Analysis and application of CRM systems in the field of education

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Abstract. **In practice, a customer relationship management (CRM) system is considered as application software, which is designed for organizations and enterprises, with the aim of facilitating the organization and successful implementation of relationships with current and future customers, i.e. CRM systems are mainly referred to business. The purpose of this paper is to research and represent the integration/ deployment and benefits of CRM-systems in non-profit organizations such as universities and other higher education institutions, thereby contributing to increasing their competitiveness. The appropriate communication and streamlined processes are the key steps to attracting and retaining more students, as well as staying competitive, therefore an adequate using of CRM system can support taking advantage of these success factors. The paper proposes a comparative analysis of existing leading CRM systems in the field of Higher Education, a summarization of the benefits and the need for their deployment**.

Keywords: CRM system, educational CRM system Education.

I. INTRODUCTION

The term CRM (customer relationship management) [16] is an umbrella term that includes strategies, practices and technologies whose ultimate goal is to improve the understanding and philosophy of a business's customers by focusing on the human factor, regardless of whether it refers to customer, service user or merchant. The ultimate goal is to build strong relationships with customers to increase business profits. The following "Fig. 1" presents a common model of CRM system [11].

Nowadays, CRM systems are the information systems which provide effective market orientation.

These systems are aimed at creating an extensive database of current and future users, the creation of which gives a competitive advantage.
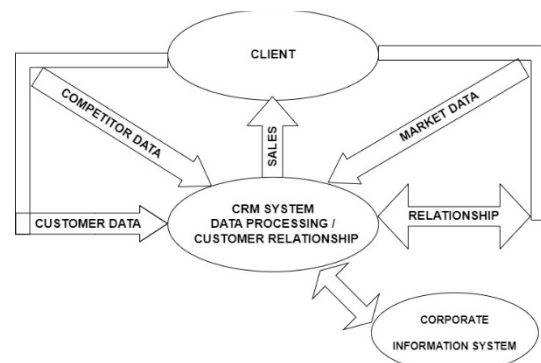

Fig. 1. Common model of CRM system.

The purpose of a CRM system is to bring together the various sources of data on customers, sales, competitors, responses to marketing campaigns and market trends in order to build close relationships with customers.

A. Principles and processes of a CRM system Basic principles of a CRM system:

- Availability of a single database in which data can be quickly, easily and efficiently stored and information retrieved for "
- Synchronization of management of multiple interaction channels. It is obvious that regardless of the method of contact with the customer, it is necessary to store the relevant data and then use it.
- Constant analysis of collected customer information and adoption of relevant organizational decisions.
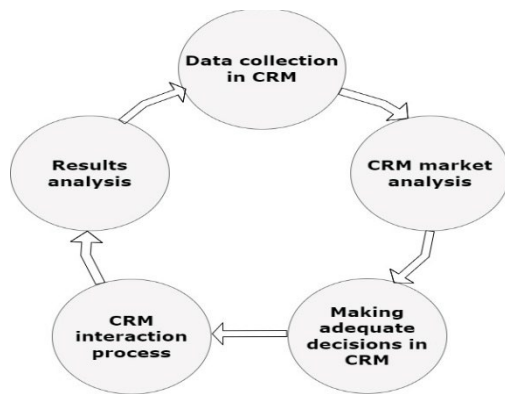Information processes in a CRM system are presented in "Fig. 2".

Fig. 2. Information processes in a CRM system.

- Data collection in CRM.
- CRM market analysis.
- Making adequate decisions in CRM.
- CRM interaction process.
- Results analysis.

B. Application areas of CRM

Every business has its own specifications and every owner runs their business differently. As a result, there are many different ways to develop the perfect CRM system [13]. Some of the industries using CRM systems are:
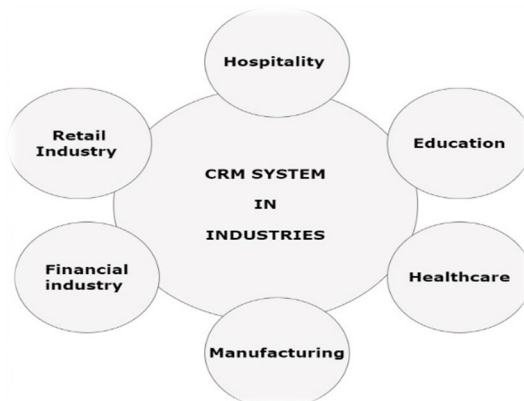

Fig. 3. Industries using CRM systems.

- Retail Industry - such an advanced software allows companies selling goods and services to personalize the shopping experience towards the users as the software can collect and analyze the data, through the websites of the companies or through the social media and thus identify the exact audience.
- Hospitality - this sector provides its customers with various types of services, and these systems allow staff to quickly access information related to current and future hotel guests, in an adequately organized way that is at the same time easy to understand.
- Financial industry - uses CRM software thanks to which it can better understand the wishes of its customers and create more attractive offers. By analyzing customer information, CRM software can attract more prospective customers in a short period of time.
- Healthcare - users can use the CRM to find a doctor, book an appointment, add to the schedule and notify the patient in advance of the doctor's visit. Various

planning can be done with the use of artificial intelligence.
- Manufacturing – using CRM software helps forecast demand, which can be crucial for high-tech and electronics companies. An integrated CRM module can compare data collected in different production departments with sales-based information and develop accurate forecasts related to product demand.
- Education - the digital age we live in is the reason CRM systems for education are quickly becoming mainstream applications used by educational institutions, regardless of the size, location and type of institution.

The current paper is motivated by the dynamics in the development of systems used in the field of education, the large set of input data, as well as the need for communication between educational institutions. These are major problems that CRM systems have the resources to deal with.

II. CRM IN HIGHER EDUCATION

CRM software in education has the ability to manage all interactions of the institution using it with prospective and current students. It maintains the management of communications with alumni, staff and other members of the educational sector at the given institution.

The educational software gathers meaningful information from a variety of sources and stores it in a convenient database. This CRM system can collect and include various data that serve to personalize the relationship between the institution and the learners in all possible channels [8].

The use of such a system can significantly reduce the problems faced by the educational institution, such as errors in the data of an individual student. With this system, the personnel can easily track changes in information and systematize it. In the case of inefficiencies in the system, there is a risk of communication problems that slow down other important institutional processes and lead to problems such as missing important deadlines. The right CRM software provides ample communication tools combined with customization options. This personalized approach ensures that all changes and announcements reach all affected students on time. CRM systems developed and used in education are specialized for its needs [1].

A higher education CRM system is a part of software that manages all interactions between the institution and all the various stakeholders. It is primarily used to optimize and manage relationships with current and prospective students, as well as school staff, partners, alumni and others. A CRM system can also help create and maintain these relationships.

An effective CRM system collects and archives all essential data about students and other participants. Among the information it may include are their names, gender, educational history, age, contact information, etc. This data about the people the organization interacts with is stored in one consolidated and easily accessible database. This provides an opportunity to simplify and personalize communication while improving relationships.

Features that should be present in a higher education CRM system include:

- Management of inquiries and acceptance.
- Integrated means of communication.
- Document management.
- Automation of the work process.
- Real-time analysis and reporting.
- Integration.

A. Leading CRM systems in higher education

Salesforce Education Benchmark - This specialized CRM system is aimed at universities, colleges, schools and other educational institutions [15]. It provides an opportunity to improve relations with learners, staff, and everyone involved in the educational process. Some of its features are:

- Student Relationship Management.
- Course and program management.
- Marketing and recruitment.
- Automation of processes.
- System for face-to-face education and online education.
- Collaboration and communication.
- Analytics and reporting.
- Integration with the Salesforce ecosystem.
- Accessibility and mobility.

Microsoft Dynamics 365 for Education - an educational platform that covers the management of student relationships, administrative processes and other important elements in educational institutions [12, 9]. Some of its features are:

- Student relationship management.
- Marketing and recruitment.
- Administrative processes and course management.
- Online education.
- Collaboration and communication.
- Analytics and reporting.
- Integration with Office 365.
- Accessibility and mobility.

Ellucian CRM Advance - specially developed for higher education. Part of Ellucian, a leading provider of applications in education [2, 14]. It is intended to support higher education institutions. The main goal is improving interaction with sponsors, alumni and other interested parties. Some of its features are.

- Relationship management.
- Marketing and communication.
- Analysis and reporting.
- Integration with other system.
- Student and Alumni Management.
- Security and regulatory compliance.
- Accessibility and easy management.

CampusNexus - Created to help institutions improve their communication with potential and current students [4, 7]. The system offers a comprehensive overview of student data, empowering staff to maintain relations with students permanently and eternally. Some of its features are:

- Management of potential students.
- Student and Alumni Management.
- Analyzes and reports.
- Integration with other systems.

Blackbaud - a system designed especifically for the needs of non-governmental organizations, charitable foundations and various institutions in the field of education [6, 10] - Some of its features are:

- Sponsor relationship management.
- Marketing and recruitment.
- Management of educational institutions.
- Event control.
- Integration with other systems.
- Analysis and reporting.
- Security and regulatory compliance.
- Communication and collaboration.

HubSpot for Education - uses the HubSpot CRM system in the field of education and manages to apply specific settings and solutions to problems in educational institutions [5]. Its main features are:

- Student Government.
- Marketing and recruitment.
- Donation and fund activity.
- Alumni management.
- Event controls.
- Accountability and analysis.
- Integration.

B. Criteria for comparative analysis of crm systems for education

The criteria on which the analysis is made aim to show the advantages of the systems. Due to the different processes in the field of education, it is the advantages and the opportunity to work with numerous and important tools that the systems have, that are essential for choosing the right one for educational institutions. The selection criteria are as follows:

- Working with the platform.
- Integration with other systems and applications.
- Tracking the students' learning path.
- Data security.
- System management costs.

III. COMPARATIVE ANALYSIS OF CRM SYSTEMS FOR EDUCATION

Table 1 presents a comparative analysis between the reviewed CRM systems in the field of education.

Table 1 Comparative analysis of CRM systems for education.

CRM systems in Education	Advantages	Disadvantages
Salesforce Education	1. A flexible platform with numerous applications. 2. Integration of carious aspects in the educational process. 3. Personalization of education.	1. Higher cost. 2. Higher starting point relative to the configuration.
Microsoft Dynamics 365 for Education	1. Integrated with MS Office and other company products. 2. Flexibility through additional extentions.	1. More complex configuration. 2. Higher starting point relative to the configuration.

Ellucian CRM Advance	1. Specialized in higher education. 2.Integration with the management systems of educational institutions. 3. Focus on student and alumni management.	1. More complex configuration for integration with other systems. 2. More complex managing large educational institutions.
CampuseNexus	1. Integrated student and administration management platform. 2. Monitoring and maintaining the student life cycle from recruitment to graduation. 3. Analytical tools for student success.	1. Complex integration with systems. 2. Complex for configuration.
Blackbaud	1. Specialized software for educational institutions. 2. Donation management and financial support. 3. Tools for analysis and reporting of the finances of educational institutions.	1. More focused on charity and resource management. 2. Complexity in implementation and integration.
Hubspot for Education	1. Intuitive software that is easy to use. 2. Integration with various marketing tools. 3. Analytical tools for tracking marketing campaigns.	1. Lack of some functionalities used in educational institutions. 2. Limited possibilities for integration with other systems.

The comparative analysis shows that most systems have the possibility of integration to work with other applications or systems. This helps the functionality of the systems themselves, as well as expanding the set of tools. All of the systems listed are applicable in the field of education, with Ellucian CRM Advance and Blackbaud specializing in higher education. Ellucian CRM Advance also has a special focus on alumni processes.

The problem with integrating with other systems is that the process is not easy with most software. HubSpot for Education lacks some functionality used in educational institutions. With Ellucian CRM Advance comes the complexity of managing larger institutions, and the main disadvantage of Salesforce is the high cost compared to other CRM systems.

The existing CRM systems in the field of education provide a good basis for the continued development and work with this type of systems. Of the listed systems, Salesforce Education, Microsoft Dynamics, and Ellucian CRM Advance are the systems that can provide connectivity between school-to-university educational institutions. The important thing here is to pay attention to whether the functionalities meet the needs of the institutions and whether the systems can be adapted and applicable to the particular educational institution.

On the other hand, there are CRM systems that connect education with business. Such type of systems supports cooperation between educational institutions and different companies.

Two of them - Campus Nexus and Salesforce Education provide this opportunity for student management that allows educational institutions to collaborate with businesses.

The need for the development of this type of CRM system, which tracks a person's development from education to business, and that is aimed directly at education in Bulgaria, is connected with two main reasons:

- Providing functionalities to track the completion of education in several different stages.
- The opportunity to improve the conversion rate of graduates.

IV. BENEFITS OF IMPLEMENTING CRM IN EDUCATION

Nowadays, there are a lot of technologies and resources that make life easier for students, teachers, and school administrators. Here are the main advantages that a CRM system can offer for the competitiveness of an educational institution:

- Improved record keeping.
- Perfect tracking of payments, acceptance and other activities.
- Simplified process for processing group requests.
- Improved acceptance numbers with automated marketing.
- Sophisticated teamwork.
- Real-time insights into organizational processes.
- Correct analyses.
- Increasing student participation.
- Better retention.

V. CONCLUSION

From the survey of existing papers on the implementation of CRM systems in higher education institutions, it can be concluded that the main motive is to improve competitiveness by helping to solve problems related to attracting and retaining students. Dealing with these problems, requires interaction with students to be aimed at increasing their success rate, perception of satisfaction with the studied courses and administrative service, and perception of loyalty to the institution. In order to increase the efficiency of this interaction, ways of extracting additional information based on prediction based on the available data are being sought [3].

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