Designing an information system to automate service management at the enterprise

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\textbf{Abstract}. In this paper we consider the development of an automated information system for a coffee shop that meets the current standards and needs of this business. Emphasis is placed on both hardware infrastructure and content structure. This AIS system provides all the necessary functionality for a coffee shop to successfully run its business, including convenient menu search, online ordering and payment. In addition, the application helps to reduce the workload of the staff, as many tasks that were previously performed by employees can now be automated and performed by the system being developed.

\section{Introduction}

In today's world, gastronomic establishments are faced with the need to improve their operational processes in order to meet the growing expectations and demands of their customers, as well as to increase the efficiency and reliability of their operations. One of the key ways to achieve this goal is to develop and implement software and hardware designed to automate various aspects of a gastronomic establishment's operations.

The relevance of performing system development is related to the huge influence of the human factor on the provision of quality services. The main parameters of the influence of human interference are illegible handwriting, haste and panic, errors in calculations. Automated information system is developed in order to either eliminate these interferences or to minimise their impact on the process of service delivery. The system being created is designed to store important information about the financial manipulations of the company, to generate uniform reports and cheques, as well as for product accounting and stop-list formation. The employees who will use this AIS will have access to the necessary information, data processing and calculation tools, as well as subroutines for compiling documents according to their level of authorisation [1, 2, 3].

One of the important advantages of implementing such a system is the possibility of ensuring a high degree of documentation and automation of processes. For example, the AIS will store a variety of data ranging from information on completed cheques and documents to data on employees, meals, products in stock, income and expenses for the day, incidents, deliveries and logs of system usage. This will not only reduce the risk of human error such as illegible handwriting, rush and panic, and calculation errors, but will also significantly...

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improve the management of restaurant operations by giving employees access to up-to-date
data and the tools to process it [4, 5, 6].

In addition, the system under development will provide additional features such as
corporate chat, access to data from geolocation services and logging of staff actions when
working with AIS. All these functions will make the management of a gastronomic
establishment more efficient and customer service more qualitative, emphasising the
relevance of implementing automated information systems in modern gastronomic
enterprises [7, 8, 9].

2 Objectives of the system creation

The purpose of creating this automated information system for a gastronomic establishment
is to achieve a number of important results aimed at improving the operation and management
of the business. First of all, the system is designed to optimise internal business processes,
which will improve the operational efficiency of the company. Automating tasks such as
product accounting, order processing and financial control reduces the likelihood of errors
and greatly simplifies staff tasks [10, 11, 12].

However, the purpose of the system is not limited to internal processes. An important
aspect is to improve the quality of customer service. AIS allows orders to be processed more
quickly and accurately, which reduces waiting times and increases customer satisfaction. In
addition, the system can provide additional options such as online ordering, which increases
convenience for visitors [13, 14, 15].

Another important goal is to improve management performance. Management has access
to up-to-date information on financials, sales, inventory and other key business metrics. This
helps to make more informed decisions, manage resources and personnel, and control
financial flows [16, 17, 18].

The system also ensures compliance with accounting, tax and sanitation regulations and
standards. This helps prevent potential violations and associated fines.

Finally, the system provides data analysis and decision-making capabilities based on the
data. By collecting and analysing information, it helps to identify trends, forecast demand,
optimise menus and manage resources [19, 20, 21].

The overall goal of this system is to improve the competitiveness of the gastronomic
establishment, ensure customer satisfaction and facilitate the management of all aspects of
the business in this area [22].

3 Requirements for the structure and functioning of the system

AIS "Coffee" needs to be implemented in the form of three subsystems. The architecture
of the system is shown in Fig. 1.
The customer communication subsystem is designed to inform customers about order status and delivery information.

The subsystem of product accounting is intended for accounting of products in the warehouse, information about the supplier and the sheet of product acceptance and issuing it to the kitchen of the enterprise [23, 24, 25].

The accounting subsystem in the Automated Information System (AIS) for a gastronomic establishment is a critical part to ensure accurate accounting of finances and financial transactions. Its purpose is to effectively manage the establishment's finances, comply with tax regulations, generate reports and ensure financial transparency [26, 27, 28].

The hardware structure of the system is shown in Fig. 2.

4 Conclusion

The proposed implementation of the AIS system will enable employees and authorized partners of the company to create and review proposals related to delivery organization, make decisions regarding these proposals, input information about the enterprise's purchased goods into the system, upload media files necessary for advertising campaigns, monitor scheduled product deliveries, and manage order processing. Additionally, the AIS system offers
traditional e-commerce functionalities commonly online order registration, and payment processing [29].

Considering the previously mentioned system capabilities that facilitate data synchronization among AIS subsystems, we anticipate a reduction in the need for routine tasks, particularly the re-entry of data. This will eliminate the necessity for third-party software that was previously required due to the limitations of other software products. As a result, this will decrease the company's financial expenditures associated with maintaining its software infrastructure and free up staff to focus more on non-routine tasks [30].

To store data within the AIS system, the PostgreSQL 15 Database Management System (DBMS) is recommended. The server component of the web application should interact with the database using the Squirrel library for constructing SQL queries. AIS should have a graphical user interface corresponding to the layouts shown in Fig. 3.

Fig. 3. Interface layout for the "report generation" page

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