

The Customization of an Oracle-Based Enterprise Resource Planning System in Pharmaceutical Distribution Company

Richard, Via Pricella

Abstract Enterprise Resource Planning (ERP) systems implementation in a company should adapt to the complexity of user requirements. This research capture the customization process of Oracle-based ERP system in a pharmaceutical distribution company. The design method used in this research is Object-Oriented Analysis and Design (OOAD), which starts by gathering requirements from the company, then doing the design phase by using the UML diagram. Analysis of the ongoing system used as references for adjusting user requirements, and then made the design of the order management system that can help the company in recording and storing sales order transactions, recording and storing receipts. The company is expected to make sales transactions without relying on different applications by using this design, which makes the user more comfortable to do decision making when dealing with the customer and make transactions easier.

Keywords: ERP, UML Diagram, Order Management, Object-Oriented Analysis and Design (OOAD).

I. INTRODUCTION

In this technology era, many companies rely on technology to run their businesses, both small and large companies. Advancement in IT offers many products that provide many impacts for companies, such as increased productivity, present data quickly, save cost, save time, and easy to use, increase internal communication so that it can produce reports that can be used for companies to see how their business grown, and for forecasting.

One way to obtain the benefits mention above is to implement Enterprise Resource Planning. Enterprise Resource Planning is an application-based business management system that integrates all business aspects, such as planning, manufacturing, sales, and marketing. Another meaning of ERP is a system that integrates many applications for sharing data across companies to reduce excessive business processes [1]. ERP can also help companies gain benefits when doing business, such as reduce operational costs, reduce administrative costs, increase the success rate in delivering products, and on-time [2].

Revised Manuscript Received on March 10, 2020.

* Correspondence Author

Richard*, Department of Information Systems, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia.
E-mail: richard-slc@binus.edu

Via Pricella, Department of Information Systems, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia.

E-mail: via.pricella@binus.ac.id

If companies want the benefit mentioned above, then companies need to analyze how much time it takes to implement ERP and how much cost the companies will need to spend. Therefore, companies need to analyze to know whether ERP will benefit the companies or not [3]. However, many companies failed implementing ERP, few factors that affect the failure of implementing ERP, such as inexperienced IT staffs that makes problem occurred in deployment process, no specialized training for project members, user challenging to adapt to new system, not enough preparation and analysis that is needed [4][5].

Responding to the problems mentioned above, one of Consultant Company in Indonesia that engaged in consultant fields as a system integrator focusing on Oracle has ERP products that can be used by the company to integrate all of their business processes.

The case study was taken from a pharmaceutical distribution company based in Indonesia. The company has problems with their old system, which have been used for 15 years because the system took so long to load data, the company business process is changing that makes them need to migrate to a new system. Also, the company wants features that make it easier to make a decision and remove the dependency on other applications.

From the problems mentioned, the company decided to use Oracle ERP package customization. Package customization means modify one or more components, such as module, database, reports, user interface. Customization in ERP needs to be done so the company can get an ERP system that can adapt to their business process and particular function of the company to company standards, without having to follow the standard business process provided by the ERP module [6] [7].

The company uses Oracle ERP because Oracle ERP is more customizable to fit company needs. After all, the company needs many validations in their business process. One of the products of Oracle ERP that will be used by the company is Oracle e-Business Suite.

Oracle e-Business Suite is an Oracle application based on a website. Each module has licensed, so the company can easily choose what modules are needed for business processes to run well. One or two modules the company use are Order Management and Account Receivables modules.

The design for Order Management and Account Receivables modules will use the Object-Oriented Analysis and Design (OOAD) method using the Unified Modeling Language (UML). OOAD method used because it will focus on object research, and the system to be created will describe the object in general [8].

The purpose of this is to design a system that fits requirements from the user and to configure their Oracle e-Business Suite application so that it fits their business process.

II. METHODOLOGY

A. Data Collection Methodology

1. Literature Review

This data collection method used for gathering information and knowledge from books, journals, thesis, internet, and other resources related to this case as a theoretical foundation to support this research.

2. Observation

This data collection method carried out by participating in the project and gather data through direct observation.

B. Design Method

The design method that is used is Object-Oriented Analysis and Design (OOAD), which is used to analyze business processes related to the ordering process to recording sales revenue from sales in order to design a system that fits with user's need with Unified Modeling Language. The diagram used in this paper are:

- Activity Diagram
- Domain Model Class Diagram
- System Sequence Diagram

User Interface will also be shown but focus only on UI that shows the solution.

III. RESULT AND DISCUSSION

Based on the problem mentioned above, the consultant company got solutions that will help solve the company's problems, such as making a new feature that will remove dependencies on other applications and new features for their needs to make the decision.

A. Activity Diagram

Before discussing the user interface, we need to know as to how the new business processes go. Business processes are shown in Figure 1 using the Activity Diagram. Activity Diagram is a diagram that illustrates a sequential flow of various activities that usually show business processes. Activity Diagram shown in Figure 1 illustrates all activities that will need to be done in order for Order Management and Account Receivables module to work.

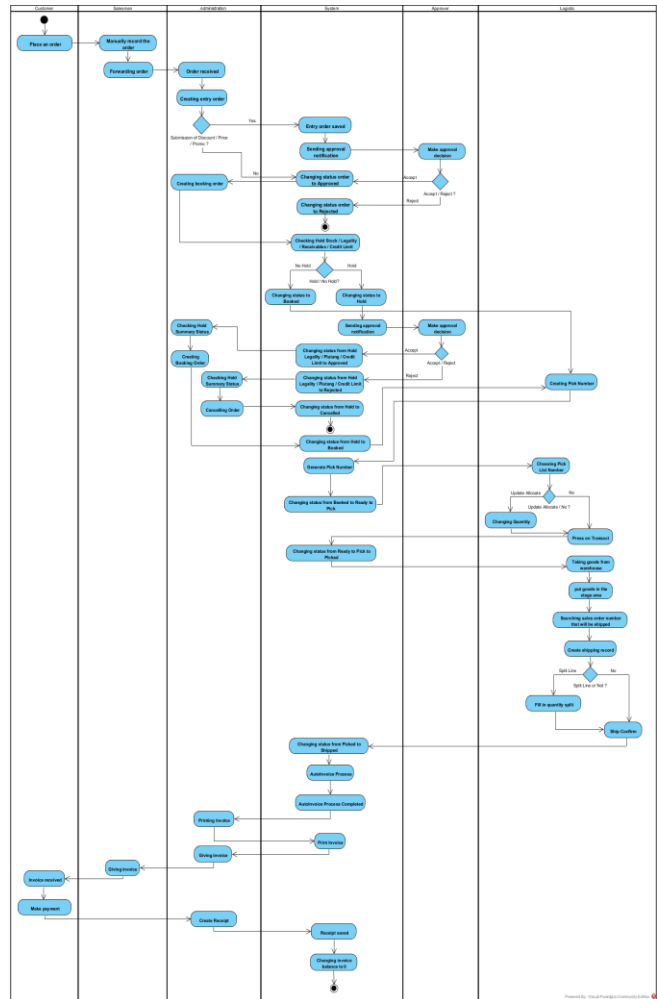


Figure 1: Activity Diagram Sales Order Transaction from Order Management until Account Receivables.

This activity diagram shows the role of each actor in the sales transaction. First, the customer needs to place an order to execute sales transactions, and then the salesperson will manually record the order and forward the order to be processed by Administration. Then, Administration creates entry order with or without submission, if entry order with submission, that entry order needs to be approved by Approver. After that, Administration creates a booking order to reserve the available stock, and there will be a stock/legality/receivables/credit limit checking if status changed to hold, then there will be another approval that needs to be approved by Approver. After order status changed to Booked, Logistic staff needs to create the “pick number” by clicking “generate pick numbers”. After the number generated, Logistic chooses which the number wants to be transacted and another logistic staff that will take the goods from the warehouse to put in the stage area. After that, logistic staff create a shipping record and click the “ship confirm button” to confirm the goods shipped.

After order status changed to shipped, the system auto-generate invoice using the “AutoInvoice” program and make automatic invoice reports to be printed and send to customers. If customer pay, Administration needs to create Receipt to record that customer already paid the order.

B. Domain Model Class Diagram

Domain Model Class Diagram will represent the structure of the system that will be made and the show relationship for each class shown. The domain model class diagram is shown in Figure 2.

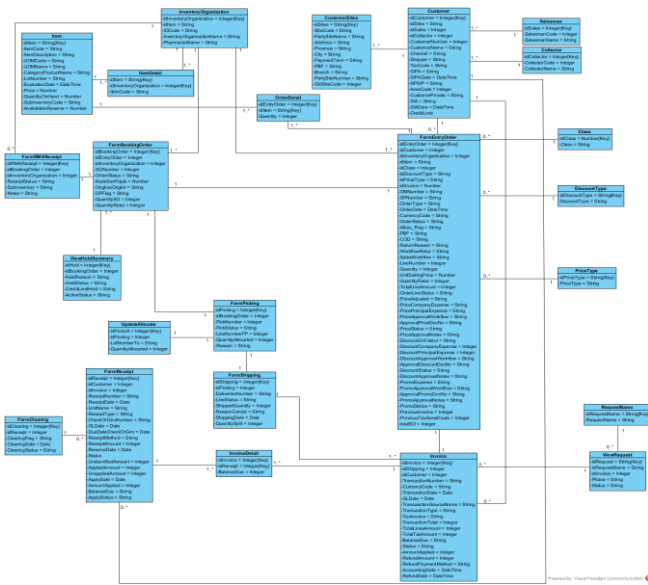


Figure 2: Domain Model Class Diagram

Following are the relation between class and sales order activity:

Table-I: The classes for each activity in the sales transaction

Entry Order	Booking Order	Picking	Shipping	Receipt
FormEntry Order	FormBookingOrder	FormPicking	FormShipping	FormReceipt
Class	FormEntryOrder	FormBookingOrder	FormPicking	InvoiceDetail
DiscountType	FormRMARceipt	FormShipping	Invoice	Invoice
PriceType	ViewHoldSummary	UpdateAllocate		FormClearing
Customer	FormPicking			
OrderDetail				
Item				
InventoryOrganization				
FormBookingOrder				
Invoice				

C. User Interface and System Sequence Diagram

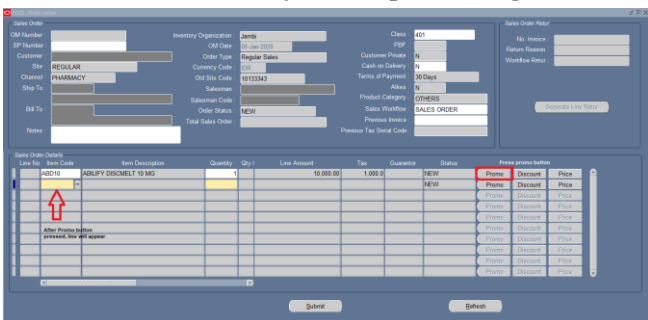


Figure 3: User Interface Form Entry Order with Promo Submission

For the user interface shown above, the system sequence diagram will show what the actor does and what the system reply.

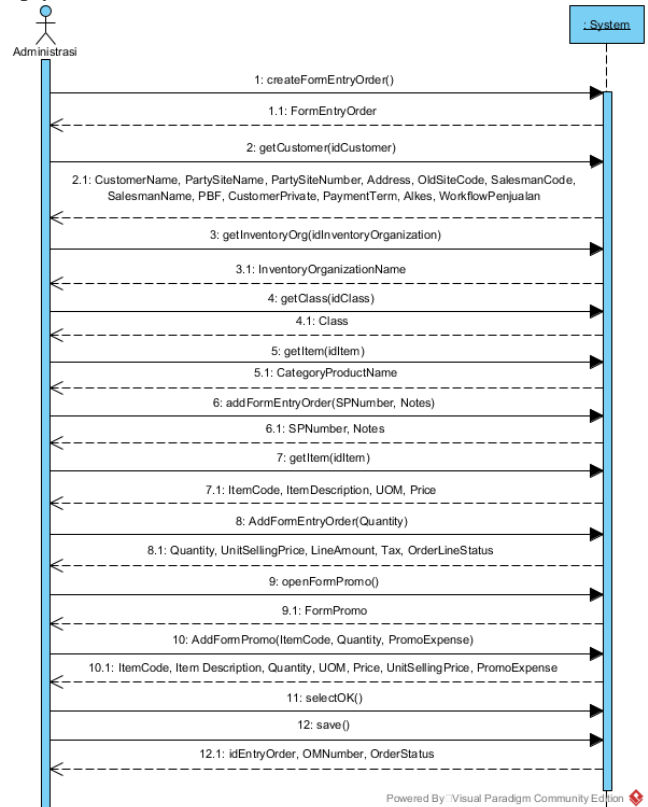


Figure 4: System Sequence Diagram Create Entry Order with Promo submission

The Administrator needs to open the form entry order first, and then Administrator chooses the customer, inventory organization, class, product category first in order to choose the item. After that, the administrator chooses the item that the customer ordered and then input the quantity. If promo has given to the customer, then Administrator needs to open form promo by clicking the “Promo” button shown in Figure 3, choose item promo, and fill in quantity. After that, the Administrator can submit the entry order and wait for the approval.

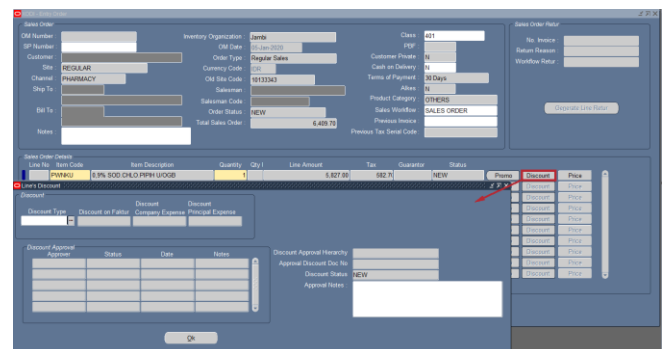


Figure 5: User Interface Form Entry Order with Discount Submission

For the user interface shown above, the system sequence diagram will show what the actor does and what the system reply.

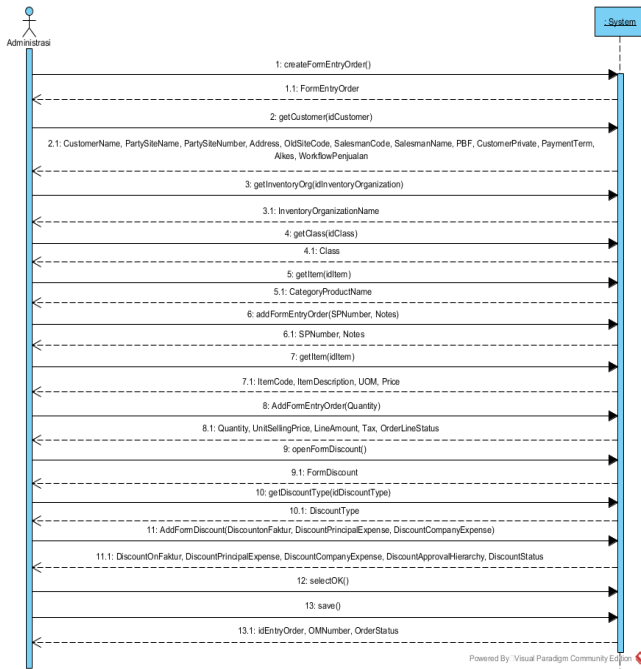


Figure 6: System Sequence Diagram Create Entry Order with Discount submission

The Administrator needs to open the form entry order first, and then Administrator chooses the customer, inventory organization, class, product category first in order to choose the item. After that, the administrator chooses the item that the customer ordered and then input the quantity. If the discount is given to the customer, then Administrator needs to open “form discount” by clicking the “Discount button” shown in Figure 5. After that, the administrator can choose the discount type and fill in discount that the customer gets, “principal discount expense”, “company discount expense”. The administrator can submit the entry order and wait for the approval.

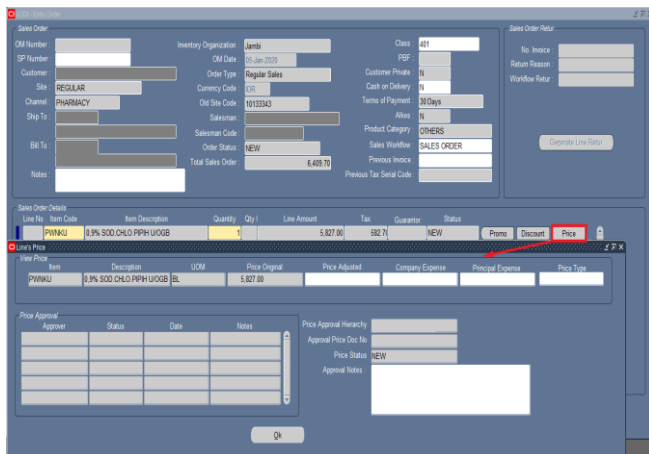


Figure 7: User Interface Form Entry Order with Price Submission

For the user interface shown above, the system sequence diagram will show what the actor does and what the system reply.

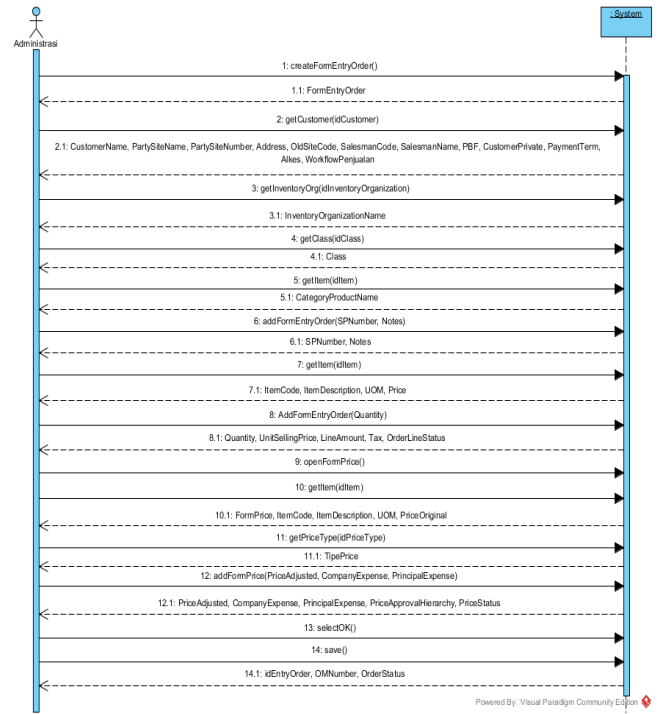


Figure 8: System Sequence Diagram Create Entry Order with Price submission

The Administrator needs to open the form entry order first, and then Administrator chooses the customer, inventory organization, class, product category first in order to choose the item. After that, the administrator chooses the item that the customer ordered, and then input the quantity. If the price adjustment was given to the customer, then Administrator needs to open form price by clicking the “Price button” shown in Figure 7, then the system will display another form. After that, the Administrator can choose price type and fill in price adjusted that the customer gets, “principal expense”, “company expense”. The administrator can submit the entry order and wait for the approval.

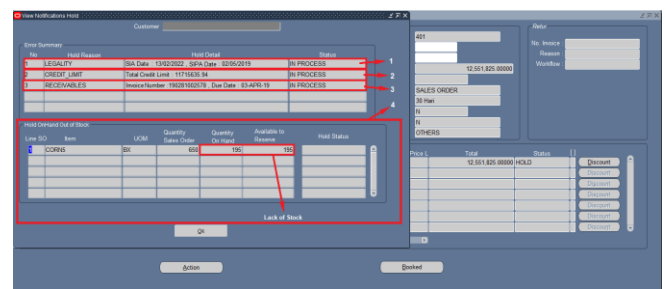


Figure 9: User Interface Form Booking Order View Hold Summary

Figure 3,5,7 shows the user interface for Form Entry Order on three different cases, these new features they did not have in their old system help them remove the dependency on the other application if they need to submit. Because in their old system, the company needs to open Lotus Notes to submit a transaction and to approve the submission.

Figure 10 shows the user interface of the “Booking order view hold summary”. This view holds a summary used to decide if the company is going to sell goods to them or not,

depending on what is holding the order. The following cases are what the company considered:

1. Legality: if legality appears in view hold summary, that means their license to do business related to pharmaceutical is expired.
2. Credit Limit: if credit limit appears in view hold summary, that means customer's purchase order exceeds their credit limit.
3. Receivables: if receivables appear in view hold summary, that means the customer not yet pay the company, and the invoice has passed its due date to pay.
4. Stock: if Quantity on Hand is less than Quantity Sales Order, that means the company will not have the stock to meet customer's demand.

If the "booking order" shows "status order" as Hold, then the administrator needs to open the "view hold summary" by clicking the "Action button" and choose "View hold summary". The sequence is shown in Figure 10.

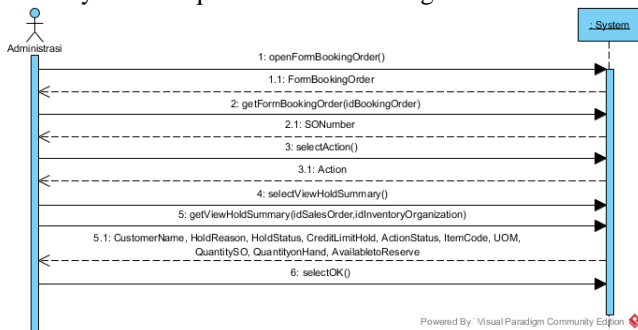


Figure 10: System Sequence Diagram View Hold Summary

IV. CONCLUSION AND SUGGESTION

A. CONCLUSION

Based on the analysis and design of Oracle e-Business Suite customization on order management and account receivables modules conducted for the company, it can be concluded as follows:

- The data load problem in the old system can be solved by using Oracle e-Business Suite because Oracle e-Business Suite can show the data less than one minute, while the old system needs more than three minutes to show the data.
- Dependency on other application problems when there is discount/price/promo submission can be solved by adding a new feature that makes users can create entry orders with discount/price/promo submission, so, the company does not need to depend and use Lotus Notes anymore.
- Legality, receivables, and credit limit problems not displayed in the old system can be solved by adding a new feature called "View Hold Summary" that is used to view orders that are affected by hold status. For the legality problem, the system will display "SIA" and "SIPA" numbers related to customers with the expiration date. Related to the receivables issue, the system will show the invoice numbers that are not yet paid and past the due date. Last, related to the credit limit issue, the system will show the remaining credit limit of that customer. With this feature, the company can make a

precise decision when doing a transaction with the customer.

B. SUGGESTION

The company can consider the following suggestion if they want to make their system better:

- Make a mobile application that can be used by Salesman for creating entry order, entry order with submission, see stock on hand, see remaining customer credit limit to facilitate sales transaction and make decision, show customer that have invoice past its due date, can record customer payment with mobile application, and also create feature that can make salesman fill in a new due date from invoices that were not paid yet by customer.
- Create a feature such as a list of receivables billing in Oracle e-Business Suite that can display invoices according to due date divided by salesperson, which is integrated with a mobile application so that salesperson can bill customers.

REFERENCES

1. M. Y. M. Al-sabaawi, "Critical Success Factors for Enterprise Resource Planning Implementation Success," vol. 8, no. 4, pp. 496-506, 2015.
2. E. Njihia, "The Effects of Enterprise Resource Planning Systems on Firm's Performance: A Survey of Commercial Banks in Kenya," vol. 3, no. 8, pp. 120-129, 2014.
3. Nishad Nawaz and Channakeshavalu, "The impact of enterprise resource planning (ERP) systems implementation on business performance," *Asia Pacific J. Res.*, vol. 2, no. 4, pp. 1-18, 2013.
4. A. Tarhini, H. Ammar, T. Tarhini, and R. Masa'deh, "Analysis of the Critical Success Factors for Enterprise Resource Planning Implementation from Stakeholders' Perspective: A Systematic Review," *Int. Bus. Res.*, vol. 8, no. 4, pp. 25-40, 2015.
5. A. Wong, P. Y. K. Chau, H. Scarbrough, and R. Davison, "Critical failure factors in ERP implementation," *9th Pacific Asia Conf. Inf. Syst. I.T. Value Creat. PACIS 2005*, no. May 2014, 2005.
6. S. Parthasarathy and S. Sharma, "Efficiency analysis of ERP packages - A customization perspective," *Comput. Ind.*, vol. 82, pp. 19-27, 2016.
7. D. K. Vishwakarma and K. J. Satao, "Customization of Materials Management Module of SAP ERP for Power Industries of C. G., India," vol. 4, no. 7, pp. 192-197, 2015.
8. D. S. Soegoto and F. Subakti, "Design and Development of Online Retail System," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 407, no. 1, 2018.

AUTHORS PROFILE



Richard, Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia. He acquired Master degree in the area of "Applied Finance" from Binus Business School, Jakarta in 2015. He obtained his Bachelor Degree from Bina Nusantara University, Jakarta in 2013. Currently, He is a Ph.D Student in Bina Nusantara University Graduate Program in Computer Science. He has 7 years of experience in teaching for Information System subject.



Via Pricella, Information Systems Department, School of Information Systems, Bina Nusantara University, Jakarta, Indonesia. She is currently taking her Bachelor degree in Bina Nusantara University in the area of "Applied ERP - Information Systems". Her speciality is SAP functional analysis and configuration.