

Implementation of Enterprise Resource Planning (ERP) Customer Relation Management and Sales Management Module on CV. Sinergi Mitra Selaras Using Agile Software Development Methods with Scrum Framework

Rivan Agusta¹, Ravi A. Salim²

^{1,2}Business Information System, Gunadarma University, Jakarta, Indonesia, 10430

Email Address: ¹vangusta31(at)gmail.com, ²ravisalim(at)gmail.com

Abstract— CV. Sinergi Mitra Selaras is a company engaged in website development services. Currently CV. Synergy Mitra Selaras has implemented an information system to handle potential customers through a CRM (Customer Relation Management) System, and also Sales Management to manage sales documents, it's just that it still stands alone between departments, so reports and transactions have not been integrated and cannot be easily consolidated. In implementing Enterprise Resource Planning, using the Agile Software Development method using Scrum Framework, the application of the Agile Software Development method can be carried out in the implementation of Enterprise Resource Planning (ERP) for the CRM Management and Sales Management modules. Using this method has proven to be effective in implementing Enterprise Resource Planning using Odoo Version 14. All stages of the method can be executed properly. Agile is a mindset to be able to act quickly, adaptively and flexibly in a project implementation. Agile prioritizes collaboration over documentation. By using the Scrum Framework, all team members can be involved in every project activity so that team collaboration can occur. Communication occurs between the developer and the Product Owner or Business Analyst every day so that it is enough to reduce the risk of differences in perceptions of requirements.

Keywords— Agile, Scrum, OpenERP, Odoo, Customer Relationship Management (CRM).

I. INTRODUCTION

In industry 4.0, business development is very fast, business actors are required to be responsive and quick in responding to this era. Business competition is fierce, where entrepreneurs must be able to develop their business so that they are not inferior to their competitors. In this era, many entrepreneurs really take advantage of information technology in running their business or industry, but in various companies they still implement information systems that still stand alone in each part. As is known, if a company implements a different information system for each part, it will be difficult to integrate the transactions that occur.

CV. Sinergi Mitra Selaras is a company engaged in website development services. CV Sinergi Mitra Selaras has implemented an information system to handle potential customers through a CRM (Customer Relation Management)

System, and also Sales Management to manage sales documents, it's just that it still stands alone between departments, so reports and transactions have not been integrated and cannot be easily consolidated. This is what drives CVs. Synergy partners align to implement ERP systems in their main business processes, especially in the CRM and Sales departments.

To implement the Enterprise Resource Planning (ERP) system in this study using Opensource ERP. The application used is Odoo Community Edition version 14. Odoo is a business management software, which includes modules such as CRM, e-commerce, billing, accounting, manufacturing, warehouse, project management, and stock management.

There are many methods in the development of the current system, but in the development of this Enterprise Resource Planning (ERP) system, a method that is able to quickly be implemented, so in this writing the Agile method with the Scrum Framework was chosen.

II. LITERATURE REVIEW

A. Odoo

Odoo is a set of business management software, which includes CRM, e-commerce, billing, accounting, manufacturing, warehouse, project management, and stock management, among others.

Odoo provides two versions namely, community and enterprise versions. The Community version is an opensource software or system licensed under the GNU LGPLv3. Where for this version the developer can freely develop the Odoo system. While the Enterprise version has additional features and services where the source code is managed by Odoo S.A from Belgium.

B. Agile

In this study using the Agile Development Method. According to Mahendra (2018) The concept of Agile Software Development was sparked by Kent Beck and 16 colleagues by stating that agile software development is a way of building software by doing it and helping others build it at once.

According to Pressman in Mahendra (2018) Agile software development methods or agile methodology is a set of software development methodologies based on iterative development, where requirements and solutions develop through collaboration between organized teams. While Sommerville in Mahendra (2018) suggests that agile methods are incremental development methods that focus on rapid development, software that is released gradually, reduces process overhead, and produces high-quality code and in the process of development directly engages customers

According to Mahendra (2018) There are several software developments models that include agile software development methods, namely:

- 1) Extreme Programming
- 2) Adaptive Software Development
- 3) Dynamic Systems Development Method
- 4) Model Scrum
- 5) Agile Modeling

Furthermore, Haryana (2019), stated that Agile software development or often referred to as "agile" is a collection of software development methods based on Iterative and Incremental Models. Agile allows developing software that has rapidly changing requirements.

According to Hohl in Hikmah (2021) The Principles of Agile Development Methods which became known as Agile Manifesto. "The Agile Manifesto" consists of 12 main principles namely:

- 1) Emphasizing on satisfaction from clients by making it a top priority in producing products early and sustainably
- 2) Accept any form of change during the software development process even though it is in the final stages of development
- 3) Products in the form of software made with a small period of time (2 weeks – 2 months), with tested quality
- 4) There is a good cooperation process between the developer and the businessman during the project
- 5) Build an environment of highly motivated people. In order to complete the project effectively and efficiently
- 6) Direct communication is needed in the process of developing a software, Software that works well and perfectly is a measure of the progress of the project
- 7) Agile methods can develop software on an ongoing basis from the support of each party such as sponsors, users and developers themselves
- 8) Technical excellence is a priority in software development using the Agile method
- 9) Simplicity here is very important for Agile itself in maximizing an existing resource
- 10) All needs in terms of architecture and software needs are highly dependent on the management of each development team
- 11) Periodically, each development team conducts self-evaluations (reflections) to work more effectively and organize their work patterns, and simplicity is the most important thing in Agile Development
- 12) Maximize existing resources

Haryana (2019) stated that Agile has advantages and disadvantages, namely:

Excess

- 1) Iterative and Incremental Processes
- 2) Requirements are subject to change at any time
- 3) Tracking requirements by looking at the Product Backlog
- 4) Active user engagement
- 5) Faster and periodic releases, functions are released at the end of each iteration
- 6) Testing is carried out at all times.

Deficiency

- 1) Interactions with clients that are sometimes too excessive
- 2) Agile is difficult to implement in large-scale projects
- 3) Short project planning time
- 4) Requires trained team management.

C. Scrum

Scrum is a method of developing software quickly (agile). The scrum principle is in accordance with the principles contained in the rapid device development method used to guide software development activities, such as meeting needs, analyzing, designing, and delivering (Pressman in Mahendra, 2018).

According to Schwaber in Azdy & Azhary (2012) explains the properties that Scrum has, namely:

- 1) Simple
- 2) Easy to understand
- 3) It is difficult to master

According to Azdy & Azhary (2012) The Scrum Alliance defines the components contained in the Scrum as follows:

- 1) Role
 - a. Product owner: responsible for the business value of a product.
 - b. Scrum Master: ensures a team that can work functionally and productively.
 - c. Team: self-organized to complete the work.
- 2) Event
 - a. Sprint planning: the team meets with the Product owner to select the work to be completed during the Sprint.
 - b. Daily Scrum: the team meets every day to share progress.
 - c. Sprint review: the team demonstrates what has been completed during the Sprint to the Product owner.
 - d. Retrospective sprint: the team is looking for ways to improve products and processes.
- 3) Artifact
 - a. Product backlog: a priority list of the desired project.
 - b. Sprint backlog: a collection of work approved by the team to complete in one Sprint, broken down into multiple tasks.
 - c. Burndown chart: a glimpse of the remaining work.

D. CRM Management

In her research Dyantina, Afrina, & Ibrahim (2012) states that CRM is a marketing strategy to create and maintain good relationships with customers and reduce the likelihood of customers moving to other competitors.

Meanwhile, according to Ariga, Supaidi, Aslamiah & Ibrahim (2018) Customer Relationship Management (CRM)

provides convenience for companies in getting detailed information about customers and applies vice versa to customers who can get information more quickly precisely and accurately.

III. METHODOLOGY

This research using the Agile Approach is a model of software development in the short term. Then, it requires rapid adaptation in overcoming any changes. The most important value of Agile development is that it allows a team to make decisions quickly, good quality and predictions, and has good potential in handling any changes.

A. Data Collection Techniques

The data collection technique used in this study was a review of documents and interviews related to CV. Synergy Partners aligned

B. Document Review

This technique is a data collection technique by reviewing documents related to the research focus. The documents that will be used in this study are documents owned by CV. Synergy Partners Aligned such as; Customer data, system user data, potential customer data, and product data. The purpose of studying this document is to find a theory that can be used as a theoretical basis for the researcher to be carried out, to find a methodology that is in accordance with the research and to compare the facts in the field with the theory used.

C. Interviews

Interview is a direct conversation process consisting of two steps, namely: The interviewer or researcher who asks questions to other people interviewed or in qualitative research is called a Key Informant.

D. Research Procedure

The research procedure is carried out in accordance with the stages of the scrum framework, namely Sprint Planning, Daily Scrum, Sprint Review, Sprint Retrospective

1) Sprint Planning

This sprint planning is carried out a maximum of 8 hours for a sprint length of 1 month. So if 1 sprint is done within 2 weeks, then for sprint planning this is done for 4 hours. In sprint planning, it is discussed about what can be done in 1 sprint, determine the sprint goal, determine the selected product backlog.

2) Daily Scrum

According to Rezanía & Azhari, (2012) Daily Scrum is a meeting that is limited to only 15 minutes which is held every day for the development team to synchronize all activities and plans that will be carried out for the next 24 hours.

3) Sprint Review dan Sprint Retrospective

Sprint review is a meeting that discusses what has been done during the Sprint. The retrospective sprint is done after the review sprint and is used for self-inspection and discusses what will be done in the next Sprint (Schwaber, et al, in Rezanía & Azhari, 2012).

IV. RESULT

In this study using Agile with Scrum Framework,

A. Software Implementation

For this Enterprise Resource Planning Application Implementation, the application used is

- 1) Operating System: Ubuntu Version 20.04
- 2) Database: PostgreSQL 10.0
- 3) Odoos Verses 14
- 4) Programming: Python
- 5) Web Server: Nginx

B. Hardware Implementation

The hardware used to support this ERP system is

- 1) Processor: 2 CPUs
- 2) RAM: 4 GB
- 3) SSD: 64 GB

C. Stages of System Development

The author organizes the progress of this ERP application development plan using an agile method using the Scrum Framework.

1) Creating the Product Backlog

The product owner determines the priority that indicates the urgency of the application to be developed, while the size is determined by the development team to estimate how much change is needed, and the sprint caption indicates that the story will be worked on in the sprint order.

TABLE 1. Product Backlog

No	Description	Priority	Sprint
1	As a Sales User and Sales Manager, I want to be able to view monthly reports related to the Sales Pipeline	Medium	2
2	As a Sales User and Sales Manager, I am an invoice status	High	2
3	As a Sales User and Sales Manager, I want to be able to integrate CRM with sales management	High	2
4	As a Sales User and Sales Manager, I want to manage potential customers and customer data	High	1
5	As a Sales User and Sales Manager, I want to see sales data	High	2
6	As a Sales User and Sales Manager, I See the activity of the canvassing process and the development of canvassing	High	1
7	As a User Sales and Sales Manager, I want to be able to communicate with potential customers and customers	High	1
8	As a Sales User and Sales Manager, I want to be able to view monthly reports related to the Sales Pipeline	Medium	1

2) Determining the Length of the Sprint

In this implementation process, the author requires as many as 2 sprints with the length of one sprint is 2 weeks. In each of these sprints, application development is carried out in accordance with the product backlog / user stories

Implementation using this scrum framework has concise stages, namely sprint planning, Daily Scrum, Sprint Review and Sprint Retrospective, then repeating the same process and time limit with different user stories. Furthermore, functional testing of the application will be carried out whether it is in

accordance with what is expected.

3) *Sprint 1*

a) *Sprint Planning*

In sprint 1, the implementation of the Customer Relationship Management module was carried out. The length of this sprint is carried out for 2 weeks, then sprint planning is carried out for a maximum of 4 hours. In this sprint planning, the task list and weight of each task are determined.

TABLE 2. Task list Sprint 1

No	Task List	Weight
	<i>Sprint 1 (1 December 2021 - 14 December 2021)</i>	
		68
1	As a Sales User and Sales Manager, I want to manage potential customers and customer data	
	Install Customer Module	3
	Customer module configuration	10
	Input Dummy Data	12
2	As a Sales User and Sales Manager, I would like to see the activities of the canvassing process and the development of canvassing	
	Install Modul CRM	3
	CRM Module Configuration	12
	Canvassing State Creation	15
3	As a User Sales and Sales Manager, I want to be able to communicate with potential customers and customers	
	Install Module Live Chat	3
4	As a Sales User and Sales Manager, I want to be able to view monthly reports related to the Sales Pipeline	
	Reporting configuration	10

b) *Daily Scrum*

Daily Scrum is used to monitor the progress of application development on a sprint, the detail of the task list that has been successfully worked on will be reduced, ideally the trend of the graph will decrease until the end of the sprint.

At this stage, it will be discussed regularly during the sprint, the time required is a maximum of 15 minutes.

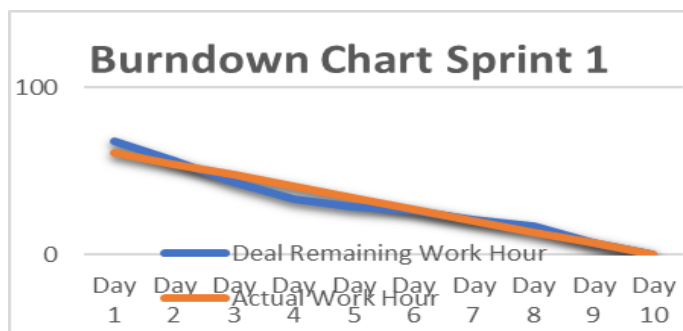


Fig. 1. Burndown Chart Sprint 1

c) *Application Testing*

Application testing is done by testing each function of the application whether it is running properly or not

d) *Sprint Review dan Retrospective*

In sprint 1, the implementation of the CRM module was carried out. The first thing to do is to install the CRM module, at this stage the team did not find any significant obstacles, but there was a slight bug due to the lack of libraries installed on the server.

Furthermore, the configuration is carried out so that the settings in the system are in accordance with the company's

requirements After that, testing is carried out, in this test all features are tested in terms of functionality. There are no failures on this sprint implementation.

TABLE 3. Script Testing Sprint 1

No	Scenario	What to Expect	Fail /Pass
1	User input customer data	Customer data is registered in the system	Pass
2	User edits customer data	Changes in customer data	Pass
3	entering customer data into a stage pipeline	customer data enters the stage pipeline	Pass
4	Shifting potential customer data from one stage to another	Opportunity data moves status from one status to another	Pass
5	Meeting schedule settings with customers	scheduled meetings in the system per customer	Pass
6	Communication with the platform	Users can communicate via email with Customers	Pass
7	move to WON status	Data Opportunity becomes WON, and becomes customer	Pass
8	Create a Sales Order in customer data based on WON	Issue Sales Order	Pass
9	View Monthly Reports	Monthly Reports	Pass

4) *Sprint 2*

a) *Sprint Planning*

This print is carried out by implementing the Sales Management module. The length of this sprint 1 is 2 weeks, so this sprint planning is carried out in just 4 hours.

TABLE 4. Task List Sprint 2

No	Task List	Weight
	<i>Sprint 2 (15 December 2021 - 28 December 2021)</i>	
		43
1	As a Sales User and Sales Manager, I want to see sales data	
	Install Sales Module	3
	Sales module configuration	10
2	As a Sales User and Sales Manager, I am an invoice status	
	Install invoice module	3
	Configure the Sales Module	15
3	As a Sales User and Sales Manager, I want to be able to integrate CRM with sales management	
	CRM and Sales module configuration	12
4	As a Sales User and Sales Manager, I want to be able to view monthly reports related to the Sales Pipeline	
	Reporting configuration	10

b) *Daily Scrum*

In this sprint, a meeting was held during the sprint period to discuss the development of each task in this sprint. To monitor the progress of the sprint can be seen in the following burndown chart.

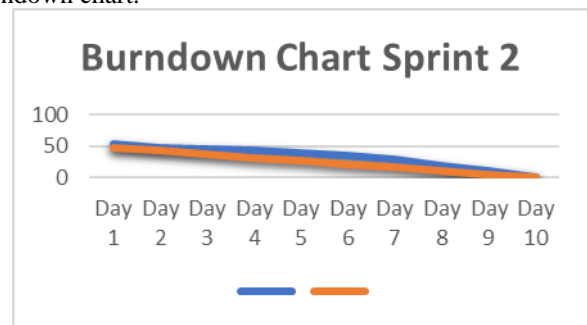


Fig. 2. Burndown Chart Sprint 2

c) Application Testing

After the implementation of the Sales Management module in sprint 2, then the application testing was carried out using the black box method.

TABLE 5. Script Testing Sprint 2

No	Scenario	What to Expect	Fail / Pass
1	User menginputkan Data Sales Order	Data Sales Order	Pass
2	User edits Sales Order data	Changes to Sales Order Data	Pass
3	View Sales Order Data formed from crm module	Sales Order data formed from CRM published	Pass
4	Editing Sales Order Data formed from crm module	Changes to Sales Order Data	Pass
5	Issuing Invoices to Customers	Invoice	Pass
6	Monitoring Sales Order Status	Sales Order Status	Pass
7	View Monthly Sales Reports	Monthly Sales Report	Pass

d) Sprint Review dan Retrospective

In this sprint, the implementation of the Sales Management module is carried out, where in this module users can see and manage their sales. This module is also integrated with CRM, so when this CRM module has reached win status, the sales order is immediately made.

All the features went well, the integration from CRM to Sales and vice versa also went well. Users can also view monthly reports related to sales.

D. Implementation of the Interface

From the results of the implementation using the Scrum Framework. The following is what the Enterprise Resource Planning (ERP) application of the CRM Management and Sales Management modules uses Odoo version 14

1) Login Page

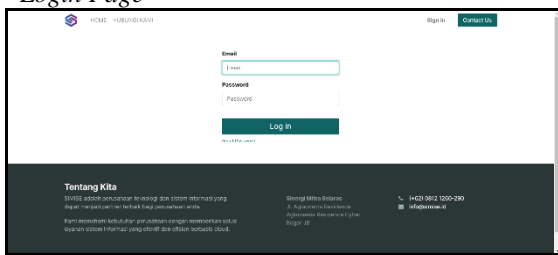


Fig. 3. Odoo Login Page

2) Start Menu

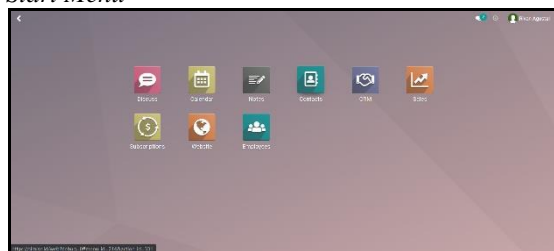


Fig. 4. Odoo Menu Page

3) CRM Management

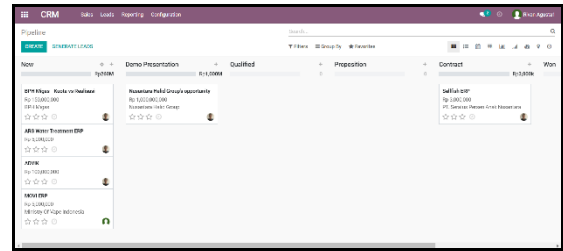


Fig. 5. CRM Dashboard Page

4) Sales Management

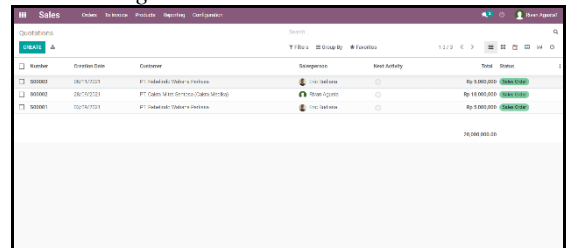


Fig. 6. Sales Dashboard Page

V. CONCLUSION & RECOMMENDATION

Based on the results of this study, the Agile Software Development method can be used to implement this Enterprise Resource Planning system well.

Agile is a mindset to be able to act quickly, adaptively and flexibly in a project implementation. Because agile prioritizes collaboration over documentation

By using the Scrum Framework, all team members can be involved in every project activity so that team collaboration can occur. Communication occurs between the developer and the Product Owner or Business Analyst every day so that it is enough to reduce the risk of differences in perceptions of requirements. By conducting daily scrums and reviews on each sprint, changes in scope can be anticipated more and better know the real needs of the client.

The success of this research can be seen from the burndown of the daily scrum chart, where at the end of each sprint all tasks can be completed on time. Although in the midst of sprinting there are some obstacles, but with the collaboration of each team that is carried out every day on the daily scrum all obstacles can be overcome.

The Enterprise Resource Planning (ERP) Modules of CRM Management and Sales Management can be used well in cv. Synergi Mitra Selaras. The process of integrating customer and sales documents can run well so that it can be easily monitored by the company. So that users can easily make company strategy decisions

REFERENCES

[1] Ariga, AR., Supaidi, A., Aslamiah, I., Ibrahim, A. (2018). Implementation of Customer Relationship Management (CRM) Customer Service (Corporate) Bges Division at PT Telkom Witel Sumsel. Indonesian Journal of Science Management Research (JRMSI), e-ISSN: 2301-8313, Vol 9, No. 1.

[2] Azdy, RA., Azhar SN. (2012). Scrum Implementation in Distributed Software Development. National Seminar on Informatics 2012, ISSN: 1979-2328.

[3] Dyantina, O., Afrina, M., Ibrahim, A. (2012). Application of Web-Based Customer Relationship Management (CRM) (Case Study on Marketing



- Information System at YEN-YEN Store). *Journal of Information Systems (JSI)*, p-ISSN: 2085-1588, e-ISSN: 2355-4614, pages 516-529.
- [4] Haryana, KMS. (2019). Application of Agile Development Methods With Scrum Framework in The Design of Qr-Code-Based General Meeting Attendance Software. *Computech Journal & Business*, Vol. 13, No. 2, p-ISSN: 1978-9629, e-ISSN: 2442-4943, Pages 70-79.
- [5] Hikmah, N., Suradika, A., Gunadi, RAA. (2021). Agile Methods to Increase Teacher Creativity Through Knowledge Sharing. *Instructional Journal*, Volume 3, Number1. Pages 30-39.
- [6] Mahendra, I., Yanto, DTE. (2018). Agile Development Methods in the Development of Web-Based Credit Application Information Systems (Case Study: Bank Bri Unit Colonel Sugiono). *Journal Of Technology and Open Source*, Vol. 1 No. 2, Pages 13-24.