DEVELOPMENT OF BUSINESS COMPETENCIES AMONG PHARMACISTS THROUGH THE "GALIVERSE" MOBILE APPLICATION

Ivana Zimonjić[1,2]*,
[0000-0002-1795-3487]

Lazar Dražeta[3],
[0000-0001-5246-6468]

Tatjana Milošević[4]
[0009-0009-7470-2762]

[1]University of Belgrade – Faculty of Pharmacy, Department of Social Pharmacy and Pharmaceutical Legislation, Belgrade, Srebia

[2]Galenika a.d. Beograd, Belgrade, Serbia

[3]Singidunum University, Belgrade, Serbia

[4]EduMed, Šabac, Serbia

Abstract:

The COVID-19 pandemic and increased incidence of adverse events in healthcare have intensified global research into the impacts on healthcare professionals, including pharmacists. Recognizing the importance of business competencies such as communication, teamwork, and resilience, global regulations have highlighted these competencies to reduce staff turnover and enhance patient safety. In response, the pharmaceutical company Galenika A.D. Beograd developed "Galiverse," a mobile application to support its strategic pharmacy partners by providing an accessible tool for competency enhancement.

The application content was created by a multidisciplinary team from two universities in Serbia based on a thorough review of the literature and guidelines for educational interventions in health. The content is accredited by the Health Council of Serbia. Since its launch in February 2023, the application has been adopted by 4,200 users, with 5,351 participating in accredited tests, achieving a 77.78% success rate. A total of 10,427 webinar views were also recorded.

A survey revealed that 95.77% of users felt the application had improved their organisational, personal, and professional competencies, while 97.65% would recommend it to colleagues seeking development. The "Galiverse", which is aligned with regulatory requirements and ensures safe and reliable practices for the future, proved to be the most accessible tool for the development of business competencies among pharmacists in Serbia.

Keywords:

Business Competencies, Pharmacists, Mobile Application, Competency Framework, Professional Development.

Correspondence:

Ivana Zimonjić

e-mail:
izimonjic@pharmacy.bg.ac.rs

INTRODUCTION

In the wake of the COVID-19 pandemic, healthcare organisations have increasingly faced employee burnout accompanied by staff turnover and a shortage of skilled personnel [1]. This situation has drawn increased attention to the physical and mental health and well-being of those providing healthcare services [2]. Numerous initiatives and research consortia have been established to study the impact of adverse treatment outcomes on the health of all healthcare professionals [3], [4]. The term "second victims" has emerged to describe healthcare professionals suffering from adverse outcomes in any form [5], [6].

The World Health Organisation, through global policy documents, recognizes the significance of healthcare professionals' safety for patient safety, emphasizing the role of business competencies such as communication, teamwork, and resilience in this context [7], [8].

Pharmacists are not exempt from the consequences of heavy workloads and the effects of adverse outcomes. Consequently, the International Pharmaceutical Federation (FIP) has revised the competency framework for pharmacists, which is structured around professional, organisational, and personal competencies, introducing first-time competencies related to resilience and public health responses in emergencies [9], [10]. This framework defines each competency with specific behavioural indicators, a national assessment scale from 1 to 4, and expected levels according to years of experience.

In response, and parallel with global regulatory updates, Galenika A.D. Beograd initiated the Galenika Academy in 2020, a competency-based program designed to support pharmacists in Serbia. The project has successfully conducted 35 webinars, accredited 15 tests, and held four business forums for owners, managers, and HR business partners in pharmacy organisations. In a bold move towards sustainability and greater accessibility of educational resources, a decision was made to develop a mobile application for this purpose. This initiative aligns with the global and local competency frameworks, aiming to provide pharmacists with the necessary competencies to ensure safe and effective practices in an increasingly complex healthcare environment.

2. DEVELOPMENT OF THE "GALIVERSE" APPLICATION

The "Galiverse" mobile application is a collaborative effort between Galenika A.D. Beograd and EduMed, focused on aligning with Serbian national standards and facilitating continuous professional development for pharmacists [11] - [13]. The EduMed platform hosts accredited tests and webinar recordings, directly linking test completion and certification records to the Pharmaceutical Chamber of Serbia. Developed internally by Galenika A.D. Beograd, "Galiverse" integrates seamlessly with EduMed to comply with regulatory requirements, ensuring accurate credential tracking and professional development reporting [14], [15].

The application features a user-friendly interface, as illustrated in Figure 1, which supports direct test-taking and easy access to educational resources. It is efficiently managed through Firebase for performance monitoring and user engagement analysis.

The "Galiverse" application demonstrates advanced technical features tailored for the healthcare sector, emphasizing user-centric design and robust data security. It offers cross-device compatibility, which is crucial for ensuring access across various digital platforms and enhancing user engagement regardless of device preference. The key to its design is the encryption of data during transmission, safeguarding sensitive user information in line with stringent healthcare data privacy standards.

Additionally, the application empowers users with the ability to manage their data, including the option to request data deletion, aligning with global privacy regulations. Recent enhancements, such as improved display functionalities for webinar dates, indicate a continuous commitment to refining user experience and application utility.
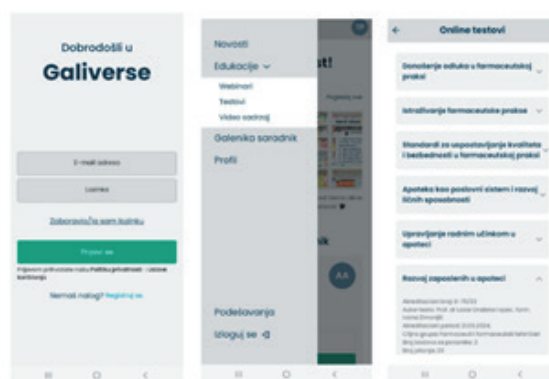

Figure 1. User interface of the "Galiverse" application.

These developments underscore "Galiverse" as a model for integrating technological innovations in pharmaceutical applications, significantly contributing to professional development and regulatory compliance. This concise overview highlights the application's pivotal role in advancing healthcare communication technologies.

2.1. EDUCATIONAL FRAMEWORK AND CONTENT

The "Galiverse" application offers a comprehensive suite of educational modules designed specifically for pharmacists. Users can access recordings of all previously held webinars and engage with short video tutorials created by pharmacists. Additionally, the application provides links to accredited tests along with preparatory materials, ensuring that pharmacists are well-prepared to enhance their professional competencies. All educational content within the application is meticulously crafted to address specific competencies from the global framework provided by the International Pharmaceutical Federation (FIP), as well as the national competency framework [16].

Each webinar is tailored to a particular competency, with accredited tests covering 15 key competencies in organisational, personal, and professional domains. The topics of these educational modules are given in Table 1.

After an extensive review of the available literature on pharmacist development [17], [18], the content of the educational modules was developed in consultation with a group of experts in management and pharmaceutical practice from the Faculty of Pharmacy, University of Belgrade, and an HR expert from the Faculty of Business, Singidunum University. This collaborative approach ensures that the educational offerings are in line with the regulatory requirements for licence renewal in the Republic of Serbia, providing pharmacists with the tools needed to stay current in their profession [19].

2.2. IMPLEMENTATION AND ACCESSIBILITY

The "Galiverse" was carefully designed, tested, and validated before being released on mobile application stores. It is available without charge across Serbia but requires prior approval for access. Registration is controlled by Galenika associates to ensure that only

Table 1. Accredited education in the "Galiverse".

Education - accredited test	Competence Group	Competence
Pharmacy as a Business System and Development of Personal Abilities	Organisation and Management	Human resources management
Time Management in Pharmaceutical Organisations - Pharmacies	Organisation and Management	Human resources management
Formation and Management of Teams in Pharmaceutical Organisations - Pharmacies	Organisation and Management	Human resources management
Management of Work Performance in the Pharmacy	Organisation and Management	Human resources management
Teamwork of Health Professionals as a Prerequisite for Patient Safety	Professional/Personal	Interprofessional collaboration
Decision-Making in Pharmaceutical Practice	Organisation and Management	Workplace management
Business Negotiation in Pharmaceutical Practice	Professional/Personal	Communication skills
Risk Management in Pharmaceutical Practice	Organisation and Management	Human resources management/ Improvement of service
Communication of Health Professionals as a Prerequisite for Patient Safety	Professional/Personal	Communication skills
Research in Pharmaceutical Practice	Professional/Personal	Quality assurance and research in the workplace
Pharmacists as Secondary Victims of Negative Outcomes in Pharmaceutical Health Care	Professional/Personal	Leadership and self-regulation
Development of Employees in the Pharmacy	Professional/Personal	Continuing Professional Development (CPD)
Resilience of Health Professionals as a Prerequisite for Patient Safety	Professional/Personal	Leadership and self-regulation
Burnout Syndrome in Health Practice	Professional/Personal	Leadership and self-regulation
Standards for Establishing Quality and Safety in Pharmaceutical Practice	Professional/Personal	Quality assurance and research in the workplace

certified pharmacists, in compliance with regulatory mandates, can access the content. This gated approach guarantees that sensitive educational material is exclusively available to the professional community. The design emphasizes clarity and ease of use, featuring a straightforward navigation system that guides users through various educational materials without unnecessary complexity. This ensures that pharmacists can focus more on learning and less on determining how to use the application.

User training is systematically conducted in pharmacies during routine visits by company representatives, ensuring thorough familiarization with the app's functionalities. The application incorporates robust feedback mechanisms; user feedback has been pivotal in augmenting the app, leading to the inclusion of frequently asked questions and enabling two-way communication with designated pharmacy liaisons. Promotional efforts to foster app adoption include direct outreach by field representatives at professional gatherings and conferences, with incentives for rapid completion of educational modules. Additionally, stringent security measures are implemented to safeguard user data, with encryption protocols in strict compliance with data protection legislation, underscored by regular security audits and compliance checks.

Since its launch in February 2023, the "Galiverse" application has been actively used by pharmacists, with the test titled "Pharmacy as a Business System and Development of Personal Abilities" emerging as the most popular, attracting 585 participants and achieving an average success rate of 82.22%. Moreover, the "Managing Work Performance in a Pharmacy" test had the highest success rate, at 87.67%, with 438 pharmacists participating. Both the most visited and the tests with the highest success rates were available for 319 days. Among the earliest available tests, "Pharmaceutical Practice Research" and "Employee Development in a Pharmacy" have been available for 362 days, garnering average success rates of 78.97% and 79.35%, respectively. Business Negotiation in Pharmaceutical Practice was available for 360 days, with a success rate of 74.23%.

Overall, since February 2023, the application has seen 4,200 users, with 5,351 participating in accredited tests and achieving a collective success rate of 77.78%, alongside 10,427 webinar views, demonstrating robust engagement and the effective dissemination of critical skills among Serbian pharmacists.

2.3. IMPACT ASSESSMENT

For the impact assessment of the "Galiverse", an online questionnaire was disseminated across the entire user base, receiving responses from 218 out of 4200 users, yielding a response rate of approximately 5.19%. The margin of error for this sample, at the 95% confidence level, is approximately ±6.64%, which provides a moderate level of reliability for the survey results. The data from the "Galiverse" satisfaction survey revealed a notably high level of contentment among participants concerning the quality of the educational sessions and the calibre of the lecturers, as evidenced by an average satisfaction score of approximately 4.75 out of 5. A significant majority, 95.77%, attest to an enhancement in their organisational and personal competencies, reflecting the effectiveness of the programme in fostering professional development.

Furthermore, the strong endorsement of the "Galiverse" is highlighted by 97.65% of the respondents who would recommend it to their colleagues, suggesting a broad recognition of its value. Additionally, approximately 85.45% believe that the education provided will positively influence the success and sustainability of their organisations, underscoring the perceived practical impact of "Galiverse" offerings. This comprehensive affirmation from the participants underscores the pivotal role of the "Galiverse" in advancing personal and organisational growth.

3. SUSTAINABILITY OF THE GALENIKA ACADEMY

The "Galiverse" application plays a crucial role in sustaining the Galenika Academy project by leveraging all available resources with minimal additional investments. This strategic use of technology not only enhances the learning experience for pharmacists but also ensures that academics remain viable and effective platforms for professional development. By integrating educational content with digital accessibility, "Galiverse" extends the reach and impact of the academy, providing continuous support to pharmacists across Serbia. Plans for the "Galiverse" include increasing daily user activity by incorporating gamification of learning and integrating real-life cases from everyday pharmacy practice.

These enhancements aim to make the learning process more engaging and relevant, thereby attracting more pharmacists to regularly use the platform.

This approach will not only enrich the educational content but also adapt to evolving professional needs, ensuring that the Galenika Academy continues to be at the forefront of pharmacy education and practice.

4. CONCLUSION

The "Galiverse" application has established itself as the most accessible and validated tool for pharmacist development in Serbia, providing significant benefits to individual pharmacists and pharmacy organisations by facilitating employee development. The deployment of the "Galiverse" faced challenges typical of digital tool implementation, such as ensuring user accessibility and integration with existing educational standards. Reflecting on the future, as a pioneering digital education tool in the pharmacy sector, the "Galiverse" has the potential to influence the development of future digital tools. These could include features such as gamification and the incorporation of natural language processing (NLP) models, further enhancing the interactive and personalized learning experience for pharmacists.

5. ACKNOWLEDGEMENTS

6. REFERENCES

[1] J. Jovičić-Bata, N. Pavlović, N. Milošević, N. Gavarić, S. Goločorbin-Kon, N. Todorović and M. Lalić-Popović, "Coping with the burden of the COVID-19 pandemic: a cross-sectional study of community pharmacists from Serbia", *BMC Health Serv Res.*, vol. 1, no. 21, p. 304, 2021.

[2] H.H. Edrees, L.A. Paine, E.R. Feroli and A.W. Wu, "Health care workers as second victims of medical errors", *Pol Arch Med Wewn.*, vol. 4, no. 121, pp. 101-8, 2011.

[3] I.M. Busch, F. Moretti, M. Purgato, C. Barbui, A.W. Wu and M. Rimondini, "Psychological and Psychosomatic Symptoms of Second Victims of Adverse Events: a Systematic Review and Meta-Analysis", *J Patient Saf.*, vol. 2, no. 16, pp. e61-e74, 2020.

[4] I.M. Busch, F. Moretti, M. Purgato, C. Barbui, A.W. Wu and M. Rimondini, "Dealing With Adverse Events: A Meta-analysis on Second Victims' Coping Strategies", *J Patient Saf.* vol. 2, no. 16, pp. e51-e60, 2020.

[5] J.D. Burlison, R.R. Quillivan, S.D. Scott, S. Johnson and J.M. Hoffman, "The Effects of the Second Victim Phenomenon on Work-Related Outcomes: Connecting Self-Reported Caregiver Distress to Turnover Intentions and Absenteeism", *J Patient Saf.*, vol. 3, no. 17, pp. 195-9, 2021.

[6] S.T. Chan, P.C.B. Khong and W. Wang, "Psychological responses, coping and supporting needs of healthcare professionals as second victims", *Int Nurs Rev.*, vol. 2, no. 64, pp. 242-62, 2017.

[7] "Caring for those who care: Guide for the development and implementation of occupational health and safety programmes for health workers." World Health Organisation and the International Labour Organisation. https://www.who.int/publications/i/item/9789240040779 (accessed Apr. 10, 2024).

[8] "Global patient safety action plan 2021–2030: towards eliminating avoidable harm in health care." World Health Organisation. https://www.who.int/publications/i/item/9789240032705 (accessed Apr. 10, 2024.

[10] S. Meilianti, K. Galbraith, L. Bader, A. Udoh, D. Ernawati and I. Bates, "The development and validation of a global advanced development framework for the pharmacy workforce: a four-stage multi-method approach", *Int J Clin Pharm.*, vol. 4, no. 45, pp. 940-951, 2023.

[11] S. Meilianti, F. Smith, L. Bader, R. Himawan, and I. Bates I, "Competency-Based Education: Developing an Advanced Competency Framework for Indonesian Pharmacists", *Front Med (Lausanne),* vol. 1, no. 8, p. 769326, 2021.

[12] A. Udoh, A. Bruno-Tomé, D.K. Ernawati, K. Galbraith, and I. Bates, "The development, validity and applicability to practice of pharmacy-related competency frameworks: A systematic review", *Res Social Adm Pharm.*, vol. 10, no. 17, pp. 1697-1718, 2021.

[13] I. Bates, L.R. Bader and K. Galbraith, "A global survey on trends in advanced practice and specialization in the pharmacy workforce", *Int J Pharm Pract.*, vol. 2, no. 28, pp. 173-181, 2020.

[14] A.J. Siegler, J. Knox, J.A. Bauermeister, J. Golinkoff, L. Hightow-Weidman, H. Scott, "Mobile app development in health research: pitfalls and solutions", Mhealth, vol. 1, no. 7, p. 32, 2021.

[15] R.G. Mannino, S.J. Arconada Alvarez, M. Greenleaf, M. Parsell, C. Mwalija and W.A. Lam, "Navigating the complexities of mobile medical app development from idea to launch, a guide for clinicians and biomedical researchers", *BMC Med.*, vol. 1, no. 21, p. 109, 2023.

[16] C.R. Lucey, G.E. Thibault and O. Ten Cate, "Competency-Based, Time-Variable Education in the Health Professions: Crossroads", *Acad Med.*, vol. 1, no. 93, pp. S1-S5, 2018.

[17] S. Ross, K.E. Hauer and E. van Melle, "Outcomes are what matter: Competency-based medical education gets us to our goal", *MedEdPublish*, vol. 1, no. 7, p. 85, 2016). 2018.

[18] K. Skivington, L. Matthews, S.A. Simpson, P. Craig, J. Baird, J.M. Blazeby, K.A. Boyd, N. Craig, D.P. French, E. McIntosh, M. Petticrew, J. Rycroft-Malone, M. White and L. Moore, "A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance", *BMJ.,* vol. 1, no. 30, p. 374, 2021.

[19] E.Y.H. Chen, C. Forrester, A.M. McEvoy and J. Singleton, "Pharmacy students' perceptions on environmental sustainability in pharmacy education and practice", *Explor Res Clin Soc Pharm.*, vol. 1, no. 12, p. 100366, 2023.

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