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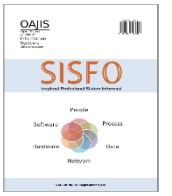

Design and Development of the KosZi Application UI Using Agile Scrum Methodology

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Abstract

The dietary habits of young adults, particularly those living away from home, are often poor due to lifestyle changes and environmental influences. Studies show the importance of meal routines and home food preparation in promoting healthier diets, but students frequently consume unhealthy foods independently. Adolescents face barriers to healthy eating, worsened by food environments that limit availability and affordability. To address this, KosZi, a mobile application, promotes balanced eating habits among young adults through personalized meal scheduling and nutrient monitoring. It also recommends affordable eateries and fosters a community for sharing reviews. Developed using Agile Scrum methodology, KosZi emphasizes continuous improvement based on user feedback. Currently a prototype, KosZi aims to evolve into a fully functional app for Indonesian students. Future enhancements include encouraging local UMKM to meet healthy food standards and integrating QRIS for payments and ride-hailing for food delivery.

Keywords: Student Lifestyle, Balanced Nutrition, KosZi Application, Agile Scrum Methodology, Indonesian SMEs

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1. Introduction

A range of studies have highlighted the impact of lifestyle changes on the dietary habits of young adults, particularly those living away from home. [1] and [2] both found that meal routines and practices, such as home food preparation and regular meal consumption, are associated with healthier dietary patterns. However, students living away from home tend to have less favorable eating habits, including decreased consumption of healthy foods and increased intake of unhealthy options [1], [3], [2]. These findings underscore the need for interventions to promote healthier diets and lifestyles among this demographic.

Adolescents face significant barriers to achieving a healthy diet, with many not meeting dietary recommendations [4], [5]. These challenges are exacerbated by food environments that shape food availability and affordability [6]. Interventions to improve adolescent nutrition should address these barriers

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and be integrated into broader health strategies and government policies [5]. The consequences of poor nutrition in this age group are significant, with potential long-term impacts on health and well-being [7]. Therefore, there is a critical need to raise awareness about the importance of balanced nutrition, particularly among older adolescents and adults, and to promote effective strategies for achieving it.

In response to these concerns and inefficiencies, KosZi emerges as a novel mobile application designed to provide comprehensive information and ease of access. Targeting young adults who lack encouragement to adopt a healthy eating lifestyle, KosZi aims to promote balanced and regular eating habits through personalized meal scheduling. The application's features will guide users in monitoring daily calorie intake and consumed nutrients, supported by information provided within the app. Additional features include recommendations for nearby affordable eateries, making it suitable for students on a budget. An online community will also be established, providing a public forum for users to share reviews and recommendations for eateries, enhancing the overall user experience.

2. Literature Review

2.1 Related Work

A range of studies have explored the use of social media and digital platforms to address the challenges faced by adolescents and young adults in maintaining healthy eating patterns. [8] and [9] both highlight the potential of social media for nutrition interventions, with Chau noting that most studies use basic features and do not evaluate efficacy. [10] proposes CookNook, an intelligent meal planning application, to help students prioritize cooking time and reduce the cognitive load associated with food management. However, there's warning of the negative influence of digital media on adolescents' eating habits, particularly through unhealthy marketing and celebrity endorsements. These studies collectively underscore the need for comprehensive, effective digital solutions to promote healthy eating among young people.

2.2 Impact of Lifecycle Changes on Dietary Habits

The shift in dietary habits among young adults, especially those living away from home, has been extensively studied. [1] and [2] found that regular home food preparation and meal routines are positively associated with healthier dietary patterns. Their research highlights a worrying trend among students who move away from home for studies or work; these individuals often exhibit less favorable eating habits, including a decrease in the consumption of healthy foods and an increase in the intake of unhealthy options. This shift is attributed to a lack of time, skills, and resources necessary for preparing healthy meals, alongside the influence of a new social and food environment.

2.3 Barriers to Healthy Eating

Adolescents and young adults face numerous challenges in maintaining a healthy diet. These challenges include limited access to healthy food options, high prices of nutritious foods, and the prevalence of unhealthy food environments [11]. Additionally, there is a significant gap in knowledge and motivation to follow dietary recommendations. [12] emphasize the need for multifaceted interventions that consider the socioeconomic, environmental, and personal factors influencing dietary choices. Integrating these interventions into broader health strategies and government policies is crucial to effectively address the dietary needs of this demographic.

2.4 Consequences of Poor Nutrition

The implications of poor nutrition during adolescence are profound, impacting not only immediate health and academic performance but also long-term well-being. Diets high in sugar, fat, and processed foods are

linked to an increased risk of obesity, diabetes, and cardiovascular diseases [13]. The urgency to address these issues is highlighted by the potential long-term health consequences, which can extend into adulthood. Thus, there is a critical need to promote balanced nutrition and healthy eating habits among adolescents and young adults.

2.5 Role of Digital Platforms in Nutrition Interventions

The advent of social media and digital platforms has opened new avenues for nutrition interventions targeted at young people. [8] and [9] explore the potential of these platforms to promote healthy eating habits. They point out that while many digital interventions utilize basic social media features, their efficacy is often not rigorously evaluated. CookNook, an intelligent meal planning application proposed by [10], is an example of leveraging technology to aid young adults in managing their diets. CookNook aims to reduce the cognitive load associated with meal planning by providing personalized cooking schedules and ingredient lists.

However, the influence of digital media on adolescents' eating habits is not uniformly positive. Studies have shown that exposure to unhealthy food marketing and endorsements by celebrities on social media can negatively impact dietary choices [14] This underscores the need for carefully designed digital interventions that not only promote healthy eating but also counteract the negative influences prevalent on these platforms.

2.6 KosZi: A Novel Digital Solution

In response to the identified gaps and challenges, KosZi has been developed as a comprehensive mobile application aimed at promoting healthy eating habits among young adults. KosZi addresses the specific needs of this demographic by offering personalized meal schedules, daily calorie and nutrient monitoring, and recommendations for affordable nearby eateries. The integration of an online community feature enhances the user experience by providing a platform for users to share reviews and recommendations, thus fostering a supportive environment for healthy eating.

KosZi's design and development are rooted in the Agile Scrum methodology, ensuring a user-centered approach and iterative improvements based on user feedback. This approach not only aligns with best practices in software development but also ensures that the app remains responsive to the evolving needs of its users.

3. Methodology

In developing KosZi, we opted for the Scrum methodology as our main framework, which structures software development into iterative cycles known as Sprints. Sprints last for 2-3 weeks. During each Sprint, the team engages in comprehensive activities including planning, analysis, design, implementation, testing, and review. Key roles within Scrum, such as Scrum Master, Product Owner, and Developer Team, ensure efficient collaboration and accountability throughout the development process.

The KosZi development under Scrum progresses through distinct phases as shown in Fig. 1. Starting with the collection of User Stories to understand user needs. This information is compiled into a Product Backlog, which prioritizes features and tasks for development. Sprint planning sessions then outline specific objectives and timelines for each iteration, culminating in rigorous testing of newly implemented features. This structured approach exemplifies how Scrum methodology is effectively applied to drive the development of KosZi, ensuring clarity, efficiency, and alignment with project goals. The iterative nature of Scrum ensures that user feedback is continuously integrated into the development process. By prioritizing User Stories and conducting regular Sprint Reviews, we maintained a strong connection between user expectations and the evolving product.

Fig. 1. Scrum Phase

3.1 User Story Creation

The methodology begins with creating detailed User Stories that outline the requirements of the KosZi application from the user's perspective. This is achieved through surveys conducted via Google Forms targeted at students to gain a comprehensive understanding of their needs.

3.2 Product Backlog Development

In the second stage, the KosZi Product Backlog is created. This backlog includes detailed descriptions of business processes, actors, business activities, and the application structure, all derived from User Stories and literature studies. The development team uses this backlog to focus on improving the user experience by designing interfaces and features that meet clients' needs. This structured approach ensures that every aspect of the application is aligned with the business requirements and user expectations, facilitating a more efficient and targeted development process.

3.3 Spring Planning

KosZi Sprints are divided into two sessions: Sprint Planning and Sprint Backlog. During Sprint Planning, the Scrum team reviews the Product Backlog, discusses each feature in detail, and estimates the time required for their implementation. This collaborative evaluation ensures that the team has a clear understanding of the tasks ahead and can prioritize them effectively. The Sprint Backlog is then created, comprising the tasks and features that the team commits to completing during the Sprint. This structured approach facilitates efficient planning and execution, aligning the team's efforts with the project goals.

3.4 Sprint Execution

The KosZi team conducts daily meetings to report everyone’s progress and identify any obstacle that might occur along the sprint execution timeline. The meeting was conducted briefly and held any time specified by the team. These meeting aims are to help maintain transparency among our members and to align our efforts as well as to find resolution of issues.

3.5 Sprint Review

In the concluding stage, following the completion of the Sprint series, a Sprint Review is conducted to evaluate the progress of the KosZi application. During this review, the development team presents the work completed, demonstrating new features and functionalities to stakeholders. Simultaneously, thorough testing is performed to verify that the features developed in the previous Sprint function correctly. Any discrepancies or issues identified during testing are documented and addressed in the subsequent Sprint. This iterative process ensures continuous improvement, ultimately aiming to deliver a polished product increment that meets user expectations and requirements.

4. Results and Discussion

4.2 User Story

In the realm of software development, User Stories act as a bridge, translating user needs and desired features into the language of development. This is a critical step, as the compiled list of User Stories forms the very foundation upon which the application is built. Table 1, which documents the results of gathering client requirements, serves as a treasure trove of these User Stories.

Table 1. User Story

Week	User's Desired Outcome	Conclussion
1	Having a user-friendly design and integrated login page that is easily accessible.	Ensuring implementation, user-friendly design and allowing users to easily log in with minimal steps.
2	Dashboard design that easily tracks daily calorie and nutrition intake.	Facilitating a user interface element that calculates daily calorie and nutrition intake, involves features for adding meals, logging food items, and visualizing nutritional data.
3	Home page that can show products by filter products by price, category, and brand.	Facilitating product search and filter system on the homepage. This allows users to refine their search based on price range, product category.
4	Notifications about new features and updates to the application, so that users stay informed and take advantage of the latest functionalities.	Ensuring integration of a notification system within the app. This allows the app to inform users about new features, updates, or important announcements.
5	User interface that automatically adjusts its layout and elements to fit the screen size.	Facilitating implementation of responsive design principles and user interface adapts its layout and elements (buttons, text, etc.) to fit different screen sizes (phones, tablets, desktops) for optimal user experience.

4.2 Product Backlog

The initial task in application development using the Scrum methodology is to work on the Product Backlog. During this phase, various elements are created, including business processes, actors, business activities, and application structures. The Product Backlog is populated with identified user stories, as illustrated in Table 2.

Table 2. Product Backlog

No	Item	Priority
1	Login Page	High
2	User Registration	High
3	Meal Tracking	High
4	Nutrition Analysis	High
5	Meal Planning and Sugestions	High
6	User Profile Management	Medium
7	Weekly Report Generation	Medium
8	Public Dashboard for Nutrition Trends	Medium
9	User Notifications and Reminders	Medium
10	Data Visualization for Nutrient Intake	Medium
11	Admin Panel for Content Management	Medium
12	Integration with Fitness Apps	Low
13	Community Forum for Students	Low
14	Nearby Food Delivery Integration	Low

4.3 Sprint

The design process's third stage, Sprint, is divided into Sprint planning and Sprint backlog. During Sprint planning, the Scrum team meets to evaluate the Product Backlog list, discussing each feature's development and estimated completion time as shown in Table 3.

Table 3. Sprint Planning

No	Item	Estimation (days)
1	Login Page	0.5
2	User Registration	0.5
3	Meal Tracking	1
4	Nutrition Analysis	1
5	Meal Planning and Sugestions	1
6	User Profile Management	0.5
7	Weekly Report Generation	1
8	Public Dashboard for Nutrition Trends	1
9	User Notifications and Reminders	0.5
10	Data Visualization for Nutrient Intake	1
11	Admin Panel for Content Management	1
12	Integration with Fitness Apps	0.25
13	Community Forum for Students	0.5
14	Nearby Food Delivery Integration	0.25

4.4 Sprint Execution

Sprint execution is a vital phase in the Scrum process where the development team works on the tasks defined in the sprint backlog. For the Koszi Application, which aims to help students manage their nutrition, this phase focuses on developing key features and functionalities listed in Table 4.

Table 4. Sprint Backlog

Sprint Backlog	Task	Estimation Time (Day/Hours)									
		1	2	3	4	5	6	7	8	9	10
Login Page	Design UI	4									
	Implement Backend	6									
	Testing	2									
User Registration	Design UI	4									
	Implement Backend	6									
	Testing	2									
Meal Tracking	Design UI		4	4							
	Implement Backend			4	4						
	Setup				6						
	Testing					2					
Nutrition Analysis	Design UI		5	7							
	Implement Algorithms			3	6						
	Testing				4						
Meal Planning and Suggestions	Design UI		8	6							
	Implement Algorithms				4	3					
	Testing					3					
User Profile Management	Design UI					6					
	Implement Backend					4					
	Testing					2					
Weekly Report Generation	Design UI					4	8				
	Implement Backend						4	4			
	Testing							4			
Public Dashboard for Nutrition Trends	Design UI						8				
	Implement Backend						4	4			
	Testing							4			
User Notification and Reminders	Design UI							6			
	Implement Backend							2	2		
	Testing								2		
Data Visualization for Nutrient Intake	Design UI								8		
	Implement Algorithms								6	5	
	Testing									5	

Admin Panel for Content Management	Design UI	6	3	
	Implement Backend		7	
	Testing		4	
Integration with Fitness Apps	API Integration			4
	Testing			2
Community Forum for Students	Design UI			6
	Implement Backend			4
	Testing			2
Nearby Food Delivery Integration	API Integration			4
	Testing			2

4.5 Testing KosZi

In a series of KosZi development sprints, testing of various user experience-related features was conducted. Each testing scenario, including ease of use, navigation, user interaction, and error handling, has been successfully executed as expected. Testing was performed by a dedicated software testing team within the Scrum team, and the results of the application testing can be seen in Table 5. To evaluate the application's usability, we used the System Usability Scale (SUS).

Table 5. System Usability Scale

	Statement	SD	D	N	A	SA	Avg. Score
1	I think that I would like to use this system frequently.	2	4	6	8	5	3.6
2	I found the system unnecessarily complex.	3	5	7	6	4	3.2
3	I thought the system was easy to use.	1	2	5	10	7	4.0
4	I think that I would need the support of a technical person to be able to use this system.	4	5	6	7	3	3.1
5	I found the various functions in this system were well integrated.	2	3	5	9	6	3.8
6	I thought there was too much inconsistency in this system.	3	4	6	7	5	3.4
7	I would imagine that most people would learn to use this system very quickly.	1	2	4	11	7	4.2
8	I found the system very awkward to use.	2	3	7	8	5	3.6
9	I felt very confident using the system.	1	2	4	10	8	4.3
10	I needed to learn a lot of things before I could get going with this system.	3	4	6	7	5	3.5
Overall SUS Score							72.5

After conducting surveys with 25 participants, we received a System Usability Scale score of 72.5. This score indicates that the application is above average in terms of usability, suggesting that users generally find it functional and easy to use. The feedback from these surveys will be crucial in guiding further refinements and improvements in the user experience as we move forward with the development of KosZi.

5. Conclussion

5.1 Conclussion

KosZi was developed as an initiative by undergraduate students to address health issues among their peers. Throughout the development process, Agile Scrum principles were employed to ensure rapid responsiveness to user needs and flexibility. User Stories were used to organize the KosZi product backlog and prioritize features for each Sprint, aligning with user expectations. After each iteration, evaluations and continuous improvements were made to enhance productivity and product quality sustainably. Emphasis on adaptability, user responsiveness, and ongoing improvement were key aspects of KosZi development. Currently, KosZi is still in development, with the output being a prototype. However, the goal is to continue refining and expanding it into a fully functional application that can benefit Indonesian undergraduate students in the future.

5.2 Suggestion

To ensure KosZi achieves its full potential and fosters synergy between Indonesia's small and medium enterprises (UMKM) and the awareness of healthy foods, several key steps should be considered. The development of KosZi needs to be continued and expanded. Achieving synergy between Indonesia's UMKM and the promotion of healthy eating habits among undergraduate students requires ongoing effort and dedication. By advancing the current prototype into a fully functional application, KosZi can effectively bridge the gap between local food providers and health-conscious students. It is crucial to encourage UMKM to meet the standards of healthy and nutritious food suitable for undergraduate students. This can be achieved by providing guidelines and resources to UMKM, helping them understand and implement healthier cooking practices. Collaborating with nutrition experts to educate UMKM on the importance of balanced meals can also ensure that the food offered meets the health needs of students.

Additionally, integrating KosZi with third-party applications can significantly enhance its functionality and user experience. Implementing QRIS (Quick Response Code Indonesian Standard) for seamless payment options can facilitate easier transactions between students and UMKM. Furthermore, integrating with ride-hailing services can provide convenient delivery options, making healthy food more accessible to students. These integrations can make KosZi a more comprehensive and user-friendly solution. By focusing on these suggestions, KosZi can become a powerful tool in promoting healthy eating habits among Indonesian undergraduate students while supporting local UMKM. The continued development and strategic enhancements will ensure that KosZi not only meets its initial goals but also evolves into a sustainable and impactful application for the future.

6. References

[1] J. K. Das, Z. S. Lassi, Z. Hoodbhoy, and R. A. Salam, “Nutrition for the next generation: older children and adolescents,” Ann. Nutr. Metab., vol. 72, no. Suppl. 3, pp. 56–64, 2018.

[2] M. Story, K. M. Kaphingst, R. Robinson-O'Brien, and K. Glanz, “Creating healthy food and eating environments: policy and environmental approaches,” Annu. Rev. Public Health, vol. 29, pp. 253–272, 2008.

[3] M. N. Laska, M. O. Hearst, K. A. Lust, L. A. Lytle, and M. T. Story, “How we eat what we eat: identifying meal routines and practices most strongly associated with healthy and unhealthy dietary factors among young adults,” Public Health Nutr., vol. 18, pp. 2135–2145, 2014.

[4] K. M. Klassen, C. H. Douglass, L. Brennan, H. Truby, and M. S. Lim, “Social media use for nutrition outcomes in young adults: a mixed-methods systematic review,” Int. J. Behav. Nutr. Phys. Act., vol. 15, pp. 1–18, 2018.

[5] K. D. Raine, “Improving nutritional health of the public through social change: finding our roles in collective action,” Can. J. Diet. Pract. Res., vol. 75, no. 3, pp. 160–164, 2014.

[6] D. Neumark-Sztainer, M. Wall, N. I. Larson, M. E. Eisenberg, and K. Loth, “Dieting and disordered eating behaviors from adolescence to young adulthood: findings from a 10-year longitudinal study,” J. Am. Diet. Assoc., vol. 111, no. 7, pp. 1004–1011, 2011.

[7] S. Lupi et al., “Assessment of lifestyle and eating habits among undergraduate students in northern Italy,” Ann. Ist. Super. Sanita, vol. 51, pp. 154–161, 2015.
[8] N. Akseer, S. Al-Gashm, S. Mehta, A. Mokdad, and Z. A. Bhutta, “Global and regional trends in the nutritional status of young people: a critical and neglected age group,” Ann. N. Y. Acad. Sci., vol. 1393, no. 1, pp. 3–20, 2017.
[9] M. M. Chau, M. Burgermaster, and L. Mamykina, “The use of social media in nutrition interventions for adolescents and young adults—A systematic review,” Int. J. Med. Inform., vol. 120, pp. 77–91, 2018.
[10] S. R. Partridge, “Current dietary advice and challenges for adolescents,” Br. Med. Bull., vol. 135, no. 1, pp. 28–37, 2020.
[11] L. Buchanan, B. Kelly, and H. Yeatman, “Exposure to digital marketing enhances young adults’ interest in energy drinks: An exploratory investigation,” PLoS ONE, vol. 12, no. 2, p. e0171226, 2017.
[12] N. Gupta, K. Goel, P. Shah, and A. Misra, “Childhood obesity in developing countries: epidemiology, determinants, and prevention,” Endocr. Rev., vol. 33, no. 1, pp. 48–70, 2012.
[13] M. Hamada, I. Tanguay Doucet, and B. Aurélie, “COOKNOOK: Intelligent Meal Planning Application,” in Extended Abstracts of the CHI Conference on Human Factors in Computing Systems, May 2024, pp. 1–6.
[14] A. Papadaki, G. Hondros, J. A. Scott, and M. Kapsokefalou, “Eating habits of University students living at, or away from home in Greece,” Appetite, vol. 49, pp. 169–176, 2007.