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NasiQu: Designing Mobile Applications with the Concept of Social Entrepreneurship for Hunger People Using Agile Methods

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Abstract— **Entrepreneurship is becoming an essential part of everyday life today. But the social problems of society, especially cases of hunger, have also become an essential issue to date. Digital entrepreneurship has become a trend recently, with many digital business platforms and emerging applications. However, combining digital entrepreneurship with social activities becomes more attractive, which we know as Digital Social Entrepreneurship. This study describes and explains the stages in designing NasiQu, a mobile social entrepreneurship application, to see how agile can make digital social entrepreneurship interesting by involving people's sense of concern for people in need, in this case, hungry people. The Agile method, one of many used in software development, is the one that is being used. The Agile method is a short-term system development approach that calls for quick adaptation and developers who can work with any change. The results of this product from *NasiQu* can facilitate donations in the form of packaged rice to those who need food; in the case of this implementation, it is still specifically for orphans. In this application, there are three users, namely donors, admins, and partners. All these users have different roles and application usage flows. In addition, this application makes food donation activities more effective and can be done anywhere and anytime. It is hoped that the ongoing implementation of this activity will help many people who need food and impact opening new job opportunities.**

Keywords— **Digital social entrepreneurship; application; agile method; food.**

I. INTRODUCTION

The challenge of application requirements in several decades has become very high in demand [1]. Application design tailored to each user's needs is integral to software engineering activities [2]. Various applications for overcoming community problems are included in social problems [3]. Global economic and post-pandemic effects of COVID-19 contribute to social problems, including the high hunger rate [4], [5]. There are better approaches for special social problems like starving people than using standard application designs. Social problems are also an input in obtaining financial benefits through Digital Social Entrepreneurship (DSE) as an innovative concept in the form of a special application [6].

Food security has remained a crucial issue on the global agenda. UNICEF reports that after a protracted decline, new evidence has shown a rise in global hunger, indicating that much work remains to be done to achieve food security [7]. Humanity will likely have to deal with the issue of food security in the near and long term [8]. This global hunger has become a severe issue in Indonesia [9]. Thus, handling this case must be taken seriously because hunger still haunts people's lives. New technology that is easy and efficient is a good way to help overcome the problem of people's hunger [10] and provide feedback on opening opportunities for Digital Social Entrepreneurship [11]. Digital platforms enable services that serve certain groups in need [12], and disadvantaged groups receive increasingly digitally supported jobs [13]. Despite their differences, these experiences all use digital models for social enterprises [14], emphasizing the importance of digital in social missions [15]. In this explanation, we refer to the entrepreneurial work of digital technology-focused social enterprises as "digital social entrepreneurship" (DSE). Previous studies have discussed the potential of DSE to provide marginalized communities with income [16], [17].

The difficulties with the DSE model have also been looked at, including how important it is to get institutional support from various levels of both non-governmental and governmental organizations in general [18], [19], challenges and needs for how to be able to package business in alternative

and unique ways for various respondents [20], [21], and the needs of employees involved in job transitions. social culture from their home community to the workplace [22]. The breakthroughs and innovations that are presented through DSE are by building a relationship between digital works and the recipient's needs, where there are two essential skill elements, namely operator skills that focus on the core of the digital business with skills that are not related to digital, such as interaction and communication between people and users [23]. These abilities, like social enterprise's social and commercial aspects, must be combined and mutually supported. This article suggests an approach for designing and developing mobile applications that target helping people in need of food and hunger. This approach is based on previous research regarding interface design for mobile applications based on digital platforms with the concept of Digital Social Entrepreneurship [24]. The design of digital platforms and various applications that are engaged in social enterprises has been produced and published in previous studies [25].

The existing literature highlights the importance of application design tailored to user needs in software engineering activities [2]. However, there needs to be more special applications that bridge restaurants and donors with children in orphanages who require food assistance. In response to this gap, this article proposes a novel solution called *NasiQu*—a digital platform with the concept of Digital Social Entrepreneurship (DSE). *NasiQu* aims to facilitate connecting donors with orphanages, providing convenience for administrators and enabling seamless transactions for donations. This unique application fills the gap in existing research on digital platforms for social enterprises [25], offering a specialized solution to address hunger among children in orphanages, both globally and specifically in Indonesia. By integrating the principles of social entrepreneurship and leveraging digital technology, NasiQu presents an innovative approach to tackling the persistent problem of food security [10], [11].

The current study adds practicality to the field and an efficient solution to alleviate hunger through a digitally supported social enterprise model, demonstrating the potential of Digital Social Entrepreneurship in addressing social problems and supporting marginalized communities [16], [17]. Moreover, *NasiQu* benefits restaurants and helps orphanage children meet their daily food needs. Donors regularly make donations in the form of money to applications. Then the application is forwarded to the restaurant to be distributed to several orphanages. For donors, sharing and donating activities that are given sincerely and voluntarily will give a feeling of joy and a manifestation of love for others. In this paper, the author describes and explains the design stages of NasiQu, a mobile application with the concept of social entrepreneurship.

Entrepreneurship education in the curriculum helps students develop the knowledge, skills, mindset, and drive needed to succeed as business owners [26]. According to Haynie et al. [27], cognitive flexibility is essential to entrepreneurial passion and success. Growing evidence suggests that schools should teach entrepreneurship to foster an entrepreneurial mindset [28]. Students' digital literacy has been found to impact their inclination to utilize digital technologies [29] [29], as well as their utilization of

technology for educational purposes in various contexts. Digital literacy refers to the capacity to comprehend and effectively utilize information provided by computers across diverse platforms [30]. Individuals' willingness to adopt and use new technology to meet their personal and professional goals is called "technology readiness" [31]. Technology preparedness can explain user psychology. Technology readiness may be used to evaluate people's tech adoption readiness. The utilization of novel technologies yields both advantageous and detrimental outcomes for individuals. There is a consensus among scholars that individuals may hold similar attitudes and emotions towards high-tech products and services, with both positive and negative implications [32], [33].

II. MATERIALS AND METHODS

This application will be designed using Agile, one of several development approaches. The agile methodology is utilized in software development [34]. This article aims to analyze, explain, and describe the various stages of designing an application for digital social entrepreneurship called NasiQu. NasiQu is a mobile application incorporating This article examining whether the agile method convenience makes digital social entrepreneurship appealing. NasiQu is accessible on the Apple App Store and Google Play. The Agile methodology creates a more responsive, customer-focused, efficient project management and software development approach. By embracing iterative development, collaboration, and continuous improvement, Agile helps teams deliver high-quality products that align with customer needs and market trends [35].

Rapid adaptation and developers who are open to any change are required when using the agile method, which is a quick-change approach to system development. Agile Software Development prioritizes customer collaboration over contract discussions, working software over paperwork, and interactions and persons over plans. Agile methods can be characterized as a clear strategy that calls for developers to adjust to any changes as soon as they occur or as a collection of methodologies for developing software that shares the same guiding principles. Agile Software Development emphasizes communication among team members, technical people, businesspeople, developers, and their managers. However, it is widely assumed that Agile provides the following core benefits based on Table 1.

TABLE I
ADVANTAGES OF AGILE METHODS COMPARED TO TRADITIONAL/WATERFALL METHODS

Advantages	Agile Methodology	Traditional/Waterfall Methods
Rapid Adaptation and Flexibility	• Enables quick adaptation to changes. • Emphasizes flexibility in system development	More rigid and resistant to change
Customer Satisfaction	• Involves customers throughout the process. • Values customer feedback and collaboration	Focuses more on contract negotiations
Quality Improvement	An iterative approach leads to continuous improvement and refinement	Linear process with limited opportunities for improvement and feedback

Advantages	Agile Methodology	Traditional/Waterfall Methods
Enhanced Reliability	Short sprints allow for better visibility and resource allocation	Less visibility into progress and potential bottlenecks
Risk Mitigation	Regular progress assessments identify and address issues early	There is less focus on identifying and addressing potential risks and issues

Six phases comprise the Agile software development cycle, including Plan, Design, Develop, Test, Deployment, Maintenance, and Retirement [36], as in Figure 1. But in the development of this project, we will only do five cycles because the most recent cycle is only considered when the system is replaced by new software, when it has become dated over time, or when it is no longer compatible with the organization.

1) Plan: we will first establish the project's scope in this section. Then, after consulting with the client (representative of the donor), we draft documentation outlining the key requirements, including the features that will be supported and the intended outcome.

2) Design: once the plan is outlined, it is time to build the software development team. We started developing the project with the team. A team has been formed to design the procedure. A team will design the project architecture and user interface mock-ups. Thanks to additional stakeholder feedback, the requirements on the diagrams and the definition of product functionality were fully refined during the first stage. Regular check-ins will allow us to ensure that all requirements have been considered during the design process.

3) Develop. Develop is referred to as construction from here on out. Since this stage sees the completion of the bulk of the work, it typically lasts the longest. As we translate the design into code, we will collaborate with the UX designer to consider all product requirements and user feedback. The objective is to finish the first sprint or iteration with a functional product. Later, additional features and modifications might be added. The foundation of Agile software development is this stage, which enables programmers to quickly produce functional software and make changes to guarantee client satisfaction.

4) Test: the product is just about to go on sale. The quality assurance team must perform tests to ensure the software is fully functional. If a potential bug or flaw is found, the developer will fix it immediately. Members of our agile team will test the application to ensure the code is clear. This phase will also include user training, which necessitates more documentation. Once this is all done, the product can be produced in its final iteration.

5) Maintenance: The customer can now access all the software. It is put into maintenance mode by this action. The software development team will continue to support the system during this phase to keep it functional and to address any new bugs. Additionally, they will be available to give users additional instruction and ensure they comprehend how to use the product. Iterations may be developed to enhance and build upon the current product.
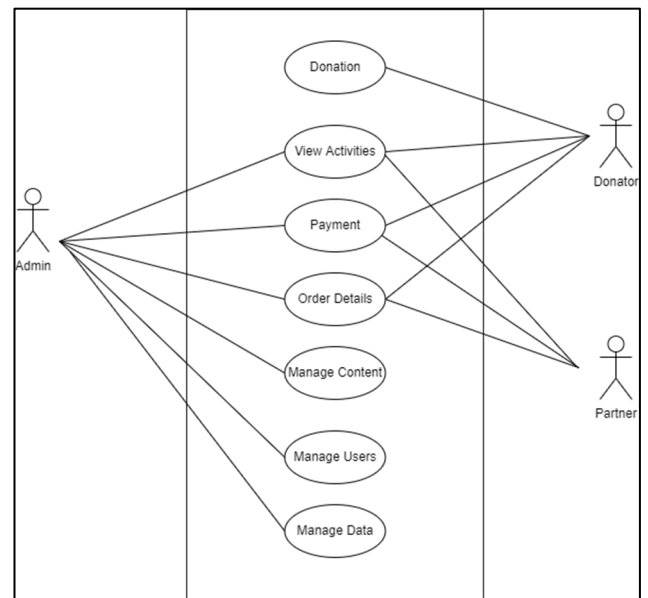

Fig. 1 Use case diagram of the app "*NasiQu*"

Among all the app's features, we have some limitations for access, as shown below in Figure 1. Admin has full control to access the application except for donations. Donors will have basic user access and donation as a special feature. While partners only need basic user access.

To evaluate the app's impact on users, we carried out a series of developmental activities encompassing Digital Entrepreneurship Education [37]. Entrepreneurship education may change students' views, encourage them to become entrepreneurs, and encourage them to increasingly use context-oriented learning methods like action or project-based learning. These methods stress hands-on learning. Entrepreneurship education can also improve teachers' views on entrepreneurship, and schooling shapes entrepreneurial traits [38].

Additionally, the idea in question originates in the study of literacy, and it has gained a significant amount of traction since it has a broad scope beyond the simple act of using a computer. This aspect distinguishes it from other definitions of literacy that are more commonly used. Scholarly works have significantly contributed to the progression of digital literacy [30]. According to Bawden [38], digital literacy encompasses a wide range of capabilities and skills across various domains. These new businesses heavily rely on various forms of electronic commerce. Building a digital business requires acquiring skills in digital literacy as a prerequisite for its launch and continued operation.

Furthermore, the underlying factors driving individuals' adoption of emerging technologies offer a promising direction for further scholarly inquiry [33]. Technological readiness is an individual's ability to use intelligent technologies, whereas perceived ease of use is a system's features that assist consumers' use. Both concepts are interconnected to enhance customer satisfaction. Simultaneously, harnessing the dual capabilities of technological readiness and perceived ease of use can substantially enhance one's effectiveness. Once the technology is deemed ready for extensive implementation, the influence of user-friendliness on a specific variable will become more prominent. Prior studies [31] have provided

evidence that technology readiness can function as a regulatory mechanism.

In this study on structural equation modeling conducted by Arkadiusz et al. [39], a questionnaire was employed to gather data from a representative population sample. This research included 428 university entrepreneurship students. This study sent questionnaires using email and Google Forms.

SEM using Partial Least Squares (PLS) and SmartPLS version 4 was used to analyze the data. SmartPLS evaluated measurement and structural model validity. The research components' validity and reliability were tested using Anderson and Gerbing's (1988) standard item loading measurement paradigm [40]. The heterotrait-monotrait correlation ratio (HTMT) examined discriminant validity, whereas the average variance extracted (AVE) measured convergent validity. Composite reliability (CR) and Cronbach's alpha assess research construct internal consistency. 5,000 bootstrap samples were created to test the statistical significance of structural links.

III. RESULTS AND DISCUSSION

Designing applications for entrepreneurial needs [41], entrepreneurial products [42], and existing social can contribute to building good interfaces and systems [43], and these application development activities also have an impact on the development of career maturity in engineering education [44]. The *NasiQu* Website-based application was built using the Microsoft Visual Studio 1.73.0 environment code editor. This application was built using the PHP programming language with the Laravel framework. The choice of PHP and Laravel as the main tools for working on this application is because the template is lightweight, has a complete library, and uses the MVC (Model, View, Controller) system. The features mentioned earlier are considered more effective and efficient for building the *NasiQu* application. Currently, the *NasiQu* application is only being developed for the website version only. The *NasiQu* application, built with the PHP programming language and the Laravel framework, presents its features as simply and as simply as possible. The selection of the website version and features is done because it considers the target users that will be reached by the *NasiQu* application. After all, the website is considered easier and friendlier to the *NasiQu* target users. Website application display http://*NasiQu*.com/ is as follows:
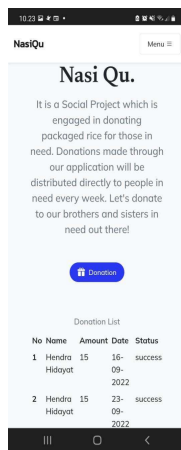

Fig. 2 Home Pages

Figure 2 is part of the home page, which provides an initial explanation of this project. This project is known as *NasiQu*. Mobile applications can be accessed anywhere and anytime via mobile phones and desktop devices. This social entrepreneurship project is engaged in donating packaged rice to needy people. Donations through our application will be distributed directly to needy people, such as orphans, the poor, and the homeless. At the beginning of the home, there is also a donation button available, which you have to click to donate, and you can also see a list of donors who have donated to this application.
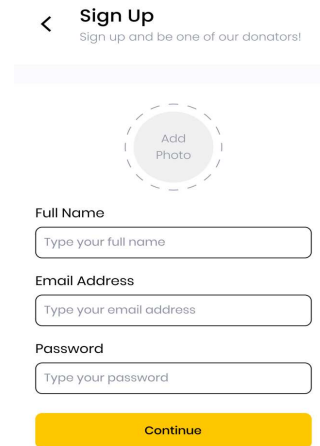

Fig. 3 Create an Account Pages

Furthermore, in Figure 3, there is a create an account section; this page serves to register early for those who will make their first donation. In this section, donors must fill out a registration form, including their name, email, and password. After filling in the donor form, click the continue button. However, if someone has already registered, it is hoped that they will click the login button, and then the donor will be sent to the Login menu.
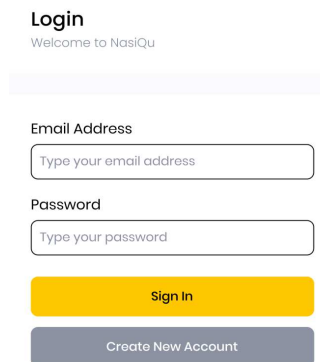

Fig. 4 Login Page

Next in Figure 4 is the log-in section; in this section, it is interpreted that the donor has registered beforehand in the Create account menu. In this menu, donors are required to input the email and password that were previously registered. When you have finished inputting your email and password, click the login button. In addition, there is information that if potential donors still need an account, it is best to register first by clicking the signup link.
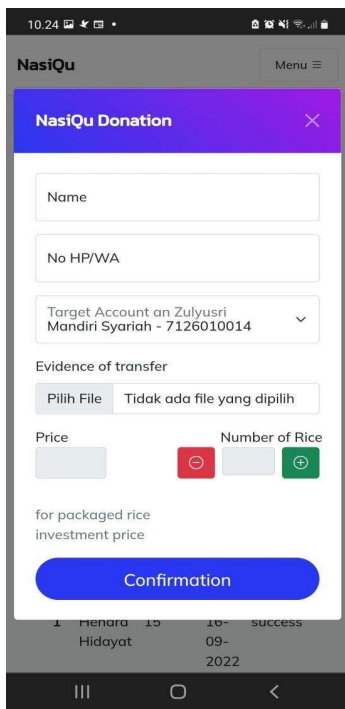
Fig. 5 Display of *NasiQu* Donations

Fig. 6 Gallery Page and Donation List

Then, Figure 5 displays the NasiQu donation menu, which potential donors can access. In this section, you can see several information entries consisting of name, contact number, and the choice of the target account for the account to be transferred. Next, attach proof of transfer, the amount of packaged rice, and the nominal value, which will appear automatically in the price column. If it is believed that all the processes carried out are appropriate and correct, the donor can click confirmation to approve the donation.

Figure 6 is a gallery menu that provides an overview of donation activities. Furthermore, a list of donations provides information on the name, date, and donation status. The list of donations will be updated automatically by the system, and the admin will update the image of each donation according to weekly activities.
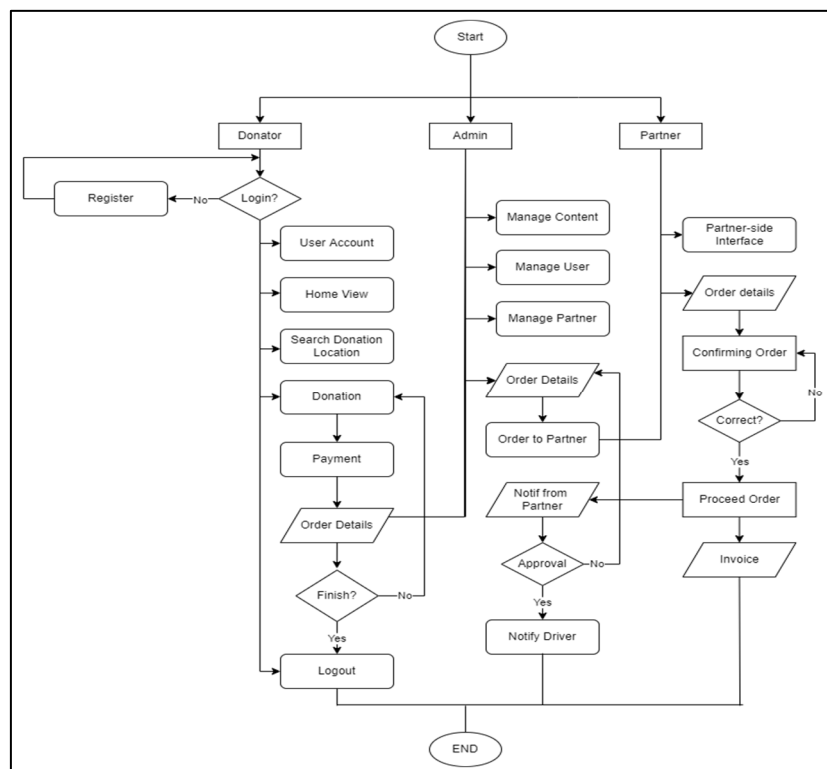

Fig. 7 Flowcharts of an app "*NasiQu*"

In this flowchart section Figure 7 is the application workflow. There are three users, namely donors, admins, and partners. All these users have different roles and application usage flows. Donors can access features such as making donations, making payments, registering, and more. Admins and partners do not need to register to access the application because the admin manages partner access. Admins will have full control over the application data flow, and admins can send order messages (donations) to partners, then our partners will process orders. The mechanism and workflow of this application have been well described, but in its implementation, DSE is certainly faced with various obstacles. Many factors must also be considered, such as building digital attention, credibility, empathy, and user relationships.

The findings from this study make an essential contribution to the development of digital social entrepreneurship through the NasiQu app. The app seeks to address the disconnect between restaurants and donors, specifically targeting children in orphanages who need food assistance. NasiQu offers a novel and customized solution to the problem of child hunger in orphanages, both globally and in Indonesia. It addresses an important research gap in digital platforms for social enterprises. In addition, this research offers a pragmatic and effective approach to addressing the issue of food insecurity by applying a digitally facilitated social enterprise framework. NasiQu offers a novel solution to address food security issues by combining the principles of social entrepreneurship and leveraging the potential of digital technology.

In addition, this research makes a significant contribution by examining the issue of food security, a global problem that continues to be a major concern. Reports issued by UNICEF highlight the growing prevalence of hunger on a global scale, emphasizing the importance of ongoing efforts aimed at achieving food security. NasiQu provides a platform that focuses on children living in orphanages, allowing everyone to establish relationships with these institutions and contribute to addressing the issue of hunger. This study highlights the potential influence of digital technology in addressing issues related to food security and aiding marginalized populations. This study demonstrated that convenience could improve a person's motivation to buy something for the poor.

Furthermore, this study adopts an Agile Methodology, emphasizing client collaboration, iterative improvement, adaptability, and regular progress assessment. By embracing Agile principles, the study ensures the efficient and effective development of the NasiQu application, leading to customer satisfaction, quality improvement, adaptability, reliability, and risk mitigation.

Through contributions in application development and methodology, this research addresses the crucial issue of food security, which continues to be a concern worldwide. The NasiQu application specifically targets children in orphanages and provides a platform for individuals to contribute to resolving the problem of hunger. The study highlights the potential impact of digital technology in addressing food security issues and supporting vulnerable populations.

This study adopts an agile approach, emphasizing client collaboration, iterative improvement, adaptability, and regular progress assessment. By embracing the Agile

Methodology, Research helps develop NasiQu efficiently and effectively, ensuring customer satisfaction, quality improvement, adaptability, reliability, and risk mitigation.

In 2022, the number of children residing in orphanages accounted for 4.76% of the total child population, with over 5,000 orphanages. Specifically, in the city of Padang, where this pilot project is taking place, there are 35 targeted orphanages for implementation. With the initiation of this application's pilot project, it is anticipated that all orphanages will be able to experience the impact of this application.

TABLE II
MEASUREMENT MODEL EVALUATION

	VIF	CA	CR	AVE
Digital Entrepreneurship Education		**0.893**	**0.895**	**0.700**
DEE1	1.766			
DEE2	1.892			
DEE3	1.682			
DEE4	2.205			
DEE5	2.172			
Digital Literacy		**0.901**	**0.902**	**0.717**
DL1	2.258			
DL2	2.425			
DL3	2.569			
DL4	2.255			
DL5	2.331			
Readiness Of Use Application		**0.856**	**0.861**	**0.636**
RUA1	2.261			
RUA2	2.458			
RUA3	2.154			
RUA4	2.471			
RUA5	2.021			

The measurements were taken using the PLS-SEM method, a resampling strategy generally known as the standard process for calculating PLS bootstrap components (factors). Standardized item loadings were used to assess Cronbach's alpha, AVE, Composite Reliability, and HTMT for all constructs. Table 2 shows how the Variance Inflation Factor (VIF) and PLS-SEM approach detected our study's common bias [45] [45]. The VIF values were between 1.682 to 2.569, which is below the 3.30 threshold recommended by Kock [46] [46] to ensure a significance test is free from common method bias.

TABLE III
HETEROTRAIT-MONOTRAIT RATIO CORRELATIONS (HTMT)

	DEE	DL	RUA
DEE			
DL	0.805		
RUA	0.719	0.797	

The Heterotrait-Monotrait Ratio (HTMT) discriminant validity test was also performed (table 3), where the HTMT value must be less than 0.9 to demonstrate discriminant validity between two reflective constructs (Henseler et al., 2015) [47] [47]. Discriminant validity test scores are still less than 0.9, coming in at 0.700–0.717.
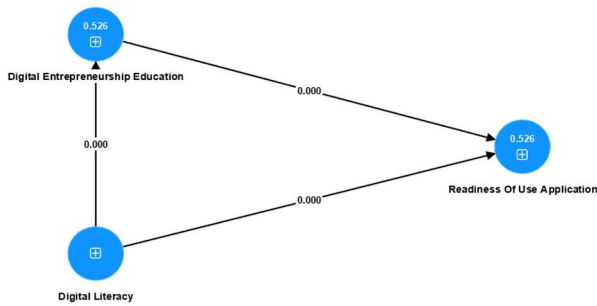
Fig. 8 Path Coefficient

Figure 8 displays the findings of the analysis that was performed using SmartPLS. These findings can also be seen in Table 3, which displays the outcomes of testing all the hypotheses developed for this study based on the findings of the PLS analysis. These findings are presented in Table 4, which reveals a positive and statistically significant connection between Digital Literacy and Digital Entrepreneurship Education (β = 0.725, ρ = 0.000). In addition, there is a positive and significant association between Digital Entrepreneurship Education and Readiness to Use Applications, with a value of β = 0.262 and ρ value of 0.000. Meanwhile, the correlation between Digital Literacy and Readiness to Use Applications has been determined to have a positive and significant association, with a value of β = 0.513 and an ρ value of 0.000. If this is the case, the correlation between digital literacy and readiness to use applications mediated by education in digital entrepreneurship has a positive and statistically significant association (β = 0.190, ρ = 0.000).

TABLE IV
PATH COEFFICIENT AND HYPOTHESIS TESTING

Path	β	STDEV	t	ρ	Result
DL -> DEE	0.725	0.725	0.027	0.000	Supported
DEE -> RUA	0.262	0.263	0.056	0.000	Supported
DL -> RUA	0.513	0.512	0.060	0.000	Supported
Mediating Effect					
DL -> DEE -> RUA	0.190	0.191	0.043	0.000	Supported

Based on the results obtained from the survey administered through this questionnaire, it has the potential to serve as a contributing factor in bolstering the adoption and implementation of agile methodologies. Agile development methodologies are instrumental in promoting the efficient integration of user feedback and iterative processes, ultimately resulting in a mobile app that can be readily tailored to meet the unique requirements of individual users. The application's compatibility with the dynamic nature of social media platforms ensures its adaptability, allowing users to navigate and utilize its user-friendly features seamlessly.

Agile methodology heavily emphasizes fostering collaboration among individuals in the iterative phase of product development. Mobile social networking apps may be adjusted by adding more user input to meet users' demands. Students' understanding of real-world app development and the enrichment of their educational experience can be enhanced through their active involvement in the development process while studying digital entrepreneurship.

The Agile methodology is characterized by its adaptability in project management, allowing teams to effectively respond to changing conditions by adjusting their priorities and activities accordingly. This feature is particularly beneficial for mobile applications focused on social networking since it allows for incorporating additional functionalities in response to evolving user interaction patterns within these applications. The ability to customize the learning experience for individual students in an online business education course is facilitated by the adaptable nature of the platform's design. Consequently, pupils are subjected to a more intellectually interesting and captivating instructional environment.

IV. CONCLUSION

This study shows that Digital Social Entrepreneurship underpins application development. This software helps food-insecure people, focusing on orphans. This application offers convenience, exhibits effective administrative control, and facilitates seamless transactional processes for donors to contribute their donations. The application above, NasiQu, is accessible via online platforms, including smartphones and desktop computers. The presented application offers a broad platform for individuals seeking to contribute donations to individuals in need of sustenance. The donation provided is not subject to any specific minimum or maximum amount, allowing donors the flexibility to contribute varying quantities of rice.

The principal objective of digital social entrepreneurship is to achieve substantial social impact effectively. This encompasses a broad spectrum of societal concerns, including but not limited to the mitigation of poverty, the provision of educational opportunities, the enhancement of healthcare services, the preservation of the environment, and various other matters. The environment may be affected by the actions of digital social entrepreneurs who focus on their local communities and employ digital solutions to alleviate or resolve preexisting issues.

Empowerment allows people and communities to take charge of their well-being and solve problems. This concept encompasses various elements, such as facilitating access to education, skills development, and necessary resources. To mitigate unforeseen consequences and uphold the confidence of stakeholders, it is imperative to employ ethical and responsible methodologies when it comes to the utilization of data, protection of privacy, and evaluation of impact. The digital nature of these initiatives enables them to effectively tackle challenges that extend beyond national or regional boundaries due to their global reach.

The Agile methodology is characterized by its adaptability in project management, allowing teams to effectively respond to changing conditions by adjusting their priorities and activities accordingly. This feature is particularly beneficial for mobile applications focused on social networking since it allows for incorporating additional functionalities in response to evolving user interaction patterns within these applications. The ability to customize the learning experience for individual students in an online business education course is facilitated by the adaptable nature of the platform's design.

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