Building Futsal Competition System Based on Website to Increase Participants and Profit

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Abstract. The purpose of this research is to facilitate the prospective participants in the registration so the applicants do not need to go to the registration venue, minimize transportation costs incurred by the prospective participants, and to facilitate the implementation of competition from various aspects through online way. The method used in this research is collecting primary and secondary data by interview and direct observation to the futsal field, processing data that has been obtained using object-oriented system approach and waterfall system development, and creating a system design using use case diagrams and activity diagrams. The result of this research has increased the participants because they can see schedule information directly by accessing the website, and the team of participants can see the results of the match that has been going on because of the website-based information system built with the concept of a real-time report.

1. Introduction

The development of information systems that can be applied almost in all areas has become interconnected aspects, one of them is sports, especially futsal. However, this development is not yet complete, the succession indicator on a trend is directly proportional to technology. One of the developments of this MAHAR community has held 3 times consecutive futsal competition in Cimahi city, with the number of participants as follows (Table 1).

Table 1. A number of competition participants from 2015-2017.

Year	Participants
2015	24
2016	42
2017	64

Based on the data above, every year futsal competition activities organized by this community has increased, unfortunately, this community has not utilized the information system in the implementation process. Starting from the registration process of this competition which requires participants to bring the requirements that have been determined by the committee to a place that has been determined by the committee that is on the street Mahar Martanegara no 116 Cimahi middle of Cimahi city. In the process of scheduling the competition, the participants are required to remember or keep a good piece of paper scheduling their respective team competitions announced and distributed at the technical meeting. The data collection process of the winning team, the best supporters, the top scorers, and the best players are

still recorded on the paper in the form of archives or not using the information system. The benefits of applying the information system on the registration of futsal competition are to facilitate the prospective participants and minimize the transportation costs incurred by the prospective participants from the previous which requires the applicant to come directly to the registration place that has been determined by the committee. For the benefit gained from the committee, of course, facilitate the implementation of competition from various aspects. Currently, futsal sport is popular in Indonesian society, even mushroomed up to the students. As mushrooming of the futsal field, many field managers vigorously held both public tournaments, government agencies, to universities [1] and according to Achmad et al. Futsal is currently not just a hobby, even by some people futsal has been used as a source of livelihood. Not a few also some people who have a permanent job apart from futsal players who still looking for additional income from futsal. [2] further Moore and Radford, The evidence from respondents indicate that futsal, while many also wish to increase their participation in the sport. Barriers to participation are also prevalent, particularly with regards to the availability and quality of facilities [3].

According to Heliza et al, in Futsal development information system there is One role of Decision Support System (SPK) in the field of sport that is for the election of best player futsal in the tournament in Samarinda. This system implements the SMART (Simple Multi-Attribute Rating Technique) method. SMART uses a linear additive model to predict the value of each alternative. SMART is mostly used because of its simplicity in responding to the needs of decision-makers and how to analyze responses. There are several criteria to consider in choosing the best players, among others, contributing to the team in the form of goals, the number of offenses, attitudes, and can be a role model in the team. SPK which will help the committee select the best players in large quantities with accurate calculation results, and will provide recommendations to the committee to know the right player to become the best player in a tournament in Samarinda [4].

According to Adi et al. Futsal or in Spanish is football sala, meaning soccer room. Futsal sport is synonymous with team vs team game where every team competing must have 5 people which consist of 1 goalkeeper and 4 player. The current futsal trend is so fast its development is no exception in Kutai Kartanegara area so everyone is so enthusiastic with one of these sports and a global information plays an important role in all aspects, including finding information about futsal matches in futsal fun events, Train Sparring and Tournament. However, with the increasing of futsal activists in Kutai Kartanegara there are obstacles that make the activist difficult to find the opposite because there is no media that can gather the activists of futsal in Kutai Kartanegara. This system is built using a waterfall process model that consists of stage requirements, design, implementation, testing and maintenance. Then implemented using the programming language HTML, PHP and MySQL. The testing technique used is black-box testing. The result of this research is a system consisting of User page and Guest page. The User menu consists of your Schedule Page, Sparring Confirmation, Search for Opponent and Logout Pages. And Guest Menu consists of Homepage, Team, Sparring Schedule, Search Foe, Field and Login. [5] opinion Haris et al explains, Sports futsal is a sport with a field covered and became one of the most popular sports from all walks of life. The city of Padang has a lot of futsal field facilities, but not all fields operate well due to ignorance of the community with futsal field location. So needed a web-based information system using Google Maps API, so that people can access the information anytime with internet connection. The application development process uses a waterfall method consisting of the stage of analysis, design, implementation, and testing. Data collection techniques by interview and point retrieval using Latitude Longitude Coordinates application on smartphone. The data will be divided into spatial data and attributes to meet the functional requirements of the system to be built. The design of the system is built by describing the application architecture, the design of the application display and the database design. Implementation using PostgreSQL database and PostGIS extension for spatial data processing. The programming languages used to build applications are PHP, Javascript, and HTML. Testing application using blackbox method. The results of the tests indicate that the application has fulfilled the required nine functional and in accordance with the design of the application [6].

Besides that according to Achmad and Hadi The design of website-based information system using the system development method that is FAST (Framework for the Application System Thinking)

consists of phases of Scope Definition, Problem Analysis, Requirements Analysis, Logical Design and Physical Design. As the basic analysis used DMAIC cycle (Define, Measure, Analyze, Improvement, Control) which is a method to know the problem and make continuous improvement so that get better result. In the Define stage a fishbone diagram tool is used for problem determination. In the Measure stage is done by FAST method. In Analyze stage done with SWOT analysis. While in the Improvement stage is done with SWOT matrix strategy. There is one main page on the golf course information system design which is divided into main menu, golf menu, sport club menu, family club menu, birdie cafe menu and contact us menu [7].

Gusti et al. explains, The application of futsal sports information system Kutai Kartanegara web-based is a system to assist data management and information futsal tournament web-based. In this application is available tournament registration features, management of team and player data and match results. The futsal lovers, team owners, players and fans in Kutai Kartanegara are getting information and exchanging information about futsal tournaments. [8] then Ansarullah et al, Planet Futsal is one of the futsal playgrounds located at Jalan Kembangsari, Rumbai. The field reservation management conducted by Planet Futsal is still conventional. As the growing time and interest in futsal grows, the management of a futsal playing place that is still conventional is no longer sufficient. On the above problems then obtained a solution that is information system for Planet Futsal. This information system can manage the reservation field, either done by the customer or admin and also to provide other information about Planet Futsal. To build the information system of Planet Futsal is also done UAT testing using Blackbox method with 100% result. Furthermore, also conducted a questionnaire testing of 30 customers with a result of 73% of customers satisfied with the information system that has been built. Based on the test results it can be concluded that the information system built for futsal planet has been running well and also has helped the planet futsal and customer to manage or do field reservation and also help customers to find out information on Planet Futsal [9] and Another researcher, Deby et al. The purpose of this research is to produce an application of geographic information system of futsal field spread in Pontianak City that can help the community in finding information about futsal and its spread in Pontianak City. Design tool in this research using Data Flow Diagram and Entity Relationship Diagram. Research Tests using Black Box method and Questionnaire method then calculated using LSR method. This research produced an application of geographic information system of futsal spread in Pontianak City [10].

From various references there is still a lack of comparison of which system is good for the development of Futsal competition as a whole, therefore the research focuses on futsal competition system Mahar futsal competition. Object-oriented approach method used by the authors with primary and secondary data sources to analyze the system that is running on futsal data processing system. The authors proposed to implement a website-based information system so that in the next competition data processing more effective and efficient starting from the registration system of competitor's team online, more flexible scheduling data processing competition, and data processing of final result in real-time.

2. Method

The methods used are Collecting primary and secondary data with interviews and direct observation to the secretariat with Case Studies Mahar Community. Processing the data that has been obtained using object-oriented system approach and waterfall system development and make the design of the system using tools designing the structured use case diagram, and activity diagram with the method of system development through prototype and create content analysis and evaluation system running and design of the proposed system (See Figure 1).
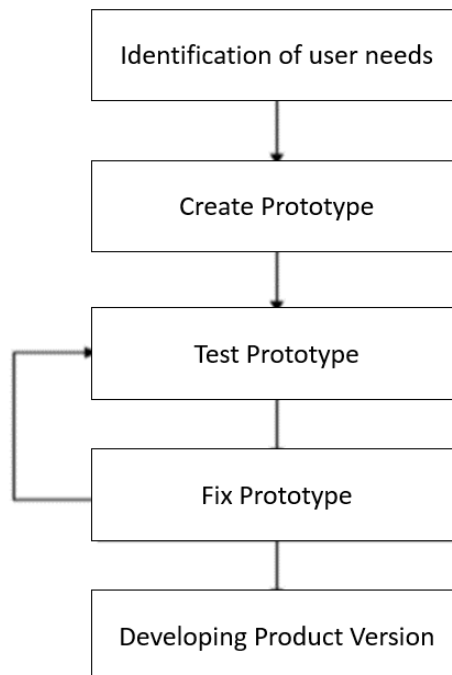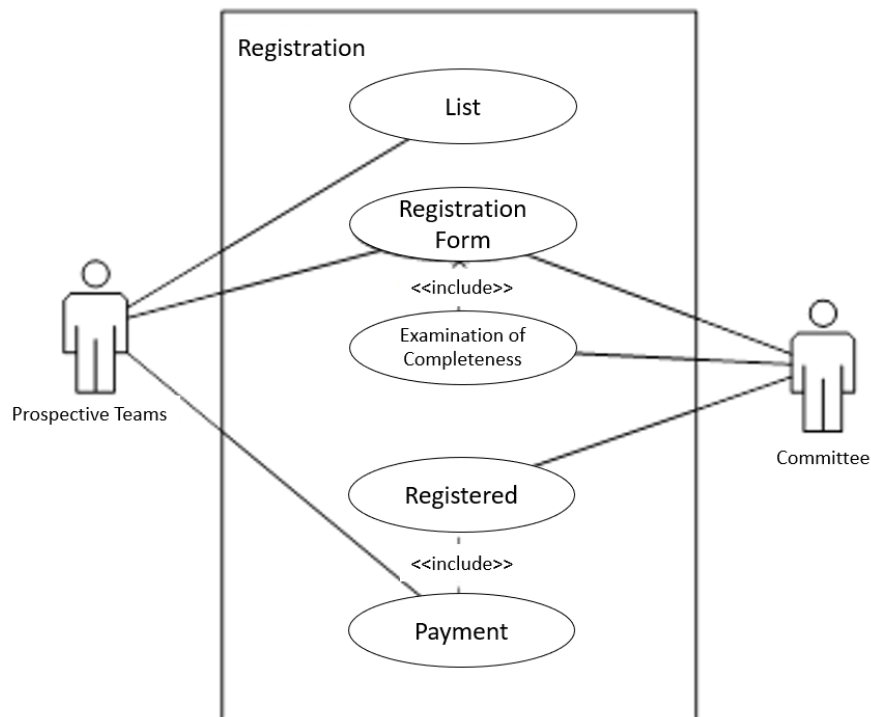
Figure 1. Development Mechanism System with Prototype.

3. Results and Discussion

3.1. Running System
Registration is an early stage of the establishment and checking system that will run. Prospective Team Participants who want to register fill the Registration Form, after that the committee manages the registration and payment can be done (See Figure 2).
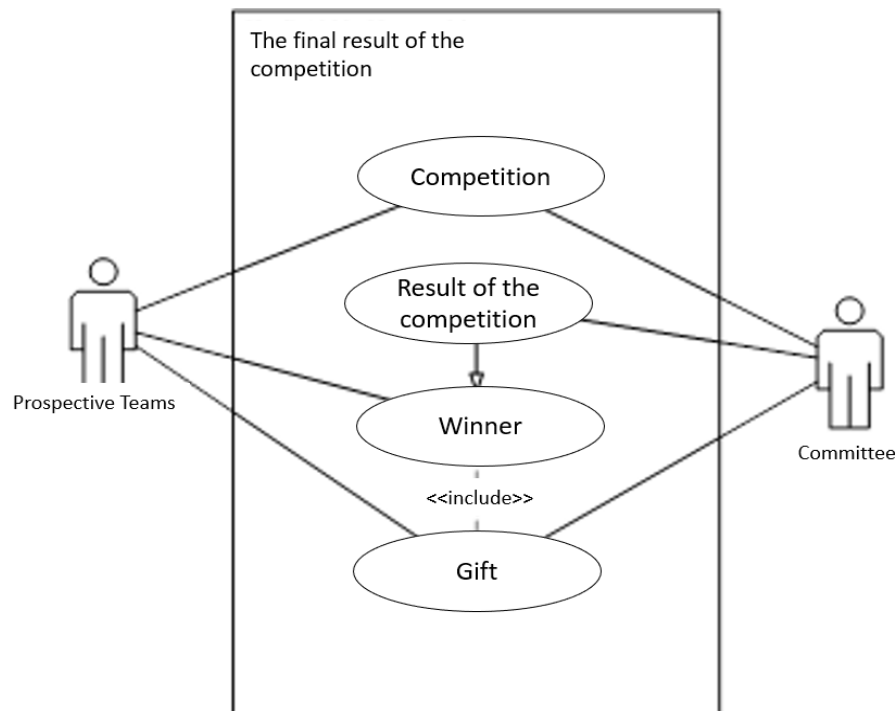
Figure 2. Registration System.

The running system will lead to systematic scheduling. The interface communication on the website is more intense as it relates to the determination of the Competition Schedule (See Figure 3).
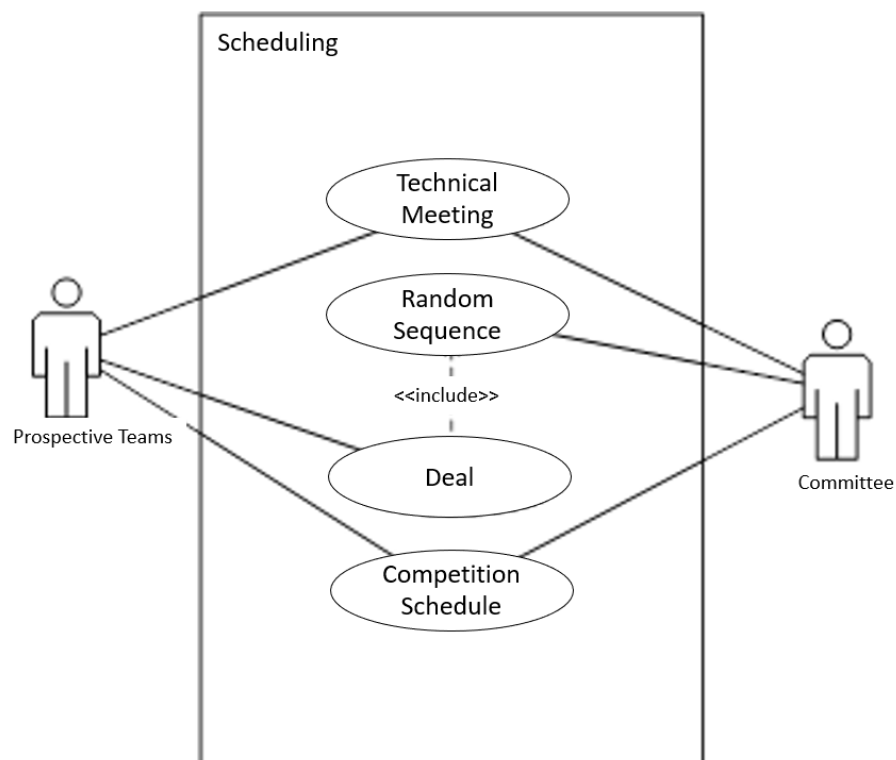
Figure 3. Scheduling system.

The system of final competition is not too different from the use of the manual system. Significant differences can be seen from the running system set by the Committee and Team Participants (See Figure 4).

Figure 4. The system of final competition.

Description of the scenario created ie (Table 2).

Table 2. Registration Scenario.

Name of *Use Case*	Registration
Initial Condition	Prospective team participants have not been registered in futsal competition.
Final Condition	Participants have been registered in futsal competition.
The action of Team Participant Candidate	**Committee Reaction**
Normal Scenario 1. Visit the registration place	
	2. Give the Registration form
3. Receive Registration form 4. Fill the Registration form 5. Submit the registration form	
	6. Accepting the Registration form 7. Checking the registration form 8. Asking a registration fee
9. Giving money of registration fee	
	10. Receive a registration fee 11. Giving receipt of payment receipt

3.2. Accept the payment receipt

Table 3. Accept the payment receipt.

Alternative Scenario	
1. Visit the registration place	
	2. Give the Registration form
3. Receive Registration form	
4. Fill the Registration form	
5. Submit the registration form	
	6. Accepting the Registration form
	7. Checking the registration form
	8. Give back the registration form because it is not complete
9. Receive registration form	
10. Refill the registration form	
11. Give registration form	
	12. Receive a registration fee
	13. Checking the registration form
	14. Ask for the registration fee
15. Giving money of registration fee	
	16. Receive the registration fee
	17. Giving payment receipt
18. Receive payment receipt	

Table 4. Scheduling Scenario.

Name of *Use Case*	Scheduling
Initial Condition	All teams of participants who have registered, not knowing the schedule of their respective team play.
Final Condition	All team of participants already know their own team's play schedule.
The action of Team Participant Candidate	**Committee Reaction**
Normal Scenario	
1. Visited the place of t*echnical meeting*	
	2. Present the number of participating teams, competition charts, and competition rules
	3. Randomize the participant's team number to match the chart number
	4. Ask for a mutual agreement with the whole team of participants
	5. Provide a competition schedule
6. Receive a competition schedule	

Table 4. Cont.

Alternative Scenario	
1. Visited the place of *technical meeting*	
	2. Present the number of participating teams, competition charts, and competition rules
	3. Randomize the participant's team number to match the chart number
	4. Ask for a mutual agreement with the whole team of participants
5. Disagree with the decision of the committee	
	6. Randomize the participant's team number according to the chart number
	7. Requesting a mutual agreement to the whole team of participants
	8. Provide a competition schedule
9. Receive a competition schedule	

Table 5. Final Result Scenario

| Name of *Use Case*	Final Result
Initial Condition	The participating teams are not yet aware of the winners of the futsal competition.
Final Condition	The participating teams already know the winners of the futsal competition.
The action of Team Participant Candidate	**Committee Reaction**
Normal Scenario	
	1. Keep track of every goal, assist, and score on every game
	2. Evaluate the top scorers, the best assists, the best supporters and the best players
	3. Asking a mutual agreement to the whole team of participants
	4. Award each team and individual who gets the champion
5. Receive an award	

3.3. Implementation of activity diagrams
Activity diagrams are techniques for describing procedural logic, business processes and workflow in many cases. Activity diagram has a role as well as a flowchart, but the difference with flowchart is activity diagram can support parallel behavior whereas flowchart cannot. Here is a diagram of running system activity (See Figure 5, Figure 6, and Figure 7).
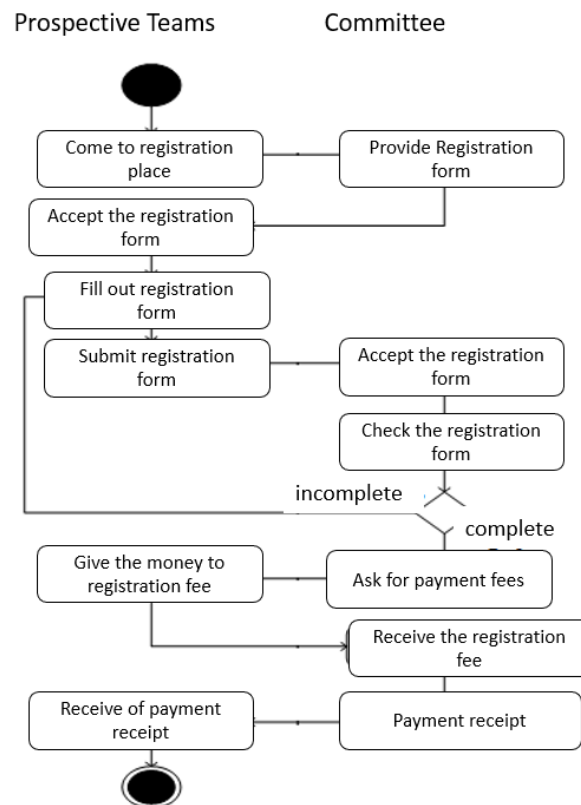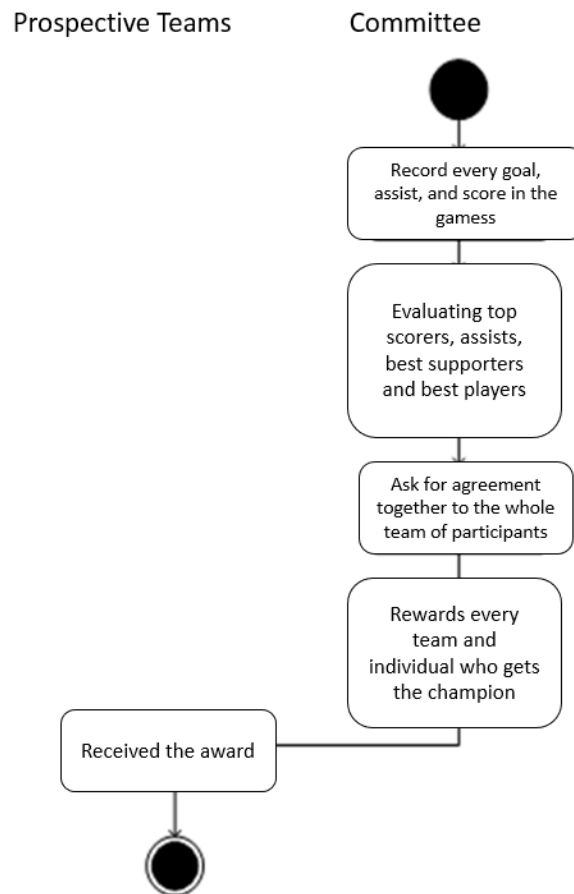
**Figure 5.** Registration Activities Diagram.
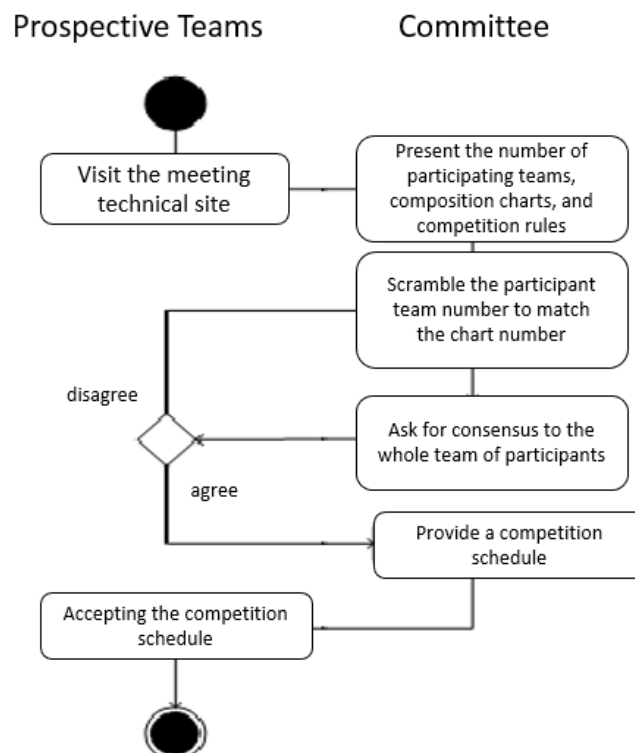
**Figure 6.** Scheduling activities Diagram.

Figure 7. Final Result of Activities Diagram.

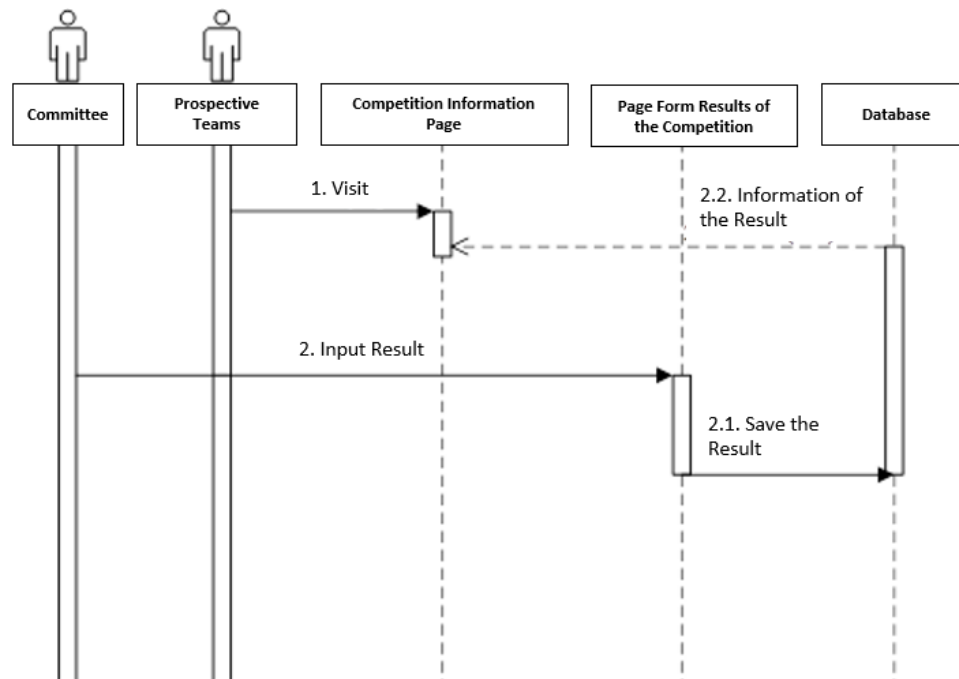### 3.4. Implementation of System Sequence Diagram

System Sequence Diagram is a diagram showing the sequence of messages between external actors in Use Case. Here's the system description using sequence diagrams (See Figure 8, Figure 9, and Figure 10).
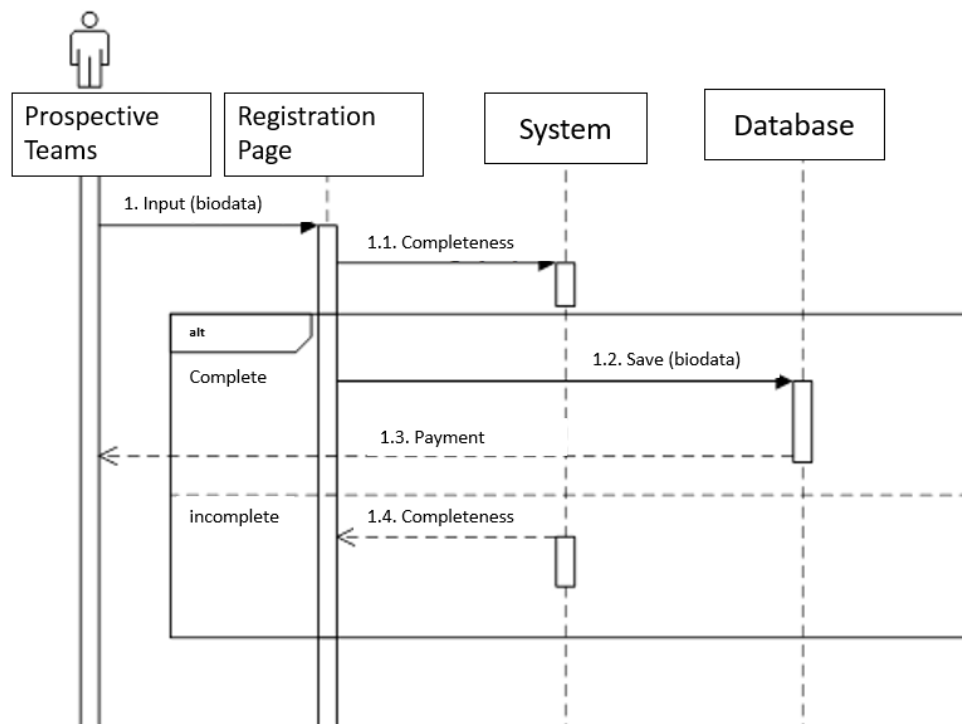
Figure 8. Registration of system sequence diagram.
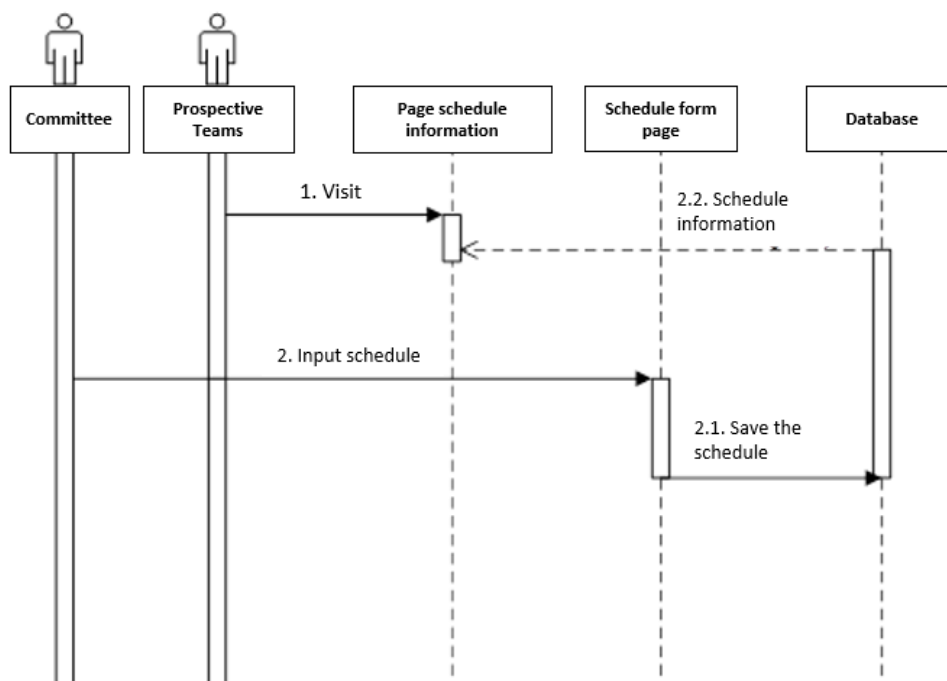
Figure 9. Scheduling of system sequence diagram.

Figure 10. Final Result of system sequence diagram.

3.5. Display of website interface
Based on the method and system approach that has been described, then display the website interface:

- Main Page
  In this view is the first view when visitors open a website page there are several menus available, among others home, matches, history, and latest dowry news.
- Gallery Page
  This view shows a gallery of photos of this dowry community activity during the stand.
- Match Menu
  Match Menu In this view the participants and the general team can see the futsal match schedule.
- Page of History of Mahar
  This view describes the history of the Mahar community itself.
- Registration Page
  In this view the candidates who will register require to fill out the form first.
- Final Result Page
  In this view, the participants can see the results of matches that have been played before.

4. Conclusion
Based on the results of research from this study, it can be concluded, the processing of data registration, scheduling, and the final result is still manual with the recording on the media sheet of paper. The newly designed system can be an option for implementing Building Futsal Competition System Based on Website to Increase Participants and Profit in Mahar Community gets better by using the new system.

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