Introduction of e-commerce elements in the management of modern universities

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Abstract. The use of e-commerce tools enables universities to make the educational process more accessible and convenient, as well as enhance their efficiency and competitiveness. The main tools include a website, online courses, various types of video content, cloud services for collaborative work among university staff, CRM resources, ERP resources, and mobile platforms.

Keywords: E-commerce, digitalization, electronic resources, education

1 Introduction

Universities, in their transformation, are moving from being knowledge-centered institutions to becoming technological centers for self-realization of all participants [13].

Within the management paradigm 4.0, the focus is shifted towards defining personalized needs and demands, customization with subsequent development of marketing communication strategies that integrate the offline and online environments in the organization's interactions with stakeholders. At this stage, the formation of a digital infrastructure and the automation of business processes become relevant, allowing for an expansion of the boundaries of stakeholder and external environment perceptions and aiding in decision-making in accordance with the rapidly changing environmental conditions [3]. In the management paradigm 4.0, the key categories become education, research, innovation, and digital infrastructure. The transformational vector is directed towards technologization and the formation of the university ecosystem, which is driven by socio-cultural, economic, technological, demographic, and other processes that lead to the restructuring of applied technologies [5,6].

In the era of digitalization, new prospects and trajectories of development are opening up for universities, facilitating the formation of qualitatively new university management systems, which is reflected in strategic planning for the university's development: an information system for university management, online support for the educational process, key competencies of the digital economy, and management of the educational process with personalization and the construction of an individual educational trajectory [10].

By implementing e-commerce tools, universities create a digital intellectual environment where embedded technical devices allow for not only digital communications but also

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organizing events with diverse stakeholders, taking into account their needs and specific responses [2,15].

These processes involve expanding university partnerships, increasing interactions, and expanding educational, scientific, and research content, making it impossible to manually process vast amounts of information. Consequently, e-commerce tools are actively used by universities today. The main tools include a website, online courses, various types of video content, cloud services for collaborative work among university staff, CRM resources, ERP resources, and mobile platforms.

2 Materials and Methods

Currently, China is the leader in e-commerce, showing a growth rate of 90% over the past four years.

A comparative analysis of electronic resources in universities in Russia and China can be conducted based on several criteria:

Variety of resources: In both Russia and China, most universities provide access to electronic libraries and databases containing scientific articles, books, journals, and other materials. However, China exhibits greater activity in developing electronic resources due to active government support for digitalization in education. In Russia, the "Priority 2030" grant program is being implemented, aiming to establish over 100 progressive and modern universities in Russia by 2030 as centers for scientific, technological, and socio-economic development of the country. One component of "Priority 2030" is the implementation of professional retraining programs under the project "Digital Departments," which is part of the national program "Digital Economy of the Russian Federation." Southern Federal University is one of the 18 winning universities under the "Priority 2030" program in the "Research Leadership" track [8].

Relevance of materials: The quantity and relevance of provided electronic materials are key criteria for comparative analysis. China has developed its own online platforms with constant information updates. In Russia, there are also digital platforms for MOOCs, such as "Open Education" and "Lectorium," where relevant materials are provided, but systematic updates are not always regulated.

Quality and reliability of resources: An important aspect is the quality and reliability of electronic resources provided by universities. In this case, it depends on the selection and verification of information sources. Russia and China follow similar standards for verifying the credibility of information.

Pricing: Both paid and free electronic resources exist in Russia and China. Prices for platforms and databases in Chinese universities may be higher than in Russian ones. However, some universities in Russia offer their resources for free, which can be a significant competitive advantage. For example, Southern Federal University provides students and staff with free access to online courses offered on its own e-learning platform (https://moodle.sfedu.ru/) and on the Stepik platform (https://stepik.org/), as well as free access to educational, methodological, and scientific literature on the university's repository portal (http://free.sfedu.ru/) [9].

In Russia, the most well-known educational online platforms that universities can collaborate with include Coursera, Skillbox, Netology, Stepik, Universarium, and MOOCs.

In China, the most in-demand educational online platforms are Alibaba Cloud Academy, Alibaba Cloud University, Aliyun, VIPKid, TAL Education Group, Xueersi Online School, Udemy, Course, XuetangX, Mooc.cn, and NetEase Open Courses.

By studying the experience of implementing e-commerce elements by Chinese universities in collaboration with online platforms to enhance their competitiveness, several key effective implementation approaches can be identified:

- Online registration and conducting events
- Souvenir and merchandise stores
- Digital libraries
- Online event registration and admission
- Online courses for continuing education and professional retraining
- Online platforms
- Smart educational technologies
- Developing a website or application with virtual tours of the university campus
- Providing detailed information about educational programs, faculties, and services
- Data analytics and personalized learning
- Mobile applications and messengers
- Online feedback
- Electronic university management system

Implementing a system that integrates all university processes and data will improve management, automate routine tasks, and enhance operational efficiency.

3 Results

At the Southern Federal University, an automated system for managing core administrative processes has been implemented based on the software product "1C: University PROF." The integration of implemented software solutions on the "1C: Enterprise 8" platform with the university's information systems and services (accounting and personnel information systems, as well as the university's web portal) is ensured. [1]

Based on the research results on identifying key indicators of socio-professional well-being (satisfaction with working conditions and involvement in university development) conducted by the staff of the Southern Federal University in 2020, the following results were obtained. The most popular digital tool among Russian scientists is scientific databases. Scientific databases and platforms (Scopus, WoS, elibrary, etc.) are used by 60.8% of the faculty, 82.1% of the research staff, 20.9% of the educational support staff, and 24.1% of the administrative staff. As for other digital tools, they are generally less in demand among the staff of the Southern Federal University. Every fourth respondent noted that they use software for experiments in the digital environment using simulation models. This is done more frequently by research staff (33%). Moodle and Blackboard management systems are less popular (15.3%) and are used approximately equally by research staff (15.2%) and faculty (18.3%). It is also important to note that 22.8% of the study participants do not use any digital tools. Among them, administrative staff (41.1%) and educational support staff (44.4%) are predominant. [7].

When implementing e-commerce, universities face the following problems:
1. Financial issues: Implementing e-commerce requires sufficient financial resources for website development, maintenance, and other online platforms.
2. Technical problems: Reliable servers, broadband internet access, and robust data protection are necessary for e-commerce implementation.
3. Personnel: Training university staff to work with the new e-commerce system can be challenging.
4. Data security: E-commerce involves handling a large volume of confidential information about students, staff, and financial transactions, requiring stringent data protection measures.
5. Legal issues: Introducing e-commerce raises concerns about copyright protection, confidentiality, and the safeguarding of students' personal data.
6. Support and maintenance challenges: After implementing e-commerce, universities need to allocate resources for system support, regular updates, and software upgrades.

Overall, e-commerce can bring numerous benefits to universities, but successful
implementation requires addressing and resolving the aforementioned problems.

4 Discussion

Mass digitization, a year of social isolation, and the continued rapid growth of social media have influenced the electronic commerce industry. Electronic commerce is the activity associated with promoting, advertising, and selling goods through virtual platforms on the Internet. One specific form of electronic commerce is internet commerce: "electronic commerce limited to the use of the Internet computer network only" [14]. In this direction, for educational institutions, electronic commerce has created a new channel for marketing and sales, where the main factors are the accessibility of digital content, interactivity, and personalized offerings.

The authors of the book "Electronic Commerce," J. F. Rayport and B. J. Jaworski, write that "... electronic commerce can be formally defined as a technologically mediated exchange between parties (individuals, organizations, or both), as well as electronically oriented intra-organizational or inter-organizational activity that facilitates such exchange" [13].

Thanks to the tools of electronic commerce, education has become self-directed and accessible anytime and anywhere. Completely new blended forms of learning have emerged [4].

This is due to several reasons, among the main ones are:

- Improvement of the quality of the educational process. Universities can offer online courses, webinars, and video materials that allow students to acquire knowledge and skills remotely. Online platforms can also be used to organize tests, quizzes, and feedback, which help teachers assess and improve their teaching methods.
- Convenience and accessibility. Access to course registration, payment processing, and, in the case of commercial education, obtaining asynchronous access to materials without specific geographical constraints.
- Omnichannel approach. By utilizing electronic commerce tools and digitalizing business processes, universities have the opportunity to create a unified system of all available communication tools and platforms, enabling seamless transitions between communication channels with tracking and preserving all interactions [3].
- Time savings. Implementing electronic commerce allows universities to automate many processes, such as student registration, payment processing, and issuance of certificates, leading to a successful relationship strategy with stakeholders.
- Expanding the audience. Integration of electronic commerce tools enables universities to attract students from all around the world.
- Increasing revenue. Universities can use electronic commerce to sell educational courses for professional development, retraining programs, and provide consulting services.

Overall, the use of electronic commerce tools allows universities to modernize their educational process, making it more accessible and convenient for students, while also enhancing their efficiency and competitiveness.

5 Conclusion

Thus, the advantages of electronic commerce in the educational sphere are as follows:

- Flexibility and accessibility in obtaining education according to one's own schedule and from any location with internet access.
- Expansion of offerings and personalization of educational services.
- Development of a value-oriented management strategy for universities, taking into account the core values of the groups involved in shaping a comprehensive digital university environment [11].
- Expansion of universities' audience, fostering international contacts, and collaborations.
Implementing electronic commerce in universities will help simplify processes for students and enhance the overall experience and interaction geography. However, it is essential to consider limitations associated with electronic commerce in education, such as difficulties with connectivity and internet access, lack of face-to-face interaction, and challenges in student monitoring and assessment, as well as ensuring copyright protection and safeguarding personal data.

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