PROJECT DEVELOPMENT OF OPEN EDUCATION PLATFORM FOR THE COMPANY COMPETITIVENESS

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Abstract

Since the corporate e-learning platforms is a relatively new, unexplored frontier, this paper is intended to provide a case and to offer a framework for project development. The aim of this study is to discover the development of open education platform for maintain the company competitiveness. This paper describes the idea and the stages of the project to create a corporate online learning platform. The general background for education platform project in Ukraine is presented; the reasons for choosing the Igor Sikorsky KPI as software and content developers are revealed. Also, it is highlighted that just on-line resources do not lead to realizing the potential of platforms; it requires technologies that make platform interactive and engaging.

Methodology: The case study in this article introduces an initiative to create online platform for a Ukraine-based company. Comparative research methods are used for analysis of Ukraine's position on the level of ICT development by international indices, with vertical comparison extensively for determination the level of ICT development in comparison with other countries. Benchmarking method is realized for actualization the corporate e-learning in Ukraine. The traditional method of dividing the project into stages, which involves determining the actions to be completed, is used.

Findings: The results showed positive values in the different dimensions analyzed: (I) Potential of learning platform in corporate development, (II) The design of e-learning platform, (III) The project steps in the open education platform creation and (IV) The professional practice of «company-university» cooperation.

Implications: Our implication in the problems of company development horizons, which are determined by modern challenges and opportunities of digitalization. Online platforms launched by «company-university» teams can provide thematic, social and digital enrichment for all agents involved.

Originality: The main contribution is revealing the project of open education platform to maintain the Ukrainian company competitiveness with integration the Ukrainian university experience. The case has no analogies in Ukraine.

Keywords: education platforms, project development, e-learning, company-university collaboration, company competitiveness

1. INTRODUCTION

The Internet have created the conditions for a variety of platforms to benefit from the diversity of online information, communication, collaboration and sharing. So, platforms have exploded on the web, and they are assumed to play a major role in the learning in the future. On the other hand, the systematic staff training is one of the key factors to company successful development. To maintain the company competitiveness, it is necessary to continuously improve the employees' skills, as the professional knowledge is rapidly becoming obsolete. The problems of company for development horizons are in strategic competitiveness maintain, which are determined by modern challenges and opportunities of digitalization. Online platforms launched by «company-university» teams can provide thematic, social and digital enrichment for all agents involved. The company's online educational platform becomes a tool for the personal training management and interaction with the system of HR development in the company.

The aim of this study is to discover the development of open education platform for maintain the company competitiveness. This paper describes the idea and the stages of the project to create a corporate online learning platform. In this article the case of online platform project development is revealed, namely the platform with the Igor Sikorsky KPI contribution for Triumph-Pack LLC's employees training. The urgency of the project is determined by both changes in the educational environment and the modern tools for HR development. It is the right time, the pandemic has accelerated the shift towards a more digital world and triggered changes in online communication. The online platforms launched by «company-university» teams can provide thematic, social and digital enrichment for both agents involved.

This case study introduces an initiative to create online platform for a Ukraine-based company in the polyester products sector. The online platform development for a corporative e-learning is presented as the project from idea to implementation through a series of steps – the project development process. There are many areas of project management concept application, and they can cover almost all areas of human life, including the platform development.

2. REVIEW OF LITERATURE

The corporate e-learning is reflecting the educational changes and the modern vision of company development tools. Urdan and Weggen (2000) in the report "Corporate e-learning: exploring a new frontier" focused on key drivers, growth for market segments and product groups of the technology-based corporate training industry. They predicted that companies that deploy and effectively utilize e-learning would have a distinct competitive advantage.

Chen (2008) defined e-learning as combining technology with learning, delivered using telecommunication and information technologies, and a type of training delivered on a computer supporting learning and organizational goals. According to Henry (2001), a e-learning solution involves three basic parts: technologies, content, and services. Sangrà et al. (2012) found four general categories of definitions of e-learning: (1) Using technology to deliver learning and training programs; (2) The delivery of a learning,

training, or education program by electronic means; (3) Learning facilitated by the use of digital tools and content that involves some form of interactivity; and (4) ICT (information communication technologies) are used to support students to improve their learning. Ellis and Kuzni (2016) found the correlation between e-learning and employee satisfaction, productivity, and job performance.

The concepts of Electronic Learning (Uden et al., 2007), Learning Ecosystem (Brodo, 2006; Pirie, 2004) create a framework for education platforms. The term "open education" appeared for the description of open practices in education are led by development in technology and widespread availability of the Internet (Blackall, 2007; Yang & Kinshuk, 2017) including, online learning, e-learning, and distance education. Caswell, Henson, Jensen and Wiley (2008) outlined the origins of the open education to the free software movement, which preludes the emergence of open educational resources (OER). The next-generation of OER are the user-friendly, approachable platforms (Morrison, 2016).

Bri et al. (2009) defined e-learning platforms as "the hardware and software environment designed to automate and manage development academic formation activities. The software must administer, distribute and check activities for face-to-face formation or e-learning in an organization". The definition of e-learning platform is continuously broaden regarding the multiplex components and characteristics that any platform should have.

Corporate learning today considers e-learning not just as one of the alternative ways for learning, but a response to the needs of modern society, the digitalization of which is growing from year to year. Generations of Y-employees expect corporate learning to be accessible and fast like Google search.

Due to recent implementation of corporate e-learning in Ukraine, the body of literature is very limited. The research of Lviv business school (2008) recorded the use of e-learning courses, on-line trainings, seminars in the SoftServe IT Academy' activities (SoftServe is one of the largest companies in Ukraine in the field of software development and consulting). Almost the only example of a serious national academic report is the study carried during 2015-2017 at the Institute of Information Technologies and Training of National Academy of Sciences of Ukraine ("Formation of the informational and educational environment for teaching senior students on the basis of electronic social networks technologies").

In addition, corporate learning is presented in form corporate university. There are advantages of the corporate university: ensuring a high level of staff competence in order to form a competitive advantage of the business; increasing the loyalty and motivation of staff to the organization, solving problems with staff turnover; identification and development of particularly talented people capable of performing leadership functions, creating a reserve of management staff and their high mobility; corporate university is a means of forming, developing and preserving corporate culture; corporate learning emphasis with no typical, but on specific current issues of the enterprise and approaches to them from the inside, constantly dealing with them, so that allows to consider business processes, environment, management in dynamics and development; continuous improvement and increase of business efficiency due to the application of new methods and technologies in teaching;

generalization of experience and knowledge in highly specialized problems; creating a continuous organization of training, which is a tool for internal development of the company, whose activities are aimed at achieving the strategic goals of the organization.

The future of corporate learning is tightly tied to the future of work; therefor repetitive work is becoming more automated, training and learning are shifting to cover more human-centered abilities. In SAP Insights research of Janning, Jonker and Koch (2021) were determined two mega drivers of the Future of

Corporate Learning of explosive growth of information processing and availability, the network in remote work becomes normalized, employees will increasingly depend on digital learning content.

In non-academic publications, the main emphasis is on choosing from the existing LMS (Learning Management System) the one that suits company. This approach could be right, but the purpose of this article is to highlight a case of developing own company platform in cooperation with the university.

3. RESULTS

3.1. Background for education platform project in Ukraine

Online platforms in education can have a synergistic effect due to the attraction and network that creates conditions for using their creative potential and solve scientific, socially significant problems. Online education in Ukraine was one of the few innovations almost at the same time with similar Western initiatives. In 2011, the world saw the first massive online courses from Stanford University, and in 2013 there was a wave of online education in Ukraine. Trends appear in Ukraine with a delay of several years. This is evidenced by an analysis of Ukraine's position on the level of ICT development by international indices, it has an average level of ICT development in comparison with other countries (table 1).

So the level of ICT development in Ukraine isn't an obstacle. Schweizer (2004) predicted as the technological sophistication of the workforce increases, employees would consider e-learning as the preferred learning format. Now the fulfilled prophecy is seen.

Table 1. The Ukraine ranking according to the ICT development indices

	Rank (out of 134)			Rank (out of 63)		Rank (out of 139)
Networked Readiness Index 2020:	64					
Technology pillar,	62,	**Digital ranking 2020**	58		**ICT Development Index 2017**	79
People pillar,	65,					
Governance pillar,	58,					
Impact pillar	79					

Networked Readiness Index (NRI) measures the performance of 134 economies in leveraging information and communications technologies to boost competitiveness, innovation and well-being.

The IMD World Digital Competitiveness Rankings are calculated on the basis of the 52 ranked criteria: 32 Hard and 20 Survey data. The countries are ranked from the most to the least digital competitive. According to Digital ranking 2020 Ukraine improves, moving up two spots from 60th to 58th, which is driven by gains in talent, particularly in the availability of digital/technological skills (40th to 27th), e-participation (53rd to 39th) and agility of companies (47th to 33rd).

The ICT Development Index is designed to be global and reflect changes taking place in countries at different levels of ICT development. It therefore relies on a limited set of data which can be established with reasonable confidence in countries at all levels of development.

The problem is that there is a lack of practices for benchmarking.

In Ukraine there are some distance education resources. In particular, Prometheus, EdEra, a free video lectures WiseCow, «G-MoBa» (Ukrainian language learning), or the first distance education platform for civic education from the Open University of Maidan (training courses from leading business school, public sector, business and social business practitioners). Although these free online portals change the approach to learning in Ukraine, they are rather Massive open online courses (MOOCs) than open educational platforms. The difference is that the platforms provide the two-way communication, moreover the omnicanal communication. Online platforms are to share resources and to form networks.

Traditional corporate training formats do not work due to the low level of customization, the lack of a diagnostic unit and the solution of third-party cases that have nothing in common with the company. But training is a strong alternative to project solutions, when there is value for the team to do everything itself and achieve the target results.

The main trends of corporate training formats are:

- accurate software design with adaptation each unit and individual module to exact business goals through diagnosing the company's potential, strategic goals, internal and external challenges, through the required delta in team development;

- digitalization for working and learning remotely or a hybrid format, which combines online and offline;

- soft skills development with focus on thinking, values, communication with people;

- precise programs with focus on developing specific skills;

- online networking to maximize contact between students and experts, which will eventually form communities that are valuable to both students and experts.

The trend of precise development programs is at its peak. They are replaced by precise development programs aimed at pumping up certain knowledge and skills that help solve the company's business problem. With the help of light diagnostics and a very accurate understanding of the business focus of training is determined: what to do, what not to do and in what better form. They have the main influence on: team thinking; the ability to think about long-term goals and solve applied business problems; system performance; opportunity to see the picture wider, more; the ability to maintain positive energy, charge in the team; finding new opportunities; preparing the team for practical actions / launching actions; taking responsibility for the creation and implementation of decisions; non-binding to a single place, time of programs.

So the level of ICT development in Ukraine, the existing open education resources, the main trends of corporate training formats make a background for developing corporate educational platform in cooperation with the university.

3.2. Background for platform project in Igor Sikorsky KPI

When designing a system of staff development and training, companies must take into account, own competencies and analyze the practicability of involving partners. In the absence of experience in developing e learning, it is rational to contact an institution with such knowledge. Igor Sikorsky Kyiv Polytechnic Institute has

relevant experience. First, it is Sikorsky Distance Learning Platform, an open virtual learning environment. Other example of existing inner university platforms is a page with projects from members of the IT KPI Community (table 2). The main platform idea is to introduce newcomers to the world of open-source projects and to help make the first steps. The subject is wide-ranging: from the emulator of the NES console to the SQL injection tester for Android. The revenue is "If you are just starting out open-source projects, then this is just the perfect chance to start. You can stick with the author, ask for tips and fill in the code without fear that they will be rejected". The university has professionals ready to develop the resource and teachers who want to be involved.

3.3. Triumph-Pack LLC – a case study

Triumph-Pack LLC is a manufacturer and supplier of plastic products made of linear low density polyethylene. The company is a subject of foreign economic activity, but does not currently export plastic plates, pipes and profiles. In the near future, Triumph-Pack LLC plans to export its products. The internal diagnostics of company competitiveness has revealed that for the international business development the level of skills can become an obstacle (table 3).

It is therefore conceived the idea of this project, because of the complexity of-the-line training during the pandemic and the need for training. The initial problem grew into an opportunity. The first training program should be content for sales managers and logistics managers.

The main idea of the education platform for the company is to reduce training costs and eliminate the need to pay consultants to fully implement internal training in the company (table 4).

3.4. Steps in the project development

Although platforms are not created equal, there are three essential building blocks for any upcoming successful platform:

1) a platform must provide the necessary infrastructure enabling interaction between participants in the eco-system;

2) platform developers must also use social media to create a network effect and foster rapid growth;

3) platforms must put the right data (Bonchek & Choudary, 2013).

At the preparatory stage, a group of identified specialists is formed, data on preliminary analysis and drafting of the online platform are specified and a work program is developed (table 5).

Working group consists of KPI specialists and specialists from the surveyed company. The composition of a working group will depend on the type of task highlighted in the plan.

During the production stage of the development, training material is created to fill the platform, it is downloaded and tested on a group of employees of the company, after feedback, which is amended and refined (table 6).

At the last final stage, an examination is conducted in various areas and components of the online platform, such a feedback is collected for refinement (table 7).

The minor errors in the platform operation that may occur during use should be reported to the responsible working group for troubleshooting.

4. CONCLUSIONS

The level of ICT in Ukraine, the bench of existing open education resources, the main

Table 2. The projects of IT KPI Community

Name of the project	The link to the GitHub	Technological stack	Description	Stage of the project and what is to be completed
High-Level Telegram Bot API	https://github.com/Re odont/telegram- simple	Java 8	High-level ARI for Telegram bots	Developed system of updates using the pattern Publisher/ Subscriber. A simple DSL based pacemaker has been developed (not modified). Realized 30-35% Telegram Bot API function (standard)
Room538	https://github.com/hm lON/room538	Ruby/Rails + PostgreSQL	Tracking of chores in your room	The main functionality is made. A list of things to improve: - e-mail to all comrades when a new member joins the room - copy the link with the mouse click invitation - Transfer the front-end to the framework
CP—tester	https://github.com/Ale xeyZatsepin/CP-Tester	Android SDK, Java	Android-based application for SQL injection vulnerabilities in all content providers based on SQLite databases on smartphone	Project at the final stage, open to complementary / improvement ideas
RRS Converter Go	https://github.com/gre m11n/rrs-converter-go	Go	Default for converting files to S3 from one class to another	It copes with the task, but it would be good to add tests
Security Group Search	https://github.com/gre m11 n/security-group- search	Go	Search by security groups in AWS	Searches for IP and other SG in ingress / egress rules. Improvements are limited to fantasy: you can play with the output format, make an IP search from subnets, etc.
Emunes	https://github.com/do nqustix/emunes	C++ & SDL2	Exact NES emulator with support for the following mappers: 0, 1,2, 3, 7	The project is in the final stage. What can be done: accuracy, game by two on the network, graphic shell
THUNDER STORM	https://github.com/Igo r1101/THUNDE RST ORM	Embedded operating system	Is written with emphasis on portability and stability, POSIX capability	Early stage of development, there is a lot to write, endless improvements, but I have a plan how to design it further.
KPI Groups	https://github.com/Qu inlys/LoginPage. git	Currently defined	The project represents a site with all necessary resources which the student enjoys on the Internet. Namely: a personal rating, a direct connect to teacher, the ability to download various files (the module will replace the emails of groups, etc.)	At the moment, the registration system is being developed, after which we plan to proceed to the development of a personal page for the teacher, etc.
IT KPI Codewars bot	https://github.com/ma ksim36ua/IT-KPI-Codewars-Bot	.NET (C#), Microsoft Bot Framework, MS SQL	Telegram-bot (t.m e/itkpi_cod ewa rs_bot), which once a week publishes the points of participants from the site codewars.com and generates a rating among the members of the IT KPI community (t.me/itkpi). It has a set of commands.	The basic functional is developed. It is possible to add more features, cover tests, write a normal Readme, and refactor.

Table 3. Score of competitiveness of LLC "Triumph Pak"

Factors of competitiveness	Weigh of factors	The value of competitiveness factors			The weighted value of competitiveness factors		
		Triumph-Pack	Flagman	Grand-Flacks	Triumph-Pack	Flagman	Grand-Flacks
Market share	0,09	4	3	4	0,36	0,27	0,36
Consumer product characteristics	0,13	5	4	4	0,65	0,52	0,52
Brand	0,10	4	3	3	0,4	0,3	0,3
Packing	0,07	4	4	4	0,28	0.28	0,28
Assortment	0,06	4	5	4	0,24	0,30	0,24
Price	0,08	4	5	3	0,32	0,4	0,24
Distribution channel	0,05	4	4	5	0,2	0,2	0,25
Effectiveness of marketing communications	0,10	4	5	4	0,4	0,5	0,4
Production capacity	0,11	4	3	5	0,44	0,33	0,55
Logistics	0,11	4	4	5	0,44	0,44	0,55
Relevance of staff skills to the entering foreign markets plans	0,10	3	2	3	0,3	0,2	0,3
Total	1,0	-	-	-	4,03	4,18	3,99

Table 4. The description of the online platform project

Title	Triumph education platform
Result	Functioning education platform and 90% reduce in training costs for out-company consultants
Customer	Triumph-Pack LLC
Team or Working group	Mixed: Triumph-Pack LLC+Igor Sikorsky KPI
Software and content developer	Igor Sikorsky KPI
Skills are aimed to improve	- Skills to draw up foreign trade contracts, licenses, permits, delivery schedules, product specifications - Skills of conducting commercial negotiations, conducting business correspondence - Ability to register of cargoes across Ukraine and international
Who will use the platform	sales managers and logistics managers
Stages	1. Preparatory 2. Production 3. Final
Risk	Low Express Analysis (done through service – Youcontrol.com) showed that the customer company has no signals to pay attention to, among the list of evaluated factors of express analysis, or they were few or insignificant
The type of content you to be included in the courses	Audio, video, interactive actions, PDF-documents, PowerPoint presentations
Priority of functions	Discussion boards; tracking progress The ability to train the whole team simultaneously or in groups

Table 5. Preparatory stage of online platform development

Phase	Performer	Result	Comments
Formation of a working group and a plan	Approval at the organization level	Legal act (Order)	Working group: HR department specialist and IT specialist, designer, psychologist, educator
Didactic features of the platform	Working group	Working materials of the working group for the development of the online platform	It is necessary to specify: - methods of content distribution (modules, sections, topics, classes, micromodules); - criteria and forms of performance evaluation.
Clarification of the structure of the online platform	Working group	Section of the work program of the online platform	
Development of the working program of the platform	Working group	Working program of the online platform	

Table 6. Production stage of online platform development

Phase	Performer	Result	Comments
Creating an informational part of the content (long grids, educational video lectures, presentations, diagrams, tables, audio files, etc.)	Online course development working group (if necessary - with the support of the personnel training department and the IT department)	1) Training content for further download to the platform 2) Necessary methodological support	The key role in the development of a video lecture is played by: preliminary script development and storyboarding, professionalism of video shooting and video editing, absence of psychological barriers when working on camera.
Creating an interactive part of the content (interactive lectures, system of tasks, tests, etc.)	Working group	1) Training content for download on the platform 2) Necessary methodological support	
Uploading materials to the platform	Working group	Online courses and materials uploaded to the online platform	
Online platform testing	Personnel training department	Information on technical deficiencies to be eliminated	It is desirable to conduct testing with the participation of employees.
Completion of the platform based on the results of testing	Working group, IT department	A well-functioning online platform	

Table 7. The final stage of developing an online platform

Phase	Performer	Result	Comments
Expertise online platforms	A group of experts of the relevant profile	Feedback on the didactic qualities of the online platform, including a list of identified content and methodological shortcomings to be addressed	Examination should be divided into external and internal, technical and substantive
Completion of the platform based on the results of the examination	Working group (if necessary - with the participation of the IT department and the personnel training department)	On-line platform, completely ready to use	It is necessary to provide adjustments, if necessary, both for educational content and methodological support of the platform
Completion of the platform based on the results of implementation	Working group (if necessary - with the participation of the IT department and the personnel training department)	A workable online platform that periodically undergoes content updates and user-upgrades	The platform is being finalized taking into account its real pedagogical efficiency, which is determined on the basis of the analysis of employees' educational achievements

trends of corporate training make a favorable background for developing corporate educational platform in cooperation with the university.

In order to create competitive advantage and accomplish company goals, companies can consider investing in similar online platforms to help their staff improve their job skills, engagement, and satisfaction. The corporate learning is moving from linear to networked models, from pipes to intelligent platforms. In pipes a value is produced upstream with centrally employed staff and owned assets and consumed downstream. There are plenty of opportunities to construct educational platforms today. Therefore, it should be emphasized that their quality, effectiveness and success depend, first of all, on the motivation and desire of participants in the project.

Our study does not exhaust all of the issues outlined problem. The main limitation is a very few corporate online platform project, which practice alliance between university opportunities and business needs. Although using the modern trend of precise development programs and pandemic challenges allow achieving certainty competitiveness results for all stakeholders. Therefore, future researches should try to research economic efficiency of the project.

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ПРОЈЕКТ РАЗВОЈА ПЛАТФОРМЕ ОТВОРЕНОГ ОБРАЗОВАЊА ЗА КОНКУРЕНТНОСТ ПРЕДУЗЕЋА

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Извод

Пошто су корпоративне платформе за е-учење релативно нова, неистражена граница, овај рад има за циљ да пружи пример и да понуди оквир за развој пројекта. Циљ ове студије је откривање развоја отворене образовне платформе за одржавање конкурентности компаније. Овај рад описује идеју и фазе пројекта за креирање корпоративне платформе за онлајн учење. Представљена је општа позадина пројекта образовне платформе у Украјини; откривени су разлози за одабир КПИ Игора Сикорског за програмере софтвера и садржаја. Такође, истиче се да само онлајн ресурси не доводе до реализације потенцијала платформи; захтева технологије које платформу чине интерактивном и привлачном.

Методологија: Студија случаја у овом чланку представља иницијативу за стварање онлајн платформе за компанију са седиштем у Украјини. Упоредне методе истраживања се користе за анализу положаја Украјине о нивоу развоја ИКТ-а према међународним индексима, са вертикалним поређењем опширно за одређивање степена развоја ИКТ-а у поређењу са другим земљама. Метод бенчмаркинга је реализован за актуализацију корпоративног е-учења у Украјини. Користи се традиционални метод поделе пројекта на фазе, који подразумева одређивање радњи које треба завршити.

Налази: Резултати су показали позитивне вредности у различитим анализираним димензијама: (I) Потенцијал платформе за учење у корпоративном развоју, (II) Дизајн платформе за е-учење, (III) Пројектни кораци у креирању платформе за отворено образовање и (IV.) Стручна пракса сарадње «компанија-универзитет».

Импликације: Наша импликација у проблемима хоризоната развоја предузећа, које одређују савремени изазови и могућности дигитализације. Онлајн платформе које су покренули тимови «компанија-универзитет» могу пружити тематско, друштвено и дигитално обогаћивање за све укључене агенте.

Оригиналност: Главни допринос је откривање пројекта отворене образовне платформе за одржавање конкурентности украјинске компаније уз интеграцију искуства украјинског универзитета. Случај нема аналогије у Украјини.

Кључне речи: образовне платформе, развој пројеката, е-учење, сарадња компаније и универзитета, конкурентност предузећа

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