

Rule Based System in E-Commerce Dolanan Bocah Pinter

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Abstract—The development of information technology during the industrial revolution 4.0, the existence of the internet is very much needed by the community. The sales and purchasing process is no exception. SMEs Dolanan Bocah Pinter is SMEs making educational toys for kindergarten children. Various types of educational toys have been produced. The selling and buying process currently running is face-to-face between the seller and the buyer. For the promotional media for SMEs Bocah Pinter, they still use the conventional method, namely by distributing brochures and catalogs to kindergarten schools. This is an obstacle to the development of SMEs Bocah Pinter. Because buyers are only from local residents. With these problems, E-commerce was designed by implementing a Rule Based system. For the system development method using the RAD method. SWOT analysis is used to analyze business processes and PIECES analysis for weakness analysis of the running system compared to the system to be developed. E-commerce design is expected to help SMEs Bocah Pinter in developing its business, it is hoped that buyers will not only come from the surrounding community but from various regions.

Keywords—SMEs, E-commerce, RAD, PIECES, SWOT.

I. INTRODUCTION

Toys are a necessity for children. With children's toys it becomes easier to learn. Because children prefer to learn by playing rather than learning formally. Choosing a useful toy is very influential on a child's mental and emotional development. The right toys will make it easier for children to learn. SMEs Dolanan Bocah Pinter is engaged in producing educational children's toys. By utilizing wood waste from furniture production, various educational toy media have been made, for example train arrangements with alphabets, towers with letters, puzzles, and many other educational toy models. The selling and buying process currently running is still using the conventional method, where the buyer and seller must meet in person [1]. For media promotion currently running is distributing brochures, sending catalogs to kindergarten schools and selling in stores. This creates an obstacle in developing the buying and selling process. At this time the development of internet media and information technology is growing so rapidly. Almost all people are connected to the internet and people who are internet literate. So that in the research conducted, the researcher made an E-Commerce design that implemented a Rule based system. The E-Commerce design is expected to be able to help SMEs Dolanan Bocah be smart in developing their business, disseminating the resulting educational toy products [2]. It is hoped that buyers will not only come from the surrounding community, but can be scattered in various regions. The application of the Rule based system is to make it easier for customers to access E-commerce, because there will be filter

menus based on prices, based on types of goods and based on goods models. In addition to implementing a rule based system, this E-Commerce design also uses SWOT analysis in business process analysis and PIECES analysis for weakness analysis of the running system compared to the system being developed. For the development method is to use the RAD (Rapid Application Development) method. The RAD method was chosen because the stages are short so it doesn't take too much time in making this E-commerce design.

II. METHOD

Method of collecting data

a. Questionnaire

A questionnaire is a data collection technique that is done by submitting written questions to respondents. The questionnaire was addressed to the owner of the SMEs Dolanan Bocah Pinter. The purpose of taking the questionnaire was to determine the application concept desired by the user.

b. Documentation

Documentation is a data collection technique by studying the existing documents written objects such as books, minutes, diaries, regulations and so. The documents required are sales books, brochures and media Another promotion used by SMEs Dolanan Bocah Pinter.

c. Study of literature

Literature study is looking for theoretical references that are relevant to the research being carried out. The literature needed is related to the development of e-commerce.

Expert System Components

As a system that always has a number of components that must be interacted for achieve goals, the main component that must exist in an Expert System are [3]:

- Knowledge Base
- Inference Engine
- Explanation Subsystem
- User-Interface

Rules are written in IF - THEN structure and numbered rules to distinguish one rule from another. The rules will be written to a text file using the PROLOG syntax.

The rule syntax used is as follows:

```
rule <rule id>
if [<N>: <condition>, ...]
then [<action>, ...].
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(Source: Primary data, 2020)

Description:

- rule id: identification number of the rule.
 - N: identification number for conditions: premise or pattern to match working memory
 - action: conclusion or action to be performed
- R1: IF A AND B THEN D
 R2: IF B THEN C
 R3: IF C AND D THEN E

III. RESULT

A. SWOT ANALYSIS [4]

Analysis	Explanation	Business Analysis
Strengths (S)	Forming the strength of the company, this strategy is based on one way of thinking, namely by using all strengths to take advantage of opportunities	The quality of Dolanan Bocah Pinter products are the main attraction, buyers can choose several types of models that have been provided at UKM.
Weaknesses (w)	Determining some of the weaknesses that still surround the company, this system is based on defensive activities and is shown to minimize existing weaknesses.	Inadequate marketing of Dolanan Bocah Pinter Products, lack of information to the public about product sales promotion is an obstacle for Dolanan Bocah Pinter SMEs.
Opportunities (O)	Several opportunities faced by companies, by considering industrial deregulation as one of the strategic factors	Opportunities that are owned by UKM Dolanan Bocah Pinter are the number of orders for educational game products, the producers of educational games are not too many, making it an opportunity for these UKM to develop more.
Threats (T)	Determine some of the threats facing the company	1. The threat from outside is to imitate the same business as SMEs. 2. The threat from within is a poor marketing process.

Figure 1. SWOT Analysis (Source: Primary data, 2020)

B. PIECES ANALYSIS [5]

Measurement	Indicator	Developed System
Performance	Result	This application makes sales can grow which is not only serving transactions within the city but also outside the city.
	Response time	Fast response time to product information provided to buyers who are quite far from the seller's location.
Information	Accuracy	Product information that is presented more fully helps buyers in getting information.
	Relevansi	Information about the product is quite relevant. Has benefits to buyers.
Economy	Cost	Cost Transactions can still run even though the shop is not open.
Control	Security	With the joint account feature, buyers from outside the city can buy goods safely and avoid fraud.
Efficiency	Flexibility	Search is easier because there is a sorting of item categories
Service	Services	Services for delivery out of town are much better because they are safer

Figure 2. PIECES Analysis (Source: Primary data, 2020)

C. WORKFLOW DIAGAM [6]

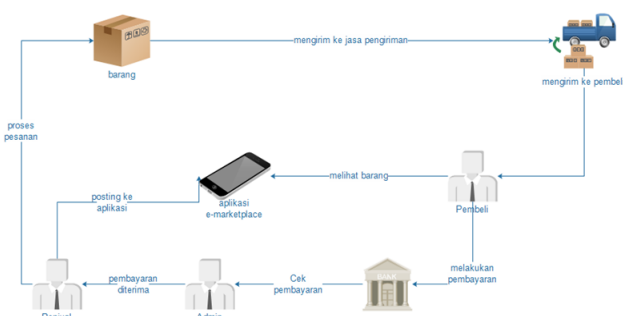


Figure 3. Workflow Diagram

D. USECASE DIAGAM [7]

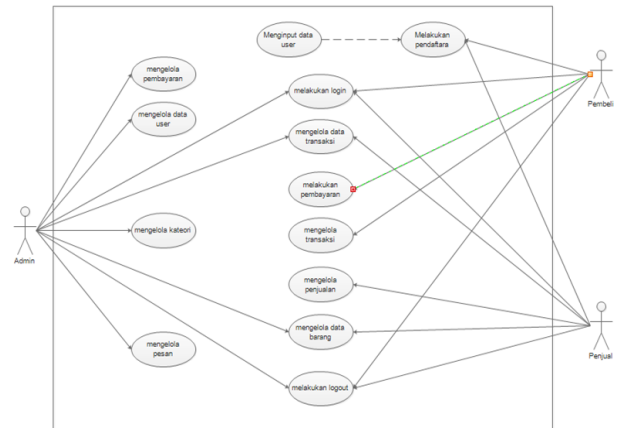


Figure 4. Usecase Diagram (Source: Primary data, 2020)

E. ACTIVITY DIAGAM LOGIN PAGE

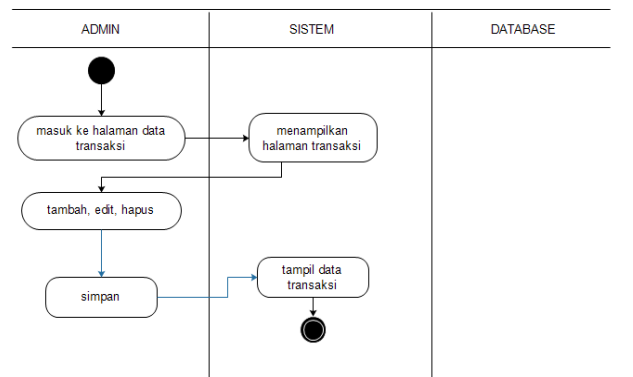


Figure 5. Activity Diagram login Page (Source: Primary data, 2020)

F. ACTIVITY DIAGAM SELLER PAGE

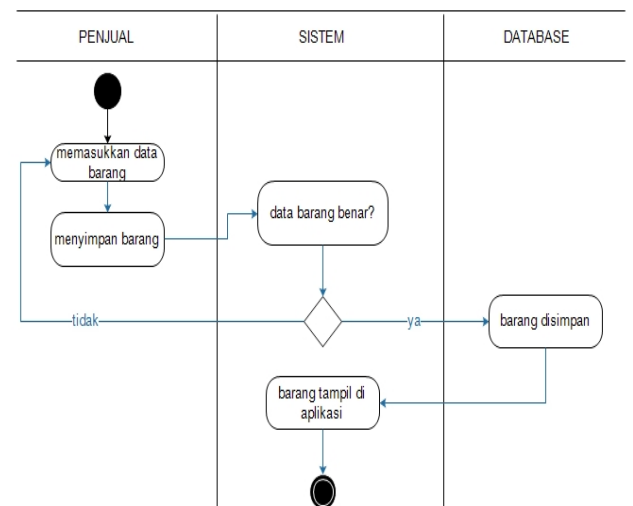


Figure 6. Activity Diagram Seller Page (Source: Primary data, 2020)

G. CLASS DIAGRAM

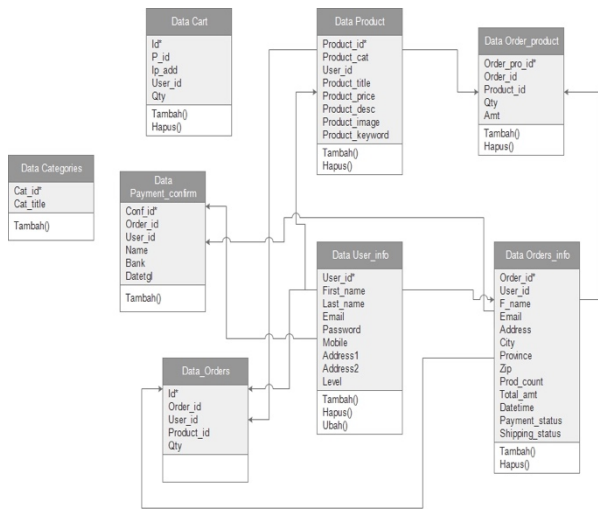


Figure 7. Class Diagram (Source: Primary data, 2020)

H. SEQUENCE DIAGRAM ADMIN PAGE

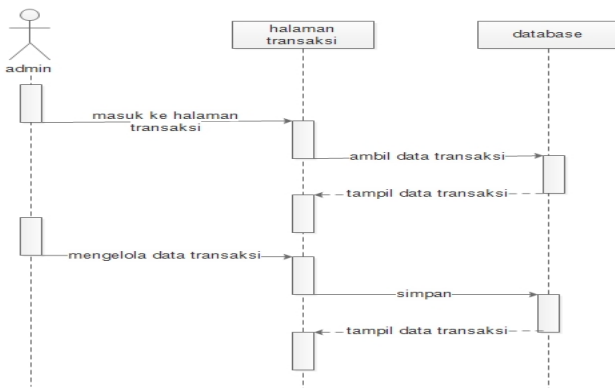


Figure 8. Sequence Diagram Admin Page (Source: Primary data, 2020)

I. SEQUENCE DIAGRAM INVENTORY PAGE

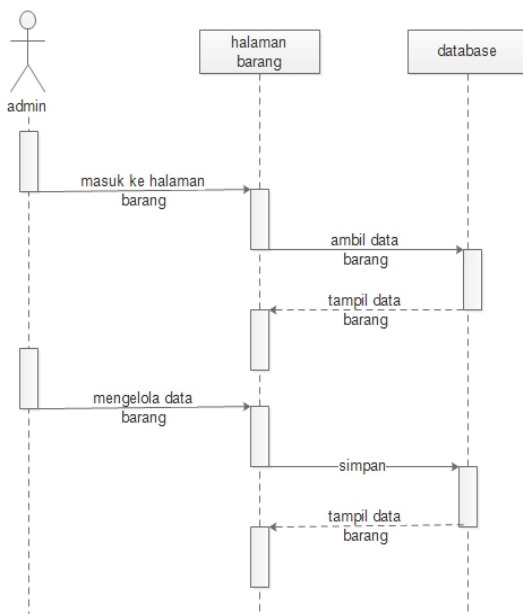


Figure 9. Sequence Diagram Inventory Page (Source: Primary data, 2020)

J. HOME INTERFACE



Figure 10. Home Interface (Source: Primary data, 2020)

K. PRODUCT INTERFACE

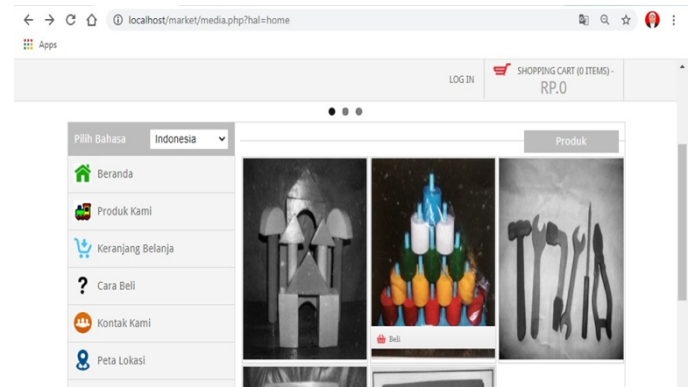


Figure 11. Product Interface (Source: Primary data, 2020)

L. FAQ INTERFACE

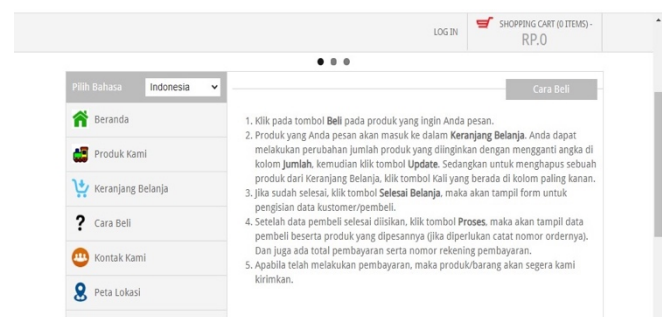


Figure 12. FAQ Interface (Source: Primary data, 2020)

M. CONTACT PERSON INTERFACE

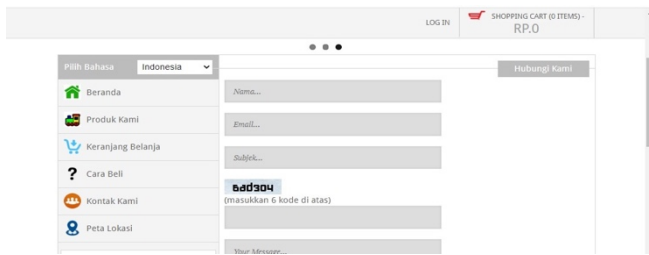


Figure 13. Contac Person Interface
(Source: Primary data, 2020)

N. PRICE FILTER INTERFACE

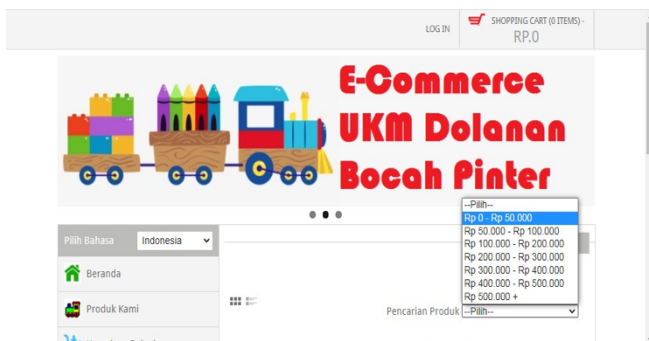


Figure 14. Price Filter Interface
(Source: Primary data, 2020)

IV. CONCLUSION

a. E-Commerce information system presents data processing which includes; data advertising information,

ad category data, data seller, buyer data, blog data, and data transaction. While the reports are generated namely: transaction reports, reports advertising, transaction invoices, seller reports, buyer report.

- b. Access rights in the E-commerce information system are divided into three, namely users who become administrators and has the right to manage data as a whole, users who become sellers and are entitled manage advertising data and transaction data, as well as buyer users who can only see ads and articles or blogs that are offered and presented in the form of information product.
- c. Testing this system using the method Black Box testing and testing users with a questionnaire method. Result from user testing showed that the system built is free of bugs and in accordance with the expected function

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