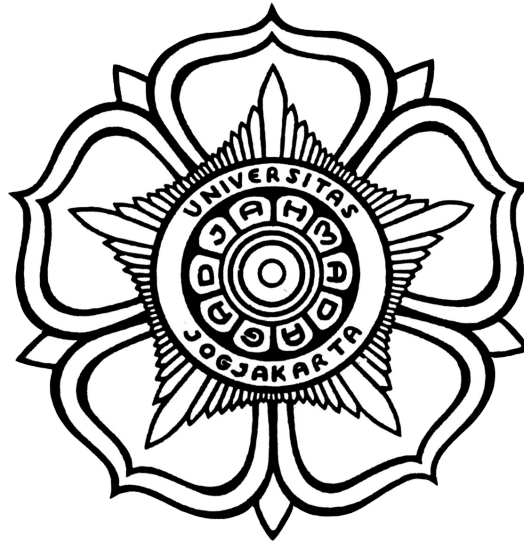


INFORMATION TECHNOLOGY PROJECT MANAGEMENT PROJECT SELECTION



Presented by:

Faiz Khansa Adrika	18/425516/PA/18408
Fedora Ramadhanty Widijanto Putri	18/423106/PA/18189
Rafqi Muhammad Azzaydan	18/429295/PA/18686
Nikolas Adhi P.	18/425529/PA/18421
M Haidar Azhar	18/429291/PA/18682
M Ananda Radianto	18/425525/PA/18417
M Zafran Kasman A	18/429292/PA/18683
Gentha Wibhi Miasa	18/420299/PA/18679
Zaky Syihab Hatmoko	18/425535/PA/18427
M Amridhan Mahdi	18/429290/PA/18681

**UNDERGRADUATE PROGRAM IN COMPUTER SCIENCE
DEPARTMENT OF COMPUTER SCIENCE AND ELECTRONICS
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNIVERSITAS GADJAH MADA
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A. Document Purpose

This document aims to provide a quantitative basis on decision making of the work project selection prioritized by the team.

B. Company Profile

Groundbreaking technology for daily life is our development focus. Our mission is to provide society with cutting-edge products that enable members to work better and smarter. We believe that when technology is data-driven and people-centric, it will upscale the impact given.

Anbasiri will help you go through the digital transformation by the assistance of mobile application and website development service to your door.

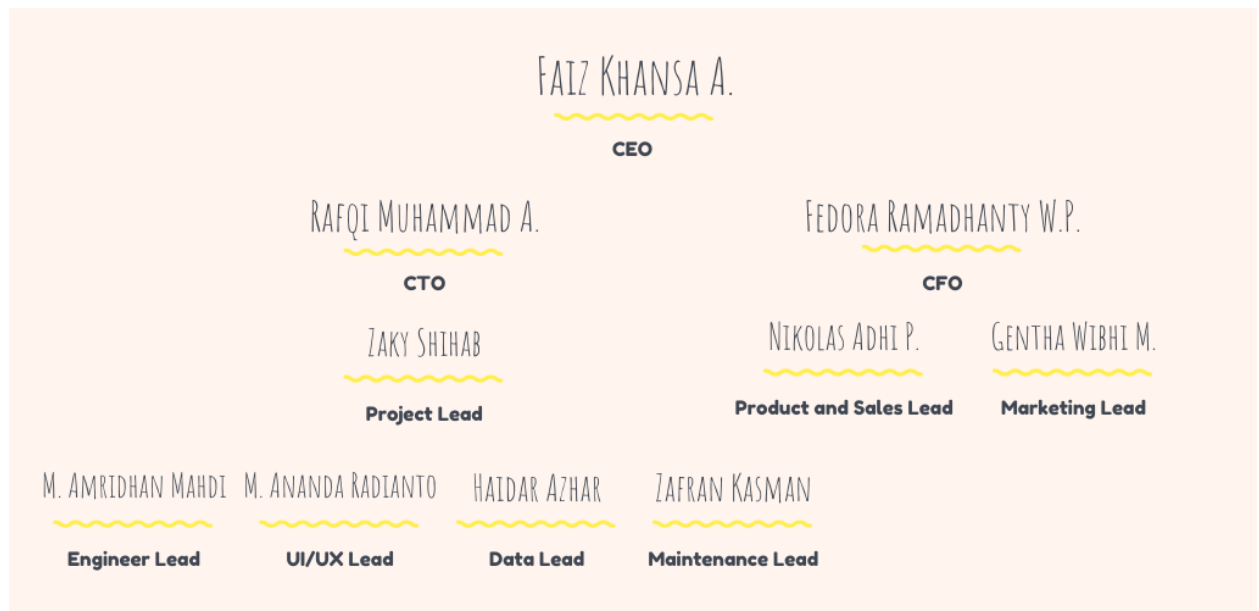
C. Vision and Mission

Anbasiri's vision and mission is ultimately to help people with innovative technology to ease up their life. For the detailed vision and mission you can see it on the description below:

Mission Statement : To create the world's most innovative and easy to use apps for people to ease up their daily lives.

Vision Statement : We believe that people should have a daily driver app for every activity in their daily lives.

D. Organizational Structure



E. Projects Overview

1. Menu and Recipe Inspiration Application

Food is one of the most essential needs in our life. According to the UN Food and Agricultural Organization (FAO), approximately 30 percent of global production is wasted annually. People also tend to run out of ideas about what to eat everyday. With the limited ingredients that are available, it is quite difficult to determine what food to cook to not waste the food ingredient leftovers. This 'Menu and Recipe Inspiration from Available Ingredients' application will be able to give inspiration about what to cook with limited ingredients and help reduce food waste.

Features:

- Text inputs that allow users to input their ingredients
- Provide various recipes according to ingredients entered by users
- Provide link to tutorial videos in each menu

2. Food Recommendation Application

It is a fact that people want to have and maintain a healthy body to support themselves in their activities. Nowadays, people eat whatever they want and whenever they want. They couldn't control their nutrition consumption for their own bodies. This happens because they don't have the information or rather, they are too lazy to get the information of nutrients from the food that they are eating, hence their body could sometimes overgain and undergain nutrients from foods. That is why, this Food Recommendation App could help people to keep their daily consumption in check and maintain their healthy lifestyle.

Features:

- The Input of the statistic of the customer includes Height, Weight, and Fat Percentage.
- Recommendation of the food they need to consume based on the customer's adequacy.
- Recommendation of the amount of calories/nutrients based on the statistics of the customer's body to have an ideal and healthy body.
- List and Reminder of what customers need to consume based on the food they have includes Breakfast, Lunch, Afternoon Snack, and Dinner.

3. Digital Task Reminder Application

Digital platforms have become an important method in knowledge innovation, dissemination, and application with the development of internet and network databases. Especially in the Covid-19 pandemic, society self-drive

themselves into the digital world of education and jobs. The objective of this project is to develop a reliable timeline tracker to keep the schedule of classes/meetings and tasks/assignments on time. People can be more organized with their planning and scheduling what they need. People often forgets what they need to do so we created an application that can help as a reminder or notification on mobile phones so that people will not miss their work deadline and other important stuffs

Features:

- Set deadlines and activities to be reminded
- Notification for upcoming deadlines and events integrated with alarm
- Reminder customization for activities
- Calendar, integrated with Google Calendar
- Notes to write in-app
- Activity list widget for home-screen.

4. High School Announcement Application (OFMENT)

During the pandemic season, or even non-pandemic, many times school announcements are not distributed properly to the students. This application will serve as an integrated source of information for students on various things around school. Although an e-learning system is already adapted in most schools, this application focuses on general announcements to the students. Aside from the announcement feature, this application also connects students with system administrators using chatbot. With this, students can gain more information by simply chatting on the platform. OFMENT is a mobile application that is designed to help school officials to create announcements, it also serves as an official and exclusive communication channel. With our high level encryption, the security of the conversations are guaranteed to be safe. OFMENT also supports every single file format for any file types (images, videos, files, etc).

Features:

- General school announcements
- Private announcements
- Administrator chat function.

5. Tourism Destination Recommendation Website

Tourism sector has long been referred to as the economic sector. It is believed that tourism is one of the factors causing a multiplier effect that results in welfare on one side and community empowerment on another side. Due to COVID-19

pandemic, the tourism district faces a crisis. The government of the Special Region of Yogyakarta wanted to gain more tourists by promoting their territory using a website.

Features:

- Predictive Search
- Informative images
- Google map integration
- Google analytics integration
- SEO Optimization

F. Quantitative Criteria

1. Net Present Value (NPV)

Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is the result of calculations used to find today's value of a future stream of payments. Projects with a positive NPV must be considered to do if financial value is the key criterion. In general, the higher the NPV value, the better. The NPV relies on a discount rate that may be derived from the cost of the capital required to make the investment, and any project or investment with a negative NPV should be avoided (Investopedia).

$$NPV = \sum_{t=0}^n \frac{CF}{(1+i)^t}$$

Where:

- t = year of cash flow
- n = the last year of cash flow
- CF = cash flow of year t
- i = interest/discount rate

This following table summarizes the NPV of each project:

Project	NPV
Menu and Recipe Inspiration Application	Rp39,530,428
Food Recommendation Application	Rp25,826,446
Digital Task Reminder Application	Rp25,501,427
High School Announcement Application	Rp43,886,189
Tourism Destination Recommendation Website	Rp8,884,222

With NPV detail of each project:

- Menu and Recipe Inspiration Application

Menu and Recipe Project				
Discount Rate	10%			
Initial Investment	Rp100,000,000			
Year	Out Flows	In Flows	Cash Flows	Present Value
0	Rp40,000,000	Rp5,000,000	-Rp35,000,000	-Rp35,000,000
1	Rp20,000,000	Rp50,000,000	Rp30,000,000	Rp27,272,727
2	Rp20,000,000	Rp80,000,000	Rp60,000,000	Rp49,586,777
3	Rp20,000,000	Rp150,000,000	Rp130,000,000	Rp97,670,924
NPV	Rp39,530,428			

- Food Recommendation Application

Food Recommendation App Project				
Discount Rate	10%			
Initial Investment	Rp100,000,000			
Year	Out Flows	In Flows	Cash Flows	Present Value
0	Rp35,000,000	Rp10,000,000	-Rp25,000,000	-Rp25,000,000
1	Rp20,000,000	Rp45,000,000	Rp25,000,000	Rp22,727,273
2	Rp20,000,000	Rp75,000,000	Rp55,000,000	Rp45,454,545
3	Rp20,000,000	Rp130,000,000	Rp110,000,000	Rp82,644,628
NPV	Rp25,826,446			

- Digital Task Reminder Application

Digital Task Reminder				
Discount Rate	10%			
Initial Investment	Rp100,000,000			
Year	Out Flows	In Flows	Cash Flows	Present Value
0	Rp59,600,000	Rp20,000,000	-Rp39,600,000	-Rp39,600,000
1	Rp20,000,000	Rp45,000,000	Rp25,000,000	Rp22,727,273
2	Rp30,000,000	Rp75,000,000	Rp45,000,000	Rp37,190,083
3	Rp10,000,000	Rp150,000,000	Rp140,000,000	Rp105,184,072
NPV	Rp25,501,427			

- High School Announcement Application

School Announcement App Project				
Discount Rate	5%			
Initial Investment	Rp150,000,000			
Year	Out Flows	In Flows	Cash Flows	Present Value
0	Rp30,000,000	Rp10,000,000	-Rp20,000,000	-Rp20,000,000
1	Rp20,000,000	Rp60,000,000	Rp40,000,000	Rp38,095,238
2	Rp20,000,000	Rp90,000,000	Rp70,000,000	Rp63,492,063
3	Rp20,000,000	Rp150,000,000	Rp130,000,000	Rp112,298,888
NPV	Rp43,886,189			

- Tourism Destination Recommendation Website

Tourism Website				
Discount Rate	10%			
Initial Investment	Rp100,000,000			
Year	Out Flows	In Flows	Cash Flows	Present Value
0	Rp32,100,000	Rp0	-Rp32,100,000	-Rp32,100,000
1	Rp15,000,000	Rp30,000,000	Rp15,000,000	Rp13,636,364
2	Rp15,000,000	Rp60,000,000	Rp45,000,000	Rp37,190,083
3	Rp15,000,000	Rp135,000,000	Rp120,000,000	Rp90,157,776
NPV	Rp8,884,222			

2. Return on Investment (ROI)

Return on investment (ROI) is a performance measure used to evaluate the efficiency or profitability of an investment or compare the efficiency of a number of different investments. ROI tries to directly measure the amount of return on a particular investment, relative to the investment's cost (Investopedia).

$$ROI = \frac{(total\ discounted\ benefits - total\ discounted\ costs)}{total\ discounted\ costs}$$

The discount factor used to calculate ROI as follow:

Year	Discount Factor
0	1
1	0.9090909091
2	0.826446281
3	0.7513148009

This following table summarizes the ROI of each project:

Project	ROI
Menu and Recipe Inspiration Application	155.49%
Food Recommendation Application	148.49%
Digital Task Reminder Application	302.02%
High School Announcement Application	229.55%
Tourism Destination Recommendation Application	156.89%

With ROI detail of each project:

- Menu and Recipe Inspiration Application

Menu and Recipe Project				
Year	Out Flows	Discounted Costs	In Flows	Discounted Benefits
0	Rp40,000,000	Rp40,000,000	Rp5,000,000	Rp5,000,000
1	Rp20,000,000	Rp18,181,818	Rp50,000,000	Rp45,454,545
2	Rp20,000,000	Rp16,528,926	Rp80,000,000	Rp66,115,702
3	Rp20,000,000	Rp15,026,296	Rp150,000,000	Rp112,697,220
TOTAL		Rp89,737,040		Rp229,267,468
ROI	155.49%			

- Food Recommendation Application

Food Recommendation App Project				
Year	Out Flows	Discounted Costs	In Flows	Discounted Benefits
0	Rp35,000,000	Rp35,000,000	Rp10,000,000	Rp10,000,000
1	Rp20,000,000	Rp18,181,818	Rp45,000,000	Rp40,909,091
2	Rp20,000,000	Rp16,528,926	Rp75,000,000	Rp61,983,471
3	Rp20,000,000	Rp15,026,296	Rp130,000,000	Rp97,670,924
TOTAL		Rp84,737,040		Rp210,563,486
ROI	148.49%			

- Digital Task Reminder Application

Digital Task Reminder				
Year	Out Flows	Discounted Costs	In Flows	Discounted Benefits
0	Rp59,600,000	Rp35,000,000	Rp20,000,000	Rp20,000,000
1	Rp20,000,000	Rp18,181,818	Rp45,000,000	Rp40,909,091
2	Rp30,000,000	Rp24,793,388	Rp75,000,000	Rp61,983,471
3	Rp10,000,000	Rp7,513,148	Rp150,000,000	Rp220,787,822
TOTAL		Rp85,488,355		Rp343,680,384
ROI	302.02%			

- High School Announcement Application

School Announcement App Project				
Year	Out Flows	Discounted Costs	In Flows	Discounted Benefits
0	Rp30,000,000	Rp30,000,000	Rp10,000,000	Rp10,000,000
1	Rp20,000,000	Rp19,047,619	Rp60,000,000	Rp57,142,857
2	Rp20,000,000	Rp18,140,590	Rp90,000,000	Rp81,632,653
3	Rp20,000,000	Rp17,276,752	Rp150,000,000	Rp129,575,640
TOTAL		Rp84,464,961		Rp278,351,150
ROI	229.55%			

- Tourism Destination Recommendation Website

Tourism Website				
Year	Out Flows	Discounted Costs	In Flows	Discounted Benefits
0	Rp32,100,000	Rp32,100,000	Rp0	Rp0
1	Rp15,000,000	Rp13,636,364	Rp30,000,000	Rp27,272,727
2	Rp15,000,000	Rp12,396,694	Rp60,000,000	Rp49,586,777
3	Rp15,000,000	Rp11,269,722	Rp135,000,000	Rp101,427,498
TOTAL		Rp69,402,780		Rp178,287,002
ROI	156.89%			

3. Internal Rate of Return (IRR)

The internal rate of return (IRR) is a metric used in financial analysis to estimate the profitability of potential investments. IRR is a discount rate that makes the net present value (NPV) of all cash flows equal to zero in a discounted

cash flow analysis. Generally, the higher an internal rate of return, the more desirable an investment is to undertake.

$$IRR = \frac{\text{cash flows}}{(1+r)^i} - \text{initial investment}$$

Where:

r = discount rate

i = time period

This following table summarizes the IRR of each project:

Project	IRR
Menu and Recipe Inspiration Application	130%
Food Recommendation Application	154%
Digital Task Reminder Application	104%
High School Announcement Application	252%
Tourism Destination Recommendation Application	105%

With IRR detail of each project:

- Menu and Recipe Inspiration Application

Menu and Recipe Project			
Year	Out Flows	In Flows	Cash Flows
0	Rp40,000,000	Rp5,000,000	-Rp35,000,000
1	Rp20,000,000	Rp50,000,000	Rp30,000,000
2	Rp20,000,000	Rp80,000,000	Rp60,000,000
3	Rp20,000,000	Rp150,000,000	Rp130,000,000
IRR	130%		

- Food Recommendation Application

Food Recommendation App Project			
Year	Out Flows	In Flows	Cash Flows
0	Rp35,000,000	Rp10,000,000	-Rp25,000,000
1	Rp20,000,000	Rp45,000,000	Rp25,000,000
2	Rp20,000,000	Rp75,000,000	Rp55,000,000
3	Rp20,000,000	Rp130,000,000	Rp110,000,000
IRR	154%		

- Digital Task Reminder Application

Digital Task Reminder			
Year	Out Flows	In Flows	Cash Flows
0	Rp59,600,000	Rp20,000,000	-Rp39,600,000
1	Rp20,000,000	Rp45,000,000	Rp25,000,000
2	Rp30,000,000	Rp75,000,000	Rp45,000,000
3	Rp10,000,000	Rp150,000,000	Rp140,000,000
IRR	104%		

- High School Announcement Application

School Announcement App Project			
Year	Out Flows	In Flows	Cash Flows
0	Rp30,000,000	Rp10,000,000	-Rp20,000,000
1	Rp20,000,000	Rp60,000,000	Rp40,000,000
2	Rp20,000,000	Rp90,000,000	Rp70,000,000
3	Rp20,000,000	Rp150,000,000	Rp130,000,000
IRR	252%		

- Tourism Destination Recommendation Website

Tourism Website			
Year	Out Flows	In Flows	Cash Flows
0	Rp32,100,000	Rp0	-Rp32,100,000
1	Rp15,000,000	Rp30,000,000	Rp15,000,000
2	Rp15,000,000	Rp60,000,000	Rp45,000,000
3	Rp15,000,000	Rp135,000,000	Rp120,000,000
IRR	105%		

G. Weighting Scoring Method (WSM)

Project	NPV (35%)	ROI (40%)	IRR (25%)	Total	Ranking
Recipe	0.29	0.17	0.19	21.87%	3
Food	0.19	0.16	0.23	18.92%	4
Reminder	0.19	0.33	0.15	23.71%	1
Announcement	0.26	0.16	0.27	22.44%	2
Tourism	0.07	0.17	0.15	13.06%	5

H. Conclusion

From the analysis conducted in part G using Weighting Scoring Method, the three selected projects based on the percentage of the total weight are:

1. Digital Task Reminder Application
2. High School Announcement Application
3. Menu and Recipe Inspiration Application

Investopedia.com

REFERENCES