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# DIGITAL EDUCATIONAL PLATFORMS AND THEIR IMPORTANCE FOR VOCATIONAL TRAINING IN MODERN ENTERPRISES

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**Abstract**. The study examines the impact of digital educational platforms (DEPs) on employee training and development in Bulgarian enterprises. Employing survey data and statistical methods, it explores the influence of these platforms on professional growth and employee satisfaction. The methodology includes correlation analysis and the Mann-Whitney U test to test hypotheses regarding interactivity, personalization, and their effects on engagement and learning effectiveness. Key findings indicate that while DEPs enhance professional skills and productivity, they also correlate with lower satisfaction regarding course quality. This highlights the need for better adaptation of content and teaching methods to individual needs. Additionally, the research underscores the importance of social learning and collaboration through interactive features, which significantly boost engagement and learning outcomes. The study provides valuable insights into the complex role of DEPs in workplace training, emphasizing a balanced approach to their implementation to maximize benefits and address areas needing improvement.

*Keywords*: digital learning platforms; continuing vocational education and training; organizational learning; skills enhancement; professional development

## 1. Introduction

The digitization of educational processes is among the main trends at a time when organizations seek to improve the professional development of their employees and stimulate innovation within the company. With the growing number of workers requiring continuous training and updating their skills, digital education platforms offer an efficient and flexible tool for learning new knowledge and skills. The possibility of personalized training and interactive formats significantly improves employee engagement and training. DEPs offer a variety of educational resources, such as online courses, webinars, virtual

labs, etc., which contribute to personalized learning and the achievement of specific business goals. According to studies, companies that invest in digital training have higher productivity and better resilience to changes in the market environment. Platforms not only make it easier to hire and retain talented employees but also significantly reduce the time it takes to learn new technologies and processes. It is also important to note that DEPs not only provide knowledge and skills but also facilitate the process of tracking and evaluating employee progress in real time. This is key to the adaptive management of curricula and to ensuring continuous improvement of staff skills. They can be integrated with other learning management systems and enterprise platforms, facilitating administrative processes and the integration of learning with enterprise business objectives.

Another important aspect is the social interaction and collaboration that can be achieved through such platforms. Virtual learning environments allow employees to communicate and share knowledge with colleagues from different parts of the world, which enriches learning and increases motivation. To contribute to this active discussion, the present study uses survey data to examine the impact of DEPs on the development of organizations and their employees in Bulgaria.

## 2. Conceptual framework and methodology

The study's conceptual framework evaluates the influence of DEPs on workplace training in Bulgarian enterprises, focusing on their impact on professional development and employee satisfaction. The purpose of this article is to contribute to the research on the current use of DEPs for professional training by answering the following questions: assessment of their popularity and usefulness in Bulgarian organizations; preferences and needs of employees; effectiveness and legitimacy of DEPs in the eyes of consumers and employers; and assessing the role of DEPs in the development of employee skills and productivity. Our intention is primarily to understand how digital learning platforms contribute to supporting the development of organizations and their employees, enterprise innovation and market competitiveness.

To achieve our objective, we provide a classification of digital platforms based on the specific methodology of the courses, as well as we offer the results of a survey conducted among employees and workers of enterprises and organizations from South-Eastern Bulgaria, to verify the following research hypotheses:

- *Hypothesis 1: Interactivity and personalization of digital educational platforms increase engagement and learning effectiveness.*
- *Hypothesis 2: The training offered through digital platforms affects employee satisfaction and motivation.*

Methodologically, the research employs survey data analysis and statistical tools such as correlation analysis and the Mann-Whitney U test to investigate these hypotheses, aiming to provide insights into the practical implications of digital platforms in organizational training contexts.

The primary data collecting method is a structured questionnaire that contains 30 closed-ended questions with Likert scales and multiple-choice alternatives. Cronbach's alpha and Guttman's Lambda 6 (G6(smc)) coefficients were used to assess the questionnaire's internal consistency. Cronbach's alpha was 0.79, indicating that the questionnaire had a high level of internal consistency. The results are interpreted using the table developed by George and Mallery in 2003 (George & Mallery 2023). The G6(smc) result is extremely high (0.91), adding to the questionnaire's dependability.

The questionnaire was distributed to employees from 70 organizations in South-Eastern Bulgaria. The online survey is distributed through email invites and internal communication channels. The survey's complete anonymity allows respondents to participate freely and provide honest answers to the questions, and the online distribution allows them to complete it at their leisure.

The research sample consists of employees from various departments and levels across several organizations that use DEPs for professional development. The sample consists of 104 respondents.

## 3. DEP for continuing professional learning

In 2023, 90% of global companies supplied digital training to their staff, with 67% giving mobile e-learning options[1]. Companies are increasingly adopting personalized training based on AI and machine learning that analyses employee performance and preferences. Microlearning, consisting of short modules, is focused on specific skills and topics, improving engagement and knowledge retention. Gamification, mobile education platforms, and integration with existing systems facilitate learning and increase efficiency. The analytics capabilities of these platforms provide valuable data on employee behaviour and progress, supporting decision-making to optimize training programs. Some popular DEPs that are widely used in enterprises to facilitate various aspects of learning and professional development are Coursera for Business[2], edX for Business[3], Udemy for Business[4], Skillsoft[5], Pluralsight[6], LinkedIn Learning[7], and Cornerstone Learning[8].

Digital platforms can be classified in a variety of ways (Usova 2021). A classification of DEP used in business can be made based on the specific methodology of the courses, on technological integration and compatibility, or on administrative functions and learning management.

Table 1 presents a typology of DEPs used in enterprises based on the specific methodology of the courses. A comparative analysis between different types of digital business learning platforms can be useful to understand their advantages and disadvantages, depending on the specific needs of the business and the learners. Platforms such as Udemy, Coursera, and LinkedIn Learning provide flexibility and variety in *learning through video materials*. They are particularly useful for businesses looking for ready-made courses and training programs on a variety of topics. Video materials provide visual and audio training opportunities that can be more accessible and easily absorbed by employees (Arkenback 2023). *Virtual classrooms* such as Zoom[9], Microsoft Teams[10], and WebEx[11] are particularly useful for businesses because of their ability to provide real-time active participation and interaction between participants. They offer a wide range of learning interaction tools, such as screen sharing, chat, group sessions, and even the options to record sessions for later use (Holuša 2023).

The typology of DEP, based on the specific methodology of the courses, is given below.

### *3.1. Video-based platforms*

• Advantages: *Visual Learning*: Video materials provide a visual representation of learning material that can be easier for learners to absorb. *Flexibility*: Learners can learn at the time and pace that suits them, thanks to the ability to play videos.

• Disadvantages: *Limitations in interaction*: Videos often do not provide opportunities for interactive participation and discussion, which may be necessary for some teaching methods.

• Frequency of use: *High*. According to Corporate E-Learning Statistics, video tutorials are one of the most popular training methods, with 98% of companies anticipating in increase in their investment in this technology.

### *3.2. Virtual Classroom Platforms*

• Advantages: *Real-time interaction*: Platforms like Zoom and Microsoft Teams offer opportunities for real-time participation, feedback and group work. *Time flexibility*: Can be used for synchronous learning in different time zones and locations.

• Disadvantages: *Requirement of a stable Internet connection*: Successful use requires a stable Internet connection and appropriate technological skills on the part of participants.

• Frequency of use: *High*. According to "Global Industry Analysts, Inc.", Virtual Classroom Market size is projected to grow, exhibiting a com-pound annual growth rate of 13.10% during the period 2024 – 2032.

### *3.3 Mobile Learning Platforms*

• Advantages: *Accessibility*: Learning can be done from anywhere with a mobile internet connection. *Adaptability*: They can offer personalized learning adapted to the needs and pace of learners.

• Disadvantages: *Functionality limitations*: Not all educational methodologies can be easily implemented through mobile devices, especially those that require larger screen space or complex interaction capabilities.

• Frequency of use: *Average.* According to "eLearning Industry", 67% of companies are already using mobile learning platforms and this number continues to grow.

### *3.4. Social Learning Platforms*

• Advantages: *Sharing knowledge and experiences*: Enable learners to communicate and share resources and experiences with each other. *Collaboration*: Support collaboration and team-work through online forums and group chats.

• Disadvantages: *Need for active participation*: Effective use requires active participation and commitment from participants.

• Frequency of use: *Average.* According to Training Industry, 43% of companies are increasing their investment in social training platforms.

Platforms like Kahoot[12] offer the flexibility and accessibility of *learning directly through mobile devices.* They are ideal for businesses that have employees who are often on the road or working from different locations. Mobile platforms offer adaptive learning and personalized learning opportunities, which are important for effective employee training in a dynamic work environment (R. Moore et al. 2024). Platforms such as Microsoft Teams and Facebook Workplace[13] encourage collaboration, the exchange of ideas, and the sharing of resources between participants. These *social learning platforms* are especially useful for businesses that value collaboration and learning from the experiences of other employees (Deng 2022).

When we talk about the classification of DEPs in business regarding technological integration and compatibility, we can consider this topic in several aspects: integration with existing IT systems, compatibility with mobile devices, integration with existing technologies and standards, and cloud-based solutions. Examples of platforms achieving high integration and compatibility include Cornerstone OnDemand and SAP SuccessFactors[14], which offer deep integrations with existing systems and standardized protocols. Examples of medium integration and compatibility are platforms such as Moodle[15] and TalentLMS[16], which offer basic integration capabilities and are relatively easy to set up and use.

Regarding the classification of digital business learning platforms from the point of view of user interface and usability, we can consider the following key aspects: intuitive user interface, interface customization, multimedia capabilities, flexibility and accessibility, support, and user training. Platforms such as Coursera for Business provide a modern and user-friendly interface with significant customization possibilities and multimedia content. Platforms such as TalentLMS and Docebo[17] strike a solid combination between capability and ease of use.

## 4. Examining the Impact of Digital Education Platforms on Workplace Training

The section presents part of the results of a study aimed at evaluating the current use of DEPs in training in Bulgarian enterprises. The main focus is on understanding how digital platforms influence professional development and employee satisfaction in organizations. Hypotheses considered in it include the impact of the use of digital platforms on employee satisfaction and motivation, as well as the relationship between training personalization and training effectiveness. Research is based on survey data analysis and statistical methods such as correlation analysis and Mann-Whitney U test to test the hypotheses.

### *4.1 Study of the internal trainings organized by the enterprise*

The results reflect a successful integration and use of DEPs in the training offered by the organizations, but there are also potential areas for improvement, such as a strategy to update and personalize the educational offers, as well as to increase the visibility and support of the digital educational initiatives in the organization. 46.2% answered that they receive training offers implemented using DEPs. The most commonly offered types of training include technical skills and management and leadership training. The main advantages of training through digital platforms, indicated by the participants, include flexibility in the training program, accessibility from any place and the ability to learn the material independently. Almost half of the participants use additional resources such as forums, chats or interactive platforms to exchange experiences with colleagues. Although 62.5% rate digital education platforms as meeting their individual educational needs on average, it is important to improve the personalization and adaptation of educational programs to the specific needs of employees. Almost 94% of the participants rate the support from the enterprise as good or very good, which is a positive signal of the organization's commitment and care to the educational needs of its employees. Most of the participants (87.5%) note that the courses are up-

dated periodically or as necessary, which is important to maintain relevance and responsiveness to modern business trends and needs.

### *4.2. Evaluating the effectiveness of digital platforms*

Evaluation of the effectiveness of DEPs used in enterprise trainings by employees participating in such trainings provides an important perspective on their application and perception by employees. Almost 62% of participants rated the platforms as useful or very useful. A significant percentage (50%) noted that there was a variety of courses, but not enough. This is an area where work can be done to respond to the diversity of employee interests and needs. Almost 56% rate interactivity and engagement as high to very high, which is important for maintaining motivation in learning through digital platforms. Almost two-thirds of the participants (66.7%) are satisfied or very satisfied with the quality of the courses offered through digital platforms. A remarkable majority (88.9%) believe that DEPs have a positive impact on their professional productivity. This highlights the importance of investing in such technologies to improve work efficiency.

### *4.3. Evaluating the effect of interactivity and personalization of educational platforms on engagement and learning effectiveness*

The present study examines whether the interactivity and personalization of DEP increase engagement and learning effectiveness. The results of the Mann-Whitney U test and of correlation coefficients such as Spearman's r and Kendall's $\tau$ provide the relationships between these aspects of the use of DEP and their effect on learners.

Between questions for Engagement (Q7.4 Do you use additional resources such as forums, chats or interactive platforms to exchange experiences with colleagues during training?) and Personalization (Q8.6 To what extent do DEP provide personalized learning based on your needs and skills?), the Spearman's r value is 0.6105. This value indicates a moderate to strong positive monotonic relationship between the responses to Q7.4 and Q8.6. Between questions for Effectiveness of training (Q8.5 How do you think DEP affect your professional productivity?) and Personalization (Q8.6) the Spearman's r value is 0.8916, i.e. a strong positive monotonic relationship between the answers to these questions.

Between questions for Engagement (Q7.4) and Interactivity (Q8.3 How would you rate the interactivity of DEP?), the value of Kendall's $\tau$ is 0.1596. This value indicates a weak positive monotonic relationship between the answers to Q7.4 and Q8.3. Between questions Q8.3 and Q8.5, the Kendall's $\tau$ value is 0.2665, which is a weak to moderate positive monotonic relationship between them. Between questions Q7.4 and Q8.6, the value of Kendall's $\tau$ is

0.5565, i.e. a significantly stronger positive monotonic relationship between responses to these questions. There is an extremely strong positive monotonic relationship between the answers to Q8.5 and Q8.6, as the value of Kendall's $\tau$ is 0.9893.

The Mann-Whitney U test is a non-parametric test that is used to compare two independent groups to determine if there is a statistically significant difference between them. In this case, the test compares in the groups that use and do not use DEP evaluations of the personalization of the courses conducted through the DEPs. The resulting numerical value of the U statistic, which shows the rankings of the two groups, is 980. The p-value indicates the probability that the differences between the groups occurred by chance. The level of significance adopted was 0.05. As the p-value is 0.1936, which is greater than 0.05, there is insufficient evidence to reject the null hypothesis, which suggests that there is no difference in personalization ratings of DEP between those who do and do not currently use DEP for CVET.

The Mann-Whitney U test is used to compare the perceptions of interactivity and engagement in the implementation of DEP in CVET. U-statistic value is 948. p-value is 0.1443 which is greater than 0.05 i.e. there is insufficient evidence to conclude that there is a statistically significant difference between the groups using and not using DEP in terms of their perceptions of the interactivity and engagement of these platforms. This may be because both groups have similar expectations or experiences with these platforms.

The results *partially support Hypothesis 1.* In particular, the personalization of DEP seems to have a significant positive effect on engagement and learning effectiveness, while the relationship between interactivity and these two aspects is not as pronounced, with the data showing a weaker relationship.

### *4.4. Evaluating the effect of training offered through digital platforms on employee satisfaction and motivation*

By examining Spearman's rank correlation coefficients, we aim to reveal the relationship between employees' usage of DEPs and their satisfaction with course quality (Q8.4) and perceived effectiveness in professional skill enhancement (Q6.3). The analysis focuses on whether increased use of digital platforms correlates with changes in employee perceptions of course quality and professional skill development, shedding light on the potential impacts of digital training on workplace attitudes and motivation.

The Spearman's rank correlation coefficient value of -0.3973 indicates a moderately negative relationship between the use of DEPs (Q2.1) and satisfaction with the quality of the courses provided (Q8.4). The p-value of 0.0493 is slightly below 0.05, which means that the relationship between the use of

digital platforms and satisfaction is statistically significant at the 0.05 significance level. An increase in the use of DEPs is associated with a slight decrease in satisfaction with the quality of the courses provided. This may suggest that there may be issues with the quality or suitability of the courses offered through these platforms, which could be an area for improvement. This *partially supports Hypothesis 2*, showing that learning through digital platforms can affect employee satisfaction, but in a negative direction.

The Spearman's rank correlation coefficient between Q2.1 and Q6.3 has a value of 0.5490, indicating a moderate to significant positive correlation. The correlation is statistically significant (P-value is 0.0045), making it highly unlikely that this relationship is due to chance. The results show that participants who currently use DEPs for continuing professional learning tend to rate these platforms as effective in improving their professional outlook and skills. This may mean that those who use the platforms find them useful and effective in developing their professional skills and knowledge. Employees' positive evaluation of the effectiveness of training through digital platforms leads to a positive influence on motivation, which *supports Hypothesis 2.*

## 5. Limitations

The current study's limitations include a small number of participants, a limited geographic scope, and a short-term perspective. The research includes 104 participants from the IT technology, services, production, and financial industries. The study was conducted in South-Eastern Bulgaria; hence, the findings may not be generalizable to other places. It was carried out within a short period of time (March-May 2024); therefore, the long-term consequences and trends connected with DEP implementation in CVET may not be fully captured. Despite the constraints, the collected data give useful information about the impact of CVET DEPs on employees' engagement, learning effectiveness, employee satisfaction, and motivation. Its findings can serve as the foundation for future studies that broaden the scope.

## 6. Conclusions

In conclusion, the research provides evidence for the benefits of using DEPs in training in Bulgarian enterprises, as well as some interesting paradoxes or aspects that may require further explanation or attention. Although the increase in the use of learning platforms shows a positive correlation with a higher assessment of their impact on the professional skills and knowledge of employees, there is also an inverse relationship with satisfaction with the quality of the courses. This fact can be interpreted as a need to better adapt the content and teaching methods to the individual needs and preferences of the participants.

While 88.9% of participants believe that DEPs have a positive impact on their professional productivity, there is a moderate-to-significant positive correlation (0.549) between using the platforms and improving professional skills. These results indicate that although users may find the platforms useful, their perceptions of their impact on productivity may be influenced by other factors not addressed in the present study.

The research shows a positive effect of digital platforms on the professional productivity and motivation of employees, but there is a negative correlation between the use of the platforms and satisfaction with the quality of the courses. This contradiction emphasizes the complexity of the impact of technologies in educational processes and the need for a balanced approach in their application. The use of additional resources such as forums and interactive platforms to exchange experiences with colleagues shows a highly positive effect on engagement and learning outcomes but is not always related to the level of personalization of the platforms. This aspect may suggest the need for wider research into the possibilities of social learning and collaboration in the context of educational platforms.

The research shows a positive effect of digital platforms on the professional productivity and motivation of employees, but also dissatisfaction with the effectiveness of the courses. These results point to the importance of joint efforts between universities and businesses to develop new learning methodologies in a digital environment to meet the practical requirements of industry. Through such collaborative efforts, universities can provide academic expertise and methodological approaches, while businesses can offer real-life case studies and feedback on the practical applicability of the solutions developed. Such collaborative initiatives can offer employees the latest knowledge and skills that are relevant to the industry. According to research by the Institute for Economic Research at the BAS, about 34% of universities in Bulgaria have active partnerships with businesses for continuing professional education in 2023. The reports of the Ministry of Education and Culture for 2022 and 2023 show that about 30% of universities in Bulgaria are involved in partnerships with business organizations for the implementation of continuing professional education. There are joint projects and partnerships between universities and businesses in the integration of digital education, but there is still a significant way to go to reach the level of the leading European countries.

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**NOTES**

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