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Short Paper*

SHARITY: A Spare Sharing Community App

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Abstract

Purpose – The study aimed to create a platform that enable individuals within a community to share or lend their spare resources, request food or items from others in the community through the platform, and ensure that the web application was usable, functional, efficient, and reliable.

Method – The researchers used the RAD approach which is ideally suited to adapt to changes in the applications, such as features, functionalities, and upgrades. To determine the usability, functionality, efficiency and reliability, evaluation was administered using the 5-point Likert scale. Lastly, to determine the consistency of data collected by the researchers, Cronbach's Alpha (α) was used.

Results – The web and mobile applications scored highest in functionality and usability, while the app excelled in efficiency and reliability. Both web and mobile apps received positive feedback for their user-friendly interfaces and effective functionalities.

Conclusion – From the design, development and series of testing, the web application was successfully developed. The platform developed allowing the users to share spare food or resources, lend/borrow items, and post requests for assistance was indeed successful.

Recommendations – The researchers have only implemented SMS OTP as a security feature. It must have added security features for users to prevent their accounts from being breached and their identities from being stolen.

Research Implications – The resulting data has shown that the SHARITY app can be an effective tool in promoting community engagement and collaboration in terms of sharing of foods and resources.

Keywords – Bayanihan, community pantry, spare sharing, rapid application development, mobile web application

INTRODUCTION

The project design entitled "SHARITY" is a web application that focuses on a system that links barangay community members, enabling them to share excess food or items they no longer need, to maximize the value of the items and possibly minimize environmental waste. The web application will be the platform that would rekindle the Bayanihan spirit of Filipinos in the modern era, which has been adapted to address the major blow to our fellowmen affected by the pandemic. By bridging the exchange of

goods and promoting generosity, the SHARITY platform aims to promote social cohesion and help those in need.

This study focused on developing a community–based sharing app that revitalizes the Bayanihan spirit that the pandemic has ignited in the hearts of Filipinos. Bayanihan spirit has been culturally embedded among Filipinos throughout history. Bayanihan also known as tulongan or damayan, is common among Filipinos. In the Philippines, this is a system of mutual assistance and care that serves as a foundation for family and community. In times of adversity, natural calamities, and acts of God, bayanihan becomes a distinct Filipino culture (Adlit & Martinez, 2023).

Specifically, this study aimed to achieve the following specific objectives:

1. To design a web application platform in terms of Rapid Application Development; React JavaScript Framework; and Django Rest Framework
2. To develop a web application platform that allows the members of the local community to (a) share their spare food or resources; (b) lend/borrow useful items and; (c) post their requests for food or items that the people in the community may give or lend.
3. To evaluate the web application in terms of usability, functionality, efficiency, and reliability

LITERATURE REVIEW

Local Literature

The COVID-19 pandemic has had a devastating impact on the Philippines, leaving millions unemployed and struggling to make ends meet (Fallesen, 2021). Despite the difficult years with gaps in government responses, Filipinos demonstrated the strength of a community working together (Bagayas, 2020; Del Prado et al., 2023). Community Pantries, which are food banks by and for the people, are one of the notable ways that showcase the Bayanihan spirit of Filipinos (Gita-Carlos, 2021).

The community pantry movement began on April 14, 2021, when Ana Patricia Non set up a small bamboo cart filled with groceries on Maginhawa Street in Quezon City. Non-posted about the cart on social media, and it quickly gained popularity. The concept inspired and encouraged others to adopt it, and within a week (Kusuma, 2021).

Bayanihan is the foundation of the SHARITY Spare Sharing Community App—a mobile-focused web application developed to address the lack of a dedicated online platform for community-based spare sharing in the country. Existing community-based sharing apps in the Philippines are mostly focused on connecting people to help with

tasks such as grocery shopping, running errands, and ridesharing. There is no existing app in the country that specifically focuses on sharing spare items within a local community.

Foreign Studies

Sharing is an important facet of human relationships, yet there is a lack of research on how people share ownership of possessions. The study "Things we Own Together: Sharing Possessions at Home," focuses on proving that sharing possessions, physical objects, or digital content, plays a role in building relationships (Gruning & Lindley 2016). According to the World Economic Forum, thousands of sharing economy platforms operate around the world, touching almost every business sector and activity (Rinne, 2019).

Sustainable consumption is becoming a major goal for local authorities, modern societies, and businesses. Sustainable consumption behavior is defined as voluntary consumer behavior that promotes sustainability by recognizing the environmental and social impacts of consumption. This behavior also facilitates the efficient use of unused resources (e.g., sharing spare household resources) and extends the life cycle of available products (e.g., keeping items in good condition for others), reflecting the significant potential for sustainable development in the sharing economy (Bogusz et al., 2023).

The reduction of food waste is still a pending issue that governments have still not resolved. In response to this problem mobile platforms are emerging that follow food ecology and the responsible consumption of food, and self-management of their access to allow the communication between people and their use of food (Cane & Parra, 2020). Olio founded by Tessa Clarke and Saasha Celestial-One, claims to be the world's favorite local sharing app. It is a platform that focuses on a waste-free world by sharing leftover food at first, and later unused household items, to those who need them.

Likewise, SHARITY emerged, demonstrating the spirit of sharing of Olio. However, it was inspired by the community pantry movement that aims to address the lack of a dedicated online platform for community–based sharing in the Philippines and revitalize the Filipino Bayanihan Spirit.

SHARITY primarily connects the members of the community, enabling them to share their spare resources or lend useful items. Community members can request assistance for their needs be it food or items by posting a request. To provide ease of communication as well as user convenience, SHARITY also includes the following features: in-app messaging, search and filter, and end-user account and listing management.

The In-app messaging feature allows the users to communicate directly which can be used to ask questions regarding a listing, request or borrow a listing, or lend a hand to the

member who posted a request. In-app messaging is a key component of a strong customer engagement strategy – one that reaches users in the right place, at the right time, and is consistent across platforms. (Intercom, n.d. para. 1). The search and filter feature allows users to easily find resources by searching for specific items or filtering the listings by category. Lastly, the user can manage their account profile and may be able to view their listings from all categories and manage them.

METHODOLOGY

This chapter provides an overview of the research methodology used for developing the business and employment-oriented online service, including the development process, project design, and testing.

Project Development

Figure 1 shows the methodology process the researchers have chosen, which is the Rapid Application Development model. It is a flexible way to quickly create and deploy software applications.

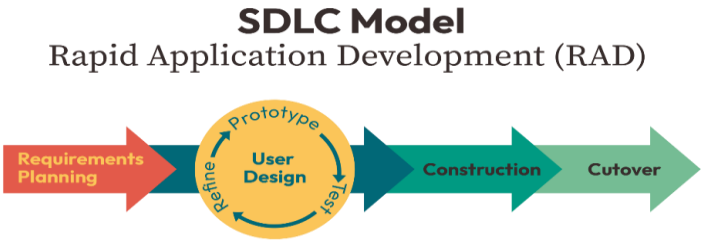

Figure 1. The RAD Model

The RAD approach is suited to adapt to new inputs and changes, such as features and functionalities, upgrades, etc. At every stage of the development process, it is intended to be adaptable to modifications and to take new inputs, such as features and functionalities (Kissflow, 2023). During the requirements planning phase, a preliminary survey of the target user's preferences was conducted, about resource sharing using a questionnaire. The questionnaire was formulated to ascertain what kind of items the userbase would generally be willing to donate and the volume or amount they are most likely to share, along with other details such as mode of delivery and the duration of time items may be sent through the application.

Survey results were tallied and analyzed. Based on the processed results, the researchers created general categories of items that were typically preferred to be shared by the respondent users, and a model of the initial database design was drafted accordingly.

During the user design and construction phase, the user interface for both the web and mobile apps was designed by UX best practices. This included using visual signifiers on elements (widgets) to ensure they both appear and function as intended. (Fanguy, 2018). The initial prototype was subjected to user testing and general feedback. During the testing periods, several overlooked issues—such as API compatibility and integration along with design adjustments—were made, with notable changes in the user interface responsiveness and overall reliability of the application. After the user design phase, the final output was refined according to the feedback from the users. Notable changes were made during the construction phase, such as the overhaul of the initial database design and item categorization, several adjustments to the client–side item management functions, and several user–interface and user–experience improvements.

Lastly, the application underwent acceptance testing and evaluation. The users were asked to test all the functions of the application and evaluate its performance by answering a questionnaire.

Project Design

The following are the frameworks used in designing SHARITY.

React JavaScript Framework

The front end of SHARITY is designed using React 18, the current latest version of the open-source JavaScript library for building user interfaces and web applications. React allows developers to build reusable UI components that can be used across different pages and applications, making the development process faster and more efficient. (Miller, 2021)

Django Rest Framework

Django Rest Framework is utilized for the backend of the web application. Django REST framework (DRF) is a powerful and flexible toolkit for building Web APIs. It is a third-party package that builds on Django's strengths and makes it easy to build and customize RESTful web services.

One of the best and most powerful parts of Django is the automatic admin interface. It reads metadata from models to provide a quick, model-centric interface where trusted users can manage content on your website (Ramesh et al., 2018)

By combining React JS and Django REST Framework, the platform benefited from a powerful and efficient technology stack. This stack enabled the researchers to create a

responsive, scalable, and modular application with a seamless user experience. Together allows for the development of a full-featured web application that can handle complex logic, real-time updates, and efficient data management.

Statistical Treatment

To determine the level of usability, functionality, efficiency, and reliability of SHARITY, the researchers used the 5-point Likert scale at 0.8 intervals to interpret and analyze the responses. A Likert Scale is commonly used to measure attitudes, knowledge, perception, values, and behavioral changes (Mount Wachusett Community College, 2020, p.1). The weighted mean was used to show the validity of each category.

Table 1. Likert Scale Interpretation Table

Mean Range	Scale	Interpretation
4.21–5.00	5	Very Easy / Excellent / Always
3.41–4.20	4	Easy / Above Average / Usually
2.61–3.40	3	Neutral / Half the time
1.81–2.60	2	Difficult / Average / Seldom
1.00–1.80	1	Very Difficult / Poor / Never

The weighted mean of the Likert Scale was calculated using the formula below:

$$\bar{x} = \frac{\sum wx}{n} \qquad \textit{Equation 1}$$

where: $\bar{x}$ = weighted mean, x = sum of data, w = Likert scale weight, n = sample size

The reliability of SHARITY was determined by checking the consistency of data collected by the researchers using Cronbach's Alpha (α) value. The formula was used through IBS SPSS Statistics. The evaluation for reliability got the value for Cronbach's Alpha score of α = 0.889 which is a good equivalent in internal consistency.

Table 2. Reliability Statistics

Cronbach's Alpha (α)	Cronbach's Alpha Based on Standardized Items	Number of items
0.889	1.000	2

RESULTS

SHARITY is conceptualized as a web application with consideration of its features such as it doesn't cause space limitation; it can be accessed anywhere with a browser; it is

always up to date because the updates are applied centrally; and it is cost-efficient. It was developed by the researchers with a mobile-first approach while being accessible on various devices including desktop computers, laptops, and tablets.

The SHARITY web application prototype demonstrates the application's functionalities, user interface design, and interactive elements. The following prototype figures do not include any live data integration. The succeeding figures present SHARITY's mobile application interface, including all its features and functions.

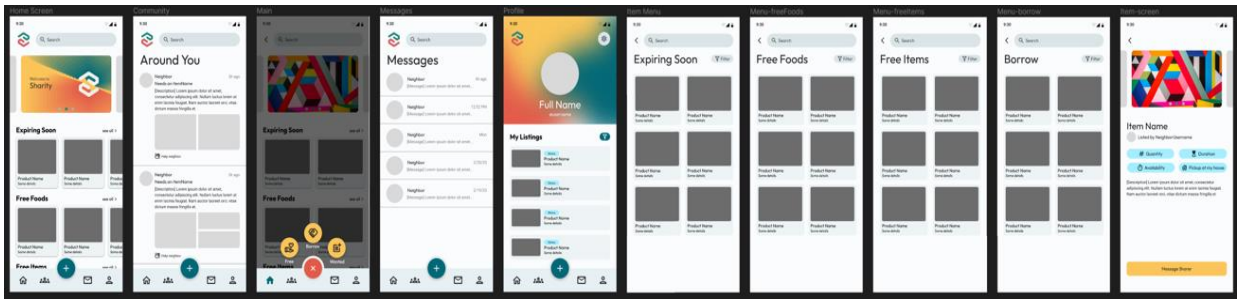

Figure 2. SHARITY's Main Menu and Its Categories

Upon opening the web application, users will be greeted by the SHARITY landing page, which provides an overview of the application and invites them to either get started or sign in. Users can choose to register for an account or log in if they already have an account.

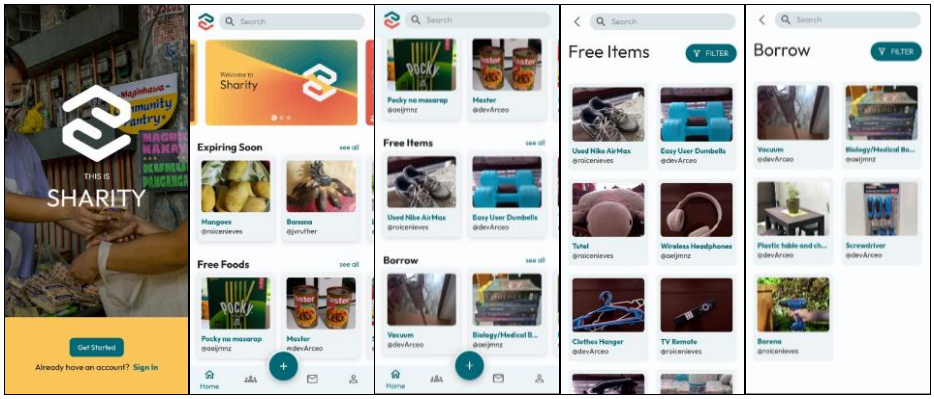

Figure 3. SHARITY's Web App Landing and Listing Page

After logging in to the SHARITY app, users are greeted with the Home page, which displays all the recent available listings in their community. The listings are categorized into four major categories: Expiring Soon, Free Food, Free Items, and Borrow.

Table 3. SHARITY'S Usability

Description	Weighted Mean	Response Description
Accessing the SHARITY web application.	4.9	Very Easy
Setting up an account in SHARITY.	4.9	Very Easy
Identifying and understanding the user interface and actions of SHARITY including buttons, icons, and terminology.	4.9	Very Easy
Using the features of SHARITY such as viewing and posting listings and in-app messaging.	5	Very Easy
Overall Mean	**4.925**	**Very Easy**

Table 4. SHARITY'S Functionality

Description	Weighted Mean	Response Description
Account creation	4.85	Excellent
Post to Free, Borrow, and Request listings	5.0	Excellent
Viewing, searching, and filtering listings	4.9	Excellent
In-app messaging feature.	5	Excellent
Updating user avatar and listing.	4.95	Excellent
Deleting a listing and/or account.	**4.95**	Excellent
Overall Mean	**4.94**	**Excellent**

Table 5. SHARITY'S Efficiency

Description	Weighted Mean	Response Description
Allows the user to post and view different listings efficiently.	4.86	Always
Allows the user to easily update their avatar and listings.	4.71	Always
Facilitates real-time messaging between users.	4.86	Always
Displays listings neatly in the most recent order with a filter option and is responsive.	4.71	Always
Overall Mean	**4.785**	**Always**

Table 6. SHARITY's Reliability

Description	Weighted Mean	Response Description
SMS OTP Verification is working.	4.71	Always
Features such as post, view, search and filter listings, and in-app messaging are operational.	5	Always
Ability to handle errors.	4.86	Always
Overall Mean	**4.865**	**Always**

DISCUSSION

The tables beforehand are the result of the data gathering conducted through an evaluation form, which is given, arranged, and organized with a descriptive and numerical analysis. The data are presented in a tabular form and were given an interpretation, as a basis for this study's findings, conclusions, and recommendations.

Table 3 contains the usability features of SHARITY. It has produced good results from the respondents when it came to accessing the SHARITY web application, setting up an account in SHARITY, and identifying and understanding the user interface and actions of SHARITY, including buttons, icons, and terminology with a score of 4.9 that entails very easy on the verbal interpretation. By using the features of SHARITY such as viewing and posting listings and in-app messaging, it got a mean score of 5 which is the perfect score tallied, implying that it has an excellent score. Generating an overall weighted mean of 4.925, meant that SHARITY is very easy to use.

Table 4 contains the functions of SHARITY. It has produced good results from the respondents when it came to the Account creation (Login, Logout Password Reset) feature, having a mean of 4.85. Post to Free, Borrow, and Request listings. a mean of 5 and an interpretation of excellent, which means that this function performed very well. The Viewing, searching, and filtering listings by category feature received a mean of 4.9 and interpretation of Excellent. Then the in-app messaging feature was excellently rated by users with a 5 mean. Updating the user avatar and listing would have a mean of 4.95. Lastly, the deletion of the listing/account can be easily accessed by the end-user which has a Mean of 4.95. Generating an overall weighted mean of 4.94, meant that using the app's functions was excellent.

Table 5 contains the efficacies of SHARITY that focus mainly on experts' evaluation. It has produced 4.86 means on the feature that the user would be allowed to post, view, and able to message real-time, which in verbal would interpret as it always works. While it has produced a 4.71 mean on allowing the user for customization, and responsiveness of

the filter options in displaying listings. Generating an overall weighted mean of 4.785, meant that the app is always efficient.

In terms of reliability, IT professors and industry practitioners assessed the reliability of SHARITY. It has produced a 4.71 mean on SMS OTP Verification, which in verbal would interpret as it always works. It showed a perfect 5 on the app's features such as post, view, filter, and messaging. And a mean of 4.86 on the capability of the app to handle its errors. Generating an overall weighted mean of 4.86, which meant that the app was reliable.

CONCLUSIONS AND RECOMMENDATIONS

Based on the data gathered from the evaluation of the respondents, it is therefore concluded that: (a) SHARITY was developed using the RAD approach, incorporating React JS Framework for the front-end and Django REST Framework for the back-end; (b) SHARITY was a platform, successfully developed to allows users to share spare food or resources, lend/borrow household items, and post requests for assistance; and (c) the application has been proven usable, functional, efficient and reliable.

During development, database design has changed multiple times due to users' preferences. The API availability and compatibility issues were also a challenge since some of them have limited trial periods. These introduced limitations to the app development and testing phase which required the researchers' substantial effort to integrate some functionalities to negate these limitations.

It is recommended that the system must provide better user security in terms of transaction handling. It must have added security features for users to prevent their accounts from being breached and their identities from being stolen. To get around the limitations imposed by the existing program, which only allows peer-to-peer sharing of products, the researchers have proposed a more practical approach a secure transaction monitoring and distribution. Lastly, location grouping should be improved to further locate specific areas in the community for easier mapping and tracing.

IMPLICATIONS

The resulting data has shown that the SHARITY app can be an effective tool in promoting community engagement and collaboration in terms of sharing food and resources.

Potential research implications to consider could involve how mobile apps could be used to facilitate the formation of social networks and the strengthening of ties among community members through the sharing of resources. Research should be conducted to

examine the impact on resource allocation and redistribution within the community, assess the ability to adapt to changing community needs, and explore strategies for funding and expansion.

The researchers suggest that similar studies focused on developing community-centric apps can better contribute to the development of more effective and sustainable solutions for addressing societal challenges.

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DECLARATIONS

Conflict of Interest

The researcher declares no conflict of interest in this study.

Informed Consent

Informed consent is not applicable as it did not collect personal data or any private information.

Ethics Approval

This study did not involve personal information or procedures that would require ethical review.

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Author's Biography

Jazmine Liberty J. Tumibay is a versatile and driven individual who graduated Magna Cum Laude from Wesleyan University-Philippines with a Bachelor of Science degree in Computer Engineering, where she was also recognized as an Outstanding Leader Awardee. Throughout her academic career, she maintained a steadfast commitment to excellence, consistently achieving Dean's Lister recognition and Academic Scholar status.

Roice Mico Nieves is a designer specializing in digital design and user interfaces. His extensive expertise in digital design has enabled him to produce successful work for various organizations, spanning both academic and professional realms. Nieves earned a Bachelor's degree in Computer Engineering from Wesleyan University-Philippines, integrating his design skills with computing and technology.

Ezekiel Arceo is a man of many pursuits, with a keen interest in both law and computer technology. Specializing in programming and project design, he excels in planning and implementing solutions to complex problems. Alongside his computer engineering classmates, Arceo successfully developed a platform that serves charitable and community-oriented goals, aiming to benefit his community members. His dedication to staying at the forefront of development in his passions reflects his commitment to innovation and social impact.

Engr. Galilee A. Villar graduated with a Bachelor's Degree in Computer Engineering in 2003 and a Master of Science in Computer Science in 2006. Currently an Associate Professor at Wesleyan University-Philippines, where she has been teaching Computer Engineering for 19 years. She has served as a Cisco Network Academy Instructor, leveraging her expertise in networking. She is also a Certified Computer Engineer, contributing significantly to both academia and the field of computer engineering.

Engr. Hilda W. Santos graduated with a Bachelor's Degree in Computer Engineering in 2000 and a Master of Management Degree with a Major in Engineering Management in 2005. Currently an Associate Professor at Wesleyan University-Philippines, where she has been teaching Computer Engineering for 23 years. Santos has served as a Cisco Network Academy Instructor, contributing to education in networking technologies. She is a founding member of the Institute of Computer Engineers of the Philippines and held a Regional Board Member position from 2022 to 2024. At 45 years old, she balances

her academic career with her roles as a devoted wife and loving mother of two, embodying fulfillment in both personal and professional spheres.

In the bustling streets of Cabanatuan City, Joshua S. Bautista, affectionately known as JB, blends professionalism with a touch of goofiness on the academic stage. He fearlessly pursued his studies in Computer Engineering at Wesleyan University Philippines. Graduating cum laude, JB demonstrated that serious endeavors can be infused with whimsy.