Role of Integrated Information Systems for Modern Organizations

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Abstract. The article is devoted to the study of the role of integrated information systems in an unstable external environment characterized by negative development trends in modern conditions. The analysis of the situation on the information technology market allowed us to identify the main advantages of integration of such systems in the organization’s activities, and predict the effect of their implementation. Special attention is paid to the issue of forming relationships with customers, the use of analytics tools that provide an assessment of the quality of work for departments responsible for customer relations, the effectiveness of sales tactics, communication with customers through various channels. An algorithm for implementing integrated information systems is proposed, taking into account specific features of implementing the system in the organization’s activities from the initial stage, and an algorithm for embedding it into an existing system in the organization is also considered. Recommendations have been developed for the implementation of integrated information systems aimed at improving the competitiveness of organizations in modern conditions, allowing them to respond flexibly to changes in the conditions of limited use of labor resources.

Keywords: Advantages • Customers • Functionality • Information system • Information technology • Loyalty

1 Introduction

The market of enterprise management systems is currently the most attractive and fast growing. The current economic situation, which is largely determined by global social trends, also plays a significant role in the emerging dynamics. The impact of the COVID-19 on the economy digitalization is incredibly strong. The coronavirus accelerated the digitalization of the world economy by at least 10 times [10].

Analytical reports of marketing, information and consulting agencies have recently massively revised the trends they indicated earlier. The main source of change was the impact of the pandemic on the end user, who will completely change their behavior in...
the post-pandemic period due to the digital experience they have gained. Business is forced to adapt.

The proof is the volume of increase in e-commerce. According to the Russian Association for Electronic Communications (RAEC), Runet’s contribution to the Russian economy in 2019 amounted to 6.4 trillion rubles [7]. During the stabilization period of the industry’s development (2016–2019), the growth rate was 15–20%. According to analysts, with a moderate development of the crisis scenario, the growth rate of the Internet market volume will be 6–10% in the first and fourth quarters of 2020 [9]. These processes set a very important task for organizations – implementing a strategy to attract customers in the context of changing preferences, habits, declining social standards of living, etc. Each organization should address the issue of implementing a modern way to quickly update information and data to understand customer needs, as well as quickly remove from offers what is no longer relevant [3]. If the company can provide customers with the ability to manage the digital experience, it will get information about their wishes and needs quite quickly.

Moreover, almost all organizations are forced to work not only in the face of an increasing number of information threats and attacks [11], but also with reduced staff, according to the requirements of social distance. In these conditions, it is integrated information systems and their implementation that can create a competitive advantage and help to keep the organization in the zone ensuring the effectiveness of financial and economic activities.

2 Methodology

Analytical reports of consulting agencies, static information, and Internet resources were used for the analysis. The study was conducted on the basis of traditional qualitative analysis of materials, as well as identifying patterns of the situation development by applying quantitative methods of analysis. In general, the research purpose to study the situation on the information technology market in order to develop recommendations for improving the competitiveness of organizations in modern conditions by implementing integrated information systems that allow flexible response to changes in the conditions of limited use of labor resources.

3 Results

In order to solve the tasks set in the study, the SAP S/4HANA and SAP CRM systems were considered in detail. The SAP S/4HANA system is an intelligent integrated ERP system based on the in-memory SAP HANA database. Like any ERP system, it can reliably store a large amount of data and provide all the necessary information in the specified format. SAP S/4HANA (the system replaced SAP ERP) is an advanced platform in the SAP product line that extends capabilities of previously existing solutions. SAP S/4HANA combines advantages of the well-known SAP ERP platform,
best practices of process and industry expertise, and advanced technologies for processing, storing and transmitting data. SAP S/4 HANA has a number of significant technological advantages that provide record-breaking computing speed and comprehensive business automation in accordance with the ERP II concept. It can act as the main platform for complex business automation, and successfully complement the existing IT landscape [4, 8]. It has ready-made built-in tools for integration with other SAP solutions and other external systems. It has a modular structure that allows to use separate blocks to automate business processes and scale the solution as needed with minimal costs and maximum quality of the final solution.

The process-oriented architecture of SAP S/4HANA ensures the application of the world’s best automation practices, while maintaining extensive tools for customization when creating an enterprise ERP system. Centralization of SAP S/4HANA information flows allows to increase the speed, quality and control of information support for key and supporting business processes of the enterprise. The distributed architecture of SAP S/4HANA makes it possible to get high speed of calculations, representation and data transfer regardless of the number of remote branches of the enterprise. SAP S/4HANA includes a set of tools that take into account the industry specifics of business: manufacturing, retail, distribution, construction, telecommunication, etc. Information security and a well-established policy for differentiating access rights to information are also present in the system, technological superiority due to the use of advanced developments in the field of database management system, cloud solutions, IoT, Big Data, Blockchain, etc.

The implementation of SAP S/4HANA creates additional opportunities for improving the performance of both individual employees and the company as a whole:

- combining all the company’s divisions in a single information space, creating a “single source” of data,
- optimization of the business architecture through the use of the world’s best practices of enterprise management,
- improving the quality and reliability of information by typification and system control of data entry, eliminating duplicate data entry points and automating the main volume of transformations and calculations,
- improving the quality of accounting, its transparency, and control of operations (measures to increase employees’ motivation using a simple and visual KPI system),
- reducing the number and cost of servicing used IT systems and applications by applying the universal SAP S/4HANA platform,
- 20–80% faster input, search and processing of information in the ERP system.

SAP CRM is a software that allows you to combine personnel, processes, and company management methods into a single information space to achieve the goal of improving the quality of interaction with customers.
First of all, the SAP CRM system is oriented and pre-configured for the main business processes of absolutely any company. This increases the effectiveness of marketing interaction with the customer base. This kind of effect allows you to minimize the sales cycle, which reduces the cost of servicing the consumer. Ultimately, it simplifies the decision-making process, thanks to instant data analytics and so on [1].

Using the SAP CRM electronic platform allows you to coordinate the key processes of the organization aimed at mutually beneficial relations with the client. The CRM system optimizes sales, marketing activities, service, analytics, e-commerce procedures, and so on. The SAP CRM product enables the company to maximize the use of all communication channels for effective interaction with customers. Deep integration of the CRM system with modules for informational communication with the customer (telephony, web chats, e-mail distribution systems, SMS communications) ensures the flow of data from customers to employees of the service department and back on the basis of a single digital platform.

The entire history of interaction with a specific customer is stored in a separate profile, which gives the manager all the necessary information (the used product, contact history, personal data, etc.) in real time [2]. Due to this, the specialist is able to provide timely support for a customer or offer additional services. At the same time, the system allows you to integrate as painlessly as possible into any SAP-based solutions of the company. This provides an incomparable advantage for doing business and reduces the cost of integration interactions between systems.

SAP CRM creates a closed system of relations with the client base, providing solutions for working with Big Data, Predictive Analytics tools and business process automation across all management verticals. Since further we will talk about additional SAP products, such a system as SAP CRM can be used as a tool for maintaining price lists, in particular when communicating with the company’s customers. Its use reduces the company’s risks and helps optimize pricing, increases productivity and makes business processes more convenient. A single customer base when interacting with pricing policy allows you to effectively maintain and select the desired price lists for a specific range of customers of the company.

However, when it comes to suppliers or providing customers with personal access to the price list database, there are problems with the appropriate use of the SAP CRM system. This, unfortunately, is a disadvantage of this system, but the solution itself can only be relevant when interacting with the company’s customers or when the company’s business is absolutely customer-oriented.

4 Discussion

There is no single solution when it comes to migrating of SAP S/4HANA, and each organization is at a separate stage of SAP S/4HANA readiness. Some companies decided to start cleaning by implementing a new system or approach from scratch [6]. Other businesses prefer to perform a complete system conversion or a “Brownfield” approach because it doesn’t disrupt their existing business process. And for those companies that want to consolidate their current system landscape in SAP S/4HANA, they can choose to transform the landscape.
Since each methodology has its own advantages and challenges, you need to look at the database, platform, and configuration before deciding which route might be most appropriate for a particular situation. Each methodology is analyzed below to help the company come up with a specific best option for implementing the SAP S/4HANA system. An approach from scratch requires a new implementation of SAP S/4HANA. This can be a tedious and time-consuming project, especially in terms of change management, since you need to start from scratch. The advantage of this path is that you can redefine and simplify business processes and take full advantage of the capabilities of S/4HANA. This does not guarantee that the new embedded system will actually work on the operating side, but there will be time to configure it.

Going through this re-implementation path can lead to confusion, because the system will undergo drastic changes. Therefore, if you follow this path, you need to make sure that the company is ready for the entire reengineering process. Taking into account all the consequences of the “from scratch” approach, there is an alternative path: the “from scratch” route. This is the latest SAP recommendation for existing customers who work on SAP ECC and want to upgrade it to S/4HANA, but still retain their investment in the current system.

With the transformation of the system, the entire system and business processes will be transferred to the new S/4HANA platform. This approach can offer a better solution if the organization does not allow any changes in the business process operations. In fact, this allows you to do business with less interruptions, since this is a technical transformation of the system. The disadvantage is that there may be possible technical problems, but SAP has provided conversion tools and recommendations for this. Therefore, the risk can be reduced.

The focus of landscape transformation is not the entire system conversion, but rather individual parts of the business process that the company wants to migrate. Using SAP landscape transformation, you can selectively migrate data to SAP S/4HANA or consolidate your business landscape into a single global system. This means that the process that gives the best and fastest ROI for migrating to S/4HANA is selected first. Basically, SAP clients choose this path.

Choosing the right approach requires the organization to conduct extensive analysis and evaluation of both the technical and functional aspects. The existing system environment, business functions, and user readiness are a few things to consider. More importantly, the organization needs to look at its own roadmap for digital transformation. That is, determine where the company is located and where it wants to go in the coming years. After determining the path, it’s time to prepare for the actual migration by planning the exact steps necessary for the successful implementation. If you decide to run a new implementation using the initial stage approach, there is a whole methodology called SAP Activate that explains each required step (Fig. 1).
On the other hand, if you decide to perform a system conversion or landscape conversion, there is a sequence that the organization has to follow to ensure smooth operation. The process is divided into two phases: preparation and implementation (Fig. 2).

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**Open**

the first step is to determine the business value, and then develop a roadmap and strategy that will be used in the implementation of the project

**Prepare**

at this stage, the project is initiated and work begins on the final project plans, as well as preparing the project team; choosing the right people for the team is essential to ensure that the project works optimally.

**Explore**

SAP S/4HANA offers a wide range of business solutions, especially for new implementations. At this stage, the volume estimation process will be completed, and instead of the traditional project requirements, a Fit/Gap analysis can be adopted to ensure more efficient and faster implementation.

**Understand**

this stage focuses on the process of implementing the business requirements that were defined in the previous stage; these include system configuration parameters, integration scenarios, and data migration.

**Deploy**

at this stage, the production environment is configured; when everything is ready, the corresponding operations will be performed and the business operations will be transferred to the new system.

**Perform**

the company is ready to make a new decision and launch a new system.

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**Fig. 1.** Stages of implementation of the integrated information system from the initial stage (Source: authors).
The transition to S/4HANA is inevitable for every SAP client. It’s not a matter of “if”, but only “when”. However, the migration process can be intimidating for clients because they don’t really know what to expect from the process. This is why choosing the right approach will be important for business transformation. In this regard, it is

**Preparation stage**

*System requirements and planning*

this assessment should be conducted to analyze the existing system and then determine the best possible solution to perform the migration;

*Pre-conversion check*

checking the compatibility of any add-ins or business functions that are active in the current system is necessary to make sure that they can technically be converted to S/4HANA. SAP provided a simplification element check to determine the required steps before converting an existing system.

*Migrating user code*

this step will check the user code for compatibility with S/4HANA; this is important, especially if there are improvements in the current system.

**Implementation phase**

*System installation*

after the preparation stage, you can start converting to SAP S/4HANA; this step includes database migration and data conversion.

*Subsequent actions*

after the technical transformation, all the relevant adjustable parameters should be transferred.

*Checking data consistency*

as SAP S/4HANA collects all relevant components from financial accounting (FI) and controlling (CO) into a single data pool called a universal log, you should perform reconciliation between a reconciliation between accounting data of components; in this way, the data can be combined correctly in universal log.

*Iterative testing*

when the configuration is complete and all the data is migrated, you need to run test iterations to make sure that the system is working correctly.

**Fig. 2.** Integration stages of information system in an organization (Source: authors).
very important to pay attention to the issues of training, updating the knowledge and competencies of both performers and individuals who influence the process of making management decisions in this area [5].

5 Conclusion

The conducted research allows us to conclude that the solution of current problems of modern organizations through the introduction of integrated information systems should be treated very carefully. For example, the CRM system allows you to: track the effectiveness of the sales department; use Predictive Analytics to set strategic goals; generate individual offers for each client; and respond to changes in customer needs in a timely manner.

Tools provided by the CRM system make it possible to differentiate marketing campaigns, quickly create personal offers based on the needs of individual customers and build long-term relationships with them. Planning and analytics modules of the CRM system allow you to track marketing moves and manage expenses, focusing on the market situation and customer behavior.

SAP CRM has built-in analytics tools that provide an assessment of the quality of customer relations departments, the effectiveness of sales tactics, and differentiation of communication with customers through various channels. The functionality of end-to-end analytics of the CRM SAP platform also includes: monitoring KPI indicators of call centers, sales departments and other divisions; analysis of key factors of business processes: the effectiveness of solving issues from the first call, and so on; increasing customer loyalty through high-quality interaction between departments.

CRM SAP includes the necessary resources for automating key business processes: a single segmented customer database; a user-friendly interface; data about existing and potential customers. SAP CRM provides centralized control of interaction with customers by collecting information about the work of specialists. In addition, the CRM system organizes compliance with the implementation time of projects and proposals through modules for reminders of important meetings, newsletters, and other things. It also distributes responsibility for work through modules for assigning responsible persons for various projects of the organization, and so on.

Additional useful features of CRM SAP include working with advertising tools. Analysis of customer attraction using the resources of advertising offers and assessment of their quality is available for each category of employees. Another useful feature is the loyalty module for implementing loyalty offers based on the automatic analysis of each client’s bonuses in a shared database.

CRM SAP solves tasks of transaction analysis, sales planning, customer data management, and sales not only over the phone, but also through mobile applications. An important point regarding the customer interaction is to keep up-to-date the pricing processes and the price list management tool.

CRM SAP has a number of advantages when implementing: instant automation of business processes; increasing functionality at the right speed; all key business processes are included in the price. CRM system support is available both with the help of a personal specialist and by searching for solutions in the general “knowledge base”.
As a result, the organization that has implemented the system will receive a single customer base, monitoring the effectiveness of the business promotion direction, data protection, and ready-made solutions for the loyalty system.

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