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ADAPTATION OF TECHNOLOGICAL PRODUCTS FROM UKRAINE TO FOREIGN MARKETS

АДАПТАЦІЯ ТЕХНОЛОГІЧНИХ ПРОДУКТІВ УКРАЇНИ ПІД ІНОЗЕМНІ РИНКИ

Abstract. Introduction. In the context of rapid technological transformation and economic globalization, the adaptation of technological products to foreign markets becomes critically important for the success of enterprises. Ukraine, possessing significant potential in the field of technology, faces the challenge of effectively penetrating foreign markets with its products. The adaptation of Ukrainian technological products requires studying and understanding the specifics and demands of international consumers, as well as considering intercultural differences and regulatory constraints. Research on this topic will contribute to enhancing the competitiveness of Ukrainian enterprises on the international stage, promoting export growth, and attracting foreign investments, which are of great significance for the country's economic development. Therefore, this topic is relevant and important for the further development of Ukraine's technological sector and support of its position in global markets. Purpose. This article aims to explore the process of adapting Ukrainian technological products for successful entry into foreign markets. Given the intensifying globalization and competitive environment, adaptation is pivotal for ensuring the competitiveness of Ukrainian companies on the international stage. Methods. The research examines technical, cultural, and strategic dimensions of product adaptation, including the analysis of foreign market needs, implementing necessary product modifications, and navigating local regulatory and cultural nuances. Additionally, it investigates best practices and strategies for effective adaptation that Ukrainian enterprises can leverage. The article explores the process of adapting Ukrainian technological products for successful entry into foreign markets. Given the increasing globalization and competitive environment, the adaptation of technological solutions is a key strategy to ensure the competitiveness of Ukrainian companies internationally. The article examines technical, cultural, and strategic aspects of adaptation, such as studying the needs and requirements of foreign markets, implementing appropriate changes in the product, and understanding local regulatory requirements and cultural peculiarities. Additionally, it investigates best practices and strategies that Ukrainian enterprises can employ for the effective adaptation of their technological products to external markets. The findings of this research can be beneficial for Ukrainian companies seeking to expand their presence in international markets and increase their competitiveness. Results. The findings underscore the significance of strategic product adaptation for Ukrainian enterprises, offering avenues for increased competitiveness, expanded market reach, and sustainable economic growth. By understanding and responding to evolving market dynamics, Ukrainian companies can cultivate stronger international partnerships and drive innovation, thereby contributing to broader economic development objectives. Conclusion. The adaptation of technological products for foreign markets represents a crucial strategic endeavor for Ukrainian enterprises, offering the potential for increased competitiveness, expanded market reach, and sustainable economic growth. Through concerted efforts to understand, anticipate, and respond to evolving market dynamics, Ukrainian companies can forge stronger international partnerships, drive innovation, and contribute to the country's broader economic development objectives.

Keywords: technological products, globalization, foreign markets, foreign investments.

Анотація. В умовах швидкої технологічної трансформації та глобалізації економіки адаптація технологічних продуктів на зовнішніх ринках набуває критичного значення для успіху підприємств. Україна, яка володіє значним потенціалом у сфері технологій, стикається з викликом ефективного проникнення на зовнішні ринки з власними продуктами. Адаптація технологічних продуктів України вимагає вивчення та розуміння специфіки і вимог міжнародного споживача, а також урахування міжкультурних різниць і нормативних обмежень. Ця стаття спрямована на вивчення процесу адаптації українських технологічних продуктів для успішного входу на зарубіжні ринки. З урахуванням зростаючої глобалізації та конкурентного середовища адаптація стає ключовою для забезпечення конкурентоспроможності українських компаній на міжнародній арені. Дослідження розглядає технічні, культурні та стратегічні аспекти адаптації

продуктів, включаючи аналіз потреб зарубіжних ринків, впровадження необхідних модифікацій продукту та орієнтацію в місцевих регулятивних та культурних відтінках. Крім того, досліджується найкращі практики та стратегії для ефективної адаптації, які українські підприємства можуть використовувати. У статті досліджено процес адаптації технологічних продуктів України для успішного входу на іноземні ринки. З урахуванням зростаючої глобалізації та конкурентного середовища, адаптація технологічних рішень є ключовою стратегією для забезпечення конкурентоспроможності українських компаній на міжнародній арені. У статті розглядаються технічні, культурні та стратегічні аспекти адаптації, такі як вивчення потреб та вимог іноземних ринків, впровадження відповідних змін у продукті, вивчення місцевих нормативних вимог та культурних особливостей. Досліджуються також найкращі практики та стратегії, які можуть бути застосовані українськими підприємствами для ефективної адаптації їхніх технологічних продуктів до зовнішніх ринків. Результати цього дослідження можуть бути корисними для українських компаній, що прагнуть розширити свою присутність на міжнародних ринках та збільшити свою конкурентоспроможність.

Ключові слова: *технологічні продукти, глобалізація, зовнішні ринки, іноземні інвестиції.*

Problem statement. Ukrainian technology enterprises constantly encounter challenges in entering foreign markets with their products. They face the task of adapting technological developments to the requirements of foreign consumers and markets to ensure competitiveness and gain a position on the international stage. Adapting technological products from Ukraine to foreign markets requires studying the specifics and needs of international consumers, as well as considering cross-cultural differences and regulatory constraints.

Given the rapid development of technology and increasing globalization of the economy, the relevance of the problem of adapting technological products from Ukraine to foreign markets is of particular importance. Enterprises require a systematic approach to addressing this issue to effectively compete with international players and ensure the sustainable development of the Ukrainian technology sector. Developing adaptation strategies, studying best practices, and implementing innovative solutions are important tasks that will help Ukrainian companies successfully establish their presence in global markets and maintain competitive advantages.

Thus, the consideration of the problem of adapting technological products from Ukraine to foreign markets reflects the relevance and importance of conducting research in this area for the further development of the Ukrainian economy and support for its integration into the global economy.

Analysis of recent research and publications. Adapting technological products from Ukraine to foreign markets is a multifaceted process influenced by various factors such as cultural differences, market demands, and regulatory environments. According to Smith (2018), thorough market research is essential for identifying target markets, understanding consumer preferences, and assessing competition. Ukrainian companies need to invest in comprehensive market analysis to tailor their products effectively. Research by Ivanov et al. (2020) suggests that forming strategic partnerships with local businesses or distributors can facilitate market entry and enhance product acceptance. Collaborating with established entities can provide valuable market insights and increase credibility. Expanding into emerging markets presents significant opportunities for Ukrainian technological products. According to Gupta (2021), rapid economic growth and increasing technological adoption in regions such as Asia and Latin America offer fertile ground for expansion.

Continued innovation is vital for maintaining competitiveness in foreign markets. As highlighted by Brown (2018), investing in research and development allows Ukrainian companies to introduce cutting-edge technologies that meet evolving consumer demands. The rise of e-commerce platforms and digitalization trends provide alternative channels for market entry. Research by Zhang et al. (2022) suggests that leveraging online platforms can mitigate some of the traditional barriers to international expansion.

The purpose of the article. The purpose of the article is to investigate and analyze the process of adapting technological products from Ukraine to foreign markets. The article aims to identify strategies and methods used by Ukrainian companies for the successful introduction of their products to international markets. It also aims to highlight the challenges and opportunities faced by Ukrainian companies in adapting their technological products to external markets.

Presentation of the main research material. Many American technology companies are hiring IT engineers from Ukraine. The Ukrainian technology sector is renowned for developing automotive infotainment systems for Ford, which has received numerous awards and dividends, creating a photography application for Reuters, improving customer retail experience for Nokia, and developing risk management systems for Deutsche Bank. Most American companies do not have official offices in Kyiv; instead, they hire employees through intermediaries, as "outsourcing" is often considered a dirty word in US politics. However, each year, more large companies with headquarters in the United States are establishing a presence in Ukraine [1].

The Ukrainian IT sector is impressive. As one of the largest industries in the country, IT in Ukraine is a key component of future economic success. Currently, the export volume of services and software development from Ukraine amounts to approximately 2 billion US dollars per year. Perhaps the most significant statistic regarding the impact of IT on the Ukrainian economy is that in 2011, for the first time in the country's history, the volume of IT services exceeded the volume of arms exports [2; 3].

The importance of education cannot be underestimated. In 2011, Ukraine ranked second in the world in terms of the percentage of the population with a university education, surpassing the United States and trailing only Canada. A large portion of Ukrainian IT professionals are young, educated workers who will pass on their knowledge to future generations and ensure a better future for the country as a whole. If this sector encounters turmoil or disillusionment, it could lead to brain drain and have serious global consequences [2].

The main achievement of 2017: the Ukrainian IT industry finally returned to pre-crisis growth rates. If over the past three years, they were closer to 10%, then this year the market has already grown by approximately 18%. Considering that only in the form of taxes for the first 10 months of 2017, IT companies contributed about 6.5 billion to the

budget, the stable development of the industry will have a positive impact on the country's economy [3].

Equally important is the fact that the development is associated with the appreciation of Ukrainian specialists by foreign clients. In the annual ranking of the best IT service providers "Global Outsourcing 100" for 2018, there were 13 companies with offices in Ukraine, which is 3 more than last year. The industry association "Global Sourcing Association" (GSA UK) – one of the largest companies in our markets – named Ukraine as an outsourcing destination for this year [4].

If the positive balance between external and internal markets continues, the Ukrainian IT sector will continue to rapidly realize its potential. There are all reasons to believe that Ukrainian IT companies in 2019 will be able to complete growth by 20% or more. "Epam", a world-renowned American IT company with several offices in Ukraine, plans to grow by 22-25%. Such goals are pursued by large companies that largely determine the market dynamics [3].

According to preliminary calculations, in 2018 the growth of the IT sector will improve last year's dynamics and will be about 20% by the end of the year [1].

The solution to the issues hindering the rapid growth of our IT sector, such as improving educational programs, shortage of professionals, investment protection, intellectual property, and particularly shaping Ukraine's reputation as a reliable and stable business partner, requires significant time. In most directions, positive shifts occurred throughout 2018.

New educational IT programs are emerging in universities, which in terms of quality and content are not inferior to foreign ones. The successful launch of programs such as "Computer Science" at UCU and "Internet of Things" at Lviv Polytechnic catalyzed improving approaches to teaching IT disciplines in higher educational institutions. This year, several new educational programs have appeared in Lviv. Among them are "Computer Science" and "Data Science" at the Ivan Franko National University of Lviv, "Business Analytics" at UCU, and a program on "Artificial Intelligence Systems" at Lviv Polytechnic. Against the backdrop of high demand for the profession and active participation of IT companies in educational program reforms, I am confident that this trend will continue in 2019 and will extend to other cities where the IT industry is not yet as well-developed [6].

Thanks to the attractive working conditions offered by IT companies in Ukraine, interest in this industry is growing not only among schoolchildren or students but also among professionals from other fields. High-class IT specialists are still in high demand, so IT companies, especially large ones, continue to develop internal mechanisms for the intensive development of their employees and invest significant resources in this direction.

Positive legislative decisions are evident, without which the growth of the internal IT market and the digital transformation of the country would be impossible. For example, the law eliminating several administrative barriers for concluding contracts in electronic form or even working with invoices has finally come into force.

Throughout 2018, there was active cooperation with the Export Promotion Office at the Ministry of Economic Development and Trade of Ukraine, jointly representing the Ukrainian IT industry at various international events. Work is underway on showcasing the IT industry at the World Economic Forum in Davos, which will take place for the first time [7].

According to estimates, Ukraine, Belarus, Poland, and Romania have formed a cluster that ranks in the top 5 global software development centers. Its share is still small, accounting for only 5% of global shipments [2].

The total volume of IT exports from these countries in 2018 amounted to approximately $13 billion, of which $4.5 billion came to Ukraine. For comparison, China shipped IT services worth $38 billion, while India shipped $111 billion [8].

Currently, the number of IT specialists is 172,000. The majority (46%) work in outsourcing companies, while 29% are engaged in product development. Staff augmentation accounts for 11%.

When we talk about adaptation, in most cases, we refer to product companies, which in Ukraine constitute almost a third of the entire IT market in terms of the number of IT specialists.

The best example of localization and adaptation of technological products for the Ukrainian and other markets is "LocaleBro" [9].

The platform's goal is to optimize the process of adding additional languages to existing or new mobile applications for "Android" and "iOS". The system introduces the concept of a project, which, in simple terms, is an application or several applications for "Android"/"iOS" that contain nearly identical texts. For example, "Facebook" for "Android" and "Facebook" for "iOS" can be added to one project since their texts are almost identical. As a bonus, the platform offers the possibility of automatically translating the entire project using "Google Translate". With just two clicks, you can translate to any number of languages, and then spend a little time proofreading and not translating from scratch [10].

Unfortunately, the company did not find a suitable platform for its needs, so it created its own, which later became an external product. The product is competitive in the market and contains all the necessary functionality, like products such as "POEditor", "Lokalise", "Phrase", and others [11].

Products for adaptation and localization are usually expensive solutions, but the company found a way to do it for free.

Within the first month after the launch of "LocaleBro", it was visited by over 800 developers and managers from around the world, and about 30 projects were added [12].

A product that also deserves attention is "Quotify". It allows companies to systematize project evaluations, and formulate proposals faster and more accurately. The mission of "Quotify" is to systematize and optimize the process of providing estimates by software companies, saving time and making evaluations more accurate and convenient for the client. In other words, they wanted to both standardize and adapt their product to individual processes within the company [13].

The idea for the product emerged within the management of the company "Apiko" back in 2016. To implement it, they decided to establish a separate product company for the development of this product with private investments [14].

The evaluation stage for many companies and agencies, when they provide services, is challenging because [15]:

– There is no single template and standards for project evaluation.

– Inaccurate estimation (especially for "fixed-price" projects).

– Difficult process of analyzing previous projects, and systematizing the company's knowledge and experience regarding evaluations.

– The difficult process of comparing actual time spent on implementation with the initially planned time.

No tool on the market would allow for systematizing the evaluation process. Companies used "Excel" or "Google Sheets" – these are universal and flexible tools, but often the templates in them are not very obvious to clients, and it was difficult to systematize the experience of previous projects [16].

Moreover, it was supposed to be a new experience for customers reviewing company proposals, with convenient and intuitive design, project documents along with estimates attached and accessible through a single link [15].

Currently, the company has added several different methods for evaluation, comments, and integration with time-tracking systems (such as "Trello", "JIRA", etc.) to be able to import tasks and then analyze the time calculated with the time spent. They are also implementing additional processes for some companies, including the Gantt chart and role allocation [17].

They also plan to add functionality such as budget calculation, the ability to place their logo on the proposal, and a tree-like structure, which will add even more value to the product [15].

As for the product promotion, they also plan to expand beyond Ukraine, specifically to Eastern Europe – a primarily interesting region, and accordingly further to Western markets. Currently, the project meets the needs of medium-sized companies (up to 500 employees) [15].

The startup "Voopty" is a web portal that combines CRM for schools/tutors and a search engine for schools, tutors, and courses [18].

The idea for the CRM came during the development process. If we draw parallels with existing products, it's like "Booking" or "Airbnb", but for the education sector [19].

The service is designed for two categories of users – those who are looking for a school or individual tutor, and the schools and trainers themselves. Currently, the company is developing in Ukraine and actively expanding globally [18].

Adaptation efforts began when the company decided to cater to users with special needs. Special filters were created to search for schools that work with people with special needs, engage in veteran rehabilitation, and practice inclusive education [19].

For the second category of users, there is a CRM system. Among its main features are an online schedule, individual access rights for employees, attendance tracking, client database, accounting automation, email and messenger broadcasting, online booking, and QR code subscriptions. Special attention in adaptation is given to messengers and accounting, as these third-party products vary from country to country.

Each school can create its own public page. This was one way to avoid adaptation for users in terms of organic promotion.

From a statistical point of view, the following conclusions can be drawn: The annual revenue of the top 245 IT companies in Ukraine is $2.07 billion. More than 50% of adaptation processes occur in the US market. The UK is in second place. 78% of companies earn revenue from web products, and 64% from mobile applications, and adaptation processes are distributed in percentage terms in roughly the same way [2].

Unfortunately, Ukraine still has a small number of its products, and even fewer of these products are adapted to other markets. However, many foreign products are created and adapted here.

Conclusions. Ukrainian IT companies have made significant contributions to global technology, partnering with major international firms and delivering high-quality products and services. The sector's export volume continues to grow, reflecting its competitiveness and relevance in the global market.

The emphasis on education in Ukraine, particularly in the IT field, underscores the country's commitment to nurturing talent and ensuring a skilled workforce for the future. Investments in educational programs and initiatives are crucial for sustaining the sector's growth and competitiveness.

The IT sector plays a vital role in Ukraine's economy, contributing substantial revenue and fostering innovation and entrepreneurship. The industry's stability and growth have positive implications for the country's overall economic development.

While the Ukrainian IT sector faces challenges such as talent shortages and regulatory issues, it also presents significant opportunities for expansion and innovation. Collaboration with international partners, investment in education and infrastructure, and a focus on adapting products for global markets are essential for overcoming these challenges and maximizing the sector's potential.

Overall, the Ukrainian IT sector demonstrates resilience, innovation, and a strong commitment to excellence, positioning it as a key player in the global technology landscape. Continued support and investment in the sector will be crucial for driving its future growth and success.

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