Advances in Engineering Research, volume 209
International Joint Conference on Science and Engineering 2021 (IJCSE 2021)

Design and Verification Application Let's SeGar Based on Android as the Ideal Physics Guard

Setya C. Wibawa[1,*] Budi Sujatmiko[1] Gerarda L. Yuwanti[2] Amirah Z. H. Putri[3] Edy Sulistiyo[3] Fendi Achmad[3] Utama A. Deta[4] Bambang Yulianto[5] Suprapto[6] Agus Hariyanto[7] Nurhasan[7] Sujarwanto[8]

[1*]*Informatics Department, Universitas Negeri Surabaya, Indonesia*
[2]*Nutrition Department, Universitas Negeri Surabaya, Indonesia*
[3]*Electrical Education Department, Universitas Negeri Surabaya, Indonesia*
[4]*Physics Department, Universitas Negeri Surabaya, Indonesia*
[5]*Indonesian Language and Literature Department, Universitas Negeri Surabaya, Indonesia*
[6]*Civil Engineering Department, Universitas Negeri Surabaya, Indonesia*
[7]*Sports Science Department, Universitas Negeri Surabaya, Indonesia*
[8]*Psychology Department, Universitas Negeri Surabaya, Indonesia*
[*]*Corresponding author. Email: setyachendra@unesa.ac.id*

ABSTRACT
In order to maximize performance during physical exercise, we need to choose foods that contain carbohydrates, protein, and fat, and eat them at the right time. The purpose of this research is to develop the application "Let's SeGar" which has the function of adding insight into the ideal height and weight for adolescents aged 10-18 years, determining BMI, and some recommendations for the right food before doing physical activities that can be finished. This application was built using the ADDIE development method, with stages 1) Analysis, 2) Design, 3) Development, 4) Implementation, 5) Evaluation. The application feasibility test procedure uses a questionnaire. The feasibility test of this application was obtained from 54.8% of students; 22.6% of students; and 22.6 the general public. The results obtained after all respondents filled out the questionnaire are that this application is interesting. The result in the application "Let's SeGar" which is very useful for users to make it easier to choose food before doing light, moderate or heavy physical activity. The material contained in the application has met the criteria and deserves to be disseminated to the general public.

Keywords: *Healthy food, Ideal body, E-commerce, ADDIE.*

1. INTRODUCTION

Nowadays human life cannot be separated from technological advances considering the times that have developed rapidly[1]. The internet in ancient times was considered complex as a pseudo technology, now it is a real world that creates a modern human lifestyle, starting from cell phones, netbooks, laptops, and various other gadgets[2]. A new lifestyle that was born in this day and age is shopping through the internet which we often call e-commerce which in Indonesian we can interpret as the name of online shopping. E-commerce has a meaning, namely the process of buying and selling transactions or exchanging products, services or services, and information on information networks including the internet. E-commerce is an online sales medium that makes it easy to shop for an item without having to meet in person, With the existence of an e-commerce site, we can easily see the products being traded in the form of images, videos, and text, so that online buying and selling transactions become more practical and efficient. E-commerce also has the benefit of being a source of information that we can use to compare prices or view a new product on offer before purchasing online[3].

The existence of technology has influenced society and the surrounding environment along with the times. Where technology can help in various ways[4][5], such as helping to improve the economy. Initially the meaning of technology was limited only to tangible objects such as equipment or machines. But nowadays most people are very dependent on technology, even technology can become a basic need for everyone. Starting from parents to children who use technology from aspects of their

lives. With technology, it can make it easier for people to carry out activities more efficiently and quickly. Technological development is also the basis for developing a country. One of which is the progress of a country based on how far science and technology are mastered.

Every living thing needs food, without food, living things will find it difficult to carry out their daily activities. Food can help humans get energy and help the growth of the body and brain. In general, foodstuffs contain several elements or compounds such as water, carbohydrates, proteins, fats, vitamins, enzymes, pigments, and others[6]. Carbohydrates are a source of daily energy, one example of foods that contain carbohydrates is rice. Carbohydrates contain glucose that muscles use as fuel during exercise. In addition, carbohydrates can also be stored as glycogen which can be used as energy reserves. Furthermore, protein is needed to build muscle and red blood cells, which carry oxygen and nutrients to the muscles[7]. There are a number of benefits that you can get if you consume protein before exercise, including increasing strength and muscle mass, helping muscle recovery, and helping muscle performance[8]. Then fat is a source of energy for moderate to high intensity exercise. A study revealed that people who regularly eat foods that contain 40% fat have better endurance while running. Fat is also used when the body lacks carbohydrates, and fat will break down into glucose which is very useful for the body when it needs energy[9]. A study revealed that people who regularly eat foods that contain 40% fat have better endurance while running. Fat is also used when the body lacks carbohydrates, and fat will break down into glucose which is very useful for the body when it needs energy. A study revealed that people who regularly eat foods that contain 40% fat have better endurance while running. Fat is also used when the body lacks carbohydrates, and fat will break down into glucose which is very useful for the body when it needs energy. Many Android-based applications in the field of takecare about COVID[10], but not in the field of Health and Nutrition tools base on mobile, fulfilled related to maintaining the ideal of nutritional adequacy are still not developed. Base on the background above need an application can help the adolescents to manage the ideal height and weight without having to physically meet a trainer.

2. METHODS

The method used for this study is ADDIE (*Analysis, Design, Develop, Implement, and Evaluate*)[11]. ADDIE is a concept in product development. It describes the steps carried out each stage of model has its own purpose as Figure 1

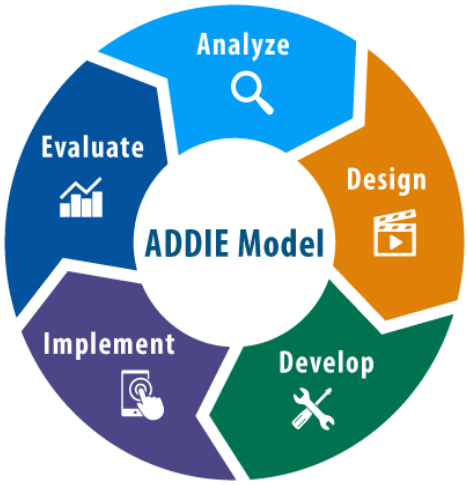

Figure 1 The stages of the ADDIE model.

ADDIE (*Analysis, Design, Develop, Implement, and Evaluate*) the model has similarities with the Waterfall model in software development related to the theory of application development. The following are the stages of the ADDIE model:[12] :

2.1 Analysis

At the system analysis stage, this is the stage where the description of a complete system in components with the aim of identifying and evaluating problems in application development is carried out e-commerce about recommendations for healthy food before android-based activities, so that improvements can be made to achieve good and maximum goals.

2.2 Design

In the planning (design) stage of the application regarding recommendations for healthy food before this android-based activity, we can define it as an illustration of a separate system design that forms a unified whole, so that its function can be used. In this design, it is expected that consumers can quickly and easily access the products being offered. In app viewe-commerce Regarding healthy food recommendations before this

android-based activity, there needs to be a design that is as attractive as possible with the aim that the user or consumer feels comforTable when accessing or using it.

2.3 Develop

At this stage, a process is carried out to realize the design step or design execution that has been designed into an application. This stage can also be said as the coding stage. At this stage, what is done is to analyze the users on the system and what each user does to the system.

2.4 Implement

This stage is the step where testing of the application is carried out e-commerce about healthy food recommendations before android-based activities that have been made in stages develop. Testing for this application using software standards that have been provided or already exist.

2.5 Evaluate

This stage is the stage to determine the success and suitability of the evaluation of the results of the implementation of the application that we make. The application that we make can be said to be successful if it is in accordance with the criteria and standards that have been set previously.

From the explanation of the ADDIE model, it can be concluded that the ADDIE model is an application development process where each stage has its own purpose. At the ADDIE model stage, there are five stages which include Analysis, Design, Develop, Implement, and Evaluate. In the concept of product development ADDIE certainly has similarities with the concept of the Waterfall model in software development (Study et al., 2014). Then to test the feasibility of the application, "Come on Let's SeGar, use a questionnaire via Google Forms.

3. RESULTS AND DISCUSSION

This research resulted in the application of "Ayo SeGar" which is very beneficial for users to facilitate food selection before doing light, moderate or heavy physical activity. In the ADDIE model implication there are several stages:

3.1 Analysis

- Analysis of the situation of the general public who always use the website to find information
- Analysis of android usage which is increasing every day.
- Analysis to make it easier for the general public in choosing food before doing activities.

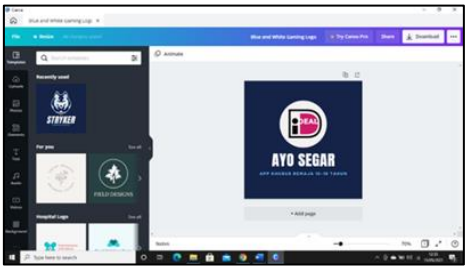

Figure 2 The logo of "Let's SeGar" application.

3.2 Develop

Realizing and developing applications, in accordance with predetermined concepts. The Figure 3 is the display contents of the "Let's SeGar" application.

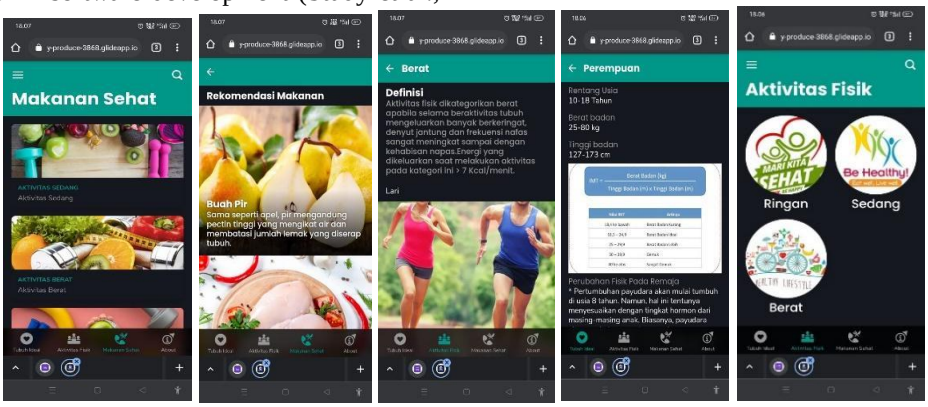

Figure 3 The contents view of "Let's SeGar" application.

3.3 Implement

Testing the application on the user directly, carry out the validation process or application feasibility by users and experts.

3.4 Evaluate

Create and process a questionnaire about application eligibility, revise if something doesn't fit. This test and questionnaire have the aim of knowing the quality of the

applications made, with this test we can find out that the "Let's Fresh" application is eligible according to the standard or not. For feasibility testing, I used a questionnaire via google form which was responded by 16 students, 6 students, and 9 general public, so that the total respondents who got were 31 people. From the results that I got after being responded to by several colleagues, the majority said that the "Let's SeGar" application is feasible and interesting, this application also helps in choosing food before activities.

Questionnaires and grids[13] that were carried out from the tests in this study were taken based on standardization of ISO 9126-1 there are several characteristics in testing the quality of software which consists of the variables Understandability, Learnability, Operability, Functionality, and Content as Table 1[14]. The following are the characteristics of ISO 9126-1 in the Table along with the criteria and results

Table 1. The characteristics of ISO 9126[15]

Variable	Information
Understandability (Understood)	Capabilities in software that are easy for us to understand
Learnability (Learned)	Skills in software that are easy for us to learn
Operability (operated)	Capability in software that is easy to operate
Functionality (Function)	Capabilities in software that provide functional accuracy, security, appearance, and data management as they are used
Content (content)	The ability to define the truth, adequacy, suitability of the contents contained therein

In Table 2, shows the questions and the results of the questionnaire, there are 3 questions given to respondents to fill out online questionnaires

Table 2. The questions and the results of the questionnai

Question	Validation By	Results	Information
How do you guys rate the application design?	College student	54.8%	Interesting
	Student	22.6%	Interesting
	General	22.6%	Interesting
Does the material contained in the application meet the criteria?	College student	54.8%	Yes
	Student	22.6%	Yes
	General	22.6%	Yes
Is it feasible if this application is distributed to the general public?	College student	54.8%	Worthy
	Student	22.6%	Worthy
	General	22.6%	Worthy

The results of the analysis of the questionnaires that have been responded to by 31 respondents, it can be concluded that the application of e-commerce applications regarding healthy food recommendations before android-based activities is very good and can improve product image and consumer confidence. With this application, it can help users to make it easier to choose food before doing their activities.

4. CONCLUSION

Based on the results of the research on the development of the "Let's SeGar" application, it can be concluded that this android-based application is suiTable for use by the general public, especially teenagers aged 10-18 years. This statement was obtained based on a feasibility test through a questionnaire on a google form. Users respond well because according to him this application can facilitate food selection before activities, it is very helpful for users because they don't need to be confused anymore in terms of food selection [13]. This application is useful for everyone wants to have an ideal and healthy body. One day if you do the research again, it is hoped that it can be updated by adding more information about a more diverse variety of food choices. In addition, evaluation, innovation, and creativity are needed to improve a quality of application and a good image to attract more users.

AUTHORS' CONTRIBUTIONS

Setya Chendra Wibawa: conceptor, review manuscript, Gerarda Lisa Yuwanti:, Data analyst, apllication builder, Experiment, Amirah Zulfa Hermawan Putri: Data analyst, apllication builder, Experiment, Edy Sulistiyo: Conceptor, Data analyst,

Fendi Achmad: Data analyst, Binar Kurnia Prahani: Review manuscript, Nadi Suprapto: Review manuscript, Utama Alan Deta: Review manuscript, Bambang Yulianto: Conceptor and funding, Suprapto: Conceptor and funding, Agus Hariyanto: Conceptor and funding Sujarwanto: Conceptor and funding, Nurhasan: Conceptor and funding.

ACKNOWLEDGMENTS

Acknowledgments to the Chancellor of the Universitas Negeri Surabaya who has appointed the author in funding the Policy Research Faculty of Engineering scheme with decree Number 838/UN38/HK / PM I 2021

REFERENCES

[1] S. C. Wibawa, D. S. Katmitasari, A. Prapanca, M. S. Sumbawati, MobiAugmented reality: Studio lighting photography simulator ver. 1.0, International Conference on Advanced Computer Science and Information Systems, 2017 pp. 359-366. DOI: 10.1109/ICACSIS.2017.8355059

[2] Q. Xiao, Understanding the asymmetric perceptions of smartphone security from security feature perspective: A comparative study, Telematics and Informatics 58 (2021) 101535. DOI:10.1016/j.tele.2020.101535

[3] Purwantono, Y. Heraldo, A.S. Alexander, G. H. Tolle, M. Attamimi, W. Budiharto, A literature review: Feasibility Study of technology to improve shopping experience, Procedia Computer Science 179 (2021) 468-479. DOI: 10.1016/j.procs.2021.01.030

[4] S. C. Wibawa, D. S. Katmitasari, A. Prapanca, M. S. Sumbawati, MobiAugmented reality: Studio lighting photography simulator ver. 1.0. In 2017 International Conference on Advanced Computer Science and Information Systems, 2017. pp. 359-366. IEEE. DOI: 10.1109/ICACSIS.2017.8355059

[5] S.C. Wibawa, R. Cholifah, A. W. Utami, A. I. Nurhidayat, Creative Digital Worksheet Base on Mobile Learning, In IOP Conference Series: Materials Science and Engineering, 2018 288(1) pp. 012130. DOI:10.1088/1757-899X/288/1/012130

[6] E. Eslampour, K. Ghanadi, V. Aghamohammadi, A. M. Kazemi, R. Mohammadi, F. Vahid, and Amir Abbasnezhad. Association Between Dietary Inflammatory Index (DII) and Risk of IrriTable Bowel Syndrome: A Case-Control Study, (2021).DOI: 10.21203/rs.3.rs-178607/v1.

[7] C.L. Lavie, D. Laddu, R. Arena, F. B. Ortega, M.A. Alpert, R.F. Kushner, Healthy weight and obesity prevention: JACC health promotion series, Journal of the American College of Cardiology 72(13) (2018) 1506-1531. DOI:10.1016/j.jacc.2018.08.1037

[8] D. C. Fonseca, P. Sala, B. de Azevedo Muner Ferreira, J. Reis, R. S.Torrinhas, I. Bendavid , L. Waitzberg. Body weight control and energy expenditure, Clinical Nutrition Experimental 20 (2018) 55-59, DOI:10.1016/j.yclnex.2018.04.001

[9] K.L. Marlatt, E. Ravussin, Brown adipose tissue: an update on recent findings, Current obesity reports 6(4) (2017) 389-396. DOI:10.1007/s13679-017-0283-6

[10] Ismael, Muataz Haqi, and Abeer Tariq Maolood. Developing modern system in healthcare to detect COVID 19 based on Internet of Things. Materials Today (2021) Proceedings. DOI:10.5194/isprs-archives-XLIV-4-W3-2020-219-2020

[11] A.A. Jumhur, R. A. Avianti, A. T. Akbar, Critical Thinking Based Interactive Learning Media for Basic Mechanical Engineering, Jurnal Pendidikan Teknologi dan Kejuruan 27(2) (2021). DOI: 10.21831/jptk.v27i2.36583

[12] R. Arief, M. I. Wazirudin, A. Rachman, D. P. Hapsari, Pengembangan Aplikasi Berbasis Web, Seminar Nasional Sains dan Teknologi Terapan, 6, 2018, pp. 509–514. URL: https://ejurnal.itats.ac.id/sntekpan

[13] A.E. Roberts, A. Tracey, T.W. Davenport, M. Hyei-Won, I. B. Hickie, H. M. LaMonica. Evaluating the quality and safety of health-related apps and e-tools: Adapting the Mobile App Rating Scale and developing a quality assurance protocol, Internet Interventions 24 (2021) 100379. DOI: https://doi.org/10.1016/j.invent.2021.100379

[14] D. Gade, The evaluation of software quality (2013)

[15] A. Abran, ISO 9126: Analysis of Quality Models and Measures (2010) 205-228. Wiley-IEEE Computer Society, New York. DOI:10.1002/9780470606834.ch10