Jurnal Mantik, 6 (3) (2022), ISSN 2685-4236 (Online)
Published by: Institute of Computer Science (IOCS)
Jurnal Mantik
Journal homepage: www.iocscience.org/ejournal/index.php/mantik

Analysis of Car Rental Information System at CV. BCD

Desti Yuvita Sari
Study Program of Nautical, Politeknik Transportasi Sungai, Danau dan Penyebrangan Palembang, Kota Palembaang, Indonesia

A R T I C L E I N F O

Article history:

Received Sep 16, 2022
Revised Sep 23, 2022
Accepted Oct 14, 2022

Keywords:

Information Systems
Analysis
Design.

ABSTRACT

CV. BCD is a company engaged in car rental services where this company rents out various types of cars from MPV to SUV. CV. BCD has a car rental system that runs starting from the customer who fills out a form to rent a car, then the form is submitted to the office for a rental history to be made after the verification process is complete, then the car and driver will be sent to the renter along with a receipt in the form of rental. history. Judging from the previous system that runs at the CV. BCD company in presenting the rental process that runs at the company, it is still manual, namely by using books/paper, telephone, fax, and also transportation in the submission of tenant data, making the provision of information quite long and the data is easily scattered until it is lost. . Judging from the company's business processes where there is a rental system that allows researchers to implement an online-based system, so that the rental history in the company will be properly managed, easy to access and report generation. In building this system, the researcher uses 5 stages in the system development life cycle (SDLC) method, namely planning, analysis, design, implementation, and use. Based on the analysis of system development carried out, this application can improve time efficiency, save paper costs in making rental history and facilitate data management of rental information in CV. BCD.

Corresponding Author:

Desti Yuvita Sari
Study Program of Nautical,
Politeknik Transportasi Sungai Danau dan Penyebrangan Palembang
Jl. Sabar Jaya No.116, Sungai Gerong, Banyuasin I Kabupaten Banyu Asin Sumatera Selatan
Email: : desti_yuvita@kemenhub.go.id

1. INTRODUCTION

Information services that are carried out manually have consequences, namely services that become slower, less thorough and ineffective, which in turn results in reports as material for management decisions to be slow, less thorough and inefficient. One of the steps commonly applied to improve the function of car rental services at CV. BCD is to use an appropriate and fast data processing system. Data processing information system required by car rental in CV. BCD will be used for the purposes of recording, processing, storing, reviewing and also to distribute the information itself.

Car rental information system at CV. BCD The web-based is expected to be able to improve services for these customers, and be able to improve the performance of the car rental service system at CV. BCD it self. Both in terms of customer data collection to

accurate information in terms of decision making by car rental parties at CV. BCD. With this new system, it is expected that the performance of car rental at CV. BCD as a whole can run optimally, because the customer administration transaction reports are presented in the form of valid data so that management decisions become better.

2. RESEARCH METHOD

There are several research methods that we consider effective for collecting facts and data, namely by means of observation and interviews. These three methods are interrelated to produce valid data and facts.

a. Observation
   The research is carried out directly on the object under study which aims to get a clear picture of the ongoing system
b. Interview
   Collecting data by means of the author directly face to face and looking for information with respondents (car rental at CV. BCD) in this case an interview with the head of car rental at CV. BCD

3. RESULTS AND DISCUSSIONS

3.1 Analysis System

At the system analysis stage, it aims to find the optimal form of the application to be built by considering various factors, problems and needs that exist in the system. At this stage an initial investigation is carried out on the work process on the CV. BCD running. The system analysis is obtained from the company's work processes running at the company, but the company's work processes have deficiencies in the delivery of information and the flow of company performance that is less effective, the absence of computer utilization, the absence of clear data storage, not neatly arranged and less secure, not there is a clear report so that the existing system is only documented in the form of a book.

Table 1. Analysis Comparison System

Running Business Process	Proposed system	The results to be achieved against the proposed system
Data collection of customers who rent vehicles uses the bookkeeping process first and then inputs them into the computer.	Customer data collection uses the online cer rental system application so that customer data is directly entered into the online application.	Customer data will be neatly organized, safe and the data stored in the database so that it can be seen and controlled by the company.
The process of renting a vehicle by a customer still uses a rental form in the form of paper media.	The vehicle rental process uses a web-based online car rental system application whose data is stored in an online database.	The vehicle rental process will be recorded neatly, securely and stored in a database so that it can be viewed and controlled by the company.
Driver data collection uses a bookkeeping process by manually recording driver data.	Driver data collection uses a web-based online car rental system application that contains driver input contained in the online database.	Driver data is neatly organized and safe and the data is stored in a database so that it can be viewed and controlled by the company.
Calculation of rental results by manually calculating rental receipts and recording them in the rental book.	The calculation of rental results is automatic in the online car rental system application and stored in an online database.	Created efficient performance time, effort and cost. The rental data is stored neatly and securely in the database so that it can be viewed and controlled by the company.
Credit card data grouping still uses a manual system.	Grouping credit card data using an online car rental system application that has credit card input stored in the database and sent automatically to the admin section online.	Credit card data is stored neatly, securely and the data is stored in a database so that it can be viewed and controlled by the company and also creates efficiency in delivery times and company performance.

Searching customer data is still done manually by searching one by one in the customer book.	Search customer data using an online car rental system application by selecting good search criteria based on name, email and mobile number.	Facilitate the search for customer data and data stored neatly, securely in the database and sent automatically so as to create time efficiency, cost and company performance. This customer data can be seen and controlled by the company.
The process of accessing data can still be done by any user.	User access can be arranged with the online car rental system application with various levels and access rights.	Confidential data can be protected and data stored neatly, securely in the database so as to create time, cost and performance efficiency and there is also user data control.
Reports must be regenerated after the rental process is complete, either daily, weekly or monthly	Each user is provided with a report facility with certain criteria as desired, time scale and reports can be printed online	The creation of clear reports and easy data for control and accountability.
The process of grouping reports must be done manually. Either arranged by type of receipt or by date.	The grouping process can be done with an online car rental system application that provides data grouping services either by receipt type or by date.	The existence of data that is neatly arranged in the database and so it is easier to control because the data is displayed in the application so as to create time efficiency, cost and company performance.
The data collection process is difficult, because data from the branch or from each existing booth must be collected first at the head office and the report printing process must also be carried out at the head office.	Data does not need to be collected anymore, because with the online car rental system application, all data is directly collected on one server and the direct printing process can be done anywhere and anytime.	The existence of data that is neatly arranged in the database and so that it is easier to collect data because the data is managed by the application, so as to create time, cost and company performance efficiency.

Table 2. Analysis Comparison Efficiency Time

Ongoing Business Process	**Time when using the existing system**	**Time when using a computerized system**
Filling out the rental history form by the customer	5 minutes to 20 minutes	2 minutes
Delivery of rental history data either by courier, fax or email	Delivery by courier takes 2 hours to 3 hours, while using fax or email takes 30 minutes to 1 hour	Automatic data transmission is carried out by the system after the customer fills out the rental history form so it only takes 5 minutes
Procedure for verifying rental history data by admin or owner	3 to 5 days	In 2 days the verification process can be completed
Process reports daily, weekly and monthly after the rental history is approved	It took one day to collect all the available data.	Within 30 minutes all reports can be printed
The process of returning the car after the car is loaned	Takes 1 day to find the files which car is being borrowed	In just 15 minutes the data of the car being borrowed can appear in the reminder section.

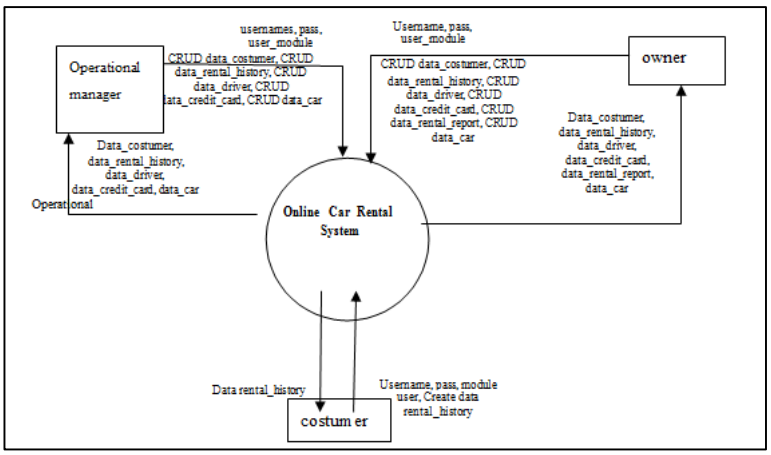
Table 3. Analysis Comparison Efficient Cost

Running Business Process	**Cost when using the existing system**	**Costs when using a computerized system.**
Rental history form printing	The cost of printing 1 ream of form = Rp. 150.000, for every day spend 5 reams for all outlets. CV. BCD up to Rp. 750,000	There is no fee because the form is included in the application

Shipping costs (either by courier, fax or email) rental history to the head office.	For couriers per day it costs Rp. 50.000 for fax up to Rp. 100,000 for email is free	The burden of shipping costs because this application is centralized on one server so that data goes directly to the database without the need to send it
Daily, weekly and monthly report printing costs	Report printing costs per day Rp. 15,000, the cost per week is Rp. 105,000 and a monthly fee of Rp. 420,000	There is no printing fee because the document after it is printed can be directly saved in pdf form.
Costs for providing rental history document storage media at the office	To buy cabinets and filing cabinets Rp. 500,000 per year	The cost to store is included with the cost of the domain and hosting Rp. 200,000 per year.

3.2 DFD System Application Online Car Rental System

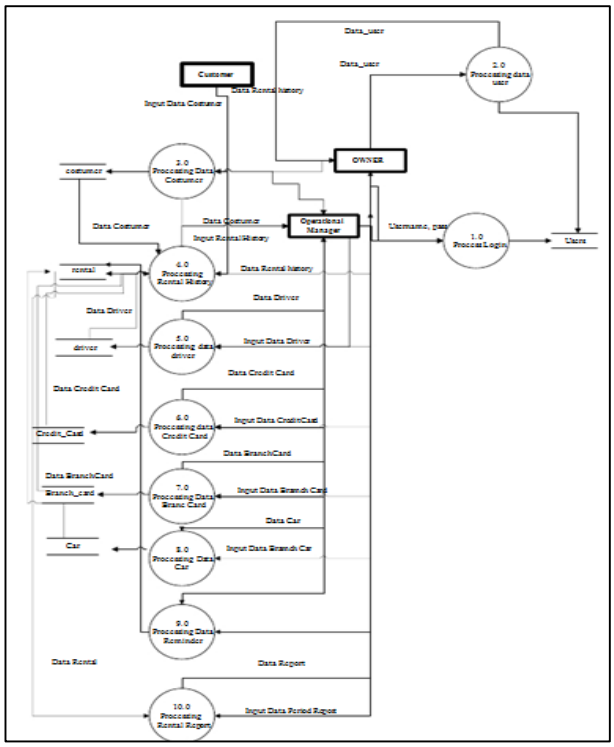
a. Diagram Context



Picture 1 DFD Level 0 (Zero)

On picture diagram context which proposed in on, writer describe something system information based web in process rental vehicle, customer To do charging rental history then data rental history the will processed by operational managers , for then checked is application rental vehicle the could received or no, next report rental will given to owner company and could sorted and printed based on period date.

b. Diagram Overview



Picture 2 DFD Level 1

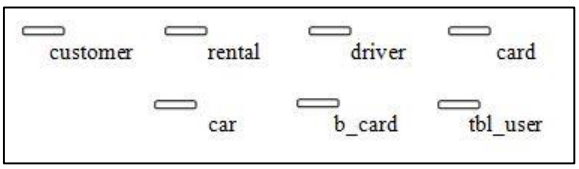
After planning system conducted then researcher designing the database with use tool help Entity Relationship Diagram (ERD) which describe connection between entity which there is on DFD. For streamline and streamline as well as avoid data which same, in database researcher also To do normalization. Following design database which will explained as following.

3.3 ERD (Entity Relationship Diagram) Database Online Car Rental System

Model this explain data in context entity and connection which depicted by data the. Following this is Step in produce ERD:

a. Determine Entity

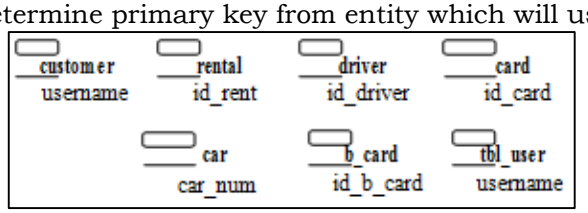
On Step this determined with entities which involved, Among other



Picture 3 Entity which will Used

b. Determine Key Entity

On Step this determine primary key from entity which will used:



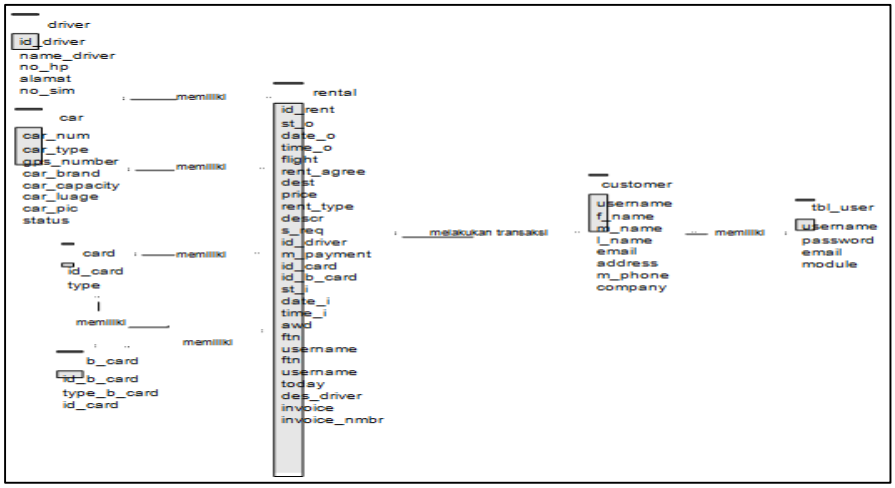
Picture 4 Primary Key Each Entity

3.4 Normalization

Normalization is technique planning system which arrange attribute data in group for shape entity which non-redundancy, stable, flexible , and easy adapt. Following stages from normalization:

a. Shape Normal Third (3NF)

On normalization second entity which attribute no primary key no depend on attribute no primary key which other, so that Picture 5 is form from base data which has normalized.



Picture 5 Third Normal Form

3.5 Structure Databases

From results normalization has got results database which Correct, with that database could detailed the structure from results normalization . Following details results normalization.

Nama File : tbl_user
Primary key : username
Type File : Master File

Table 4. Struktur Tabel tbl_user

Field	Type	Long	Information
username	Varchar	10	Username
password	Varchar	50	Say Password User
e-mail	Varchar	20	E-mail User
module	Varchar	5	Right login for user

Name Files : rental
Primary keys : id_rent
Type Files : Master File

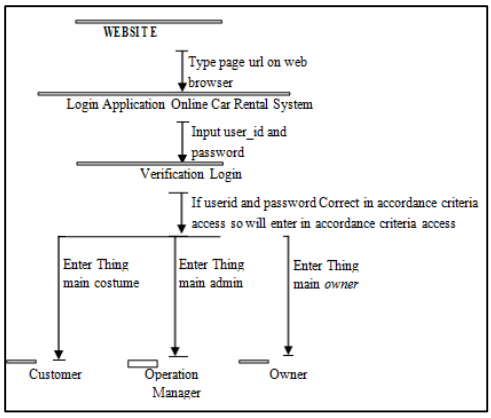
Table 5. Structure Table rental

Field	Type	Long	Information
id_rent	int	8	ID rental User
st_o	varchar	15	The place rental
date_o	Date	15	Date rental
time_o	varchar	35	Time rental
rent_agree	varchar	10	Number agreement rental
car_type	varchar		Type Car
car_num	varchar		Number Police Car
dest	varchar		Destination rental
price	int		Price
rent_type	varchar		Type Rent
desc	varchar		Description about Customer
s_req	varchar		Request special
id_driver	int		ID driver
m_payment	Varchar		Method Payment
id_card	int		ID Card Credit
id_b_card	int		ID branch card
st_i	Varchar		The place Return
date_i	Date		Date Return
time_i	Varchar		Time Return
awd	Varchar		Number Customer
ftn	Varchar		Number flyer Flight
username	Varchar		Name customer
today	Date		Date input Rental
des_driver	Varchar		Driver which wanted
invoices	Varchar		Type Receipt
invoice_nmbr	varchar		Number receipt

3.6 Design Structure Menu Application

a. Structure Menu Main Application

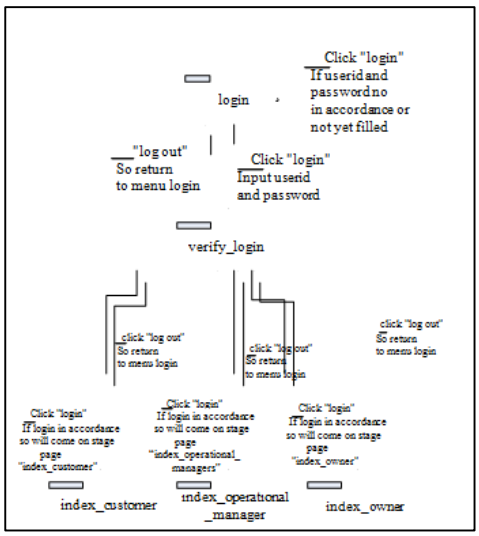
Design Structure menu application aim for determine menu which required on application which will developed. With that researcher use tool help structure menu application and STD (State Transition diagrams) which describe displacement menu in application, so that application which made will structured arrangement the menu. Following structure menu application and state Transaction Diagram (STD) design menu application online car rental system.



Picture 6 Structure Menu Main Application

Web application online car rental system this have structure menu where be found menu at in web which be found services which started on page web main then on navigation url typed url application on line car rental system and enter to menu login and customer enter username and password and then enter to page verification login and in accordance access will enter to page in accordance right access each.

b. State Transition Diagram (STD) Login



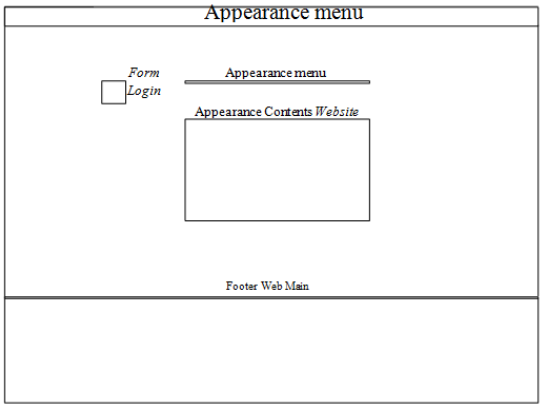
Picture 7 STD Form Login

State Transition Diagram is transition or process displacement between page which occur and process inside it. Where process login required charging username and password then clicked and occur process adjustment when username and password suitable so next to page in accordance access verification login when no so customer requested fill in return username and passwords.

c. Design Interface Application

Design interface application aim for find form which optimal from appearance application, so that could make it easy user (user friendly) in communicate with system. On planning interface application researcher make with adapt philosophy company in designing interface application so that user more easy To do

management data. Following design interface application on line car rental systems:



Picture 8 Design Interface Web Main

4 CONCLUSION

From discussion which already outlined so researcher try make conclusion as following: With web application on line car rental system this could increase efficiency time for delivery data rental history after use application this. Difference time send Becomes more short with count second compared with no use web application that is conducted delivery use transportation to office center around 3 o'clock and no direct sent the car, wait until a number of day after process verification done. There is efficiency cost in procurement paper for charging rental history , added no there is cost transportation for delivery data rental history , with existence web application this data stored neat and cost rental car could controlled and monitored by operational manager and owner so that avoid from overbudgeting . Storage data which already computerized make it easy company in process storage, search and report data which all that stored in database which create security data and process-process processing data so that data rental stored neat, clear and no is lost or scattered.

REFERENCES

Cranford, S. W. (2020). Seven Seconds or Less: Buzzwordy Titles in the Era of MOFs and Tinder. Matter, 3(4), 965–967.

Cronje, J. C. (2020). Designing Questions for Research Design and Design Research in e-Learning. Electronic Journal of E-Learning, 18(1), pp13-24.

Fryer, L. K., & Dinsmore, D. L. (2020). The Promise and Pitfalls of Self-report: Development, research design and analysis issues, and multiple methods. Frontline Learning Research, 8(3), 1–9.

Grieshaber, S. (2020). Equity and research design. In Doing early childhood research (pp. 177–191). Routledge.

Saragih, M., & Novimariono, N. (2020). An Experimental Study of The Effectiveness PEOW MODEL Through Applying Quartet Card in Teaching English Writing. Indonesian Journal of Education, Social Sciences and Research (IJESSR), 1(1), 32–40.

Shu, K., Mahudeswaran, D., Wang, S., Lee, D., & Liu, H. (2020). Fakenewsnet: A data repository with news content, social context, and spatiotemporal information for studying fake news on social media. Big Data, 8(3), 171–188.

Stewart, E. (2021). Detecting Fake News: Two Problems for Content Moderation. Philosophy & Technology, 1–18.

van der Giesen, C., Cucurachi, S., Guinée, J., Kramer, G. J., & Tukker, A. (2020). A critical view on the current application of LCA for new technologies and recommendations for improved practice. Journal of Cleaner Production, 259, 120904.