The application satisfies the needs of information for the cashier side.	4	80	1	20						
4. Inventory management of the application is useful and manageable.	3	60	2	40						
5. Needed feature for shopping enhancement was properly implemented.	4	80			1	20				

Tables 9 represents the result of evaluation conducted on five (5) cashiers from different stores in Cagayan de Oro City. The evaluation result shows that eighty percent (80%) of the cashiers strongly agreed that the transaction information and generated reports are reliable. They also strongly agreed that needed feature for shopping purposes was properly implemented and needed information for the cashier side was satisfactory. Sixty percent (60%) of the cashier strongly agreed that the management of the inventory feature was useful and manageable.

Table 10: Summary of System Evaluation

Category	Normal User	Admin	Cashier
Functionality	96.7%	100%	100%
Reliability	100%	96.7%	100%
Ease-of-access	100%	100%	100%

Table 10 shows the overall rating of the evaluation results of the proposed system and has achieved the satisfactory rate in terms of functionality, reliability, and accessibility.

Security Evaluation of the Web Application

In testing the Application's Security, the researchers use an automated evaluation plugin to test the application's vulnerabilities. The application should be free from threat to prevent hacking, viruses, and other security risks.

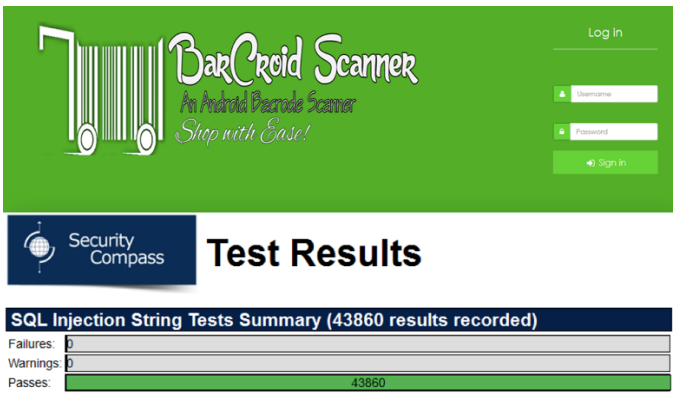

Figure 12: Screenshot of Web Login Threat Result

Figure 12 shows that the SQL injection test threat result of the login page is secured in any malicious attack.

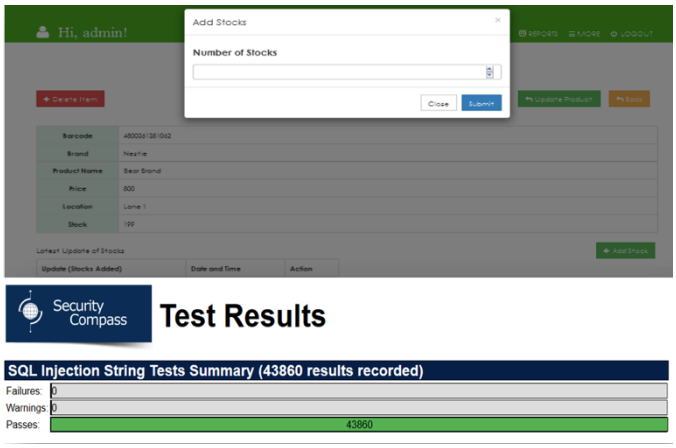

Figure 13: Screenshot of Add Stocks SQL Injection Test

Figure 13 displays the test result of SQL Injection of adding stocks in the web application. It shows that there is no failure and warning after the testing has been done. Adding Stock form passed for this security threat.

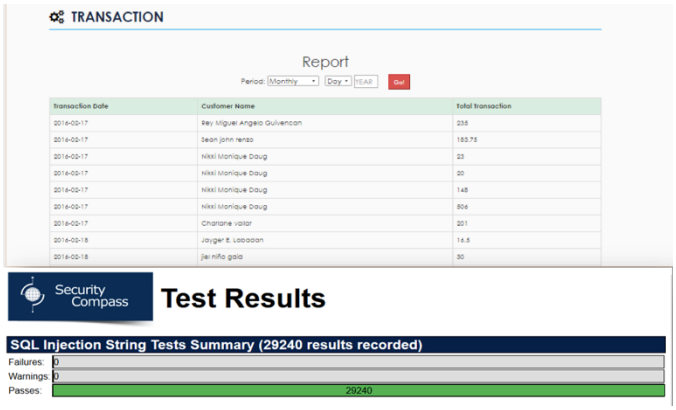

Figure 14: Screenshot of Report SQL Injection Test

Figure 14 shows that the reports generated have passed the test since it has no failure or warnings.

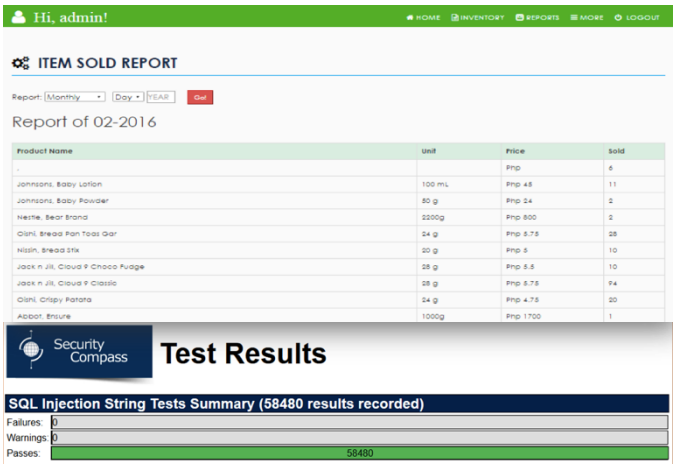

Figure 15: Screenshot of Sold Item Report SQL Injection Test

Figure 15 shows that generated report of sold item is secured in any malicious threats.

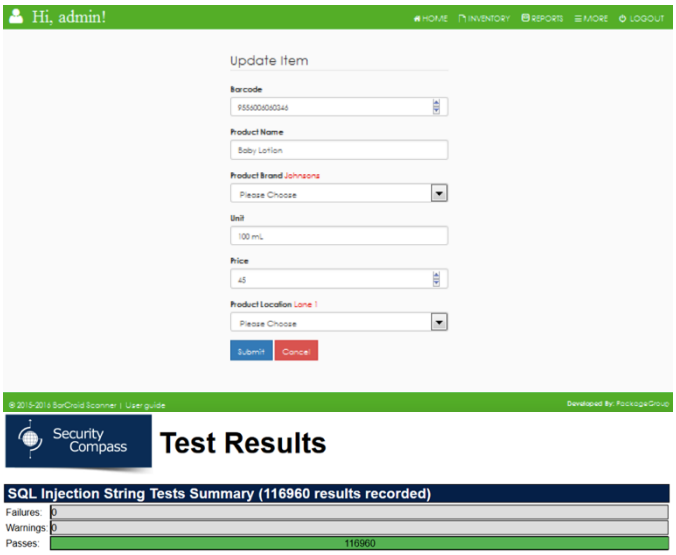

Figure 16: Screenshot of Update Item SQL Injection Test

Figure 16 shows that the update item form has passed the SQL Injection test. Thus, the form is safe from any threats.

Table 11: Web Security Evaluation

Web Functions	Remarks
Login	Passed
Add Stocks	Passed
Reports	Passed
Sold Item	Passed
Update Product	Passed

Table 11 represents the security results conducted on testing the web application. The result shows that the applications forms have passed the SQL injections test on security. Thus, it was secured from any malfunctions or threats.

SUMMARY

This study has provided a general description about barcode scanner. Knowing the common problems encountered by grocery shoppers includes unlabeled products, inconvenience in locating the products inside the store, a long line payment and the wearing off of receipts, the researcher came up with BarCroid Scanner, a mobile and a web application framework developed to help enhance the shopping experience. The application covers barcode scanning, history feature, add to cart feature and direct payment to the counter area via phone to POS process.

The researchers used descriptive research methodology, survey techniques and evaluation to collect data from random customers and store owners within Cagayan de Oro City, Philippines. Data collected from the survey respondents represented their shopping experiences at the grocery store and served as the basis in evaluating the system's functionality, ease of access, and reliability.

The result of the system's evaluation was tabulated and has been explained properly using tables and figures on the results and discussion section. Results show that out of the thirty three (33) respondents, majority of them strongly agreed on the functionality, ease-of-access, and reliability of the application.

CONCLUSION

The study entitled "A Barcode Scanner Application Framework Using Android Phones for a Better Enhancement of Shopping Experience" has undergone test through system evaluation and automated test result to be able to distinguish if the system has achieved the objectives of the study.

With the system's evaluation results tabulated and discussed, the researchers concluded that the proposed application can be beneficial for both Admin or the Store Owner and Normal Users or Customers of the Store. Through this application, store owners can eliminate expenses on buying expensive barcode scanners and shopping experience can be of ease for the customer's side since the application provides the information needed during shopping.

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