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BEYOND TECHNICAL SKILLS: DESIGNING ICT MODULES FOR STRATEGIC CHANGE IN UNIVERSITY MANAGEMENT

In the context of Ukraine's ongoing digital transformation in higher education, this article examines the conceptual, pedagogical, and strategic foundations for designing an Information and Communication Technologies module within the training programmes for higher education institution managers. The authors argue that existing ICT training often focuses on narrow technical skills, which is insufficient to prepare leaders for the demands of institutional digitalisation. Drawing on contemporary scholarly discourse and practical case studies, the article positions the ICT module not as a supplementary component but as a transformative learning environment that cultivates digital leadership. The study outlines two contrasting paradigms – digital operational efficiency versus digital strategic leadership – highlighting the limitations of the former and advocating for the latter as a means of fostering innovation, inclusion, and ethical responsibility in digital education management.

The proposed module is rooted in a social constructivist approach and integrates multidisciplinary content spanning technological tools, strategic planning, ethical standards, and institutional policy design. Emphasis is placed on tailoring learning trajectories to participants' digital maturity through diagnostic assessments, reflective learning, mentoring systems, and project-based evaluation. A series of realistic managerial scenarios are offered to simulate digital transformation challenges, such as implementing analytics tools, managing digital security incidents, or enhancing institutional reputation through online platforms. The article concludes by proposing a national framework for digital competencies aligned with international standards, positioning the ICT module as a foundational element of leadership development in modern HEIs.

Keywords: *digital leadership; higher education management; ICT module design; educational digitalisation; strategic change; managerial training*

ЗА МЕЖАМИ ТЕХНІЧНИХ НАВИЧОК: РОЗРОБКА МОДУЛІВ ІКТ ДЛЯ СТРАТЕГІЧНИХ ЗМІН В УПРАВЛІННІ УНІВЕРСИТЕТАМИ

У контексті цифрової трансформації вищої освіти в Україні ця стаття розглядає концептуальні, педагогічні та стратегічні засади розроблення модуля з інформаційно-комунікаційних технологій у навчальних програмах для керівників закладів вищої освіти. Автори стверджують, що існуюча підготовка в галузі ІКТ часто зосереджена на вузьких технічних навичках, що є недостатнім для підготовки керівників до вимог цифровізації закладів. Спираючись на сучасний науковий дискурс і практичні кейси, стаття позиціонує модуль ІКТ не як додатковий компонент, а як трансформаційне навчальне середовище, що розвиває цифрове лідерство. У дослідженні окреслено дві протилежні парадигми – цифрова оперативна ефективність і цифрове стратегічне лідерство – з акцентом на обмеженнях першої та пропагандою другої як засобу сприяння інноваціям, інклюзивності та етичній відповідальності в управлінні цифровою освітою.

Запропонований модуль ґрунтується на соціальному конструктивістському підході та інтегрує міждисциплінарний зміст, що охоплює технологічні інструменти, стратегічне планування, етичні стандарти та розроблення інституційної політики. Особлива увага приділяється адаптації навчальних траєкторій до цифрової зрілості учасників за допомогою діагностичного оцінювання, рефлексивного навчання, систем наставництва та оцінювання на основі проєктів. Пропонується низка реалістичних управлінських сценаріїв для моделювання викликів цифрової трансформації, як-от: упровадження аналітичних інструментів, управління інцидентами цифрової безпеки або покращення репутації установи за допомогою онлайн-платформ. Стаття завершується пропозицією національної рамки цифрових компетентностей, узгодженої з міжнародними стандартами, позиціонуючи модуль ІКТ як фундаментальний елемент розвитку лідерства в сучасних закладах вищої освіти.

Ключові слова: *цифрове лідерство; управління вищою освітою; розроблення модулів ІКТ; цифровізація освіти; стратегічні зміни; підготовка управлінських кадрів*

Statement of problem. In today's information-saturated world, which is constantly evolving under the influence of digital technologies, the formation of a competent, innovative, and visionary leadership cadre in the field of higher education management is particularly urgent. The educational landscape of the 21st century demands not only classical management skills but also a profound understanding of the potential of information and communication technologies (ICT), the ability to integrate digital tools into both strategic and operational management, and the readiness to adapt flexibly within a dynamic digital environment. In this context, the ICT component in higher education management programmes should be viewed not as an optional addition but as a systemic and integral element of the professional preparation of modern educational leaders. The training of specialists capable of effectively managing contemporary higher education institutions must address a range of emerging challenges: the integration of electronic document management systems, analytics of educational processes, risk management in digital contexts, assurance of academic integrity, organisation of distance and blended learning, and the digital transformation of administrative and internal communication processes. An ICT module in a managerial education programme should serve not merely as an introduction to technological tools, but as a platform for cultivating the digital competence of educational managers as agents of change. At present, Ukraine faces considerable heterogeneity in the preparation of future higher education institution (HEI) managers for work in digital environments. ICT is too often perceived as a secondary component, limited to instruction in office applications or learning management systems (LMS). Such an approach fails to meet the current demands of the sector, where ICT forms the foundation for enhancing institutional efficiency, transparency, mobility, and competitiveness. It is important to recognise that the mere introduction of new technologies does not in itself ensure the successful digitalisation of management processes. Only systematic, purposeful, and pedagogically sound training of educational managers – training that takes into account their prior experience, level of digital literacy, motivation, and leadership style – can yield meaningful and sustainable results. The ICT module should be conceived not merely as an academic discipline, but as a foundational environment for cultivating the identity and competencies of the modern educational leader.

Analysis of previous studies and publications. In the current scientific discourse on the digitalisation of higher education management, there is growing debate regarding the role, structure, and content of ICT modules within educational management training programmes. A central question is whether the ICT module should function as an instrumental supplement to the traditional curriculum or, conversely, serve as the systemic foundation for the digital transformation of management education. S. Topalova [17] argues that the principal barrier to effective management in the digital era is the insufficient level of ICT competence among institutional leaders. From her perspective, the role of ICT is primarily to bridge existing gaps in digital proficiency, particularly in the use of office software, systems for administering educational processes, and online communication tools. This approach emphasises the technological function of learning, viewing digital competence primarily as a set of operational skills designed to enhance the efficiency of everyday managerial tasks.

In contrast, S. Bubniy [3] proposes a more holistic perspective, arguing that digital competence should not be regarded merely as the outcome of technical training, but as a reflection of leadership vision and the capacity to culturally transform the educational environment. In his conceptual framework, Bubniy positions the teacher-manager as a *digital moderator of change* – a catalyst for institutional renewal rather than a passive user of technology. Within this context, the ICT module is reframed not as a basic "computer literacy" course, but as a pedagogical space where new epistemological approaches to management

emerge – approaches grounded in openness, transparency, adaptability, and horizontal communication.

Adding a practical dimension to the discourse, S. Antoshchuk & S. Larin [1] describe their experience with implementing an ICT module in a professional development programme. In their model, the module serves both compensatory and transformative purposes: it mitigates digital anxiety and technical uncertainty, while simultaneously creating conditions for rethinking the manager's role within an information-rich and networked environment.

Within the scientific discourse, a similar position is advanced by N. Morse et al. [11], who underscore the importance of developing a teacher's digital ethics, particularly an awareness of responsibility for digital footprints, the protection of personal data, and the ethical moderation of digital interactions with both students and colleagues. This approach draws attention to the humanistic dimension of digital transformation, which is often overlooked in purely technical training programmes.

The study by M. Shlenova [15] focus on developing a broad range of competencies (technical, interpersonal, and creative) for library students, aligns with the study's emphasis on moving beyond technical skills in university management. ICT modules designed for strategic change can incorporate tools that enhance professional development, motivation, and career planning, addressing the article's identified gaps in student engagement and professional attractiveness. This supports university management's strategic goals of fostering innovation, collaboration, and professional growth in a digital era.

G. Lopushnyak & R. Mylyanyk [10] emphasise the triadic nature of digital learning, comprising technological, pedagogical, and social components. According to their model, the ICT module should serve as a dynamic space where continuous coordination takes place between technology (tools), didactics (methods), and context (socio-cultural conditions).

In this context, the training of higher education institution management specialists extends beyond basic operational literacy. It encompasses the ability to critically analyse a university's digital policy, develop a digital transformation strategy, and contribute to the cultivation of an institutional digital culture. The current scholarly debate surrounding the ICT module in management education programmes is particularly shaped by the tension between the concepts of *digital operational efficiency* and *digital leadership*. At the heart of this opposition lies a fundamental divergence: a pragmatic view of digital competence as a tool for enhancing efficiency, versus a strategic vision of digitalisation as a foundation for educational transformation. The operational approach, characteristic of many regulatory frameworks, including the current standard for the Master's degree in Management (073) tends to reduce the digital component to functional skills in communication, document management, and educational administration. Within this paradigm, a manager is expected to master basic digital tools, maintain digital records, organise remote work, and uphold transparency in digital processes.

The study by M. Shlenova & O. Grechanyk [16] complements the study's focus on moving beyond technical skills by emphasizing strategic and human-centric aspects of university management. ICT modules designed for strategic change should integrate tools that support professional development, research collaboration, and administrative efficiency, addressing the article's identified needs for adaptive management, trust-building, and innovation in HEIs. This is particularly relevant in resource-constrained environments like Ukraine, where digital transformation can enhance competitiveness and resilience.

However, as I. Sedikova & D. Sedikov [14] aptly observe, this model of digital competence is inherently reproductive and constrains the manager's capacity to act effectively under conditions of uncertainty.

In contrast, the digital leadership approach drawing on the ideas of K. Lohinova [9] is founded on the premise that digital transformation cannot be achieved through technical means alone; it requires a consciously assumed subjective position. From this perspective, the head of a higher education institution is not merely an administrator of ICT processes, but a strategist, facilitator, and moderator of digital culture. Their role extends beyond implementing platforms or systems; it involves articulating a vision of the digital future and shaping policies that promote inclusion, ethics, sustainability, and innovation within the educational process.

M. Kopytko et al. [6] and colleagues, in their research, demonstrate that a manager's digital confidence does not primarily emerge from technical training, but rather from immersion in an educational environment that encourages initiative, tolerates mistakes, fosters reflection, and supports the search for individual solutions. It is precisely this pedagogical stance that transforms the ICT module from a set of instructions into a platform for leadership development.

At present, the institutional policy of HEI digitalisation in Ukraine reflects ongoing oscillation between these two paradigms. On the one hand, policy documents from the Ministry of Education and Science, such as the Draft Concept of Digital Transformation of Education and Science for the period up to 2026 [13], include elements of a strategic vision for a comprehensive digital ecosystem. On the other hand, current educational standards remain heavily focused on the use of digital tools, which limits the cultivation of competencies in critical technological thinking and innovation management. Building on the paradigm of digital leadership, the ICT module should encompass training in networked management, distributed responsibility, and the development of digital change teams. If the traditional hierarchical model prevails, the burden of digital transformation once again falls solely on the manager, reducing the ICT module to a mere refresher course with limited long-term impact.

In our view, the discourse surrounding the integration of an ICT module into the training of HEI management professionals raises not only technical or methodological questions, but also

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deeper contradictions concerning the very nature of modern educational management, its values, ethical foundations, and modes of organising responsibility.

The purpose of this article is to substantiate the conceptual foundations and practical design of an ICT module within educational programmes for future higher education institution (HEI) managers in Ukraine, positioning this module not as a technical add-on but as a core instrument for fostering strategic digital leadership, institutional transformation, and the development of a digital academic culture.

Presentation of the main research. The work of S. Hadijthoma-Garstka [5] convincingly demonstrates that the effectiveness of an ICT module depends on the presence of five essential components (fig. 1):

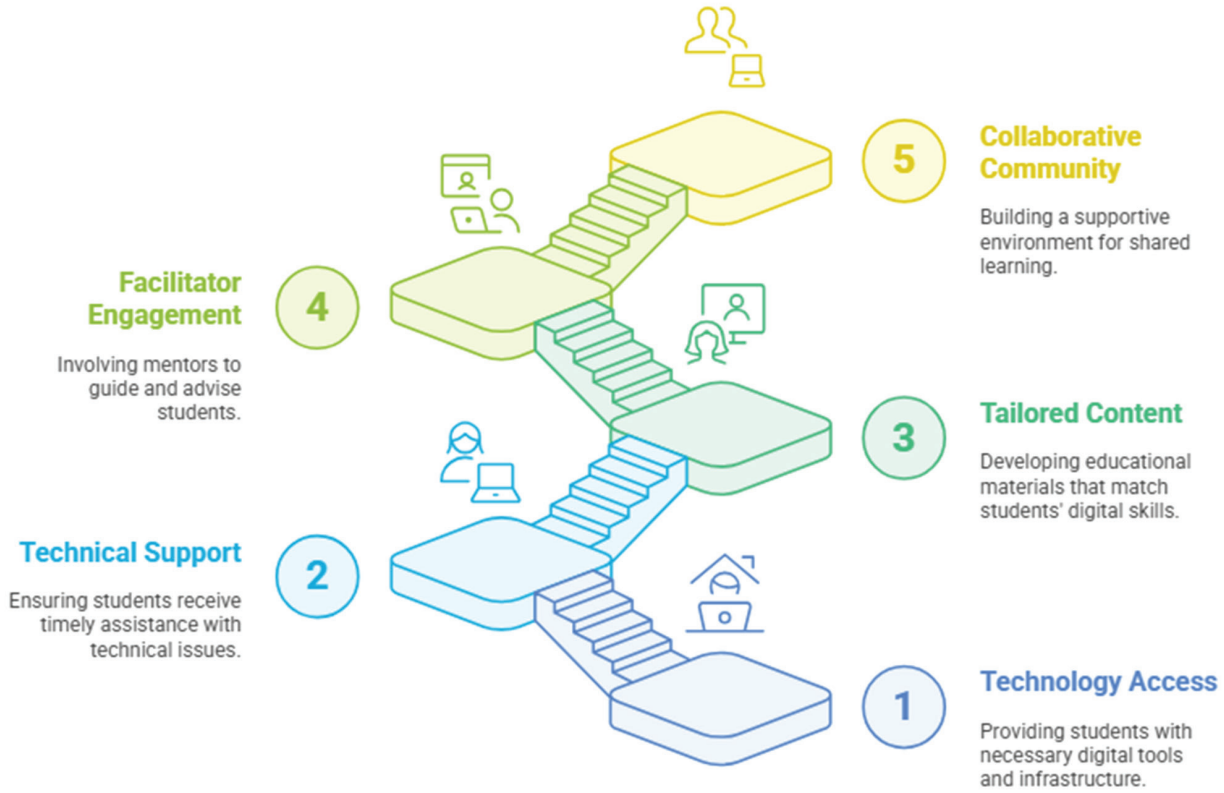

Fig. 1. Five essential components of an ICT module effectiveness

In the Ukrainian context, implementing such a module requires both theoretical grounding and practical adaptation, considering the existing regulatory framework, the digital infrastructure of domestic HEIs, pedagogical traditions, and institutional readiness for digital transformation.

It is well known that current educational programmes in the speciality 073 "Management" (Educational Programme: Management of Higher Education Institutions) include a range of management disciplines. However, the ICT component is often fragmented or primarily focused on general technical skills (e.g., proficiency in Microsoft Office, email systems, LMS Moodle, etc.). This approach requires critical reconsideration.

The ICT module should foster a strategic vision for the digital transformation of HEIs. It should unlock the potential of analytical systems, digital learning management tools, electronic document workflows, digital communication platforms, data security mechanisms, and the assurance of academic integrity.

The module should be grounded in the social constructivist paradigm, according to which knowledge is not transmitted in a ready-made form but is constructed through active interaction. Practice demonstrates that the initial task of such a module should not be the study of theoretical foundations, but rather the creation of a practical situation that immerses participants in the digital environment – for example, configuring a laptop, creating an email account, and using basic software applications. This strategy reduces anxiety, helps overcome fear, and lays the groundwork for self-awareness and self-confidence.

In the context of training higher education institution management professionals in Ukraine, it is essential to recognise that the ICT module should not only serve to enhance digital literacy, but also function as a tool for cultivating digital leadership. According to the UNESCO ICT Competency Framework for Teachers [18], the head of an educational institution should act as a change agent – an initiator and leader of digital transformation. This implies that ICT competence for managers extends beyond technical skills; it includes the strategic integration of digital tools across all functional areas of an HEI: administrative, academic, human resources, communication, and financial management.

Institutional digitalisation policy should be addressed as a distinct topic within the module. Future managers must learn how to develop IT strategies for the advancement of higher education institutions, encompassing the implementation of

learning management systems (e.g., Moodle, Canvas, Google Classroom), CRM platforms for student communication, digital document management systems (including the use of electronic signatures), internal monitoring tools, and analytics platforms for educational processes (such as Power BI, Qlik, etc.). The design and delivery of such a module require a multidisciplinary team, including an IT specialist, an educational administrator, a pedagogical expert, and a data analyst.

The study by C. Ngugi [12] highlights the value of using OneNote as both an offline and online environment. It enabled students to maintain autonomy despite unstable internet connections and supported the development of skills in digital record-keeping, collaborative document editing, the use of electronic diaries, and the creation of personal digital portfolios.

This experience should be adapted to the Ukrainian context, for example, through the use of platforms such as Microsoft Teams, Google Workspace, Notion, or Trello. It is equally important to equip future managers with the culture of digital communication – specifically, the principles of electronic etiquette, personal data protection, and academic integrity in the digital environment.

The issue of organising support for students during their study of the ICT module requires special attention. According to M. Zatserkivna & V. Halimanenko [19], one of the key factors contributing to successful content mastery was the continuous availability of communication with the facilitator – via phone, email, or WhatsApp – and the establishment of a supportive learning community. A similar approach could be adapted to management training programmes in Ukrainian higher education institutions through the establishment of mentoring pairs, electronic support hubs, asynchronous feedback mechanisms, and the creation of reflective groups. An effective practice might also involve organising a pilot project for a "digital tutor" – a student from the previous intake who serves as an advisor to a new cohort.

According to R. Bazaka & A. Yefremov [2], the development of a digital leader requires not only knowledge of technology but also a vision for the evolution of digital culture within the team. In this context, the ICT module should also focus on developing the manager's emotional intelligence, their ability to motivate staff, build trust within the team, and delegate authority in the context of digital transformation. A key principle of an effective ICT module should be the individualisation of the learning trajectory. As emphasised by L. Filippova et al. [4], assessing the entry level of ICT competencies not only accounts for the varying starting potential of participants but also helps prevent feelings of frustration, disorientation, and demotivation.

In our view, an ICT skills audit should be conducted at the outset through an entrance questionnaire, a digital portfolio, or online testing integrated into the LMS platform. This will enable the learning design to be tailored to the actual needs of the group. Particular attention should be given to the role of assessment within the structure of the ICT module. The performance criterion could be a change in learners' self-assessment of their skills and their ability to integrate ICT into their professional activities. Assessment can be conducted not through traditional exams, but through reflective tasks, project-based activities, and case studies. This approach aligns with the principles of formative assessment and facilitates a shift in focus from mere control to developmental support. In practice, this could involve portfolio assessments, where students demonstrate outcomes such as the creation of a departmental educational website, the introduction of an electronic register of academic mobility, or the development of dashboards to analyse educational processes. This system allows for the consolidation of the experience gained, making it visible and applicable to future professional endeavors.

Equally important is the inclusion of the ethical dimension within the module content. Issues such as personal data protection, digital hygiene, academic integrity, combating cyber aggression, and managing conflicts of interest in the digital environment should be integrated. Specifically, future managers must understand not only the technological aspects but also the legal implications of using ICT in the educational environment, including the responsibilities associated with violations of the Law of Ukraine "On Personal Data Protection" [7]. In the context of the Ukrainian higher education reform, particularly the Law of Ukraine "On Education" [8] and the Draft Concept of Digital Transformation of Education and Science for the period up to 2026 [13], the importance of incorporating systemic ICT modules into the training of managers is undeniable. These modules should not merely replicate general digital courses, but should focus on the strategic use of ICT in areas such as planning, monitoring, reporting, quality management of educational services, human resources policy, budgeting, academic mobility, and internationalisation.

Given the increasing complexity of management functions in higher education, the need for a practice-oriented approach to developing the digital competence of future higher education managers is particularly relevant. The information and communication module, as a structural component of the managerial education programme, not only introduces digital tools but also fosters the ability to strategically implement them in day-to-day management activities, adapting them to the realities of Ukrainian universities. Modelling typical managerial situations, both virtually and within a simulated learning environment, serves as an effective tool for acquiring complex digital competencies in educational management. One example of such a practical learning model is the implementation of an electronic document management system at a regional university. The task for students could involve analysing the existing paper-based document circulation process, identifying critical points in the logistics of management decisions and interactions between administrative structures, and developing a technical solution and implementation algorithm, taking into account financial, human, and legal constraints. In this educational scenario, it would be beneficial to incorporate software such as Metropolis.Doc, Vchasno, Microsoft SharePoint, and open document management solutions.

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Another case study is designed to create a model for management analytics aimed at improving the efficiency of strategic decision-making in higher education institutions. Students should have access to simulated data on academic performance, attendance, student participation in project activities, and academic mobility. The task involves building visual analytics tools using Power BI, Google Data Studio, or Metabase, and forming management conclusions based on this data. Students will model the behavior of a vice-rector for academic affairs, analysing risks related to student dropout, ineffective teaching loads, and imbalances in budget allocation based on academic performance. Special attention should be paid to the competent interpretation of digital indicators, modelling managerial responses, and formulating appropriate administrative decisions.

One of the most relevant scenarios is ensuring the digital security of an educational institution. In this case study, students can work through a privacy incident caused by unauthorized access to an information system. The purpose of the task is to analyse the cause of the incident and formulate a comprehensive crisis management strategy, including procedures for notifying internal staff, stages for localising the threat, and the development of a technical and communication strategy in response to external inquiries. As part of this assignment, students will be introduced to international information security standards (ISO/IEC 27001), multi-level authentication practices, ethical processing of personal data, and the opportunity to engage with the national regulatory framework for the protection of electronic information in education.

The case study focused on building the digital reputation of the institution is also of significant importance. In this practical model, students will analyse the effectiveness of an HEI's online presence, evaluating its website, social media pages, educational blogs, and profiles on platforms such as Scopus, ResearchGate, Google Scholar, and ORCID. Special attention should be given to the analysis of participation indicators in international educational rankings, reputational risks, digital transparency, and scientific communication. As part of the practical assignment, it is advisable to create templates for social media marketing (SMM) campaigns, instructions for faculty on maintaining a digital profile, and algorithms for organizing public online events.

The final element of the module could involve developing an individual plan for the digital development of the university. This document should outline strategic goals, key performance indicators, implementation stages, projected risks, and strategies for risk mitigation. It should also include the development of an internal roadmap covering both technical upgrades and the cultivation of digital culture, staff training, and the expansion of access to digital resources for students with special educational needs.

These case studies demonstrate that effective digital training for managers goes beyond mastering applied ICT tools; it requires a holistic understanding of the digital ecosystem, the integration of managerial functions into the digital environment, and the ability to navigate digital uncertainty. An effective educational process in the ICT domain can only be achieved by integrating technological, social, and pedagogical components, fully aligning with the needs of management education. Furthermore, significant attention should be given to inter-university cooperation in creating a unified framework of ICT competencies for university managers. This framework could be based on international standards (e.g., DigCompEdu, ISTE Standards for Education Leaders) and adapted to the national context. Such unification will ensure the quality and equivalence of training across different HEIs, regardless of geographical location or mode of education.

Conclusions. Thus, the implementation of an ICT module is not only a technological challenge, but, first and foremost, a pedagogical and managerial one. Its success depends on the pedagogical skills of the facilitator, the flexibility of the educational design, the effectiveness of feedback, the availability of mentoring support, and the established digital culture of the educational institution. Therefore, the ICT module for training specialists in higher education institution management should become not merely a part of the curriculum, but its innovative core – a space where digital competencies are transformed into a tool for strategic management, educational change, and the cultural transformation of the academic environment.

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