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PROSPECTS FOR EDUCATIONAL ORGANIZATIONS USING BPM SYSTEMS IN BUSINESS PROCESS MANAGEMENT

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Abstract
This article examines the issues of increasing efficiency through the integration of modern digital technologies into the activities of organizations. A private higher education institution was selected as the object of research, and the opportunities, problems and levels of impact of using electronic business platforms were analyzed in it. A survey was conducted to identify ways to improve the organization's management, marketing, information exchange and educational processes through the introduction of electronic services and digital solutions. It covered aspects such as the state of electronic infrastructure, human resource readiness, the effectiveness of digital marketing and user satisfaction with services. The research results show that electronic business models are an important tool for effectively managing the organization's activities and increasing competitiveness. Practical recommendations have been developed for the phased introduction of digital solutions in higher education institutions.

Keywords: BPM systems, educational organizations, business process optimization, digital transformation, automated management, operational efficiency, information technologies in education.

Introduction

Today, with increasing competition in the education sector, private educational organizations are striving to organize their activities effectively. The main focus is on managing internal processes, systematizing data flows, and improving the quality of service. BPM systems play an important role in the successful implementation of these tasks.

Private educational institutions perform a variety of tasks: student enrollment, curriculum development, lesson planning, teacher supervision, financial accounting, and parent communication. These processes are often performed manually, using traditional methods, which leads to time wastage, errors, and inefficient use of resources.

BPM Through systems, these processes are automated based on specific models. For example, operations such as student registration, payment systems, class scheduling, and teacher

workload management can be managed through a single platform. This not only saves time, but also reduces errors.

Especially for large private educational networks, BPM systems provide the opportunity to coordinate processes between branches, manage and monitor quality based on uniform standards. For example, a successful process model in one branch can be automatically applied to others.

In addition, BPM systems facilitate real-time monitoring, statistical reporting, and decision-making. This allows management to make strategic decisions based on accurate data. Changes can also be implemented quickly in the system, which increases flexibility.

Research methods

This study uses a comprehensive analysis method based on a systematic approach. To assess the impact of e-business and e-procurement platforms, empirical data is collected, that is, through questionnaires and interviews. Statistical analysis, comparative analysis, and diagrammatic visualization methods are used based on the data obtained. The case study method is also used to analyze existing e-platforms and services. The current e-business practices in educational institutions are analyzed and their effectiveness is assessed. Analysis of scientific literature and analysis of regulatory and legal documents are also included in the research methods. In order to analyze the effectiveness of processes and optimize them using mathematical and econometric models in business process management, methods such as linear regression, Markov processes, Monte Carlo simulation, optimization models, and ARIMA are used.

Analysis and results

According to reports, after the private training center “EduPro” implemented the BPM system, the student registration process was reduced from 3 days to 1 day, staff workload was reduced by 20%, financial control was strengthened through automatic monitoring of payments, and the effectiveness of inter-branch activities was analyzed through electronic reports.

According to Deloitte and Gartner research, organizations that implement BPM systems see an average increase in productivity by 30-40%, employee job satisfaction increase by 25%, and customer (student and parent) dissatisfaction decrease by 35%.

In the future, private educational organizations can further develop their activities by integrating BPM systems with artificial intelligence, electronic diary systems, and distance learning platforms [1]. BPM It is expected that the systems will be integrated with the following technologies in the future:

- AI (artificial intelligence) – automatic analysis and evaluation based on student activity;
- Big Data – making decisions based on large amounts of educational statistics;
- Chatbots – an automated communication tool with parents;
- IoT (Internet of Things) – monitoring of devices in classrooms [2].

Through these, they will have the opportunity to develop individual approaches based on the activity, participation, and results of each student or teacher.

With the help of BPM, managers can easily manage the situation in the organization, employees can have a clear idea of their responsibilities and effective management of working time, and consumers can receive a fast and high-quality product or service.

BPM allows you to effectively organize the flow of work and information, the interaction between systems and people. The module for analyzing and presenting reports is an important element of the structure, which allows users to monitor business processes. The most important thing is that BPM systems are easy to use and quickly profitable when implemented [3].

Management automation is a novelty for Uzbekistan. At the initial stage, foreign developments can be used. Software products such as ELMA BPM Suite, Bizagi BPM Suite and Bonita Open Solution are in high demand. These three systems are functionally close to each other, and they also have their own differences (Table 1). Each of them represents a unique constructor of software tools, with the help of which it is possible to create a unique corporate management system for an enterprise.

Table 1. Comparative analysis of BPM systems[1]

Features	ELMA BPM Suite	Our BPM Suite	Bonita Open Solution
Origin	Russia	Colombia	France
User-friendliness	Medium (interface in Russian)	High (convenient interface, multi-language)	Medium (requires technical knowledge)
Open source	Closed	Closed	Open source
Process design	Visual designer available	Visual designer, simulation	Drag-and-drop designer
Integration	Via the ELMA API	SAP, Oracle, MS SQL, etc.	REST API, SOAP, Java, BPMN
The need for technical knowledge	Less	Less	Medium or high
Cloud computing	Limited	Fully supported	Supported
Working with documents	Strong support	At a moderate level	Through special modules
Community and support	Limited, more in Russia	Large global community	Wide open community
Flexibility	Focused on corporate needs	At a high level	Very high, open source

ELMA BPM Suite is a business process management system developed in Russia, designed to automate and optimize processes within an enterprise. With this system, users can design, monitor, and automate processes using a visual designer (Figure 1). ELMA also has functions for working with documents, tracking tasks, managing employees, and generating reports.

Bizagi (Business Agility) BPM Suite is a BPM system developed in Colombia, but widely used and popular worldwide. It consists of three main components: Bizagi Modeler, Bizagi Studio and Bizagi Automation. The system allows users to design, simulate, automate and use

[1]Compiled by the authors.

processes. It has a user-friendly interface, supports cloud-based services and has the ability to integrate with other systems (Figure 2).

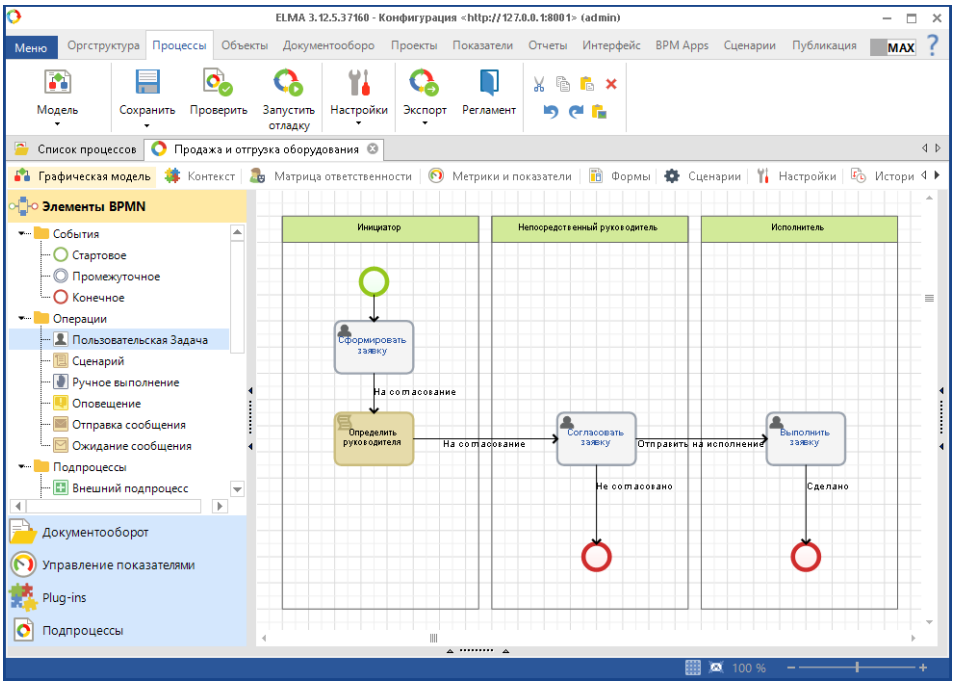

Figure 1. A sample model developed in the ELMA BPM Suite system [11]

Bonita Open Solution is an open-source BPM platform developed in France. This system allows users to design, test, and deploy complex business processes. It is characterized by its scalability, integration with various systems, and a user-friendly interface.

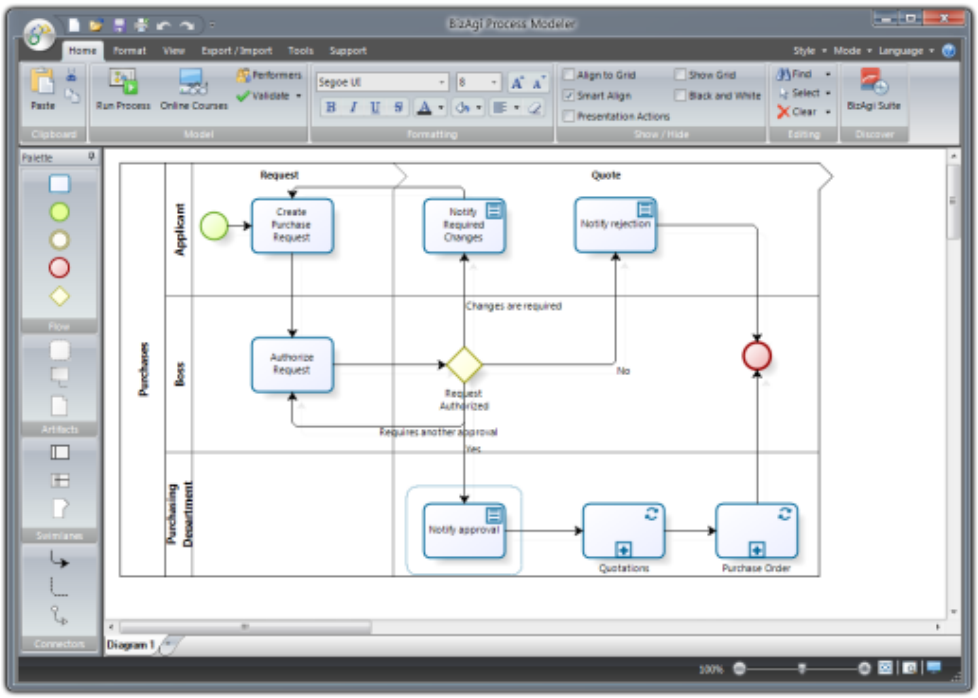

Figure 2. A sample model developed in the Bizagi (Business Agility) BPM Suite system [12]

Bonita is mainly suitable for programmers and technical professionals and offers more customization options (Figure 3).

Based on the needs of a private educational institution, the following factors play an important role in choosing a BPM system for them:

- ✓ student admission, registration, and monitoring processes;
- ✓ curriculum and lesson plan management;
- ✓ monitoring the activities of teachers and staff;
- ✓ maintaining payments and financial reports;
- ✓ automation of communication with parents;
- ✓ regulation of document circulation;
- ✓ simple and user-friendly user interface.

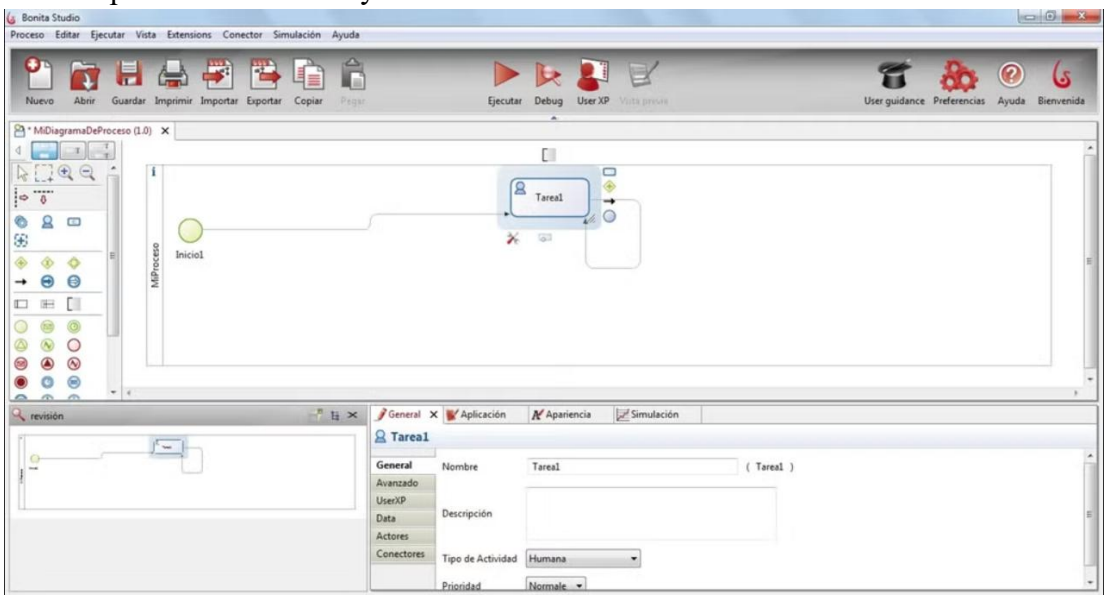

Figure 3. A sample model developed in the Bonita Open Solution system [13]

Based on these needs, we will analyze the main aspects of the ELMA BPM Suite, Bizagi BPM Suite, and Bonita Open Solution systems for the private educational institution "Renessans University of Education" LLC:

The main advantages of the ELMA BPM Suite system are that it is very convenient and advanced to work with documents, it is strong in managing internal personnel processes. The main disadvantages are that it is mainly adapted to the Russian market, the interface is in Russian, there are no ready-made modules for the education sector, customization is required, and cloud services are limited.

So, this system can be used if there are strong IT specialists and employees who know Russian. However, the customization work will take a lot of time.

The main advantages of the Bizagi BPM Suite system are its user-friendly interface, easy to learn, easy to design, test and automate processes, it works in the cloud – this is useful for institutions with limited IT infrastructure, and there are many integrations. The main disadvantages are that for full functionality you will need to upgrade to the commercial version,

there is no interface in Uzbek, but for those who know English or Spanish, this will not be a problem.

Therefore, this system is considered the most suitable option for private educational institutions and is very convenient for automating educational processes and organizational activities.

The main advantages of the Bonita Open Solution system are that it is open source - you can customize it to your liking, it has a wide range of integration options, and you can create custom interfaces for teachers and students. The main disadvantages are that it requires strong technical knowledge, there are no ready-made modules, and you will have to create all the processes yourself.

This means that this system can be used if the technical team is strong and full flexibility is required. However, installation and configuration are complex.

Based on the above analysis, we can say that Bizagi BPM Suite is the best choice for a private educational institution. It is easy to install, has a user-friendly interface, and allows you to quickly create and automate the necessary processes. If you are working with fewer IT resources or want to see results quickly, this system is the best solution.

Below is a description of a sample process model for one of the key business processes that can be automated based on the Bizagi BPM Suite for a private educational institution - the "Student Admissions Process". This model can be designed and subsequently automated in the Bizagi Modeler program (Figure 4).

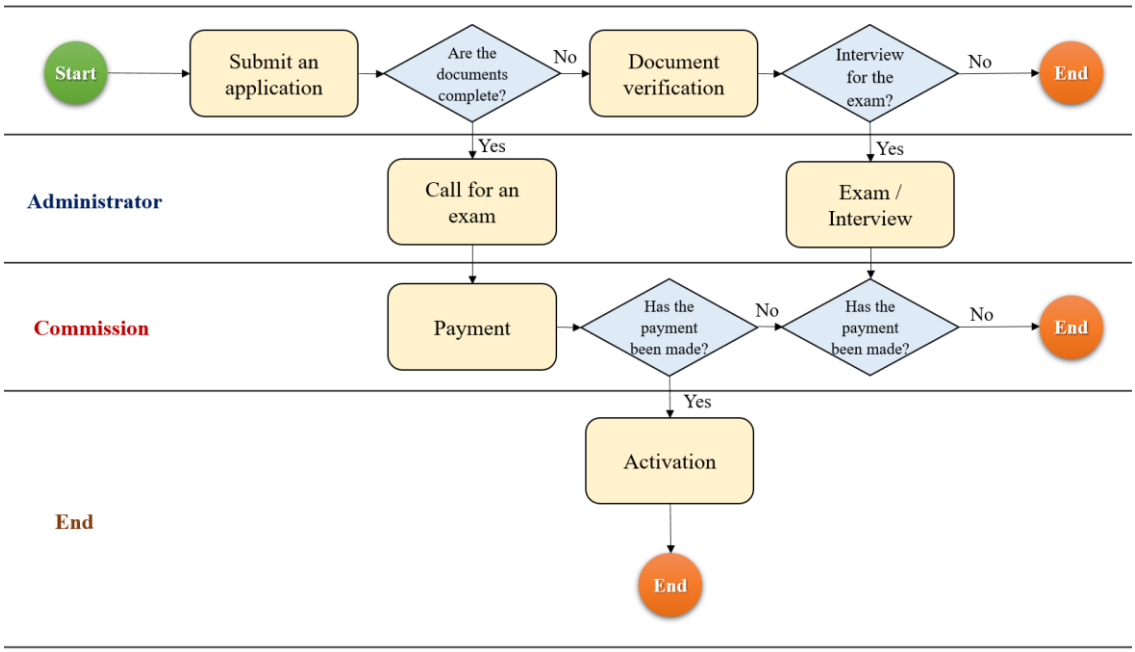

Figure 4. Visual representation of the "Student Admission Process" expressed in the form of a Bizagi BPMN diagram[2]

[2]Developed by the authors.

1. Process steps (according to BPM steps):

1.1. Application submission

✓ The student fills out an online/offline application;

✓ The following information is entered into the system: personal information, subjects, contact information, copies of diplomas or certificates.

1.2. Initial application review

✓ The administrator will review the application;

✓ If the documents are complete, the status will be "Accepted", otherwise it will be marked as "Rejected".

1.3. Invitation to an exam or interview

✓ The student will receive the test or interview date via SMS or email;

✓ The system automatically connects to the calendar.

1.4. Inputting results and making decisions

✓ The exam results are entered into the system;

✓ Depending on the results, the system will automatically assign the status "Accepted" or "Not Accepted".

1.5. Making a payment

✓ A payment link will be sent to the accepted student;

✓ Payment status is automatically monitored (via integration).

1.6. Activating student status

✓ Once the payment is made, the student will be registered in the system as an "active student";

✓ It will be added to the lesson schedule.

2. Participants in the process (Roles):

✓ The student submits an application and takes the exam;

✓ Administrator – checks documents, makes decisions;

✓ Teacher – conducts a commission, interview, or test;

✓ Financier – monitors payment, checks receipts.

3. Integration points with the system:

✓ Email/SMS notification – for exam date, payment link;

✓ Payment system (Click, Payme, HumoPay, etc.) – automatic monitoring;

✓ Electronic document system – storing scanned documents;

✓ Calendar module – chat and class schedule automation.

4. Visual BPM model:

In Bizagi Modeler, you can create a visual process based on the following blocks:

PGSQL

Start → Submit application → Check documents → Call for exam → Exam/interview → Enter result → Payment → Activation → End

There are decision points (gateways) at each stage:

- ✓ "Are the documents complete?"
- ✓ "Did you pass the exam?"
- ✓ "Did the payment go through?"

Conclusion

According to the results of the study, the use of the Bizagi system in private educational organizations serves to increase the overall efficiency of the organization by clarifying, modeling and automating internal work processes. Visual analysis of processes facilitates decision-making, and a clear distribution of tasks among employees creates the basis for rational use of time and resources. Through the Bizagi system, important operations such as lesson planning, student registration, and payment control can be standardized, and management can be made transparent and effective.

By applying mathematical and econometric models in business process management, it is possible to analyze the efficiency of processes and optimize them. Using methods such as linear regression, Markov processes, Monte Carlo simulation, optimization models, and ARIMA, organizations can find ways to improve their business processes and increase efficiency.

This study analyzed the role and potential of the Bizagi system in the digitalization of private educational institutions. However, there are some limitations of the study, which limit the generalizability of the results. First, the study relied mainly on theoretical foundations and an analysis of existing literature, and a limited number of practical implementation cases were considered. This did not allow for the full coverage of technical and organizational problems that arise in real organizations.

Second, the study only examined the core functionality of the Bizagi system – process modeling, automation, and monitoring features. Other features of the system (e.g., advanced integrations, user interface flexibility, maintenance costs) were not extensively analyzed. In addition, the experience of practical users using the system in educational institutions was not explored in depth through questionnaires or interviews.

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