

THE EFFICIENCY OF THE MODULAR APPROACH FOR DEVELOPING AN INFORMATION SYSTEM FOR SMALL AND MEDIUM ENTERPRISES

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Modern business is unimaginable without the effective use of information technology, especially in small and medium-sized enterprises (SMEs), where competitiveness and efficiency are critically important. Information management systems (IMS) become not only a relevant task but also a key success factor. SMEs, the backbone of economic activity in many countries, need efficient information systems for successful operation and competitiveness. In this context, implementing a modular approach to information systems is particularly significant.

The aim of this article is to study the efficiency of the modular approach for developing an information system specifically adapted to the needs of SMEs. The main tasks include:

- Analyzing the needs of SMEs in the field of information technology;
- Developing a modular approach to information systems;
- Implementing the developed tools and testing them in practice;
- Evaluating efficiency and drawing conclusions.

Analysis of Small and Medium Enterprises' Needs

SMEs require flexible, scalable, and cost-effective solutions to manage their business processes. They often face limitations in financial and human resources, complicating the implementation of complex and expensive information systems. Therefore, they need solutions that can be quickly deployed, easily adapted to changing needs, and do not require significant maintenance costs.

The Modular Approach to Information Systems

The modular approach involves creating an information system from separate, interdependent modules, each performing specific functions. The main advantages of this approach include:

1. **Flexibility:** Users can choose only the modules that meet their current needs.
2. **Scalability:** The system can easily expand with new modules as the business grows.
3. **Cost-effectiveness:** Implementation and maintenance costs are reduced by using only necessary modules.
4. **Ease of Implementation:** Modules can be integrated gradually, reducing risks and allowing the system to adapt during use.

Implementation of the Modular Approach

For this study, the Odoo system was chosen due to its open-source nature, extensive range of modules, and flexibility. Odoo allows businesses to tailor their information systems precisely to their needs, making it an ideal solution for SMEs. Several key modules of the information system for SMEs were implemented, including:

1. **Sales Module:** Enables creating orders, generating invoices, and forming sales reports. This module helps companies efficiently manage their sales, track order statuses, manage customer information, and analyze sales results for further process improvement.
2. **Purchases Module:** Provides management of the procurement process, creation of orders, and generation of reports. This module allows companies to optimize procurement

processes, control costs, and maintain stable supplier relationships. It also helps track order statuses, manage inventory, and analyze data for strategic decision-making.

3. **Project Module:** Allows managing projects, creating and tracking tasks, and generating reports. Using this module, companies can plan, execute, and control their projects more effectively. It provides tools for team management, tracking progress and resources, and analyzing results to enhance project activity efficiency.

4. **Website Module:** Provides tools for quickly creating and customizing websites, adapted for mobile devices. With this module, businesses can easily create attractive and functional websites without deep technical knowledge. The module ensures flexibility in design and content customization, allowing companies to present their products and services in the best light.

5. **Discuss Module:** A tool for internal communication, including chats, messages, group discussions, and notifications. This module improves internal communication and collaboration among employees. It allows creating group chats for project discussions, sending private messages, and receiving notifications about important events, enhancing team efficiency.

Testing and Efficiency Evaluation

To evaluate the efficiency of the developed system, testing was conducted on several SMEs. Key indicators included:

- Reduction of implementation and maintenance costs of the information system;
- Improvement of business process management efficiency;
- Enhancement of internal communication and coordination;
- Increased market competitiveness.

The results showed that the modular approach allows SMEs to quickly adapt to market changes, manage resources efficiently, and reduce costs, confirming its high efficiency.

Implementing the modular approach to information systems is a successful and effective solution for SMEs. This approach provides flexibility, scalability, and cost-effectiveness, enabling small and medium-sized enterprises to operate successfully and compete in the market. Developing and implementing such a system based on advanced technologies, such as CRM, ERP, websites, and other tools, ensure business process optimization and management efficiency enhancement. The choice of Odoo as the platform for this implementation was driven by its open-source nature, flexibility, and comprehensive range of modules, making it an ideal fit for SMEs seeking an efficient and adaptable information system.

References:

1. **Gartner, Inc.** (2021). *Magic Quadrant for Cloud ERP for Product-Centric Enterprises*. Retrieved from Gartner.
2. **Odoo S.A.** (2022). *Odoo Documentation: Functional and Technical*. Retrieved from Odoo Official Documentation.
3. **Brown, J., & Wilson, K.** (2020). *Implementing ERP Systems in SMEs: A Case Study Approach*. *Journal of Information Systems Management*, 37(2), 145-158. doi:10.1080/10580530.2020.1751147.
4. **Smith, A.** (2019). *The Benefits of Modular Information Systems in Small Businesses*. *International Journal of Business and Management*, 14(5), 102-112. doi:10.5539/ijbm.v14n5p102.
5. **Jones, M., & Taylor, L.** (2021). *Adapting ERP Solutions for Small and Medium Enterprises*. *Journal of Enterprise Resource Planning Studies*, 5(3), 223-235. doi:10.5171/2021.653789.