Scrum Implementation in the Development of Online Research Application

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| Article Information	Abstract
	Researchers often need a way to obtain research data through an online survey. Therefore a web-based online research application could be developed to address these needs. By using Scrum methodology, the online research application was then developed in which some challenges were found such as consistency of logic between developers in a team, relationships between different user modules, and shared debugging, among others. The challenges could be addressed by compliance with Scrum best practices and standards.

A. Introduction

The daily activities of the community, whether students, lecturers, companies, institutions or agencies, are increasing and require innovation and convenience in conducting research to obtain data for a purpose. Therefore, we need a system that can facilitate researchers to conduct research. By utilizing increasingly developing technology, and demanding easy access at an affordable price compared to other competitors, an online research platform is designed that is useful as a place to be able to conduct research.

The online research platform is a website-based application that aims to help customers consisting of individuals, businesses, and institutions in making interactive and responsive surveys quickly by providing various templates, types of questions, and types of answers. Making research for both business and educational purposes can provide benefits to realize the goals of each need. As in businesses that require customer satisfaction opinions in improving the quality of products produced for the future. In meeting this need, of course, tools are needed that can support research needs that are equipped with user-friendly features and analysis tools.

B. Research Method

Development of the online research tools would follow Systems Development Life Cycle (SDLC) using Agile methodoogy and Scrum model. The model considered to be more superior than waterfall model [1] and has been adopted in many domains such as public sector [2], [3] , medicine [4] . A workflow of Scrum model could be illustrated in Figure 1.
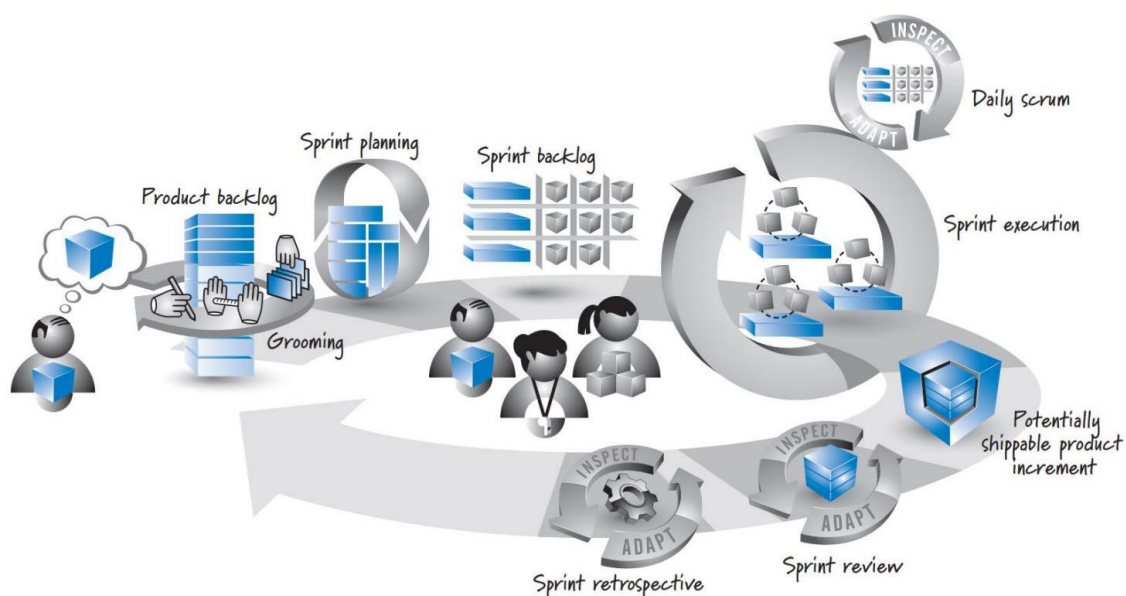
Figure1. Scrum Model

C.   Result and Discussion

The initial stage in application development is user requirements. There are 3 groups of users in this online research application, i.e.: researchers, respondents, and administrators. The user requirements of the 3 groups have been compiled as shown in Table 1.

Table 1. User Requirements

| No	User	Requirement
1	Researcher	1. Registration for users who want to use system facilities. 2. Account verification for users who want to use system facilities 3. Purchase or payment of account types from the user according to the interests and needs of the user. 4. Selection of chart templates and survey categories according to user interests and needs. 5. Advanced analysis according to user needs 6. Input questions from the user 7. Distribution of the survey to respondents. 8. Calculation of the number of respondents who have filled out the survey 9. Download the report results in various formats.
2	Respondent	1. Registration for users who want to use system facilities. 2. Account verification for users who want to use system facilities 3. Account verification for users by admin 4. Obtaining information about the study/survey that can be filled in 5. Fill in the survey/study based on the questions given 6. Giving incentives after filling out the survey 7. Withdrawal of incentive funds received by the user after filling out the survey.
3	Admin	1. Monitoring the use of the website by users 2. Manage user account data for researchers and respondents who use the system 3. Manage transaction data, surveys, users, verification, bank questions, charts, and news 4. Obtaining information about user activities

Feature development is carried out through several sprints where the development team holds weekly scrum meetings to show the progress of the application and get input from users. An example of a survey page of the online research application that has been develope can be seen in Figure 3.

Figure 2. Example of Survey Page

The development team is divided into sections that have different expertise and focus on developing various aspects of the application. Another important aspect of online research application is analytics as shown in Figure 3 and Figure 4 (for administrators).
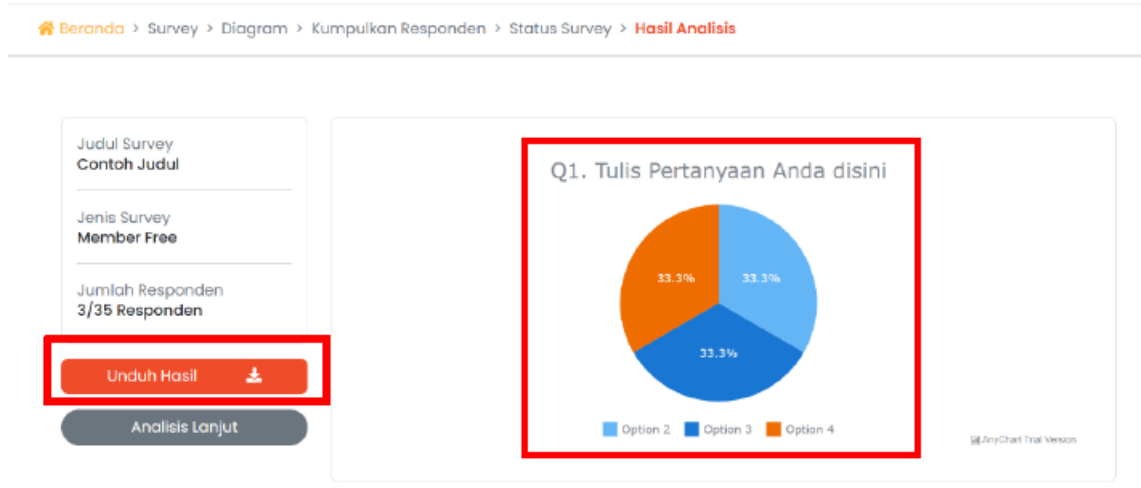
Figure 3. Example of Analytics Survey Page
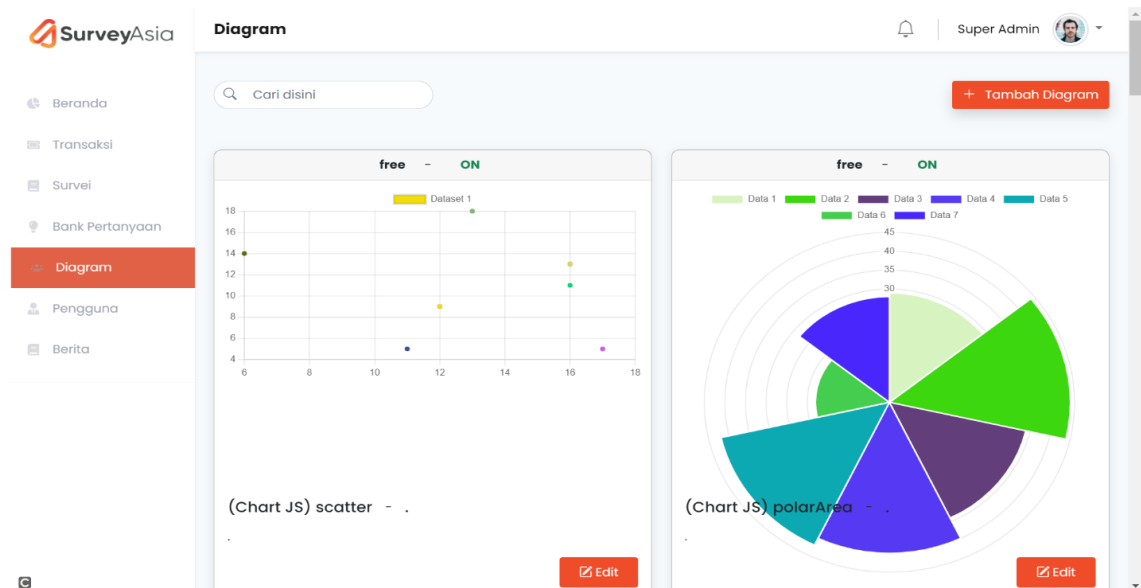
Figure 4. An example of Admin Page: Diagram

Although it has many advantages, Scrum also has some limitations. [5] Scrum has benefits of the speed of the development [6], but there are several challenges encountered during the development of an online research application, including: consistency of logic between developers in a team, relationships between different user modules, shared debugging, among others. The challenges could be overcome through compliance of Scrum best practices and standards [2], [3], [15]–[18], [7]–[14].

D. Conclusion

Development of the online research application take benefit from using Scrum model, eventhough there are some challenges. These challenges could be adressed by comply to Scrum best practices and standards.

E. Acknowledgment

F. References

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