



Assessment of factors influencing the development of digital competence among Bachelor's students in marketing at higher education institutions

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■ **Abstract.** The study aimed to identify the determinants of the development of digital competence among Bachelor's students in marketing and to assess their significance in the context of the digital transformation of higher education, with a view to strengthening the requirements for their professional training. The research methodology included a structured questionnaire developed based on the DigComp 2.2 and DigCompUA digital competence frameworks, enabling a comprehensive assessment of the importance of regulatory, content-related, technological, methodological and personal factors. A rating scale was used to assess the significance of selected factors, followed by summarisation of the results using descriptive statistics and comparative analysis. The study involved 245 prospective marketing specialists in their second to fourth years of study and 16 academic staff from higher education institutions involved in delivering the programme. Respondents identified priority areas for developing digital competence, assessed the role of the educational environment, the extent to which digital tools were integrated into educational components, and their readiness to use these tools in their professional activities. The study focused on analysing institutional conditions, the content of the educational programme, the use of modern digital platforms and services, pedagogical approaches, and the personal characteristics of future specialists, particularly their motivation for digital self-development and their ability to learn independently. The results showed differences in the perception of priorities among different groups of respondents. Students focused more on technological resources and the practical use of digital tools in marketing activities. At the same time, academic staff prioritised regulatory support, methodological support and the systematic integration of digital technologies into educational content. It was established that the effective development of digital competence requires a coordinated combination of institutional support, the updating of educational programmes, the introduction of modern teaching methods and the development of

Suggested Citation:

Voloshyna, T., Sydoruk, Y., & Korolchuk, V. (2026). Assessment of factors influencing the development of digital competence among Bachelor's students in marketing at higher education institutions. *Professional Education: Methodology, Theory and Technologies*, 12(1), 8-18 doi: 10.69587/pemtt/1.2026.08.



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students' personal responsibility for their own professional development combination of students' intellectual, emotional, and practical development

■ **Keywords:** educational process; professional training; educational programme; determinants; future specialists

■ Introduction

The rapid development of digital technologies, particularly marketing automation systems, web analytics tools, customer relationship management platforms and social media ecosystems, is significantly transforming the professional activities of modern marketers. Marketing practice requires mastery of data-driven decision-making skills, the use of digital platforms, such as Google Analytics, and the interpretation of consumer behaviour through digital footprints. At the same time, research results and analytical reports on the labour market indicate a persistent gap between the digital competences required by employers and those developed by graduates of higher education institutions (HEIs). In the context of Ukraine's digital transformation and its integration into the European educational and economic space, this problem is becoming particularly urgent. HEIs should provide not only theoretical training, but also the development of applied digital competences in accordance with international frameworks, such as DigComp 2.2, and their national adaptations, including DigCompUA. At the same time, the development of digital competence is a complex, multifactorial process influenced by the content of educational programmes, the level of technological support, teaching methods and the individual characteristics of students.

An insufficient level of digital competence among prospective Bachelor's students in marketing can lead to difficulties in applying digital tools in professional activities, reduced adaptability to labour-market requirements and a loss of competitiveness in the digital economy. Therefore, it is important to identify and empirically assess the significance of the key factors influencing the development of digital competence among Bachelor's students in marketing, taking into account the structural and organisational characteristics of HEIs. This will make it possible to substantiate scientifically sound approaches to improving educational programmes and enhancing the quality of professional training for Bachelor's students in marketing. According to R. Vuorikari *et al.* (2022), improving the digital literacy of the population and developing digital skills have been identified as key priorities of the European Union up to 2030, with a focus on achieving a basic level of digital competence in at least 80% of the population. In contemporary research, digital competence is defined as the safe, critical and responsible use of digital technologies. It is applied in educational activities, the professional sphere and participation in society.

In accordance with R. Vuorikari *et al.* (2022), digital competence encompasses working with information and data, communication and collaboration, creating

digital content, security and problem-solving. At the same time, empirical research by O. Hlazunova *et al.* (2024) confirmed that students' level of digital competence is associated with their successful employment and career prospects, and, according to V. Kovalchuk (2023), contributes to the high-quality integration of digital technologies into the learning process and the formation of professional identity. Contemporary scientific research focuses on approaches to assessing students' digital competence and on identifying conditions that promote its effective development. For example, A. MejíasAcosta *et al.* (2024) proposed and validated a method for assessing digital competence along key dimensions. In the research by A. Zubizarreta Pagaldai *et al.* (2025), predictors related to support in the educational environment, attitudes towards information and communication technologies, and the frequency of their use were identified. A. Sotelo-Núñez *et al.* (2024) concluded that the analysis of students' digital competence extends beyond the individual level to include educational practices, policies, technological support and the socio-labour context. Considering the approaches outlined above and the requirements arising from the digital transformation of marketing activities, this study examines the components of digital competence for Bachelor's students in marketing as defined by Y. Sydoruk (2025). These components include: (C1) information literacy; (C2) ethics and security; (C3) digital marketing and social media; (C4) data analysis and insights; (C5) UX design and development; and (C6) artificial intelligence and machine learning.

A review of scientific sources has provided grounds for asserting that the development of digital competence results from the interaction of a set of factors: regulatory, content-related, technological, methodological and personal. At the same time, existing studies mainly focus on individual factors or dimensions of digital competence without analysing their integrated interaction in the context of training Bachelor's students in marketing. This study aimed to identify the main determinants of the development of digital competence among Bachelor's students in marketing and to assess their significance using survey data from participants in the educational process. In accordance with the stated aim of the study, the following tasks were defined: to analyse and identify factors that influence the development of digital competence among Bachelor's students in marketing; to investigate the relationships between individual factors and assessments of their significance provided by students and lecturers; and to substantiate the practical significance of these factors for improving

the educational process in the professional training of Bachelor's students in marketing. This determines the scientific novelty of the study, which offers an integrative approach to assessing the interrelationships between key factors in the development of digital competence in the university educational environment.

■ Materials and Methods

The study was conducted as an online survey to determine the significance of factors shaping the digital competence of Bachelor's students in marketing in the educational process of HEIs. The study sample was purposive. A total of 245 students majoring in marketing in their second to fourth years of study, and 16 lecturers from the National University of Life and Environmental Sciences of Ukraine, participated in the study. The inclusion criteria for students required enrolment in a Bachelor's programme in marketing, completion of at least one course involving digital tools or digital marketing, and active engagement in the learning process during the study period. Lecturers were included if they were responsible for teaching marketing-related subjects and had practical experience in integrating digital technologies into teaching. Participants who did not meet these criteria or provided incomplete responses were excluded from the analysis. This sample composition ensured representation of the key groups involved in the training of Bachelor's students in marketing.

Empirical data were collected between 2023 and 2025 using Google Forms. The research toolkit was developed based on the DigComp 2.2 and DigCompUA digital competence frameworks, as well as contemporary scientific approaches to assessing digital competence. The developed questionnaire consisted of 33 questions and was structured into five thematic blocks reflecting key groups of factors in the development of digital competence: regulatory, content-related, technological, methodological and personal. The regulatory block, comprising 4 questions, was designed to assess the impact of regulatory documents and educational standards on the development of digital competence among Bachelor's students in marketing. The content-related block, comprising 5 questions, covered issues related to the educational programme "Marketing", in particular the alignment of academic disciplines and materials with contemporary requirements, as well as opportunities for the practical and independent development of digital competence. The technological block, comprising 9 questions, was designed to assess the level of technical and informational support for the educational process. The methodological block, comprising 9 questions, enabled analysis of the impact of pedagogical approaches and teaching methods on the development of digital competence. The personal block, comprising 6 questions, involved assessing respondents' individual characteristics, in particular motivational, cognitive and behavioural

factors that influence the development of digital competence. The significance of each factor was assessed using a five-point Likert scale ranging from 0 to 4.

The data obtained were analysed using descriptive statistics. A comparative analysis of students' and lecturers' assessments was conducted, and the relationships among the identified groups of factors were examined. Throughout the study, respondents' anonymity and voluntary participation were ensured in accordance with the ethical requirements for conducting socio-pedagogical research. The study was conducted in accordance with the ethical principles of educational research involving human subjects, as set out in the British Educational Research Association guidelines (2018). All participants provided informed consent. The study was conducted as a quantitative, cross-sectional online survey aimed at determining the significance of factors shaping the digital competence of Bachelor's students in marketing in HEIs. A purposive sampling method was employed to ensure that both key stakeholder groups in the educational process, namely students and lecturers, were adequately represented. The study sample included 245 students majoring in marketing in their second to fourth years of study and 16 lecturers from the National University of Life and Environmental Sciences of Ukraine, providing a sufficient basis for both descriptive and inferential statistical analysis. Empirical data were collected between 2023 and 2025 using Google Forms. The research instruments were developed on the basis of the DigComp 2.2 and DigCompUA digital competence frameworks, as well as contemporary scientific approaches to evaluating digital competence. The questionnaire consisted of structured blocks corresponding to five groups of factors: regulatory, content-related, technological, methodological and personal. Each factor within these blocks was assessed on a five-point Likert scale, where 0 indicated the lowest perceived significance, and 4 indicated the highest. The instrument's design enabled systematic comparison of student and lecturer perceptions and ranking of the factors according to their average importance.

For data processing, descriptive statistical methods were applied, including the calculation of mean values, standard deviations and percentages to summarise respondents' evaluations. Factor values were computed as mean scores across all items within each block, reflecting participants' aggregated perceptions. The significance of differences between student and lecturer evaluations was assessed using Student's t-test with Welch's correction, which accounts for unequal variances between groups. A significance level of 0.05 ($p < 0.05$) was used to determine statistical significance. Effect sizes were calculated using Cohen's d to quantify the magnitude of observed differences. Factor ranking was performed according to these mean values, yielding a clear hierarchy of the relative importance of each

factor group for the development of digital competence. In addition to survey data, secondary sources such as institutional documents, educational programmes and statistical reports were consulted to contextualise the empirical findings and support the interpretation of the results. Archival materials and official statistics were used to verify the relevance of the selected factors and ensure alignment with current educational standards and practices. Mathematical formulas underlying the calculation of means, t-values and Cohen's d were applied to ensure the accuracy and reproducibility of the analyses. The use of a structured online survey facilitated systematic data collection while maintaining respondent confidentiality. Overall, the combined application of descriptive and inferential statistics, structured questionnaires and relevant documentary

sources enabled a rigorous and comprehensive evaluation of the factors influencing the development of digital competence among Bachelor's students in marketing in higher education settings.

■ Results

Based on the analysis and synthesis of the studies of O. Hlazunova *et al.* (2024), A. MejíasAcosta *et al.* (2024) and A. Sotelo-Núñez *et al.* (2024), five groups of factors influencing the development of digital competence among Bachelor's students in marketing at HEIs were identified: regulatory, content-related, technological, methodological and personal. Their characteristics, their impact on the components of competence and their manifestation in professional training are summarised in Table 1.

Table 1. Factors shaping the digital competence of Bachelor's students in marketing and their corresponding areas of manifestation

Factor	Characteristic	Digital competence	Area of application
Regulatory	■ academic and professional requirements ■ regulatory documents of the HEI	(C1) Information literacy (C2) Ethics and safety	Educational process: performing tasks in accordance with standards; assessing the reliability of sources; adhering to academic integrity Professional activity: complying with professional standards and policies; adhering to ethical standards for working with data; preparing reports
Content-related	■ educational and professional programme ■ content of educational components	(C1) Information literacy (C3) Digital marketing and social media (C4) Data analysis and insights (C5) UX design and development (C6) AI and machine learning	Educational process: completing tasks in accordance with the course syllabus; working with activities and resources in electronic training courses Professional activity: ensuring the effective application of digital knowledge in marketing, analytical, UX and AI projects
Technological	■ cloud services ■ platforms, resources ■ specialised software	(C1) Information literacy (C3) Digital marketing and social media (C4) Data analysis and insights (C5) UX design and development (C6) AI and machine learning	Educational process: using cloud services, platforms, resources, and specialised software Professional activity: using analytics and AI in marketing; creating UX/UI solutions; automating processes; establishing communication and interaction
Methodological	■ teaching methods and technologies ■ assessment and feedback methods	(C3) Digital marketing and social media (C4) Data analysis and insightsW	Educational process: case studies; team projects; interactive tasks; retrospective analysis Professional activity: working on marketing projects in companies; conducting market analysis; making decisions
Personal	■ personal resources ■ ability to adapt ■ social prerequisites ■ reflective potential	(C1) Information literacy (C2) Ethics and security (C3) Digital marketing and social media (C4) Data analysis and insights (C5) UX design and development (C6) AI and machine learning	Educational process: showing initiative in performing tasks with the support of digital technologies; independently selecting tools; actively participating in teamwork; reflecting on results Professional activity: independently implementing digital solutions; showing initiative in team marketing projects

Source: compiled by the authors

The development of digital competence among Bachelor's students in marketing is influenced by external and internal factors in the educational and professional environment. The regulatory factor covers several key components defined in regulatory and conceptual documents. Specifically, these include the Order of the Ministry of Education and Science of Ukraine No. 1323 "On Approval of the Higher Education

Standard for Specialty 075 "Marketing" for the First (Bachelor's) Level of Higher Education" (2021), and the Digital Competence Framework for Ukrainian Citizens, developed by the Ministry of Digital Transformation of Ukraine (2023), based on the European DigComp model. In addition, the regulatory framework includes the Register of Professional Standards of the National Agency for Qualifications of Ukraine,

particularly the professional standard “Specialist in Market Expansion Methods (Marketer)” (National Agency for Qualifications, 2025), the educational programme of the relevant HEI, and the institution’s internal regulations and procedures. This factor contributes to a high level of professional training and to the development of students’ ability to adapt quickly to the challenges of digital transformation and to interact effectively in the digital economy. Thus, the regulatory factor underpins the development of the other factors.

Along with regulatory requirements, the content-related factor plays a key role in the training of Bachelor’s students in marketing, shaping the educational components and ensuring their alignment with general and professional competences. It covers both compulsory and elective components of the educational programme, aimed at developing students’ knowledge, skills and abilities. Consistency between general and professional competences is ensured by a matrix that links programme competences to educational components and specifies the expected learning outcomes for each component. The educational programme is implemented through course syllabuses and the corresponding electronic training courses (ETCs). The course syllabuses contain a brief description of each discipline, its purpose, structure, programme and assessment methods, as well as recommended teaching and methodological literature. ETCs provide students with access to varied educational content and facilitate interactive communication among participants in the educational process. Thus, the content-related factor puts into practice the competences defined in regulatory documents, serves as the basis for other components of digital competence and ensures the integrity of the educational process, so that the training of Bachelor’s students in marketing meets the current requirements of the labour market.

The technological factor in shaping the digital competence of Bachelor’s students in marketing determines their access to modern IT infrastructure and digital resources at HEIs, thereby providing the basis for effective, practice-oriented learning. It includes university platforms, an electronic library and external professional services that provide a wide range of opportunities for working with information, analysing data and creating marketing products. The availability of modern training laboratories enables students to gain practical experience with digital marketing tools. Such laboratories create conditions close to those of real professional activity by modelling work with market simulations, advertising campaigns, consumer behaviour data and related activities. Access to learning platforms, cloud services, specialised software solutions, professional communities and databases helps students master modern digital technologies and business analytics tools. Modern marketers actively use these tools, which correspond to the knowledge, skills

and abilities required by professional standards. Cybersecurity and data protection issues, which are critical to the security of personal and corporate information, occupy a special place within the technological factor. Developing students’ understanding of the basics of cybersecurity, privacy policies and data protection technologies under current conditions ensures an adequate level of information security in their future professional activities. The combination of these components creates favourable conditions for the development of digital competence among Bachelor’s students in marketing, providing access to relevant platforms, tools and technologies aligned with the requirements of the modern labour market.

The methodological factor facilitates the development of digital competence among Bachelor’s students in marketing through the integration of digital tools into teaching. Project-based learning has been shown to enhance digital skills and collaborative problem-solving (Pandazi & Stanzhur, 2023; Grana-do-Alcón, 2023; Karampa & Paraskeva, 2024). Problem-based and project-oriented approaches effectively foster higher-order thinking (Hmelo-Silver, 2004). Experiential learning, grounded in Kolb’s (1984) theory, remains relevant in contemporary digital education (Rahmi, 2024). Blended and flipped learning models provide flexible formats that support student engagement and autonomy (Garrison & Vaughan, 2007). Agile learning approaches, increasingly applied in higher education, enhance adaptability and responsiveness to changing professional contexts (Demydovych & Karapetian, 2024). Overall, these pedagogical strategies contribute to the development of critical thinking, adaptability and the ability to respond effectively to professional challenges (Pocsova *et al.*, 2020; Kampa & Bakke, 2023; Pombo & Cunha, 2025).

Their application ensures the comprehensive development of students’ digital competence, critical thinking and robust professional identity, as well as the acquisition of practical skills. Methodological solutions increase the flexibility of the educational process, enabling rapid adaptation of learning to the demands of the labour market and technological change. Student support mechanisms, such as mentoring, coaching, counselling and systematic feedback, combined with digital platforms, including LMS Moodle, Google Workspace and Microsoft 365, enable blended learning, interactive assessment and learning analytics. The integration of simulations, marketing campaign modelling, business analytics and data visualisation tools, including Power BI, Tableau and Google Analytics, enables students to acquire practical skills and apply theoretical knowledge in authentic professional contexts. Such approaches encourage independence, reflection and continuous self-improvement, thereby increasing the readiness of marketing graduates for professional activity in the digital economy.

The technological and methodological factors in the development of digital competence are closely interrelated. Technologies, digital platforms and software create a basis for students' practical activities, while methodological approaches determine how these technologies are used in the learning process to develop competences. In other words, the technological factor provides the tools and resources, whereas the methodological factor determines effective ways of applying them, integrating theory with practice, organising learning, supporting students and developing adaptive skills. Together, they form a holistic educational ecosystem that maximises the development of professional adaptability and readiness for change in the digital economy.

The personal factor in shaping the digital competence of Bachelor's students in marketing encompasses individual psychological characteristics and personal qualities that determine the effectiveness of professional development, the ability to learn independently and the ability to adapt to digital change. Its key components include motivation for learning and self-development, which support students' continuous improvement of their knowledge and skills. Adaptability to new technologies allows them to quickly master innovative digital tools and apply them effectively in practical activities. Critical thinking provides the ability to evaluate information, analyse data and make informed decisions in marketing processes. Analytical and communication skills facilitate effective interaction with teams, clients and digital platforms, while reflective ability enables students to evaluate their own actions, draw conclusions and pursue continuous improvement. Professional orientation and value orientations shape internal motivation, responsibility and ethical behaviour in the digital environment.

The development of these personal skills creates the foundation for the effective mastery of digital tools, critical thinking about information and the implementation of innovations in marketing practice. These skills contribute to the development of not only technical competence but also a stable professional identity, readiness for self-development and the ability to adapt to rapid changes in the digital economy. The link

with the methodological factor lies in the fact that personal characteristics are practically realised through the application of modern pedagogical methods and teaching technologies. Project-based and problem-oriented learning, blended and flipped formats, as well as experiential and flexible approaches, create conditions for the development of students' motivation, critical thinking, reflection and adaptability. They provide opportunities to apply digital tools in professionally relevant situations and contribute to the development of a stable professional identity. Thus, teaching methods and technologies are key mechanisms for combining learners' personal potential with the acquisition of well-developed digital competence.

To determine the overall structure for assessing the factors that shape digital competence, an analysis of mean values across the entire sample was conducted. The summarised indicators enabled the establishment of an internal hierarchy of the significance of these factors. The highest mean value (3.180) was obtained for the regulatory factor, indicating a strong assessment of the role of higher education standards, professional requirements and institutional regulations in the development of digital competence. The technological factor (3.154) ranked second, reflecting the importance of digital infrastructure, platforms and specialised software for the professional training of Bachelor's students in marketing. The content-related (3.102) and methodological (3.060) factors followed in descending order of mean values. The lowest scores were recorded for the personal factor (2.917). The resulting hierarchy confirms the dominance of external, institutionally determined conditions over internal personal prerequisites in respondents' perceptions of the development of digital competence. This assessment structure makes it possible to interpret the model of digital competence development as a system in which regulatory, organisational and technological components are the basic conditions, while personal resources constitute an additional, albeit important, factor. To identify possible differences between groups of respondents, Student's t-test for independent samples with Welch's correction was applied, and Cohen's d effect size was calculated. The results are presented in Table 2.

Table 2. Comparison of students' and lecturers' assessments of factors influencing digital competence

Factor	M_students	SD	M_lecturers	SD	t_Welch	p	Cohen's d
Regulatory	3.164	0.656	3.422	0.285	-3.119	0.004	0.402
Content-related	3.080	0.655	3.438	0.457	-2.936	0.008	0.554
Technological	3.141	0.629	3.347	0.523	-1.512	0.148	0.332
Methodological	3.032	0.686	3.486	0.448	-3.779	0.001	0.674
Personal	2.888	0.647	3.354	0.884	-2.075	0.054	0.704

Source: compiled by the authors

Statistically significant differences were found for the regulatory ($t = -3.119$, $p = 0.004$), content-related ($t = -2.936$, $p = 0.008$) and methodological factors ($t = -3.779$, $p = 0.001$). In each case, the mean ratings given by lecturers exceeded the corresponding ratings given by students. Cohen's d effect size makes it possible to assess the practical significance of the identified differences. For the regulatory factor, $d = 0.402$ corresponds to a small-to-moderate effect, indicating a moderate difference in the perception of the role of regulatory and institutional foundations. For the content-related factor, $d = 0.554$ indicates a moderate effect, suggesting a systematic difference in understanding the importance of educational components and programme structure. The most pronounced statistically significant effect was recorded for the methodological factor ($d = 0.674$). This value indicates that the distributions of student and lecturer assessments differ significantly, with the mean lecturer assessment exceeding the mean student assessment by approximately two-thirds of a standard deviation. In practical terms, this indicates a significant difference in professional perception: lecturers consider methodological approaches, pedagogical technologies and the assessment system to be key mechanisms for developing digital competence, while students are less aware of their system-forming role.

Regarding the personal factor, a d value of 0.704 was obtained with $p = 0.054$. Although the level of statistical significance is marginal, the effect size indicates a substantial practical difference between the groups. This combination of indicators can be explained by the imbalance in sample size, particularly the significantly smaller group of lecturers, which reduces the test's statistical power. In practical terms, it can be concluded that lecturers rated motivation, adaptability and critical thinking as factors in the development of digital competence more highly than students did. No statistically significant differences were found for the technological factor ($p = 0.148$; $d = 0.332$), indicating relative consistency in the positions of both groups regarding the importance of digital infrastructure and instrumental support for the educational process. The results confirm the existence of professionally determined differences in perceptions of the determinants of the development of digital competence. Lecturers assigned statistically significantly higher ratings to regulatory, content-related and methodological factors, while students demonstrated relatively higher ratings of the technological component. Among the statistically significant differences, the largest effect size was found for the methodological factor ($d = 0.674$), indicating moderate practical significance in the differences between the groups. The difference in the personal factor was also practically meaningful, although it did not reach the conventional level of statistical significance.

■ Discussion

The findings of this study confirm that the development of digital competence among Bachelor's students in marketing is a multidimensional and hierarchically organised process shaped by the differing perspectives of key stakeholders. The identified differences between students and lecturers reflect not only their distinct professional roles but also different cognitive frameworks for interpreting the conditions of digital learning. While students tend to prioritise the practical use of digital tools, lecturers emphasise methodological, regulatory and content-related aspects of training. This divergence suggests that digital competence is perceived either as an applied skill set or as a structured educational construct, depending on the stakeholder's position within the learning process. Such differentiation supports prior findings that stakeholders interpret digital competence through the lens of their experience and responsibilities (Zhao *et al.*, 2021), while also indicating that these perspectives may shape how competence development is operationalised in practice.

At the same time, the results show that the development of digital competence is structured around a hierarchy of factors, with regulatory and technological components forming the foundational level. The predominance of the regulatory factor ($M_{\text{students}} = 3.164$) highlights the central role of institutional norms, educational standards and digital competence frameworks in shaping the learning environment. This conclusion is consistent with the research by A. Rakishova & A. Witt (2023), L. Yulin & S. Danso (2025) and A. Barrios-del-Ángel *et al.* (2026), which emphasises the importance of institutional support systems and regulatory frameworks in organising an effective digital learning environment. However, a statistically significant difference between lecturers ($M = 3.422$, $p = 0.004$) and students ($M = 3.164$) indicates a discrepancy in how these structures are perceived. While lecturers emphasise the importance of regulatory mechanisms as a foundation for competence development, students may not fully appreciate their direct impact on skill acquisition. A similar gap between institutional intentions and student perceptions was noted by Y. Zhao *et al.* (2021), highlighting the broader challenge of translating regulatory frameworks into perceived educational value.

In contrast, the technological factor ($M = 3.141$) received the highest ratings from students, reflecting their strong focus on the practical mastery of digital tools, platforms and applications. This result is consistent with the findings of B. Mohamed (2025), who demonstrated that the use of digital tools during learning significantly influences the labour-market readiness of digital marketing students. It is noteworthy that this factor did not show a statistically significant difference between students and lecturers ($p = 0.148$), indicating a shared understanding of the importance of technological support in marketing education. Thus,

access to digital resources and their active use serve as key drivers in the development of applied competence in the digital economy.

The content-related factor acts as a bridge within this framework, linking theoretical knowledge with its practical application. Students' ratings of this factor reflect their intention to integrate conceptual understanding with professional practice through contextualised and practice-oriented tasks. This finding supports the argument that the development of digital competence is context-dependent and must integrate both general and subject-specific skills adapted to professional needs (European Commission, 2022). In the case of marketing education, this implies the need for a "hybrid" competence model that combines digital literacy with marketing analytics and communication skills. This conclusion is further supported by recent studies highlighting the growing demand for integrated digital and analytical competences in the business and marketing sectors (World Economic Forum, 2023), as well as research by S. Ye *et al.* (2024), which emphasised the importance of combining digital marketing and analytics within a unified educational framework. At the same time, the need for such hybridisation distinguishes marketing students from those studying technical disciplines, confirming the findings of A. Çebi & I. Reisoğlu (2023), who demonstrated disciplinary differences in digital competence priorities.

Lecturers, on the other hand, placed greater emphasis on methodological factors, highlighting pedagogical strategies, competence-based assessment and the development of guidelines as key conditions for the effective development of digital competence. This perspective stems from their role as designers and facilitators of the educational process, which naturally directs their attention to the systemic and organisational aspects of learning. Together with regulatory factors, these components form the structural and procedural framework within which digital competence develops. Regarding the methodological factor, the highest effect size was observed ($d = 0.674$), with lecturers emphasising pedagogical strategies significantly more than students. This "methodological gap" is consistent with research by I. Noguera *et al.* (2024), which demonstrates differences in how lecturers and students perceive digital and pedagogical practices, with educators focusing more on instructional design and integration, while students tend to prioritise the practical use and outcomes of digital tools.

An important cross-cutting element of the model is the personal factor ($M_{\text{students}} = 2.888$), which, despite having the lowest overall score, shows substantial differences in perception ($d = 0.704$). Lecturers tend to value motivation, adaptability and critical thinking more highly than students, who often prioritise technical proficiency. This is consistent with the systematic review by Y. Zhao *et al.* (2021), which indicated

that students often underestimate the cognitive and reflective aspects of digital competence. However, all respondents acknowledge the importance of personal characteristics as internal prerequisites for competence development. Motivation stimulates continuous learning, reflection allows learning strategies to be evaluated and adjusted, while adaptability and critical thinking support the effective and responsible use of digital technologies. Underestimating these soft skills may limit students' reflective potential, particularly in a rapidly changing marketing environment driven by artificial intelligence.

Taken together, the findings reveal two complementary perspectives on digital competence: an instrumental perspective focused on tool use and a systemic perspective emphasising pedagogical and institutional structures. Rather than viewing these perspectives as contradictory, the results suggest that their integration is essential for effective educational design. Importantly, the study indicates that misalignment between these perspectives may reduce the overall effectiveness of competence development if left unaddressed. Overall, the results support the adoption of a comprehensive approach that integrates regulatory, technological, content-related, methodological and personal factors. Such an approach aligns students' demand for practical digital skills with lecturers' emphasis on educational quality and structure. This alignment is particularly important in the context of the digital economy and the transformation of the marketing profession, where the ability to combine technical expertise with critical and adaptive thinking is increasingly recognised as a key determinant of professional success.

At the same time, the findings should be interpreted with caution. The observed differences may be influenced by contextual factors, including the specific institutional environment and the characteristics of the sample. Future research could extend this analysis by examining crossinstitutional or cross-cultural variations in stakeholder perceptions, thereby providing a more generalisable understanding of the development of digital competence. In summary, the study confirms the validity of a holistic approach to digital competence that integrates multiple interrelated factors and accounts for stakeholder-specific perspectives. By empirically identifying both commonalities and discrepancies in how these factors are perceived, the research contributes to a more nuanced understanding of the development of digital competence and provides a basis for improving the design of educational programmes in marketing and related fields.

■ Conclusions

The results of the study support the value of a comprehensive approach to developing digital competence among Bachelor's students in marketing, integrating regulatory, technological, content-related,

methodological and personal factors. Empirical analysis showed that these factors form a hierarchical structure of influence on competence development. In particular, the mean values indicated that regulatory ($M_{\text{students}}=3.164$; $M_{\text{lecturers}}=3.422$; $p=0.004$) and technological ($M_{\text{students}}=3.141$; $M_{\text{lecturers}}=3.347$; $p=0.148$) factors received the highest ratings, highlighting the significance of the institutional framework and access to digital infrastructure. Content-related ($M_{\text{students}}=3.080$; $M_{\text{lecturers}}=3.438$; $p=0.008$) and methodological ($M_{\text{students}}=3.032$; $M_{\text{lecturers}}=3.486$; $p=0.001$) factors occupied an intermediate position, reflecting their role in the practical implementation of educational standards. The personal factor, although rated lower ($M_{\text{students}}=2.888$; $M_{\text{lecturers}}=3.354$; $p=0.054$), demonstrated a substantial practical difference in perception (Cohen's $d=0.704$), indicating discrepancies in the priorities assigned to motivational and cognitive characteristics. Statistical analysis revealed statistically significant differences between students and lecturers in relation to regulatory, content-related and methodological factors, with lecturers consistently rating them more highly, highlighting their emphasis on the regulatory and methodological foundations of the development of digital competence. In contrast, the technological factor did not show statistically significant differences ($p=0.148$), indicating a shared understanding of the importance of digital tools and resources in the learning process. The personal factor, despite a p-value close to the significance threshold ($p=0.054$), showed a substantial practical effect, indicating the need for greater attention to the development of motivation, adaptability and critical thinking

among Bachelor's students in marketing. These results confirm that the development of digital competence is shaped by both the structural conditions of the educational environment and stakeholders' perspectives. The identified mismatch between Bachelor's students' focus on the practical application of tools and lecturers' emphasis on systemic and methodological foundations underscores the need to integrate these perspectives into the content of the educational programme.

Overall, the data obtained provide an empirical basis for aligning institutional policy, the content of the educational programme, teaching methods and student-centred approaches to ensure the balanced development of digital competence. Such alignment is particularly relevant in the context of the digital transformation of marketing activities, where professional effectiveness depends on the ability to combine technological proficiency with critical thinking, adaptability and continuous learning. Prospects for further research include analysing the impact of digital competence levels on graduates' actual professional outcomes and exploring the potential for integrating new technologies, particularly artificial intelligence tools, into the training of Bachelor's students in marketing.

■ Acknowledgements

None.

■ Funding

None.

■ Conflict of Interest

None.

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Оцінювання факторів формування цифрової компетентності бакалаврів маркетингу у закладі вищої освіти

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■ **Анотація.** Метою дослідження було визначення детермінантів формування цифрової компетентності бакалаврів маркетингу та оцінювання їх значущості в умовах цифрової трансформації вищої освіти з метою посилення вимог до їх професійної підготовки. Методологія дослідження передбачала використання структурованого опитувальника, розробленого на основі рамок цифрових компетентностей DigComp 2.2 та DigCompUA, що дало змогу комплексно оцінити важливість нормативного, змістового, технологічного, методичного і персонального факторів. Опитування проводилося із застосуванням шкали оцінювання значущості визначених чинників та подальшим узагальненням результатів методами описової статистики і порівняльного аналізу. У дослідженні взяли участь 245 майбутніх фахівців спеціальності «Маркетинг» (2-4 курсів) та 16 викладачів закладу вищої освіти, які забезпечували їх професійну підготовку в межах освітньої програми. Респонденти визначали пріоритетні напрями формування цифрової компетентності, оцінювали роль освітнього середовища, рівень інтеграції цифрових інструментів у освітні компоненти та готовність до їх застосування у професійній діяльності. Дослідження було зосереджене на аналізі інституційних умов, змісту освітньої програми, використання сучасних цифрових платформ і сервісів, педагогічних підходів, а також особистісних характеристик майбутніх фахівців, зокрема мотивації до цифрового саморозвитку та здатності до самостійного навчання. Результати засвідчили відмінності у сприйнятті пріоритетів різними групами респондентів. Студенти більшою мірою акцентували увагу на технологічних ресурсах і практичному використанні цифрових інструментів у маркетинговій діяльності, тоді як викладачі надавали перевагу нормативному забезпеченню, методичній підтримці та системній інтеграції цифрових технологій у зміст навчання. Встановлено, що ефективне формування цифрової компетентності потребує узгодженого поєднання інституційної підтримки, оновлення освітніх програм, впровадження сучасних методик навчання та розвитку персональної відповідальності здобувачів освіти за власний професійний розвиток

■ **Ключові слова:** освітній процес; професійна підготовка; освітня програма; детермінанти; майбутні фахівці