DEVELOPMENT OF WEB-BASED VEHICLE SERVICE APPLICATION PROGRAM ON CV X IN BEKASI

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Abstract
The increasing number of motorized vehicles, followed by the addition of new brands and types of vehicles, is certainly one of the factors causing the development of the automotive world in Indonesia and reflects the increasingly fierce competition in the automotive world. The research was conducted at CV X Bekasi with qualitative descriptive research methods. Data obtained from interviews the data sources were obtained from documents and informants. Research informants were managers, staff and main documents of CV X. Data analysis was carried out using interactive analysis techniques, which included data collection, data presentation, data reduction and conclusion drawing. So far, the manufacture of work orders is still manual (handwritten), so there are still frequent errors in customer service and data. Often the wrong number of spare parts causes the car repair process to be hampered. Can provide output in the form of Work Orders (SPK), Invoices and Reports.

Introduction
Today, the high mobility needs of each individual have an impact on the increase in the number of motorized vehicles (Mulyawan & Novia, 2016). The increasing number of motor vehicles followed by the increase of new brands and types of vehicles, is certainly one of the factors causing the development of the automotive world in Indonesia and reflects the growing competition in the automotive world (Wijaya & Christian, 2019). The increasingly fierce business competition and the increasingly rapid development of the business world encourage a company to always improve the quality and service to its consumers so that the company can survive with intense business competition (Septavia, Gunadhi, & Kurniawati, 2016). This competition occurs not only in the field of sales but also in the field of service services that include maintenance or repair workshops. Currently, the development of business actors in establishing workshop services continues to increase because workshop services are followed by the development or increase in motor vehicles (Bambang Noviansyah, 2016). Workshop is an activity based on knowledge and skills about equipment and methods for improve the condition of an object that was previously damaged or not use it into a form that is both beneficial and aesthetic (Meirizky Al Arief, 2019).

To be able to continue to follow the competition in the automotive world, especially workshop companies need to utilize the development of information technology such as the internet and websites to facilitate in carrying out daily activities, data processing, customer service, decision making and others (Priyanto & Khairel, 2014). The web is an internet service
that is used on a computer network that has a name and address and is a graphically rich source of information that can be accessed via a browser (Intan. et al., 2016). But there are still many companies that have not optimized their business with information technology as above, one of which is CV X Bekasi.

CV X is located in Bekasi, engaged in vehicle services, with an average of 8 to 28 cars entering per day (Rohi, 2016). This workshop is a repair shop for one of the car brands that only provides service and replacement of spare parts (Sumantri, 2015). CV X already has a computerized application program, but it is still not maximized by the leadership, because there are still problems such as frequent errors in making Work Orders (SPK) due to making SPK still manual (handwritten) thus hampering the vehicle service process, often the wrong part number so that the service time becomes longer and causes customers to complain, employee payroll is still done manually and there are no payroll details (salary slips) so there are often differences in employee salaries, as well as the need for web-based applications that can support the development and competition of workshop companies (Bunafit, 2013).

Therefore, to maximize employee performance and overcome existing problems, it is necessary to develop applications that can control spare parts inventory effectively, process service data and speed up the vehicle service process and can be accessed anytime and anywhere through a PC or mobile connected to the internet (Wibowo, 2015).

Method
The research was conducted at CV X in Bekasi research method using qualitative descriptive. Data obtained from interview data sources obtained from documents and informants. The research informants are managers, staff and primary documents from CV X. Data analysis is carried out with interactive technical analysis, which includes data collection, data presentation, data reduction and conclusion drawing.

Results and Discussion
This system design will be applied and developed in application programs consisting of Entity Relationship Diagram (ERD), Normalization, HIPO Structure, Program Flowchart and Program view design.

1. Entity Relationship Diagram.

Diagram 1
Entity Relationship Diagram (ERD)

2. Normalization
Normalization above Abnormal shape, first normal shape and second normal shape.
   a. Unnormalized Form (UNF)   b. First Normal Form (1NF)
c. Second Normal Form (2NF)

3. Structure HIPO
Hipo structure of service application program development on CV Suzuki Jaya Motor can be seen in the diagram as follows:
4. Flowchart Program
Flowchart program consists of main menu, customer data, mechanical data, service data, spare parts data, work orders, part expenditure transactions, service usage transactions, invoices and reports.

a. Main Menu

Diagram 6
Flowchart Main Menu

b. Customer Data

Diagram 7
Flowchart Customer Data

c. Mechanical Data

d. Data Service
Diagram 8 Flowchart Mechanical Data

Diagram 9 Flowchart Data Service

Diagram 10 Flowchart Sparepart Data

Diagram 11 Flowchart Work Order (SPK)

e. Sparepart Data

f. Work Order Data (SPK)

g. Part Exit Transactions

h. Service Usage Transactions
Diagram 12
Flowchart Part Exit Transactions

i. Invoice

Diagram 13
Flowchart Service Usage Transactions

j. Report

Diagram 14
Flowchart Invoice

1. Program Display Design

Login

Main Menu

Figure 1
Login View Design
Master Data Customer

Figure 2
Main Menu View Design
Master of Mechanical Data
Development of Web-Based Vehicle Service Application Program On CV. X In Bekasi

Figure 3 Master View Design of Customer Data

Master data service

Figure 4 Mechanical Data Master View Design

Master Data Sparepart

Figure 5 Design of Service Data Master Display

Figure 6 Master View Design of Sparepart Data

Work Order (SPK)

Sparepart Expenditure Transaction

Figure 7 Work Order Display Design (SPK)

Figure 8 Design of Sparepart Expenditure Transaction Display

Service Processing Transactions

Input Data Faktur
A. Implementation

1. Relationships Between Tables
Diagram 16
Relationships Between Tables

Customer
- id_customer *
- nama
- alamat
- telepon
- no_polisi
- tipe_mobil
- no_rangka
- no_mesin

User
- kode_user *
- username
- password
- nama_lengkap
- alamat
- no_telepon
- level

Surat Perintah Kerja (Spk)
- no_spk *
- id_customer **
- tanggal
- jam
- kilometer
- service
- kd_user **
- no_faktur
- Mekanik **
- saran

Pengeluaran part
- tgl_pengeluaran
- no_spk **
- user

Detail pengeluaran Part
- kode_part **
- nama_part
- jumlah_keluar
- no_spk **

Penggunaan part
- tgl_penggunaan
- no_spk **
- user

Detail penggunaan Jasa
- kode_service **
- nama
- no_spk **

Mekanik
- id_mekanik *
- nama
- alamat
- telepon

Sparepart
- kd_part *
- nama
- harga_beli
- harga_jual
- satuan
- stok

Jasa service
- id_service *
- nama
- harga

Keterangan:
* : Primary Key / Kunci Utama
** : Foreign Key / Kunci Tamu
*: Hubungan One to One
*: Hubungan One to Many

2. Database Structure
a. Customer Table

Table 1
Customer Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>id_customer</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td>varchar(50)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Phone</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>no_polisi</td>
<td>varchar(15)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>tipe_mobil</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>no_rangka</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>no_mesin</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

b. Work Order Table (SPK)

Table 2
Work Order Table (SPK)

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>no_spk</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
### Table 3
#### Mechanical Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>id_Mechanical</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td>varchar(50)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Phone</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4
#### User Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>kode_user</td>
<td>int(11)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>username</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>password</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>varchar(30)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>enum('Laki-laki', 'Perempuan')</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td>longtext</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>no_telepon</td>
<td>varchar(15)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>enum('admin', 'kasir')</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

### Table 5
#### Sparepart Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>kd_part</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>harga_beli</td>
<td>int(20)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>harga_jual</td>
<td>int(20)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Unit</td>
<td>varchar(10)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Stock</td>
<td>int(5)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

### Table 6
#### Sparepart Expenditure Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>date of expenses</td>
<td>varchar(15)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>no_spk</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>user</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
g. Sparepart Expenditure Details Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>kode_part</td>
<td>varchar(30)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>name_part</td>
<td>varchar(50)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Amount_Out</td>
<td>int(11)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>no_spk</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

h. Service Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>kd_service</td>
<td>varchar(9)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>int(20)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

i. Service Usage Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date_Use</td>
<td>varchar(15)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>no_spk</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td>varchar(10)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>User</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

j. Service Usage Details Table

<table>
<thead>
<tr>
<th>Column</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>kode_Service</td>
<td>varchar(30)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>name</td>
<td>varchar(40)</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>no_spk</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

3. Main Menu View, Program Input and Output

a. Login view
b. Main Menu View

Figure 14
Main Menu View

c. Customer Data View

Figure 15
Customer Data View

d. Customer data input view
Development of Web-Based Vehicle Service Application Program On CV. X In Bekasi

Figure 16
Tampilan Input Data Customer

e. Tampilan Data Mekanik

Figure 17
Mechanical Data Display

f. Service Data Display

Figure 18
Service Data Display

g. Sparepart Data View
h. Work Order Data Input View (SPK)

i. Work Order Print View (SPK)

j. Data Input View of Sparepart Expenditure Transactions
Development of Web-Based Vehicle Service Application Program On CV. X In Bekasi

Figure 22
Data Input View of Sparepart Expenditure Transactions

k. Service Usage Transaction Input Display

Figure 23
Data Input View of Service Usage Transactions

l. Invoice Data Input View

Figure 24
Invoice Data Input View
m. Print Invoice View

![Print Invoice View](image)

**Figure 25**
**Print Invoice View**

n. Report View

1) Sparepart Expense Report View

![Sparepart Expense Report View](image)

**Figure 26**
**Work Order Data Input View (SPK)**

2) Print Print Report on Sparepart Expenses

![Print Report on Sparepart Expenses](image)

**Figure 27**
**Print Report Exit Part view**

3) Service Usage Report View
Development of Web-Based Vehicle Service Application Program On CV. X In Bekasi

4. Compile Program / Program End Result
   a. Set up the ExeOutPut For PHP tools and the PHP files you want to turn into . Exe
   b. Run exeoutput tools for PHP, after the initial display appears from ExeOutPut For PHP, select New Application
   c. Step 1 on the Welcome view click Next
   d. Step 2 of the Source Folder Path view determines the location of the PHP project you want to turn into a. EXE (C:\xampp\htdocs\servicemobil), and then click Next.
   e. Step 3 of the Index Page view, specify the index file of the project that has been created (index.php), then click Next
   f. Step 4 of Output File view, specify the output location of the . EXE of the created project. (Desktop\X. EXE).
   g. Step 5 of The Output File view, give the application title of the project created earlier in application tille. (X), then click Finish
   h. If our PHP file is using a MySql database, configure it in the PHP Settings menu then select PHP Extensions, then change the settings by right-clicking on the php_mysql.dll and php_pdo_mysql.dll then select Compile into the EXE
   i. If you want to change the skin window, choose Application Settings menu then select Skin Properties on selected skin look for the skin that suits your wishes. For example: Ubuntu_Ext.skn
   j. When you're done with some configurations, click Compile Your Application. Wait until the process is complete in compile.
   k. Done (Application we just run)

Conclusion
With the Development of Vehicle Service Application Program on CV Suzuki Jaya Motor in Bekasi, it can be concluded as follows:
At this time, the creation of work orders is still manual (handwriting), so it is still often an error in the service and customer data. Often the wrong number of spare parts causes the repair process of the car is constrained. Can provide output in the form of Work Orders (SPK), Invoices and Reports.

REFERENCES


