



## Optimizing service management and digital sales in MSMEs with sales information system

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### ABSTRACT

Through digitization and sales information systems, MSMEs can improve their efficiency, market reach, and consumer experience in a digital era that is becoming increasingly advanced. The urgency of the research emphasizes on the rising level of business competition, urging MSMEs to adapt rapidly. If micro, small, and medium-sized enterprises (MSMEs) cannot keep up with technological trends and continue to rely on conventional methods, they risk losing market share and consumer loyalty. MSMEs can also be hindered by inefficient management and inability to utilize information technology. The research aims to implement a sales information system for MSMEs in optimizing service and sales management using the System Development Life Cycle (SDLC) method. According to the findings of the study, there are eight features of the sales information system that are tailored to the analysis of functional requirements in business processes in MSMEs, and the results of blackbox testing indicate that the system features have run successfully.

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## 1. INTRODUCTION

The Micro, Small and Medium Enterprises (MSMEs) sector has become one of the main pillars of the economy in many countries. MSMEs have a crucial role in creating jobs, supporting innovation, and maintaining economic diversity at the local level. However, MSMEs are also often faced with various challenges, especially in facing global competition and changes in consumer behavior patterns (Fadli et al., 2023; Saputra et al., 2022; Sudirjo, Apriani, et al., 2023).

In an increasingly advanced digital era, information technology has opened up new opportunities for MSMEs to optimize their service and sales processes. Digitalization and implementation of sales information systems can be the key to success in increasing efficiency, increasing market reach, and providing a better customer experience (Arsana & Lestari, 2021; Sadikin, 2020; Wijaya et al., 2022). Nonetheless, many MSMEs have not fully exploited the potential of this technology due to various reasons, including limited knowledge and resources (Muhammadiyah et al., 2022; Sudirjo & Sulistiyani, 2023).

Previously, there have been many studies that examined the application of information technology to SMEs. Some research (Amalia et al., 2023; Fitria et al., 2023; Kartini et al., 2022; Triwahyono et al., 2023) shows that MSMEs that have adopted a sales information system have succeeded in increasing their productivity and operational efficiency. Other studies also suggest that the application of information technology can help MSMEs to expand their market reach and increase accessibility for consumers (Praja et al., 2023; Rifani & Sadikin, 2020; Sudirjo, Sutaguna, et al., 2023; Wage et al., 2021, 2023). However, there is also research that highlights the obstacles faced by MSMEs in adopting information technology, such as limited funds, knowledge and skills (Boari et al., 2023; Sadikin, Naim, et al., 2023). Therefore, this study aims to understand more deeply about the potential and benefits of implementing a sales information system for MSMEs and identify solutions to overcome existing obstacles.

The urgency of the research problem is focused on the phenomenon of an increasingly high level of competition in the business world encouraging MSMEs to adapt quickly and efficiently. MSMEs that cannot keep up with technology trends and stick to traditional ways may face the risk of losing market share and struggling to survive (Boari, Ilindamon, & Rumaropen, 2022; Boari, Ilindamon, Mikir, et al., 2022). In the digital era, customers expect convenience and comfort in shopping, as well as access to fast and accurate information. If MSMEs are unable to provide services and sales that meet customer expectations and are able to adopt technology, MSMEs are at risk of losing loyalty and trust (Indriyani & Purnama, 2021; Oktavia & Indriyani, 2022; Sadikin, Yodiansyah, et al., 2023). In addition, inefficient management and the inability to utilize information technology can lead to wastage of time, resources and costs, which can ultimately hinder the growth and development of MSMEs (Muhammadiyah et al., 2022; Muliadi et al., 2022; Sadikin et al., 2022).

So the purpose of this study is to implement a sales information system is an effective solution to overcome the challenges faced by MSMEs in optimizing their service and sales management. With a sales information system, MSMEs can automate various business processes, from stock management, transaction recording, to sales data analysis. This can reduce manual workload, speed up workflow, and improve business processes for MSMEs. The results of this study are expected to make a positive contribution in developing an effective and sustainable digital sales and service management strategy for MSMEs. In addition, this research is also expected to be a reference and source of knowledge for related parties, academics,

## 2. RESEARCH METHOD

The research method used in "Optimizing Digital Sales and Service Management for MSMEs with Sales Information Systems" is SDLC (System Development Life Cycle) or System Development Life Cycle (Ahmad et al., 2022; Fauzi et al., 2023; Rachmad et al., 2023; Sudipa et al., 2023). SDLC is a structured approach used to design, develop, implement and manage information systems.

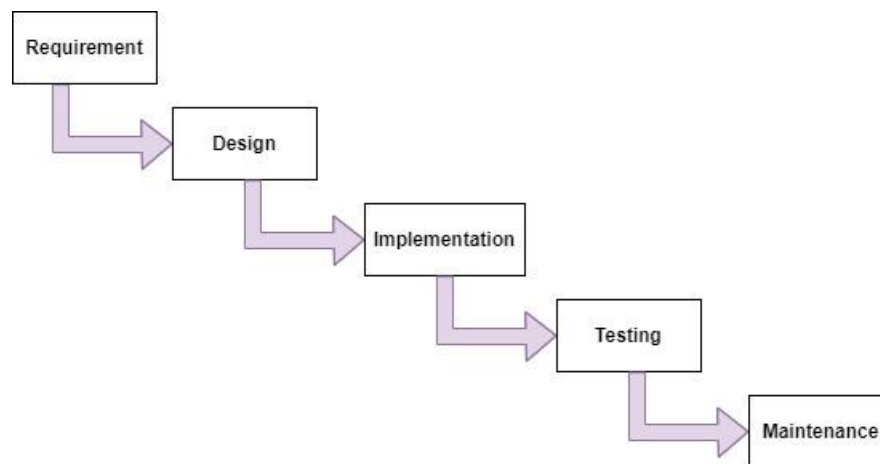


Figure 1. SDLC Method Stages

Based on Figure 1, it can be explained the stages of the SDLC method in developing a sales information system for MSMEs, namely:

a. Identifying Needs and Planning

The initial stage in SDLC is identifying business needs and planning a sales information system that will be developed for Cakra Mandiri MSMEs, namely MSMEs engaged in swimming pool sales and maintenance. At this stage, from the observation process there are problems from UMK Cakra Mandiri, namely related to business processes from written records used in transaction processes, service to customers who only rely on offline orders and the problem of incompatibility of goods inventory which is too much and piled up in the Warehouse, so that it can be made analysis of functional requirements from users to later become system features.

b. System Design

This stage involves the design of the functional requirements analysis and the design of the event list of the system so that it can describe the system features. At this stage also designing the user interface display and database structure to ensure the system can run according to the expectations and needs of MSMEs.

c. System Implementation

This step is the implementation stage of the system design. Researchers and technical teams work to develop and build a sales information system based on a pre-made design. This process involves programming, integration, and testing of the system to ensure that everything is working properly.

d. System Testing

After system development is complete, the testing phase is carried out to verify that the system works according to the requirements and objectives that have been set. This test includes testing system functionality using blackbox testing.

e. Maintenance

After the system is implemented, the maintenance phase takes place and there is a process of solving bugs, the system continues to function properly. By applying the SDLC method in this study, it is hoped that the resulting sales information system can be structured properly, function as expected, and can help optimize service management and digital sales for MSMEs efficiently and sustainably.

### 3. RESULTS AND DISCUSSIONS

#### 3.1. Functional Requirements Analysis

In the early stages of the research, an analysis of the needs of users of sales information systems was carried out in SMEs. Researchers conducted interviews with Cakra Mandiri MSME owners and employees to understand the needs and challenges faced in current sales and service management. There is an analysis of functional requirements, namely: (a) The system can perform login access rights. Access rights are divided into users as shop staff, warehouse staff and owners. That is, users can log in after filling in user data. As well as users can perform login access rights with user data that has been determined. (b) The system must be able to process user data, such as adding, changing, searching, and storing data in the database. That is, shop staff can add data to the database according to the data entered, shop staff can make changes to data in the database according to the data entered and shop staff can search data in the database according to the data entered.

Furthermore, from the results of the functional requirements analysis, an event list is created that can become the features of the system. The Event List is an event that will later occur on a system. Based on the results of the analysis of a system, it can be described in the Event List which is likely to exist in the inventory and sales information system at Cakra Mandiri MSMEs, as follows: Login, Manage User Data, Managing Goods Data, Manage Return Data, Manage stock taking data, Manage Supplier Data, Manage Sales Transaction Data, Manage Purchase Transaction Data, Manage Orders of Goods, Print Reports

#### 3.2. System planning

In system design, there is an overview of the system that can provide an explanation from system users and process flows that can be carried out on the system.

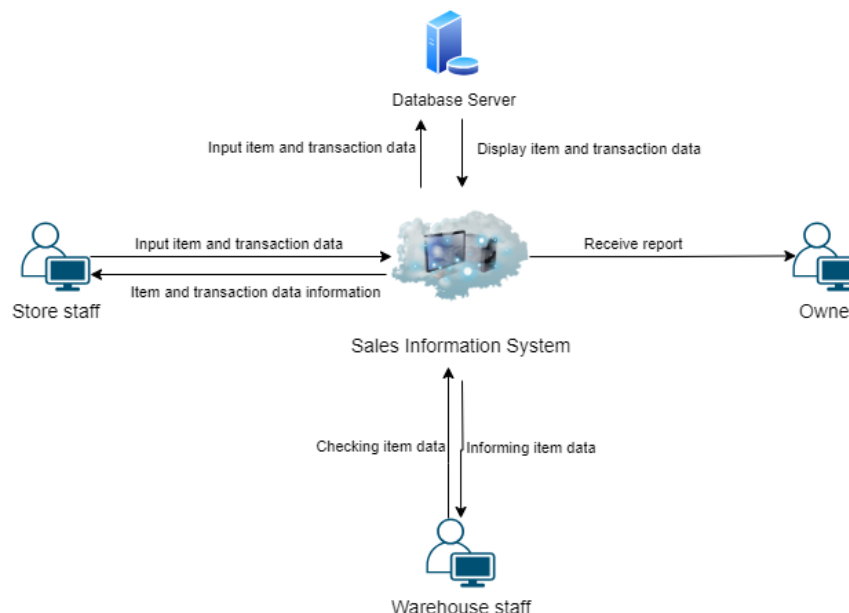


Figure 2. System Overview

Based on Figure 2, it can be explained that the general description of the system describes the process flow and the system to be designed. Starting from the store staff who input data on goods, sales transactions, purchase transactions, supplier data, and ordering goods, all of which must access the goods database. Then afterwards the

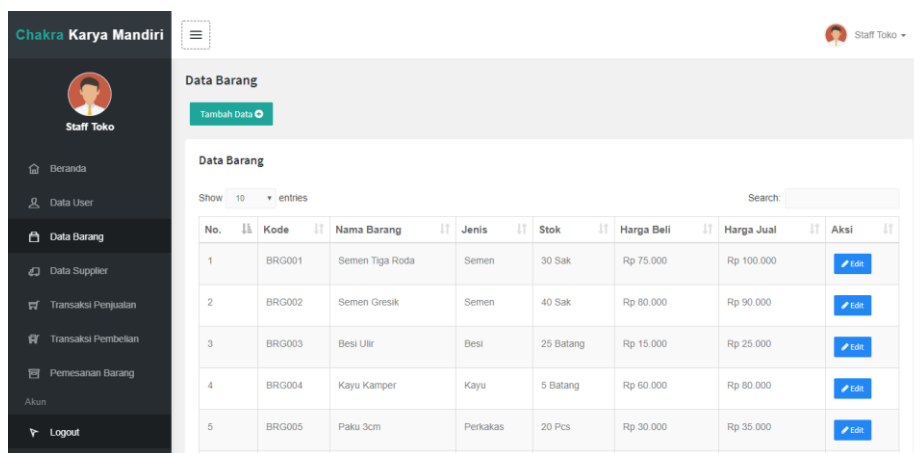
warehouse staff can input return data, stock taking data, check goods data, check supplier data, and the owner accessing this system can only input user data and view reports only.

### 3.3. System Implementation

System implementation is obtained from the analysis of functional requirements and the event list of the system so that an implementation of the sales information system at UMK Cakra Mandiri can be made.

#### a. Goods Data Management Page

Pageitem data is the page that will appear when the store staff clicks on item data on the dashboard. Where on this page there is a menu that can be accessed by store staff. The Goods Data page can be seen in Figure 3.

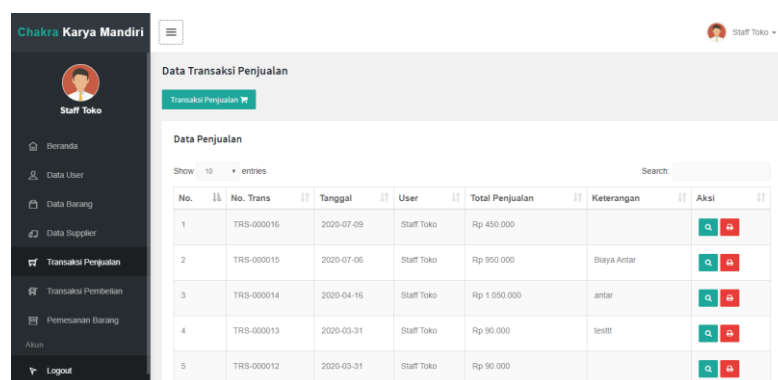


No.	Kode	Nama Barang	Jenis	Stok	Harga Beli	Harga Jual	Aksi
1	BRG001	Semen Tiga Roda	Semen	30 Sak	Rp 75.000	Rp 100.000	[Edit]
2	BRG002	Semen Gresik	Semen	40 Sak	Rp 80.000	Rp 90.000	[Edit]
3	BRG003	Besi Ulir	Besi	25 Batang	Rp 15.000	Rp 25.000	[Edit]
4	BRG004	Kayu Kamper	Kayu	5 Batang	Rp 60.000	Rp 80.000	[Edit]
5	BRG005	Paku 3cm	Perkakas	20 Pcs	Rp 30.000	Rp 35.000	[Edit]

Figure 3. Goods Data Page

#### b. Sales Transaction Data Page

Pagesales transaction data is the page that will appear when the store staff clicks on Sales Data on the dashboard. Where on this page there is a menu that can be accessed by store staff. The Sales Data page can be seen in Figure 4.



No.	No. Trans	Tanggal	User	Total Penjualan	Keterangan	Aksi
1	TRS-000016	2020-07-09	Staff Toko	Rp 450.000		[Detail] [Delete]
2	TRS-000015	2020-07-06	Staff Toko	Rp 950.000	Biaya Antar	[Detail] [Delete]
3	TRS-000014	2020-04-16	Staff Toko	Rp 1.050.000	antar	[Detail] [Delete]
4	TRS-000013	2020-03-31	Staff Toko	Rp 90.000	tesitl	[Detail] [Delete]
5	TRS-000012	2020-03-31	Staff Toko	Rp 90.000		[Detail] [Delete]

Figure 4. Sales Transaction Data Page

#### c. Purchase Transaction Data Page

Pagepurchase transaction data is the page that will appear when the store staff clicks on Goods Purchase Data on the dashboard. Where on this page there is a menu

that can be accessed by store staff. The Purchase Transaction Data page can be seen in Figure 5.

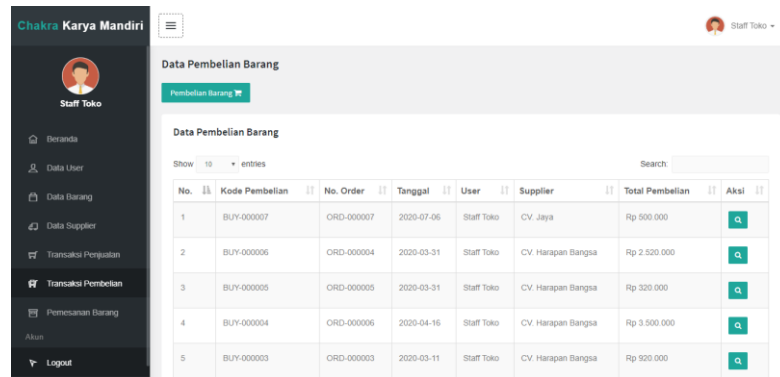


Figure 5. Purchase Transaction Data Page

d. Owner Report Data Page

Page the report is the page that will appear when the owner clicks on the sales data report menu. This page contains the desired report period and type. After selecting the period and type of report then the report can be printed.

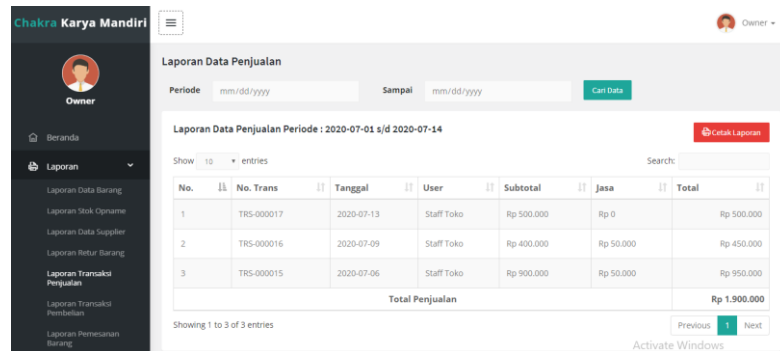


Figure 6. Sales Data Report Page

e. Warehouse Staff Goods Data Page

Page item data is the page that will appear when the warehouse staff clicks on Goods Data on the dashboard. Where on this page there is a menu that can be accessed by the warehouse staff and this process is connected to the goods data process in the store staff. Goods Data page can be seen in Figure 7.

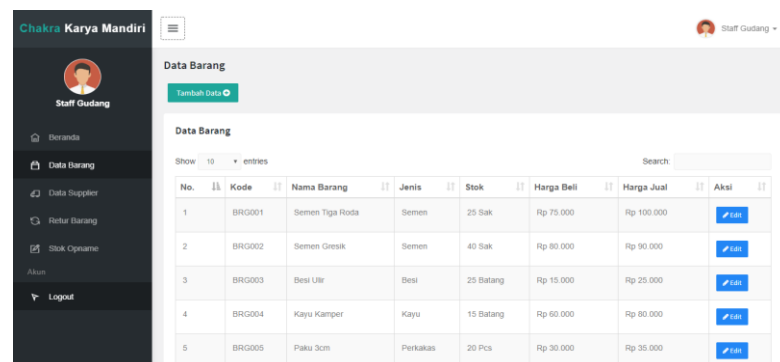


Figure 7. Warehouse Staff Goods Data Page

#### f. Warehouse Staff Supplier Data Page

Page supplier data is the page that will appear when the warehouse staff clicks on Supplier Data on the dashboard. Where on this page there is a menu that can be accessed by the warehouse staff and this process is connected to the supplier data process in the store staff. The Supplier Data page can be seen in Figure 8.

No.	Kode	Nama Supplier	Alamat	No. Telp	Aksi
1	SPL001	CV Harapan Bangsa	Dempasar	08111111112	<a href="#">Edit</a>
2	SPL002	CV Jaya	Pedungan	08996002132	<a href="#">Edit</a>
3	SPL003	PT Makmur	Pedungan	08771225990	<a href="#">Edit</a>
4	SPL004	LID Shee	Pakerisan	089976675543	<a href="#">Edit</a>

Figure 8. Warehouse Staff Supplier Data Page

#### g. Warehouse Staff Stock Opname Data Page

Page stock taking data is the page that will appear when the warehouse staff clicks on the stock taking data on the dashboard. Where on this page there is a menu that can be accessed by warehouse staff. The Stock Taking Data page can be seen in Figure 9.

No.	Tanggal	User	Keterangan	Aksi
1	2020-07-05	Staff Gudang	Barang Rusak	<a href="#">Q</a>
2	2020-07-03	Staff Gudang	Barang Hilang	<a href="#">Q</a>
3	2020-04-16	Staff Gudang	hilang	<a href="#">Q</a>
4	2020-03-31	Staff Toko		<a href="#">Q</a>
5	2020-03-11	Staff Toko	hilang	<a href="#">Q</a>

Figure 9. Warehouse Staff Stock Taking Data Page

### 3.4. System Testing

In this study apply the test method that is Black box testing, this method is used for software testing that focuses on testing system functionality without paying attention to internal implementation details so that system features can be identified according to user needs. Blackbox testing of sales information systems for SMEs can be seen in table 1 below.

Table 1. Blackbox Testing of the MSME Sales Information System

No	System Features	Test Scenario	Test result
1	Login	It's as expected	Valid
2	Manage user data	It's as expected	Valid
3	Manage item data	It's as expected	Valid
4	Manage sales data	It's as expected	Valid
5	Manage purchase data	It's as expected	Valid

Based on table 1 it can be explained that blackbox testing on the main features of the system has been running in accordance with the functional requirements analysis, so the results of the test show that all the main features of the system are valid and running well.

#### 4. CONCLUSION

The main conclusion of the research is that the application of the SDLC method in digital service and sales information systems is able to meet user needs in contributing, especially helping the effectiveness of digital records and transactions carried out by MSMEs, this is evidenced by the system features generated based on user needs analysis by testing 6 blackbox testing scenarios which state the results are valid. Suggestions for future research are to analyze functional requirements to integrate sales features with inventory features and financial systems.

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