Building TEPANG, Startup team and Digital Platform, by using Agile-Simplified-Lean-Design-Thinking Approach

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Abstract—**Currently, futsal, mini soccer and football are becoming more popular in Indonesia. Many field owners rent out their fields to players at a fairly affordable price. Besides, there are several football courses in various cities. However, there are still many problems for players and field managers, as well as for football course/school/academy managers. For players who want to rent the field, they need to access the information of the location, facilities, available time slots and their rates. For the field owners, sometimes they have problems with the unrecorded payment in cash. For football school managers, the system for managing the instructors, students and course publicity is also needed. This paper shows the process of building a solution to address those problems in three phases namely customer discovery, agile product development, and operational preparation & strengthening startup solidity. The authors propose this Agile-Simplified-Lean-Design-Thinking approach for solving customers' problems, developing the web apps, as well as mapping the business model. During this process, three customer segment representatives were involved to validate the problem's solution. This developed platform and startup team, called TEPANG - Ketemu di Lapang, are important as the bases for its future company building.**

Keywords— startup, lean, design, thinking, agile

I. INTRODUCTION

Currently, football and similar sports such as futsal or mini soccer are very popular in Indonesia. Futsal is a sport whose game is based on soccer, but the difference with soccer is that futsal is played by only a few people and in a place or field that is relatively smaller than a football field and is located indoors. Meanwhile, mini soccer is usually outdoors and the size of the field is bigger than futsal. The popularity of these sports are reflected in the number of futsal fields in Indonesia increasing quite rapidly from 6,939 to 12,482 in 2014 and 2018 respectively [1]. In addition, the number of football schools is also quite a lot, more than 1900 and is predicted to continue to grow [2]. Some people see that one could have a prospective career in football, and this is also a huge business. Furthermore, many celebrities have invested in soccer clubs, such as Raffi Ahmad, Atta Halilintar, and Prilly Latuconsina which invested in RANS Cilegon, PS Pati, and Persikota Tangerang respectively [3].

Besides, there were quite a lot of works regarding football booking apps, such as reported by Deksano *et al* [4] which creates Android-based ordering sports arenas to support its community in Jakarta. This application has several features i.e.: booking and payment, discussion forum, and versus where facilitates members to challenge another team. Besides, Hidayat et al [5] created a website for the rental system of volleyball, futsal, badminton and basketball fields sports venues, by using the Waterfall method.

Apart from numerous publications about football booking platforms, only a few that are being commercialized. One of them is Ayo Indonesia, which provide "sparring platform" for football and futsal. This startup was founded in 2016, and currently has 56,000 players, 8,000 teams, and 18,000 sparring events [6] [7].

Nevertheless, there are not many platforms for football courses or academies. One of the examples is Akademi Sepakbola, launched in May 2022, which is planned for connecting Indonesian football academies with its community [8].

Whereas this work, which is a collaborative activity between university and industry, aims to develop a startup and digital platform for managing the football fields & the football academy. The combination of Lean Design Thinking [9], Agile Development [10], and Business Model Canvas [11] approach that also simplified, was utilized in order to have a faster

development process without sacrificing the results. So, this article will report the process and progress of its development, starting with a literature review on startup development methods & tools, methodology, results, and finally conclusion.

II. LITERATURE REVIEW

A. Startup Development Methods

a) Design Thinking: One of the methods for solving customer's problems is by using design thinking. As mentioned by Z. Sándorová, et al. [12], there are five stages in design thinking, i.e.: Empathize, Define, Ideate, Prototype and Test. By empathizing, which can be done through interviewing and observing, the real needs of the customers can be identified. Then, in defining, then problems are defined by sharpening key questions to the audience. Next, is the ideation phase, which creates solutions via several techniques such as brainstorming, mind-mapping and sketching. The next step is prototyping, which brings the selected idea(s) to life using different materials. Finally, in testing, this last phase is getting feedback through observation or interviews.
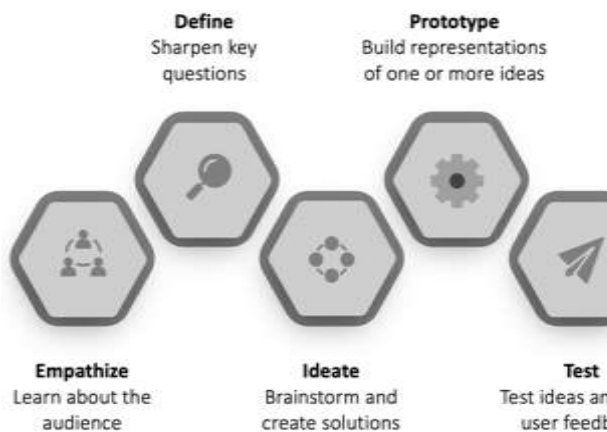

Fig. 1. Design thinking process [12]

b) Lean Startup: As stated by Marion et al [13], the Lean Startup method that was popularized by Eric Ries and Steve Blank, is an approach for developing startups. This method utilizes MVP (Minimum Viable Product) which is used for experimentation and validation by gathering data from users and customers. Then, after the evaluation, the concept or business model can be introduced. The Build-Measure-Learn cycle is done iteratively, so that the 'pivot' or changing direction can be performed after some feedback is learned.

c) Lean Design Thinking: As mentioned by Mueller and Thoring [9], Lean Design Thinking is a combination of two innovation strategies, namely Design Thinking and Lean Startup. Design Thinking is very strong in the area of qualitative methods including ethnographic detail, user research, and observation. While Lean Startup is very strong in quantitative methods that focus on metric-based analysis, as well as testing. Both qualitative testing approaches, along with

metric testing, are carried out in each stage. Moreover, both are also very user-centered and customer-oriented, and use a fast iterative process.
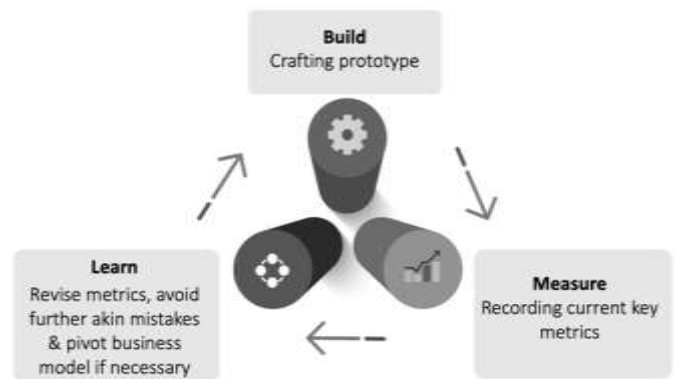

Fig. 2. Lean Startup Iteration Cycle [13]

d) Business Model Canvas: This model which originally was developed by Osterwalder, shows the structure of the business model in a single page that displays its key components [11]. It consists of nine blocks, i.e.: customer segments, value proposition, revenue streams, channels, customer relationships, key activities, key resources, key partners, cost structure. Since it is displayed in one page, the reader could quickly comprehend the business idea.
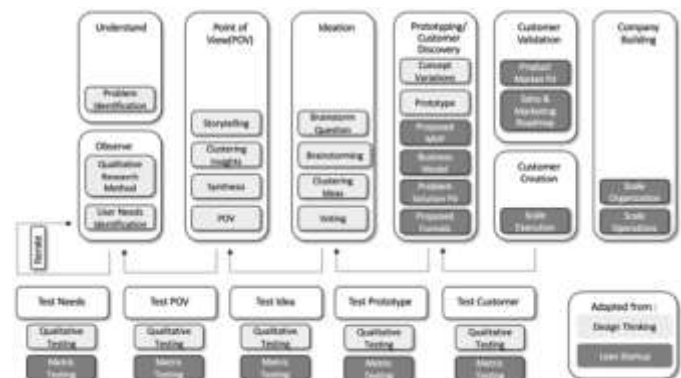

Fig. 3. Lean Design Thinking [9]

e) Value Proposition Canvas: This is a tool created by Osterwalder *et al* [14] that shows the relationship between customer segment and value proposition, and indicates whether the value propositions of a company's business model correlates with the actual needs of the customers it wishes to serve. Compared to Business Model Canvas that focused on how to create value for businesses, the Value Proposition Canvas focuses on how to create value to customers [15].

f) Agile Development: In order to present better value to customers, the shorter development cycle with constant revision can be utilized [16]. The Agile methodology implements interactive, incremental, and short periods of time between each delivery, so that evaluation and feedback from the users can always be adopted. Furthermore, collaborative culture, constant

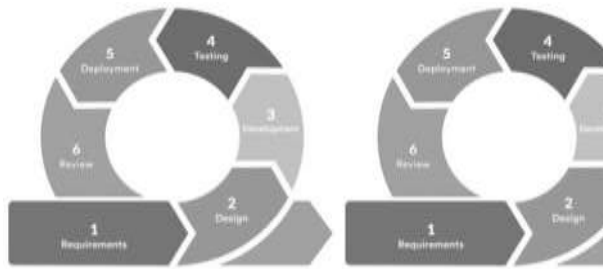feedback to all team participants, and commitment to team's goal are maintained [10].

Fig. 4.   Agile Methodology [16]

B. *Entrepreneurial Framework*

The developed product and business model solely is not adequate for successful business. However, it should be established in a complete scheme. One of the frame-works is shown in the following Founder-Company-Fit figure, that was proposed by Bätz and Siegfried [17]. Mimicking a solid house, this framework consists of five layers. The basement or the foundation is founder(s) level which are strengths, real objectives, and values. Then, the ground floor is problem level, that is expressing the 'why' or reason or justification for existence. Next, the first floor is value creation level, which is not only providing the value in product or services but also creating the value in channel and customers. Afterward, the second floor is the economic efficiency level, defining go-to-market & stay-in-market strategy, as well as its monetization. And finally, the roof is the accomplishment of the company's vision.

and the 'hacker'. The 'hustler' was referred to a business person who takes risks; the 'hipster' was seen as a designer that is innovative and creative; whereas the 'hacker' was described as the one with the tech-expertise.

III. METHODOLOGY

A. *Development Framework*

Based on the literature review and the initial problem identification, as well as the time required by the funding agency, the authors agreed to use the following framework in developing the Tepang startup and its product. This modified lean design thinking framework, as shown in Figure 6.

After Initial Problem Identification, which roughly learns the problems from three customer segments, namely football field tenants, field owners, and football school managers, the Customer Validation phase is performed. In this phase, the observation is carried out directly to the people that represent all of potential users and customers segments. Thus, various points of view can be gathered. Afterward, some ideas of solutions that are presented in a prototype can be used to understand the customer's needs. In this phase, product-solution-fit is studied, which in turn can stipulate the business model.

The next phase is Agile Product Development, where for this initial stage, the web app is chosen, as the development time is relatively fast. Nevertheless, this web app can be used for both mobile and PC users. In this phase, some early customers are acquired, whilst the product-market-fit is tested and measured.
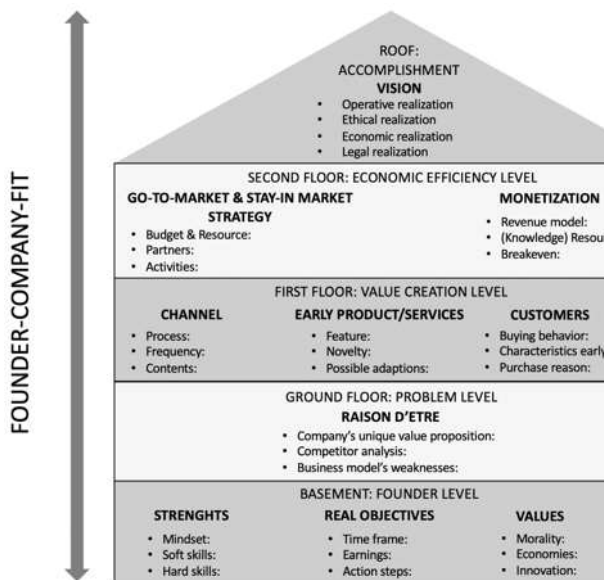

Fig. 5. Entrepreneurial Framework [17]

Furthermore, it can be seen also that founders have important roles where they are the foundation of the company. As indicated by Rudic et al [18], there are three types of entrepreneurial leaders that are needed in startup companies, namely: the 'hustler', the 'hipster',
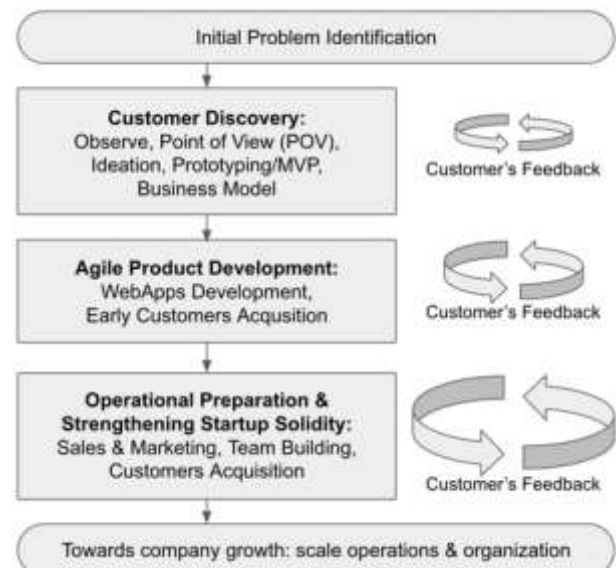

Fig. 6. Agile Simplified Lean Design Thinking Approach

Afterwards, the Operational Preparation & Strengthening Startup Solidity is carried out, where more customers acquisition is expected by the stronger team. If this operation step is accomplished

consistently, it could lead towards company growth that is indicated by its operation and organization scale.

It should be noted that in every step, customer's feedback is gathered and analyzed in order to improve the product and solve customer's problems.

B. Development Tools

In order to assure that this startup development can be accomplished effectively, beside a development framework, some working tools are also needed. There are several tools utilized in this development, namely: Jira and Miro for team collaboration; Figma for designing; and also, Visual Studio Code, XAMPP, Postman for programming the web apps.

IV. RESULTS AND DISCUSSION

Initially, the authors had some assumptions regarding the problems that are faced by the football players want to book the field, the field owner & managers, as well as football academy owners & managers. This initial problem identification is shown in Table 1 as follows.

TABLE I. INITIAL PROBLEM IDENTIFICATION

	Customers Segments	Initial Problem Identification
1	Players/tenants	Difficulties to: find and book; seek facilities information; find match opposition; optimal location for match.
2	Field owners & field managers	Transactions were manually recorded. Payment by cash. Difficulty to inform promotion and tournaments.
3	Football academy owners & managers	Difficulty in promoting the academy. Instructors and student data were managed manually.

Those assumptions were then validated in the customer discovery step, that was held by inviting the group that represented all of the three customer segments in a Point of View Workshop. This event was held on 9 August 2022, as documented in the Appendix 1.
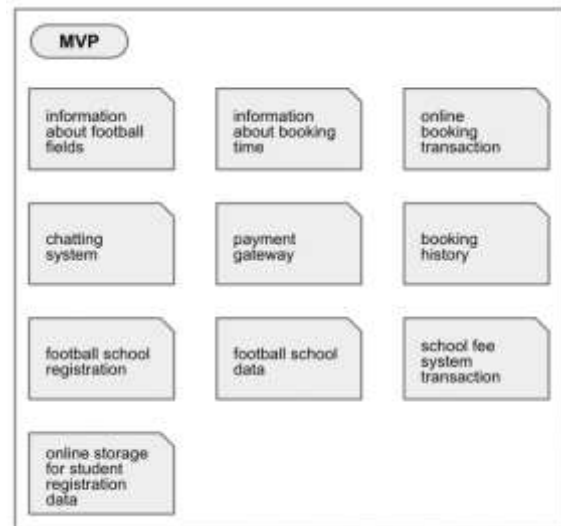

Fig. 7. Minimum viable product (MVP)

During this PoV workshop, the invited users & customers were requested to describe their daily jobs and their problems, as well as their expectation in how the problem was solved, and also their growth of business. All of the team including the hustlers, hackers, and hipsters were involved to absorb their point of views.

The information gathered, was summarized in the User's Stories as shown in the Appendix 2, 3, and 4 for Field Renter, Field Owner, and Football School Owner, respectively. Next, Value Proposition Canvas as shown in the Appendix 5, 6, and 7 for Field Renter, Field Owner, and Football School Owner, respectively were also defined. Based on those value propositions, then, the Pain & Gain Relationship was also sorted out as shown in Appendix 8. Subsequently, the minimum viable product (MVP) as shown in Figure 7 was obtained.

Besides, the business model was defined by using Business Model Canvas as illustrated in Appendix 9. This MVP was then discussed with the three customer segments representatives.

The next step was Agile Product Development, where firstly, the user's flow, web flow, database relation, API design, and wireframe were defined, before coding the web apps. The user's flow and web flow are shown in Appendix 10 and 11 respectively. Whereas, an example of Tepang's wireframe is presented in Figure 8.

At the time of this paper submission, the wireframes were just completed, whereas the web apps coding is in progress. The next activity in this Agile Product Development step, is another workshop with the three customer segments representatives, in order to clarify whether the produced web apps could solve their main problems. Furthermore, this activity is also planned to acquire them to be the early adopters.

Then, the next step will be the operational preparation & strengthening startup solidity. In this step some marketing activities through digital channels will

be performed. Moreover, internal team building activities as well as inviting external mentors are prepared. Furthermore, the dedicated team including help desk will be prepared for further operational stages.

V. CONCLUSION

In this work, the authors proposed a framework for developing a startup team and its digital platform, called Agile Simplified Lean Design Thinking Approach. This scheme, which consists of three steps, starting from customer discovery, product development, and operational phase; aims to a faster development process without sacrificing the results.

This framework was tested in the development of TEPANG, a startup team that solves the problems faced by the football community, i.e players that want to rent the field, the field managers/owners, as well as for football course/school/academy managers/owners, by using web apps platform. When this paper is submitted, the work has been running for about 6 (six) weeks where the progress is about 40% completed, which has produced the wire-frames. The work is planned to be finalized in the following 8 (eight) weeks, where the team and platform will be ready for the operational stage.

As future works, the continuous customers' feedback will be adopted, and more customers acquisition has been planned. Furthermore, in terms of new business, this platform could be utilized also to help the owner of the unproductive lands to convert it to the football field, by collaborating with the investors.

Fig. 8. One of the wireframes

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APPENDICES

Appendix 1: Focus Group Discussion with representatives of three customers segments

Appendix 2: User's Story (Field Renters)

User's Story: Field Renters

As a field renter, i want to see the data of the football field such as: field photos, field locations, field rent prices, field operational schedule, field administrators contacts. I need these data to make it easier for me to find a field that suitable

As a field renter, I need to know the schedule for me to book the field. So that it will be easier for me to decide the right time to play football.

As a field renter, I want to be able to book the field without visiting it first, i want to rent the field by contact the field administrator or by the application, and i believe it will be save lot of time.

As a field renter, I want to search a field in my own environment, or in any place. This future apps will help me to find a soccer field anywhere.

As a field renter, I want to have a notification, if there is a free field to rent nor anything, by email, or WhatsApp. This will make me more up to date about the information from the apps.

As a field renter, I want the information of the field in the apps is always up to date. This will bring a trust to a field renter to the apps.

As a field renter, if there is a Match Making feature, I want to be able to see the data of the opponents, I want to see the motive and the character of the opponents, do they play rough, do they play just for fun, or do they play for serious etc.

As a field renter, I want to be able to see the event that held by the apps, the current one or the upcoming.
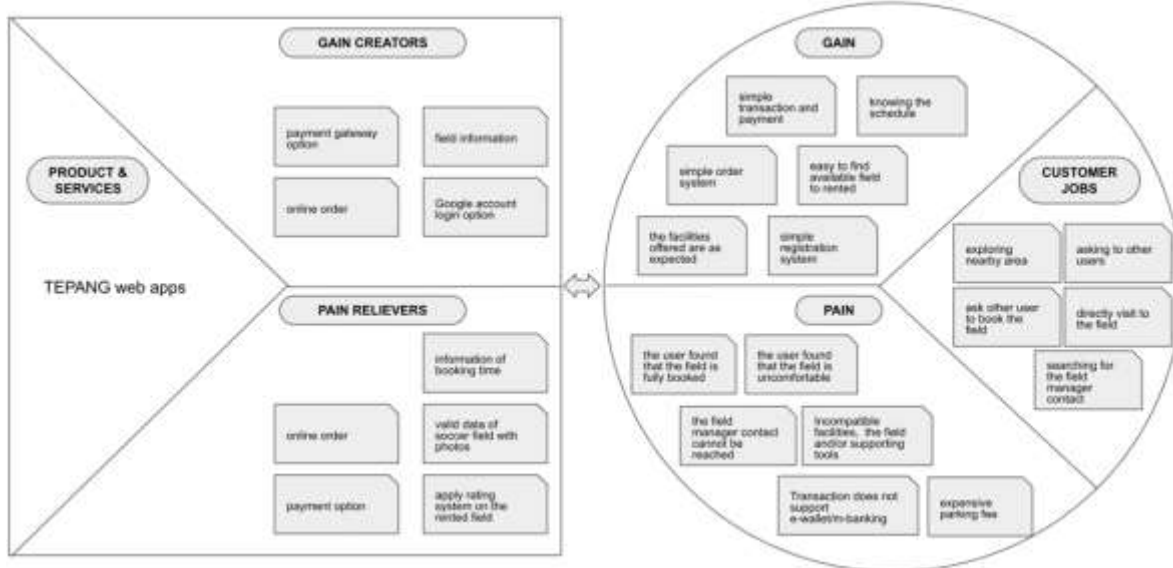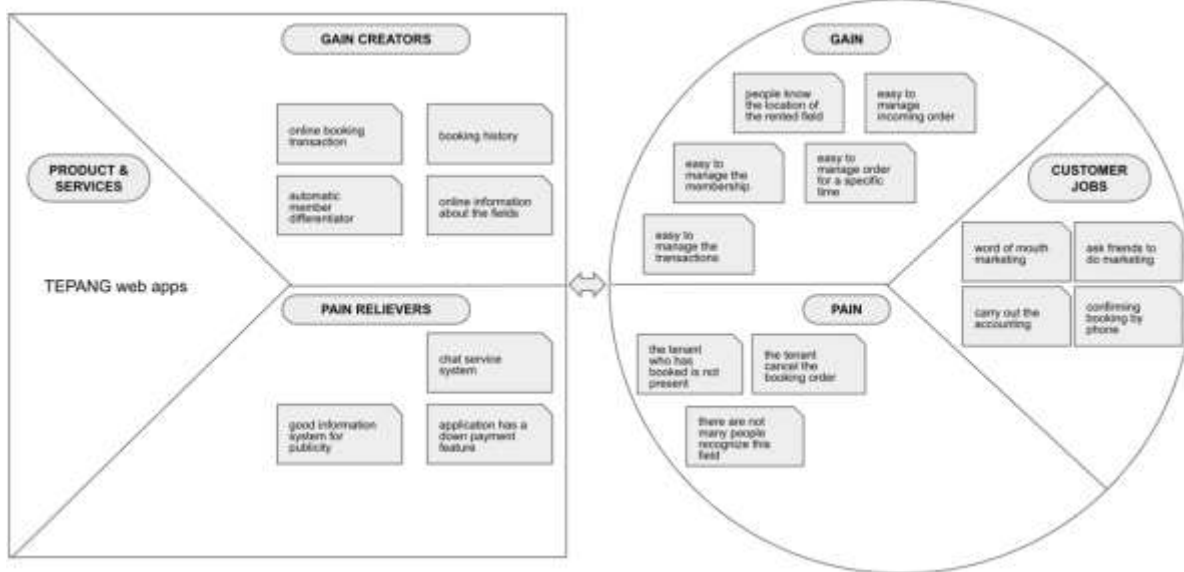
Appendix 3: User's Story (Field Owners)

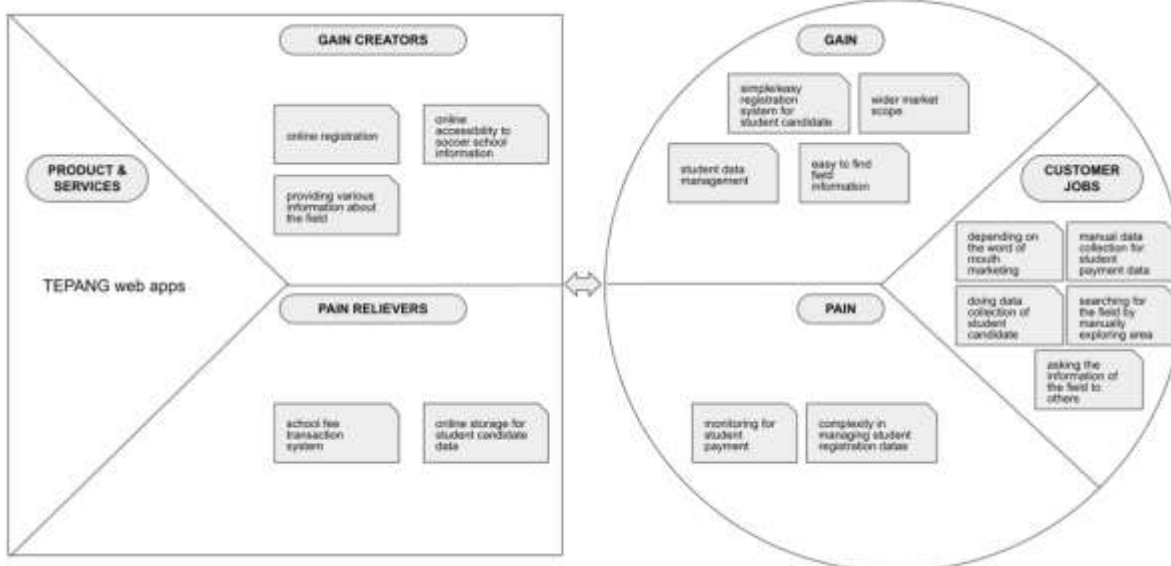Appendix 4: User's Story (Footbal School Owners)

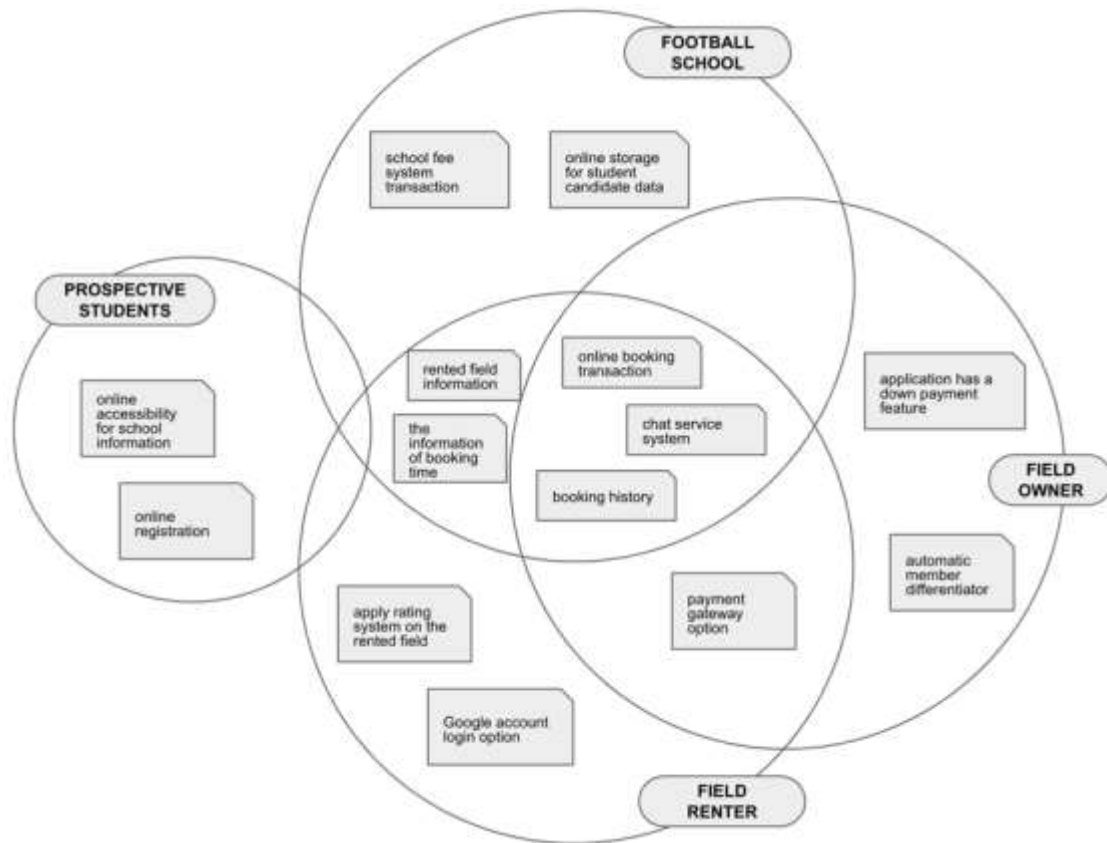Appendix 5: Value Proposition for Football Players / Field Renter

Appendix 6: Value Proposition for Football Field Owner

Appendix 7: Value Proposition for Football School Owner

Appendix 8: Pain & Gain Relationship

Appendix 9: Business Model Canvas

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITIONS	CUSTOMERS RELATIONSHIP	CUSTOMERS SEGMENT
- Football School Owner - Football Coach/Instructor - Investor - Mentor	- Data collection of football field information and football school - Preparing training materials - Preparing match needs - Increasing amount of partnership via marketing - Open and accept advertising activation on TEPANG apps - Football field rental - Registration for football school	- Web and mobile services for in football - Providing facilities to football field rental, football school management and initiating football event - Providing user need's to search for live match, so that user can find opponents based on reccomendation from the apps (TEPANG) - Providing facilities for field owner/administrator to manage the field booking system - The apps become the promotion platform for the sports products - Providing the easy and simple communication system between field owner/administrator and its consumers	- Simple-use application - Football Match/Event - Source of information about the field rental and football school	- Millenial and Gen Z - People that have interest in playing football - Football school student candidate, especially from 7-14 years old - Field owner/administrator - field renter
KEY RESOURCES			**CHANNELS**	
- TEPANG Platform - Marketing team - Solidity of team			- Word of Mouth - Digital Marketing using Social Media ads as early promotion strategy - Website and Mobile Apps - Social Media	
COST STRUCTURE		**REVENUE STREAMS**		
- Software - Hosting rent - Domain - Manpower salary - System Maintenance - Marketing budget		- From field rental - Profit Sharing with the Football School Owner - Advertising		

Appendix 10: User's flow

Appendix 11: Web flow