Research Article

Website-Based Retail Sales Monitoring System at *Purbaratu* Market Cooperative, Tasikmalaya City

[1,*]Cepi Cahyadi, [2]Rusani Jaelani, [3]Andi Arfian

[1,3] Department of Information System, Bina Sarana Informatika University, Tasikmalaya, West Java, Indonesia
[2] Department of Digital Business, Universitas Pendidikan Indonesia, Tasikmalaya, West Java, Indonesia

* Corresponding Author: cepi.ccd@bsi.ac.id

Abstract: *Purbaratu* Market is a gathering place for traders and buyers who always have buying and selling transactions every day. This market has a cooperative to monitor everything in the market, but the retail sales transaction process system in the current cooperative is still traditional in the buying and selling of merchandise, therefore, transactions need to be monitored carefully and quickly to find out transactions consisting of various types of goods, so it requires accuracy in recording the type and number of products sold, Based on the description of existing problems, an increase in services in the field of computerization is carried out. That is, this traditional system will be developed into a digital system in the form of a monitoring system for Retail Sales of the Purbaratu market cooperative. This technology is made using PHP and MySQL databases. The purpose of planning this application is to provide convenience in the process of transactions and processing retail sales data in the *Purbaratu* market cooperative.

Keywords: Information system; Monitoring; Sales; Retail; Cooperative; Website

Citation: C.Cahyadi., C. & Jaelani.R. Website-Based Retail Sales Monitoring System at *Purbaratu* Market Cooperative, Tasikmalaya City. Iota, 2024, ISSN 2774-4353, Vol.04, 04. https://doi.org/10.31763/iota.v4i4.817

Academic Editor : Adi, P.D.P

Received : September, 11 2024

Accepted : October, 12 2024

Published : November, 11 2024

1. Introduction

In economics, a market is a mechanism that connects buyers and sellers in conducting economic transactions. The market is also a place where buyers and sellers meet to carry out buying and selling transactions of various goods that are interdependent to meet their respective economic needs and goals (Alfiah, A., & Damayanti, D. 2020). Transaction data is one of the most important tools in today's digital era. Stores managed by the Cooperative carry out activities to buy and sell merchandise. The merchandise consists of various types, so it requires accuracy in recording the types and quantities of merchandise sold, the number of sales (Hanum, L. et.al.(2024)), and matters relating to the sale of goods (Carina, T., et.al. (2022). Sales made by the Cooperative are in cash and credit. All Cooperative activities must be managed with a good management scope so that it will provide convenience and smoothness in the active operation of a transaction provide reliable data information for management, and be able to produce valid reports to those who need them (Cahyadi C (2017). This is one of the keys to winning the increasingly competitive business world (Afrida, D. K., Lestari, E. W. P., Lailiya, F., & Suwanan, A. F. 2021).

The automated computerized system is expected to manage the sales system effectively, efficiently, and accurately to provide transaction services for members and the best information for management. Another thing to be achieved is to be able to assist in making appropriate management decisions on Cooperative policies without putting aside the interests of members. Thus, it has become a demand for Cooperatives to always follow and even be able to accompany the development of information technology to increase productivity, work efficiency, and the ability of Cooperatives in the economic field (Arianto, B. 2020).

The purpose of this research is to help provide solutions for traders to monitor transaction data implemented with a website-based computerized system.
Finally, the benefits of this research are expected to make it easier to reduce the subjective element in monitoring the right transaction data, so that the quality of the data generated can be improved to determine the traders in improving the sales transaction process (Li., F. et.al. 2024) in the *Purbaratu* market cooperative of Tasikmalaya city.

2. Theory

2.1 Sales

The transaction process of two parties, namely the seller and the buyer, wherein the transaction relationship a seller provides the goods or services requested by the buyer and the buyer then makes a payment for the goods or services to the seller using a legal payment instrument (Sulistiani, H., et all. 2020). Cash sales are sales employing direct payment when the goods or services are received by the buyer. Credit sales are sales utilizing payments made within a certain period or can be made several times (Oktaviani, L., et all 2022).

2.2 System Analysis

System analysis is a term that is generally the initial phases of system development (Alfiah, A., & Damayanti, D. 2020). Problem-solving techniques that describe components by examining how they work and interact to achieve goals Decomposing a complete information system into its constituent parts to identify and evaluate problems, opportunities, obstacles faced, and anticipated needs so that improvements can be suggested (Priandika et all, 2021).

2.3 Design

A process that aims to analyze, assess, improve, and design new systems that can solve problems faced by the company as a result of choosing the best alternative system, utilizing existing information to optimize physical and non-physical systems for the future (Cahyadi C, 2018).

2.4 Monitoring

A cycle of activities that includes collecting, reviewing, reporting, and acting on information about a process that is being implemented, (Mercy, 2005). Monitoring in terms of the relationship to performance management is an integrated process to ensure that the process is running according to plan. Monitoring can provide information on the continuity of the process to determine steps toward continuous improvement (Fadly et al., 2019). In practice, monitoring is carried out when a process is in progress. The level of study of the monitoring system refers to activities per activity in a section, (Wrihatnolo, 2008), for example, the process of ordering goods from suppliers by the purchasing department. The indicator that becomes the monitoring reference is the output per process.

2.5 Application

components that serve data processing and activities such as document creation and data processing computer software used in a computer, instructions or statements arranged in such a way that the computer can process input into output (Ramadhanu et al., 2021), The purpose is made to use this application has a graphic (GUI) that users use to interact with the application (Cahyadi C, 2018). Therefore, the purpose of the application is to satisfy the user or user's needs.

2.6 System

A collection of parts that work together to achieve a specific purpose. The system is a network of procedures made according to a unified pattern to carry out the company's

Main activities (Sulistiani, H., et al. 2020). The system is a collection of interrelated elements that work together to achieve certain goals. (Yusuf, M., et all 2021), Information is used for planning, management, evaluation, and continuous improvement with a group of components and elements that combine to achieve certain goals (Fadly et al., 2020).

2.7 Retail

A series of business activities that add value to products and services sold to consumers for personal or family use (Wahyudi et al., 2021). Retail includes all business activities (Sibagariang.S., & Sinaga., M.E.P. (2023)) & (Widad., N.R., et.al. (2024)) related to the sale of goods or services to end users or for personal consumption of end users, the transaction itself can be carried out through various sales channels such as online and conventional and direct sales or direct mail (Wibowo et al., 2021).

2.8 Cooperative

Cooperatives in general are business entities consisting of people who are legal entities of cooperatives by basing their activities on cooperative principles as well as a people's economic movement based on family principles (Fadhillah, M. H. (2022). and voluntarily work together and are full of awareness to meet common needs in improving welfare based on family principles (Falatehan, A. F et all. 2021).

3. Method

3.1 System Block Diagram

The data design method used in this research is bottom-up, this method is recommended by: (Deni M. et all, 2008). The four stages of designing with the recommended bottom-up method are as follows the Figure 1.

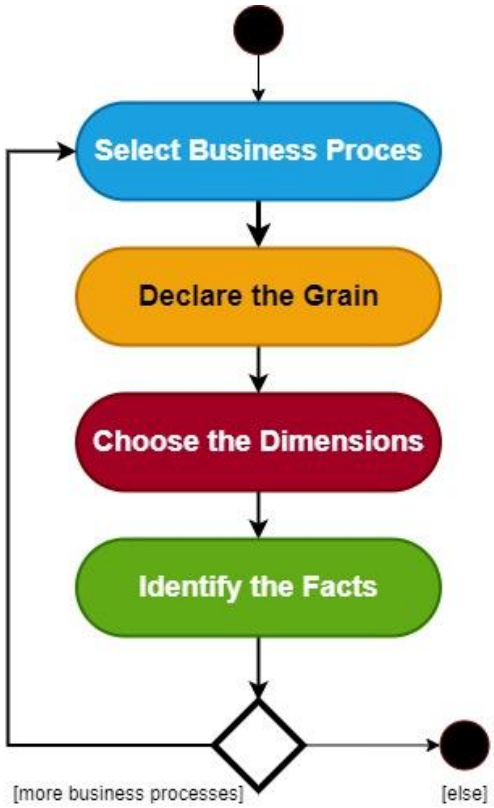

Figure 1. Block Diagram of the System in this research

Accordingly Figure 1. Some of the components are described as follows:

3.1.1 Stages of Selecting a Business Process

This stage is the initial stage carried out before designing the design model of the data warehouse (Priadana, S. H. M., et all. 2021). The selection of business processes refers to a particular subject and must be able to answer important business problems.

1. Identify the business process to be modeled.
2. Identify entities and measures that are common across multiple business processes.
3. Identify data sources.
4. Selecting the requirements collection method.
5. Collect requirements.
6. Analyse needs.

3.1.2 Stages of Declaring Grain

Grain is the data of the candidate facts to be analyzed. By selecting the grain, it can be decided what things will be represented in the fact table records.

1. Determine the granularity of the fact table.
2. Determine how to handle multiple separate grains.
3. Checking the atomicity of the grain.

3.1.3 Stages of selecting dimensions

Dimension selection applies to each fact table. Each dimension will provide an explanation or decryption for each fact table.

1. Identifying dimensions.
2. Identify shared dimensions.

3.1.4 Stages of Identifying Facts

In this stage, the selection of facts that meet the needs is done. Identifying numerical facts that will populate the fact table. Each fact that is formed, consists of dimension and data measure attributes.

A grounded Research method is a research method based on facts and uses comparative analysis (Siyoto et all, 2015).

3.1.4.1 Data Collection Methods:

1. Observation

Collecting data directly by directly observing the activities of the Purbaratu Market Cooperative management of Tasikmalaya city to find out the problems that occur in the current system.

2. Interview

Data collection techniques by conducting direct questions and answers to those related to the discussion taken.

3. Literature Study

Collecting data by reading, and understanding related problems through books, the internet, and journals.

3.1.4.2 System Development Model

The waterfall SDLC model is often called the sequential linear or classic life cycle model. The waterfall model provides a sequential or ordered software lifecycle approach starting from design analysis, coding, testing, and support stages. The System Development Model in this research can be seen in Figure 2.

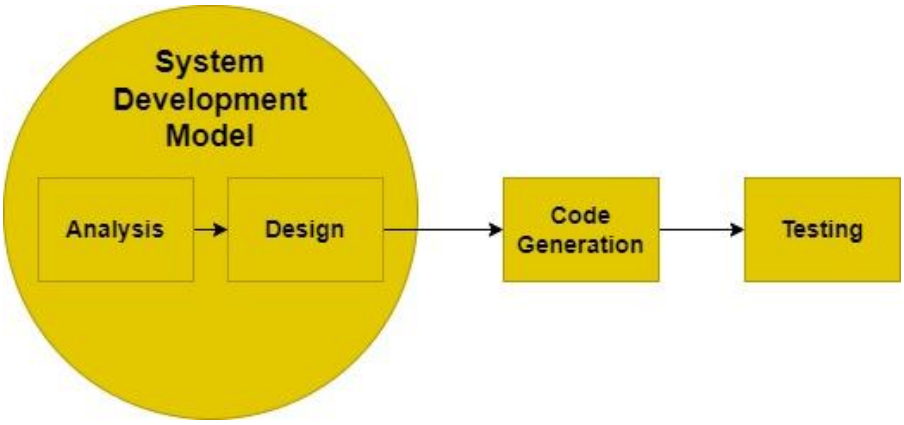

Figure 2. System Development Model in this research

Furthermore, from Figure 2, each component can be described as follows:

1. *Software Requirements Analysis*

Analyze what needs are needed in making a web-based cooperative information system in the form of input documents (categories of goods, item data, customer data, and output documents (reports).

2. *Design*

System design using UML (Activity Diagram, Use Case Diagram, Component Diagram, Deployment Diagram) for database design using ERD.

3. *Code Generation*

At this stage using the PHP programming language and SQL Server database, the system built is included in structured programming.

4. *Testing*

Programming requires testing before publication using black box testing to find errors in several categories, including incorrect or missing functions, interface errors, errors in data structures or external database access, initialization, and termination errors.

5. *Support*

To support the information system to be worked on, hardware is needed, namely, equipment in physical form that runs software (software) and this equipment functions to carry out the instructions given and issue them in the form of information.

Moreover, in detail, Admin also has activities that are explained in detail in this research, some activities are shown in detail in Figure 3. Use Case Diagram Activity Admin on this system. The admin login menu will enter the Home, User Profile, Module, Product Category, Product, Catalog Data, Order, Sales Data, Transaction Methods, Contact, and Report menus. Each of these categories has a relationship to other categories, each of which is explained by the include arrow and also the add and edit category or we are familiar with the CRUD System on Web-based. The Use Case Diagram in Figure 3 shows in detail the admin procedures and steps that must be taken, including showing a process relationship between components, for example product has a relationship with its treatment, Add Product Data, and Edit Product Data as well as other entities.

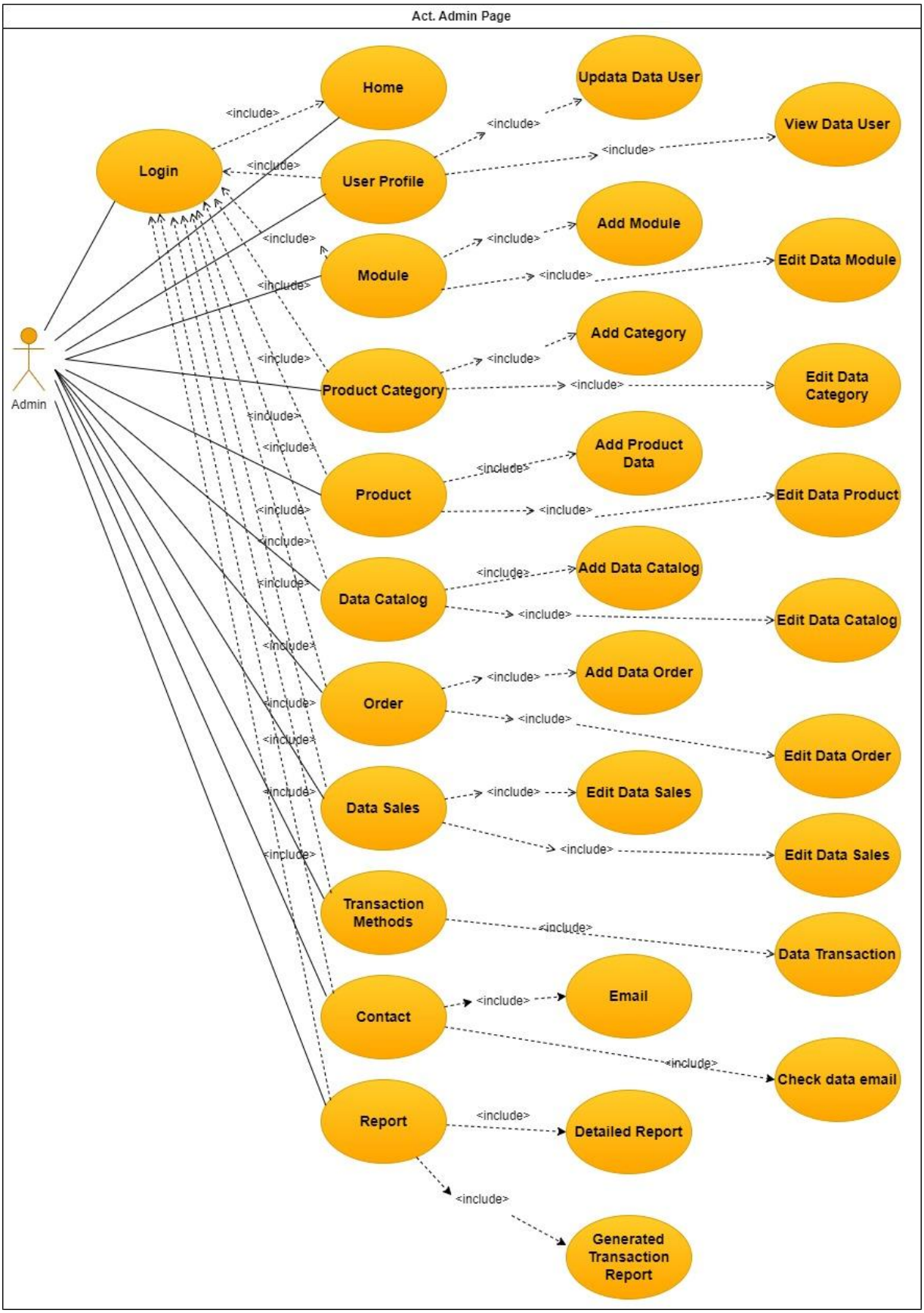

Figure 3. Use Case Diagram Activity Admin on this system

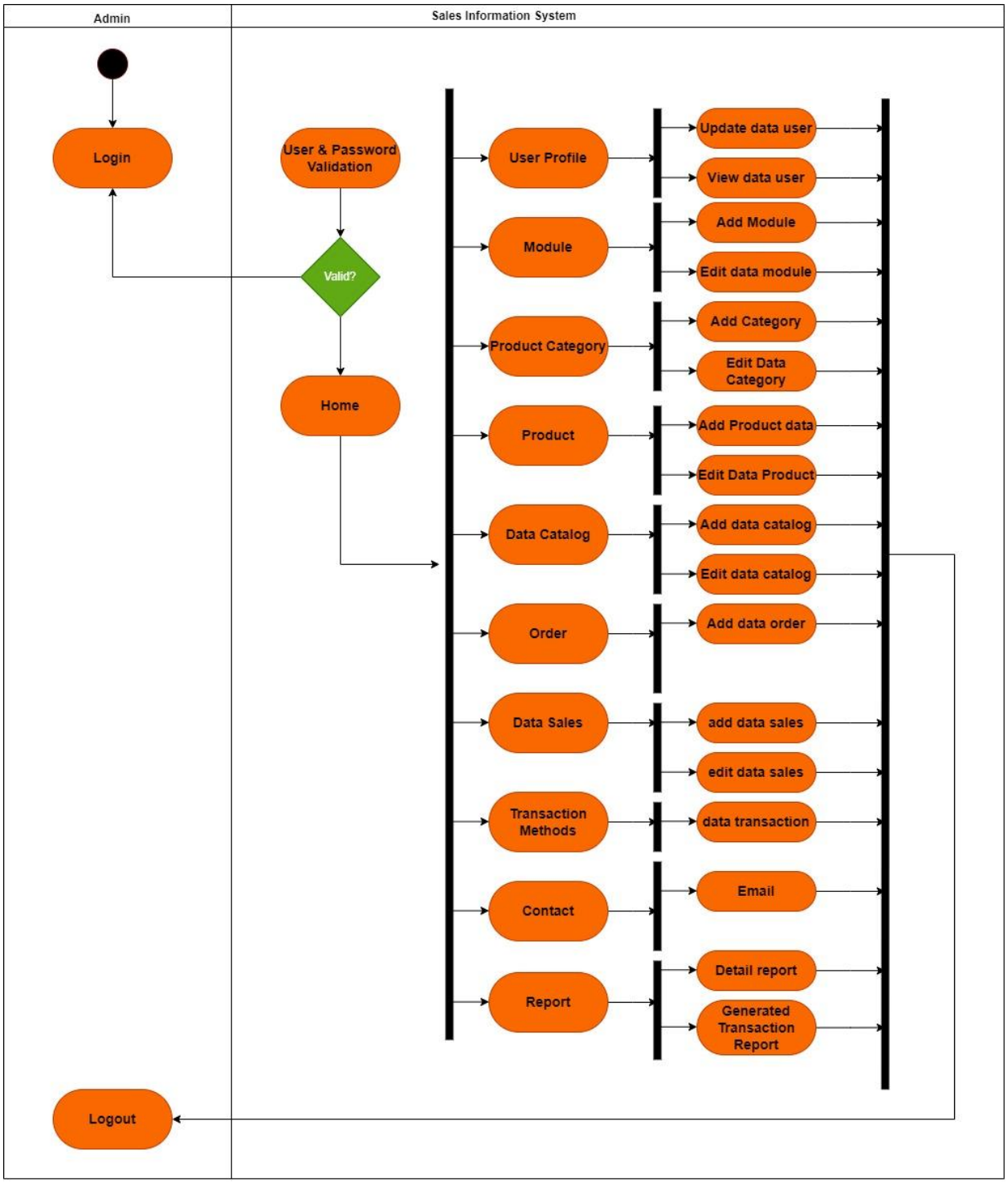

Figure 4. Activity Diagram of Sales information system on this research

Figure 4 in detail shows the sales information system, that is how the Admin enters through the login menu using username and password validation, if it is valid, it will automatically enter the system, but if not, then, it will return to fill in the username and password until it is declared appropriate or correct. The process of repeating the username and password also needs to be added with a security system, for example, how many times will repeat until blocking, there is a need for a system like this.

Moreover, in the sales information system menu, there are many modules, namely user profile, module, product category, catalog data, order, sales data, transaction, contact, and report, each of which has an edit or CRUD system. If you feel that all treatments have been carried out, the next is the Logout system.

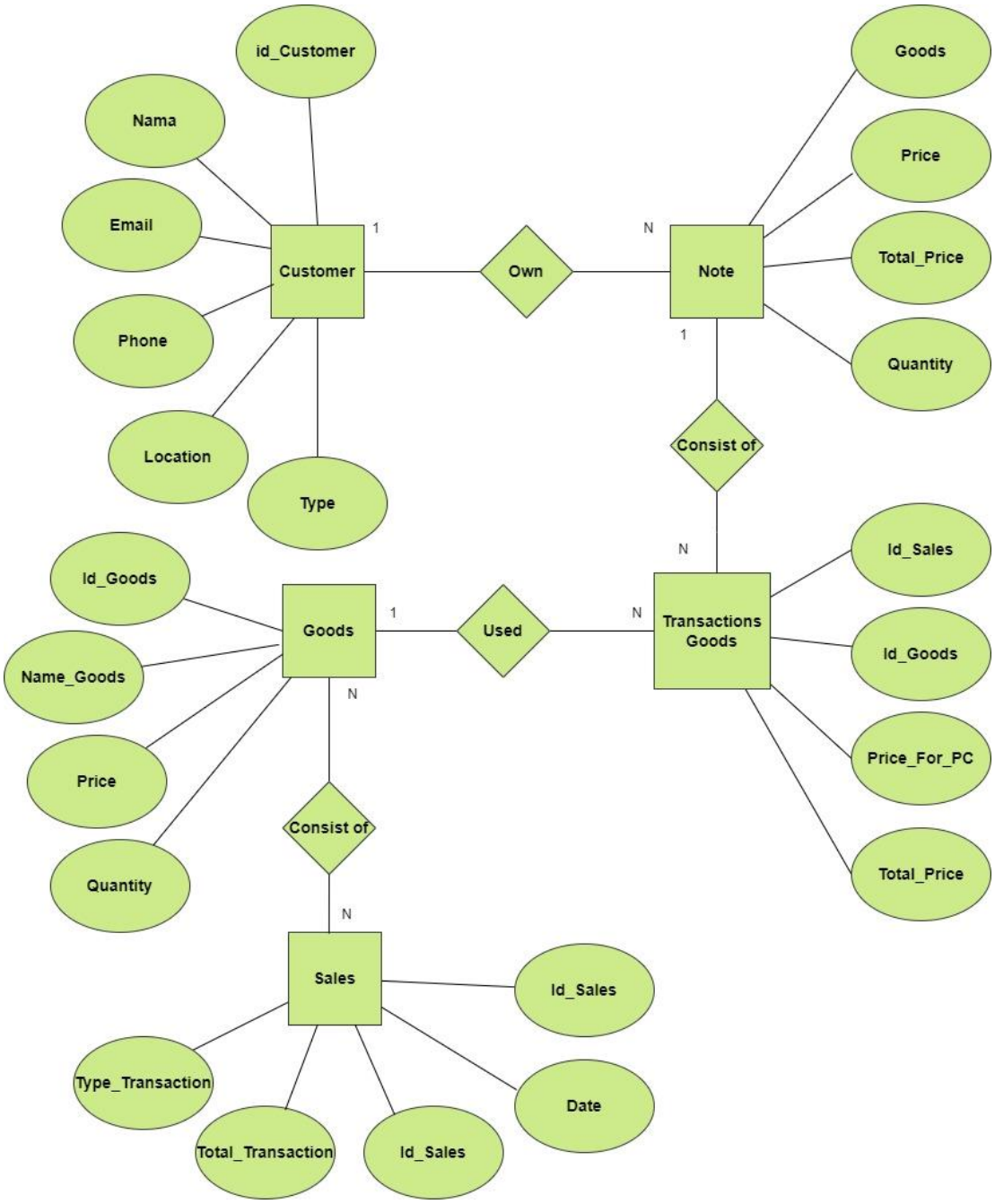

Figure 5. ERD (Entity Relationship Diagram)

Furthermore, Figure 5 shows an ERD, or Entity Relationship Diagram, where several entities are connected or related to each other, the ERD in this system includes Customer, Node, Transaction Goods, Goods, and Sales. Each of these entities has accompanying

components, for example, Customer, has ID_Customer, Name, Email, Phone, Location, and Type. as well as other entities.

4. Result and Discussion

In the Result and Discussion section, we will discuss how this system works starting from the login interface, especially on the Graphical User Interface (GUI). Here the system will directly deal with users, i.e., Admin and Customer. Moreover, Figure 6 is the part where the Admin has to log in. Validation is required to successfully enter the sales system which is more complex, as shown in Figure 7. As described earlier in Chapter 3, multiple attempts that continue to go wrong can be immediately supplemented with a notification or blocking system. This security system is necessary to make the system more robust.

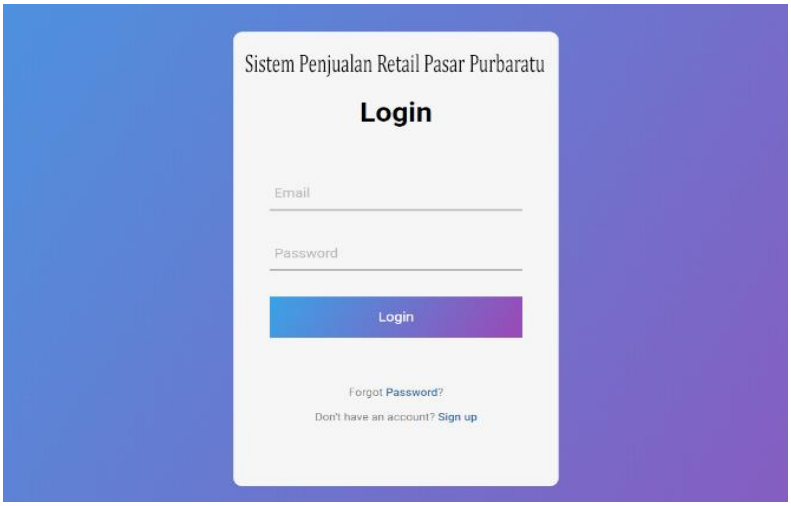

Figure 6. Login Menu

Figure 7. Admin Menu

Moreover, Figure 7 shows some of the menus in the Purbaratu Market Retail Sales System, in this system, there are several main menus such as Home, Consumer, Product, Transaction, Report, and Contact. According to the menu, if selected, it will go to a more complex menu display, such as the Home menu there is User Data, Consumer Data, Item Data, Sales Transactions, and Sales Reports. The GUI needs to be made as attractive and dynamic as possible to make the information system easier and more comfortable to use when interacting. Other functions and displays can be seen in Figure 8 through Figure 13.

Figure 8. Sales Addition Menu

Figure 9. Consumer Addition Menu

Figure 10. Add Sales Transaction Menu

Figure 11. Customer Transaction Menu

Figure 12. Cash Transaction Report Menu

Figure 13. Sales list Menu

Figure 8 shows the Sales Addition Menu consisting of Name, Location, Telephone, email, and type, if some of these parameters are not filled in or one of the fields is left blank then there is certainly a warning, so, it is important to pay attention to the data type and field whether it is character, Boolean, combo box, etc., as well as the warning system. Moreover, The system in Figure 8 is the same as in Figure 9, the components can be applied. Figure 10 is slightly different, namely by using the Search menu, here the command used is to search for data in databases. With the Consumer ID keyword, if it is not there, a warning is given that the ID is not found, or the ID entered is wrong, otherwise, if it is correct, the system will search for transaction data based on the ID. Figure 11 shows the input of date data, this version can be made more flexible by using component date or date, it can also be like in Figure 11 but it will be a little time-consuming and less flexible. In future systems, improvements are made in terms of flexibility and speed of execution. An integrated system makes data that is interconnected and will provide valid results and follow the expectations of the user, e.g., speed, accuracy, dynamism, and flexibility. A system that is easy to apply will make the system so dynamic, for example, doing the printing process with an easy and attractive display after the results are obtained. Then also a system that has a detailed relationship, for example only with the Admin ID or Customer ID, all data can be generated. An example of the sales list menu in this system can be seen in Figure 13.

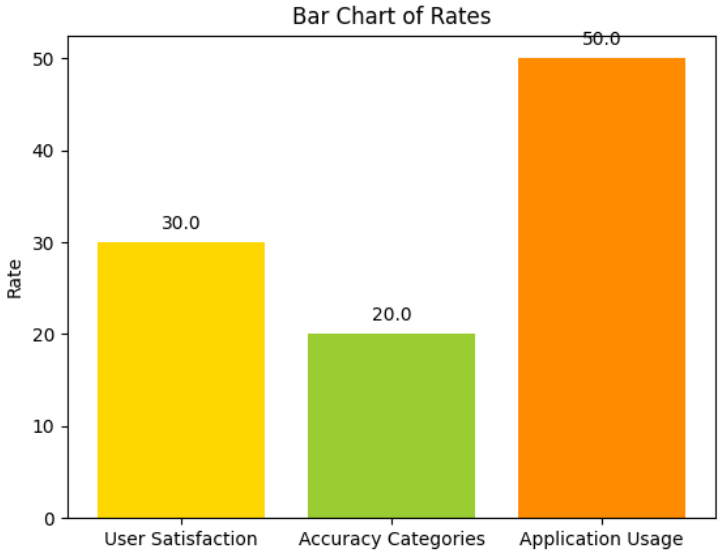

Figure 14. Satisfaction Graph

The software has several categories including User Satisfaction, Category Accuracy, and Application Usage. These categories are interrelated, the more user-friendly the software is, the more User Satisfaction increases, for User Satisfaction the value of 1-10 is the most perfect value of 10, while accuracy is used for searching transaction data. While Application Usage talks about how many users in one day make access. User satisfaction standards on the information system created can not only be achieved in a qualitative method such as using a blank questionnaire, but also by making a questionnaire directly on the system, usually before entering the system or after completing the exploration of the system, namely by providing feedback from the system used. From these items several options can be selected which can be rated from 0 to 100% for example or 0 to 50% depending on how the calculation is done, the point is how to find out the satisfaction standard shown in Figure 14. if the system is deemed still not flexible then the application usage can be rated lower or in the accuracy of the category or user satisfaction.

5. Conclusion

Based on the results of research, review of existing theory, and the results of system development analysis, it can be concluded that the Retail Sales Monitoring system at the Purbaratu Market Cooperative has several advantages that can provide information about the sales transaction process in detail and increase the efficiency and effectiveness of the cooperative retail sales process and facilitate the processing of retail sales transaction data. Moreover, to improve and be effective with the development of future applications with the latest mobile-based technology applications.

Acknowledgments: Thank you to colleagues at the Department of Information System, Bina Sarana Informatika University, Tasikmalaya, and the Department of Digital Business, Universitas Pendidikan Indonesia, Tasikmalaya who have cooperated and collaborated so that this research can be completed properly. We hope this research can provide significant progress in similar disciplines. And also the utilization and application of the same system in the community.

Author contributions: The authors were responsible for building Conceptualization, Methodology, analysis, investigation, data curation, writing—original draft preparation, writing—review and editing, visualization, supervision of project administration, funding acquisition, and have read and agreed to the published version of the manuscript.

Funding: The study was conducted without any financial support from external sources.

Availability of data and Materials: All data are available from the authors.

Conflicts of Interest: The authors declare no conflict of interest.

Additional Information: No Additional Information from the authors.

References

1. Alfiah, A., & Damayanti, D. (2020). E-Marketplace Application for Catfish Harvest Sales (Case Study: Pringsewu Regency, Pagelaran District). Journal of Information Technology and Systems, 1(1), 111-117
2. Afrida, D. K., Lestari, E. W. P., Lailiya, F., & Suwanan, A. F. (2021). The Role of Cooperative Digitalisation as a Booster of MSMEs in the Economic Development of Surabaya City Region. Proceedings of the National Seminar on Development Economics, 1(2), 151-158.
3. Arianto, B. (2020). Digital MSME Development during the Covid-19 Pandemic. ATRABIS: Journal of Business Administration (e-Journal), 6(2), 233-247.
4. Carina, T., Rengganis, R. R. M. Y. D., Mentari, N. M. I., Munir, F., Silaen, M. F., Siwiyanti, L., Usmayanti, V., Himawan, I. S., Susilawati, E., & Challen, A. E. (2022). Accelerating Digitalisation of UMKM and Cooperatives. Tohar Media.
5. Cahyadi C (2018). Design of a Decstop-Based Retail Sales Application at CV. Hambali Koperpu, INKOFAR Journal Volume 1 No.2, December 2018, E-ISSN: 2615-3645, P.ISSN. 2581-2920.
6. Cahyadi C (2017), Design of Retail Sales Applications at PT SIM Employee Cooperative, Journal of Information Systems STMIK Antar Bangsa [Vol.VI No.2 August 2017], ISSN 2098-8711
7. Deni M & Muhamad S, (2008). "Comparison of Waterfall Methodology and Rad (Rapid Application Development) in Information System Development," J. Inform. Technol. And Science, vol. 4, no. 4, pp. 302-306, 2022, doi: 10.51401/jinteks. v4 i4.
8. Fadly, M., Muryana, D.R., & Priandika, A.T. (2020). Monitoring System of Building Materials Sales Using Key Performance Indicator Approach. Journal of Social Sciences and Technology for Community Service (JSSTCS), 1(1), 15-20.
9. Fadhillah, M. H. (2022). Cooperative Behaviour in Adopting Cooperative Digitalisation. Book Chapter: Development of Organisational, Financial and Business Management Performance of Cooperatives & MSMEs, 41- 48.
10. Falatehan, A. F., Syaukat, Y., Hariyadi, H., & Falatehan, S.F. (2021). Cooperative Readiness Strategy in the Digitalisation of Smallholder Oil Palm Plantations. Indonesian Journal of Agricultural Sciences, 26(4), 537-545.
11. Mercy, C. (2005). design, monitoring, and evaluation guidebook.
12. Oktaviani, L., Aldino, A. A., & Lestari, Y. T. (2022). Application of Digital Marketing in E-Commerce to Increase Sales of Marning MSMEs. Journal of Community Service and Innovation, 2(1), 337-369.
13. Priandika, A.T., & Riswanda, D. (2021). Analysis and Design of an Online-Based Goods Order Management Information System. Journal of Informatics and Software Engineering, 2(1), 94-101.
14. Ramadhanu, P. B., & Priandika, A. T. (2021). Design of Web Service API Application for Centralising UMKM Products at UPTD PLUT KUMKM Lampung Province. Journal of Information Technology and Systems, 2(1), 59-64.
15. Sulistiani, H., Octriana, S., & Adrian, Q. J. (2020). Internal Control System for Saving and Borrowing of BMT Cooperative Members (Case Study: BMT Syariah Makmur). Journal of Social Sciences and Technology for Community Service (JSSTCS), 1(2).
16. Priadana, S. H. M., & Sunarsi, D. (2021). Methods of Quantitative Research. Pascal Books.
17. Siyoto, Sandu, &, M. Ali Sodik. (2015). Basic Research Methodology. Yogyakarta: Literacy Media Pubhlishing.
18. Yusuf, M., Agustang, A., Idkhan, A. M., & Rifdan, R. (2021). Transformation of Cooperative Institutions in the Industry 4.0 Era. JISIP (Journal of Social Science and Education), 5(4).
19. Wahyudi, A. D., Surahman., et.al. (2021). Application of E-Marketplace Product Promotion Media Using the AIDA Model and 3D Object Approach. Journal of Informatics. vol. 6(1), 35-40.
20. Wrihatnolo, R. (2008). Monitoring, evaluation, and control: concepts and discussion.
21. Sibagariang.S., & Sinaga.,M.E.P. (2023). Rancang Bangun Aplikasi Point Of Sales Menggunakan Framework CodeIgniter.June 2023. JURNAL MAHAJANA INFORMASI 8(1):26-35. DOI: 10.51544/jurnalmi.v8i1.4081
22. Widad., N.R., et.al. (2024). Designing a Website-Based Tracking Of Sales Information System to Improve Business Performance at Estoh Jember Company. October 2024Jurnal Indonesia Sosial Teknologi 5(10):3862-3880. DOI: 10.59141/jist.v5i10.1163
23. Hanum, L. et.al.(2024). Designing an Online Sales System Using a Website. September 2024. Journal of Information Systems and Technology Research 3(3):101-106. DOI: 10.55537/jistr.v3i3.897
24. Li., F. et.al. 2024. Variational Autoencoder-based Framework for Retail Sales Prediction. January 2024IEEE Access PP(99):1-1. DOI: 10.1109/ACCESS.2024.3502657