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Research article

The use of modern technologies to form professional culture among future management specialists

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Abstract: This research article investigates the transformative impact of modern technologies on the development of professional culture among emerging management specialists. In an era marked by rapid technological advancements, the integration of digital tools, artificial intelligence, and virtual platforms is reshaping the landscape of management education and professional practice. This study employs a multi-faceted approach, combining qualitative and quantitative methods, to explore how technology influences the values, communication patterns, and decision-making processes within the professional culture of future management specialists. The research delves into the evolving dynamics of leadership values in the digital age and the extent to which technology-driven communication patterns shape the interactions among management professionals. Furthermore, it examines the impact of digital tools on decision-making autonomy, risk tolerance, and collaborative practices within management teams. The study also explores the role of technology in fostering continuous learning and professional development, considering the influence of online platforms, virtual mentorship programs, and adaptive learning technologies. Findings from this research contribute valuable insights to academia and industry, shedding light on the symbiotic relationship between modern technologies and the formation of professional culture among future management specialists. As organizations increasingly rely on digital solutions, understanding the nuances of this relationship becomes imperative for educators, practitioners, and policymakers seeking to cultivate a dynamic and adaptive management workforce.

Keywords: future management specialists; innovative technologies; challenges; model

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1. Introduction

Complications of modern economic, technological and political relations require, first of all, not only deep knowledge and personal abilities from managers, but also special professional training and qualifications in the field of management as a specific practical activity related to the process of decision-making, ability to use various resources, responsibility for the results of the entire entrepreneurial process (Muzam, 2023). The nature of the manager's work is determined in the context of the implementation of the functions of the manager, whose task is integration of management system into a single whole, coordination of actions of its links and ensuring unity and structure of the management system as a whole (Glaister, 2014). Consequently, training of future management specialists is logical and scientific understanding of the professional activity of managers as an organized, continuous and purposeful process aimed at the acquisition of knowledge, acquisition of special competences that form the culture of professional activity (Strelcow, 2023).

Modern scientific research on the state of professional training of the future managers testify that there are a number of contradictions associated with formation of professional culture of future specialists (Veselovská & Hudáková, 2023), in particular between employers' requirements for the level of managers' professional culture and its insufficient level; between necessity training of managers with a high level of professional formation of culture and insufficient research of its theoretical and methodological approaches to the development in professional training; between higher education requirements and poor systematicity in the professional orientation of educational training programs for future managers; between the content of future professional activity and content of professionally oriented disciplines.

The above presents new challenges for the higher education system, which involve a radical renewal of the methods of training highly professional managers and actualizes the problem of forming a culture of professional activity of future managers in the educational environment of the university.

2. Literature Review

World transformational processes associated with globalization and internationalization of the economic environment, information and communication megaspace require specialists with formed system of professional knowledge, abilities and skills and high professional culture (McLean, 2002). As a scientific problem, the concept of "professional culture" became an object of many scientists, which respectively caused the existence of a large number of definitions and methods of interpretation its essence and structure (Yatsura, 2023).

Interpretation of professional culture of management specialists can be approached from various theoretical perspectives. Firstly, it is organizational culture theory that focuses on the shared values, beliefs, and norms within an organization (Bloor & Dawson, 1994). It examines how these elements shape the behavior and decisions of management specialists. Secondly, it is Hofstede's cultural dimensions theory and it identifies six cultural dimensions that influence behavior in organizations: power distance, individualism vs. collectivism, masculinity vs. femininity, uncertainty avoidance, long-term orientation vs. short-term normative orientation, and indulgence vs. restraint (Hofstede, 2011). Thirdly, professional culture of managers is associated with social identity theory that suggests that individuals categorize themselves and others into social groups based on shared characteristics (Ashforth & Mael, 1989). Fourthly, cultural intelligence theory involves the capability to work effectively in culturally diverse settings (Lee, 2023). This theory emphasizes the importance of understanding and adapting to different cultural contexts. Each of these theoretical approaches offers a unique perspective on the interpretation of the professional culture of management specialists, providing insights into different aspects of their behavior, decision-making, and interactions within the organizational context.

Thus, after examining different approaches to defining the concept of professional culture, we can claim that it is the basic formation that determines the principles of professional activity. In this context, culture is necessary to be considered as a means and a way of realizing the essential forces of a person in his social activities. According to Zarlenga et al. (2016), cultural activity is dynamic social phenomenon that changes conditions of social activity of the specialists, through their motives, incentives, goals of activity.

Also, it is worth mentioning that characteristic of cultural activity is creative activity, since it is connected with the process of realization, self-improvement, self-development of personality, and by its nature cultural activity is communicative activity, as an exchange of essential forces between people, as a dialogue between two cultures (internal and external) (Ellinas et al., 2017; Fietz et al., 2021). Therefore, one of the main purposes of professional culture is direct and design the activity of a specialist with the help of standards, samples, or algorithms (Pronzato, 2023).

Recent findings describe the structure of the professional culture of management specialists as a set of multifaceted and encompasses various elements that shape their beliefs, values, behaviors, and interactions within the organizational context (Kucharska, 2021; Szczepańska-Woszczyna, 2018). Figure 1 shows the components of professional culture of management specialists.

Values and beliefs include leadership values and organizational vision since professional culture often revolves around certain leadership values, such as integrity, accountability, and strategic vision (Joseph & Kibera, 2019). These values guide the decision-making process and set expectations for managerial behavior.

Communication patterns refer to communication styles and they dictate the balance between formal and informal communication. Also, professional culture influences communication styles, emphasizing clarity, directness, collaboration, or consensus-building, depending on the organizational norms (Wiesenfeld et al., 1998).

Decision-making processes is oriented towards the degree of autonomy management specialists, their collaboration and consensus-building. Decision-making processes determine the organization's risk tolerance and how management specialists approach decision-making under uncertainty (Szczepańska-Woszczyna, 2018). This can impact innovation and the pursuit of new opportunities.

Figure 1. Components of professional culture of management specialists.

Professional development refers to continuous learning and mentorship programs. The culture may encourage a commitment to continuous learning and professional development, and the mentorship programs and leadership development initiatives contributes to the professional culture (Pyliaeva & Kochyna, 2020). These programs foster a sense of growth and career progression among management specialists.

Team dynamics emphasizes collaboration and teamwork or, alternatively, foster a more competitive environment among management specialists (Oyefusi, 2022). in addition, it is associated with professional culture values inclusivity and diversity that provide values diverse perspectives and adaptability.

Professional ethics adheres to professional ethics, integrity, and ethical decision-making are fundamental aspects of the culture (Pyliaeva & Kochyna, 2020).

Understanding the structure of the professional culture of management specialists involves analyzing the interplay of these elements, recognizing that they contribute to a collective identity and shared norms within the management community of an organization. This structure evolves over time and is influenced by leadership, organizational history, and external factors.

It should be noted that the professional culture of a specialist cannot be considered only as a system of special, narrowly professional knowledge, abilities and skills. These concepts are much broader and combine the entire spiritual potentials of personality, intellectual, emotional and practical-action components of its consciousness Professional culture determines the cognitive interests of a student, conditions his outlook, value orientations, general life attributes (Peterlin et al., 2021). According to this view, professional culture should be considered as integrated personality quality. It is appropriate to resort to structural analysis from the standpoint of pedagogy not only the essence of the concept of professional culture of the individual, but also the process of its formation (Stukalenko et al., 2016), since one of the target instructions of education is training of students to social and professional self-determination.

Training of future managers at the educational institutions involves a comprehensive approach that addresses both theoretical knowledge and practical skills (Stupak, 2020). The requirements for training future managers encompass various elements to ensure graduates are well-prepared for the complexities of the professional world. They include effective curriculum development (Vance, 1988); experiential learning opportunities through internships and work placements of case studies and simulations (Armstrong & Mahmud, 2008); industry collaboration (O'Dwyer et al., 2023); soft skills development that refers to communication and interpersonal skills, leadership, adaptability, and ethical decision-making (Lamri & Lubart, 2023); global perspective (Stupak, 2020); ethics and social responsibility (Weber, 1990); continuous learning culture (Wallo et al., 2022); assessment and feedback mechanisms (Weber, 1990); innovation and creativity (Yatsura, 2023). By meeting these requirements, educational institutions can ensure that future managers are not only equipped with the necessary theoretical knowledge but also possess the practical skills and attitudes essential for success in the ever-evolving field of management.

Technologies of formation of professional culture among future management specialists encompass a diverse array of tools designed to cultivate a dynamic and adaptive learning environment (Yatsura, 2023). These technologies play a pivotal role in shaping the values, skills, and collaborative behaviors that are integral to the professional culture of management specialists. Learning Management Systems serve as foundational platforms, organizing course content, facilitating collaboration, and providing a structured space for assessments (Yudina, 2018). Virtual collaboration tools, such as video conferencing platforms and online collaborative tools, promote real-time interaction among students and educators, fostering teamwork and communication skills crucial for future managers (Morrison-Smith & Ruiz, 2020). Additionally, technologies like simulations and gamification engage students in interactive learning experiences, allowing them to apply theoretical knowledge to practical scenarios in a risk-free environment (Stupak, 2020). Social media platforms contribute to professional networking, connecting future management specialists with industry professionals and peers, thus expanding their exposure to diverse perspectives and industry trends (Morrison-Smith & Ruiz, 2020). These technologies collectively contribute to the development of a professional culture that values continuous learning, collaboration, and adaptability.

Moreover, adaptive learning systems and AI-driven personalized learning technologies cater to individual learning styles, tailoring educational content to the unique needs of each future management specialist (Fadieieva, 2023). Mobile learning apps provide flexibility, allowing access to educational resources on-the-go, supporting a culture of continuous learning outside traditional classroom settings (Morrison-Smith & Ruiz, 2020). Technologies like augmented reality and virtual reality offer immersive learning experiences, enabling future managers to simulate real-world scenarios and develop practical skills (Yudina, 2018). The integration of blockchain technology and AI analytics prepares management specialists for emerging trends, emphasizing transparency and data-driven decision-making (Walsh et al., 2021). Overall, these technologies collectively contribute to the holistic development of professional culture among future management specialists, fostering a tech-savvy and adaptive workforce equipped to navigate the complexities of modern management roles. Table 1 shows the analysis of innovative technologies used to form professional culture among future management specialists.

Table 1. Analysis of innovative technologies used to form professional culture among future management specialists.

Technology	Application
Learning Management Systems	provide a centralized hub for managing educational content, assessments, and collaboration tools; facilitate structured and organized learning experiences; provide an access to course materials; engage in discussions.
Virtual Reality and Augmented Reality	create immersive learning environments that simulate real-world scenarios; enhance experiential learning and practical skill development.
Online collaboration tools	enable remote teamwork and communication organize collaboration of students in virtual teams, engagement in online discussions, and work on projects.
Data analytics and business intelligence tools	help analyze and interpret data;

	provide insights into business trends, performance metrics, and decision-making processes; develop data-driven decision-making skills by using analytics tools to analyze business data; identify patterns and make informed managerial decisions.
Social media platforms	facilitate communication, networking, and knowledge sharing among individuals in the management field; contribute to the development of a professional online presence.
Artificial Intelligence and Machine Learning	personalize learning experiences; automate routine tasks; provide intelligent insights.
E-learning platforms and massive open online courses (MOOCs)	offer courses and certifications from universities and organizations worldwide; provide accessible and flexible learning opportunities.
Blockchain technology	ensure transparency, security, and traceability of transactions, which can be applied to various management processes.
Gamification	integrate game-like elements into learning experiences to enhance engagement and motivation; gamified training programs can simulate business challenges, fostering a competitive and engaging learning environment.
Adaptive learning systems	tailor educational content based on individual learner needs; optimize the learning experience; customize assessment.

The integration of these technologies in management education enhances the formation of a professional culture that is tech-savvy, adaptive, and aligned with the demands of contemporary managerial roles. By leveraging these tools, educational institutions can better prepare future management specialists for the challenges and opportunities presented by the digital age.

Therefore, the research objective is to determine and theoretically substantiate pedagogical conditions for the development of professional culture of future managers in the conditions of university and to identify key factors influencing the successful implementation of technologies in the educational process.

It addresses the following research questions:

4) What technologies are used to form professional culture among future management specialists?
5) What are the advantages of using innovative technologies to form professional culture among future management specialists?
6) What difficulties hinder the process of formation of professional culture among future management specialists?
7) What is the model of formation professional culture among future management specialists?

3. Materials and Methods

In the research concerning the use of modern technologies to form professional culture among future management specialists, the section Materials and Methods outlines the approach and tools employed to investigate the impact of modern technologies on the development of professional culture in emerging management professionals. The section is designed to provide transparency and reproducibility, allowing readers to understand how the study was conducted.

3.1 Participants

The study included a diverse and representative sample of future managers enrolled in various management programs across reputable universities and business schools through the country (36 individuals). The participants ranged from undergraduate students majoring in business and management to graduate students pursuing advanced degrees in management-related disciplines. Also, the participants encompassed a spectrum of academic levels, including undergraduate, master's, and doctoral students. This diversity allowed for a comprehensive understanding of the impact of technology on professional culture across different stages of academic development. The age range of participants varied from traditional students entering higher education directly from high school to mature students

with prior work experience. We made the efforts to ensure gender balance and cultural diversity within the participant pool. This inclusivity aimed to account for potential variations in the adoption and perception of technology across diverse demographics.

3.2 Research Design

The research design for a study investigating the use of technologies to form professional culture among future managers is a critical component that dictates the methodological approach and the structure of the investigation. A mixed-methods research design, combining both qualitative and quantitative elements, is deemed appropriate to provide a comprehensive understanding of the multifaceted relationship between technology use and the development of professional culture in aspiring managers. This design integrates the strengths of quantitative data, such as surveys measuring the frequency and perceived impact of technology use, with qualitative data obtained through in-depth interviews, capturing the nuanced perspectives and experiences of future managers in the context of professional culture formation.

3.3 Data Analysis

The data analysis process for a research study on the use of technologies to form professional culture among future managers involves a systematic approach to interpreting both quantitative and qualitative data. In the quantitative strand of the analysis, statistical techniques were employed to identify patterns, relationships, and trends within the survey data. Descriptive statistics, such as means and frequencies, will be used to provide a summary of participants' responses regarding the frequency and extent of technology utilization in their professional development. Additionally, inferential statistics, such as correlation analyses, was conducted to explore potential relationships between the variables of interest, such as the correlation between the frequency of technology use and perceived impact on professional culture formation. This quantitative analysis aimed to generate numerical insights into the overarching trends in the participants' experiences with technology and its role in shaping their professional culture.

In the qualitative strand, thematic analysis was employed to identify recurring patterns, themes, and insights emerging from the in-depth interviews. The qualitative data were transcribed and coded, with codes grouped into broader themes representing the various ways in which technology impacts the formation of professional culture. Integrating the quantitative and qualitative findings will involve a comparative analysis, where patterns identified in the quantitative data will be explored further and contextualized through the qualitative narratives. This mixed-methods approach ensures a comprehensive understanding of the complex interplay between technology use and the formation of professional culture among future managers.

3.4 Ethical Considerations

Ensuring ethical considerations is paramount in any research study, particularly one that explores sensitive topics such as the use of technologies to form professional culture among future managers. First and foremost, informed consent will be obtained from all participants, clearly outlining the purpose of the study, the voluntary nature of participation, and the potential risks and benefits associated with their involvement. Participants were informed that they had the right to withdraw from the study at any time without facing any consequences. Confidentiality and privacy were rigorously maintained; all collected data were anonymized, and any information that could identify individual participants will be kept confidential. This commitment to confidentiality extended to the reporting and dissemination of findings, ensuring that participants' identities are protected in all research outputs.

Additionally, the research design and procedures adhered to ethical guidelines and standards set by relevant institutional review boards and professional organizations. The study prioritized the well-being of participants, ensuring that their experiences with technology and the formation of professional culture are explored in a respectful and considerate manner. Given the potential sensitivity of the topic, efforts were made to minimize any potential psychological discomfort or stress among participants during data collection. Any potential conflicts of interest were transparently disclosed, and the research was conducted with integrity, honesty, and a commitment to advancing knowledge in an ethical manner. The research findings were reported accurately, and interpretations were grounded in the collected data, avoiding any form of manipulation or misrepresentation. By addressing these ethical considerations, the study aimed to contribute valuable insights to the field of management education while upholding the rights and well-being of the participants involved.

4. Results

4.1 Technologies used to form professional culture among future management specialists

The findings showed that online collaboration tools and gamification are the most frequently used technologies to form professional culture among future management specialists. At the same time, Artificial Intelligence and Machine Learning Blockchain technologies are the least frequently used in the educational process. Table 2 demonstrates the detailed analysis of innovative technologies used to form professional culture among future management specialists.

Table 2. Analysis of innovative technologies used to form professional culture among future management specialists.

Technology	Frequency of usage			
	Always	Often	Rarely	Never
Learning Management Systems	5	12	16	3
Virtual Reality and Augmented Reality	4	15	12	5
Online collaboration tools	12	24	0	0
Data analytics and business intelligence tools	2	13	18	3
Social media platforms	9	20	6	1
Artificial Intelligence and Machine Learning	1	17	11	7
E-learning platforms and massive open online courses (MOOCs)	3	16	15	2
Blockchain technology	0	4	19	11
Gamification	16	19	1	0
Adaptive learning systems	3	18	10	4

The choice of these technologies in management education requires careful consideration of several key requirements to ensure their meaningful integration and impact. The participants described the criteria to select technologies in the educational process. By addressing these requirements, educational institutions can harness the full potential of innovative technologies to form a professional culture among future managers. This holistic approach ensures that technology serves as an enabler, contributing to a dynamic and effective learning environment. Figure 2 shows the requirements to innovative technologies used to form professional culture among future management specialists based on participants' opinions.

4.2 Advantages of using innovative technologies to form professional culture among future management specialists

The survey showed that the integration of innovative technologies to form a professional culture among future managers brings forth numerous advantages, propelling organizational development and preparing leaders for the complexities of the modern business landscape. Firstly, these technologies enable immersive and dynamic learning experiences, fostering a culture that values continuous education and adaptability. Virtual and augmented reality tools, for instance, allow future managers to engage in lifelike simulations, providing hands-on experiences in decision-making, crisis management, and strategic planning. This not only enhances their skill set but also instills a proactive mindset towards embracing new challenges. Additionally, the incorporation of artificial intelligence and machine learning technologies facilitates data-driven decision-making, empowering future managers to make informed choices based on real-time insights. This contributes to a culture that values analytical thinking, strategic foresight, and the ability to navigate the complexities of a rapidly evolving business environment.

Secondly, the use of innovative technologies in communication and collaboration platforms fosters a culture that prioritizes connectivity and effective teamwork. Cloud-based collaboration tools, video conferencing platforms, and project management software create seamless virtual work environments, breaking down geographical barriers and promoting cross-functional collaboration. Future managers can leverage these technologies to engage in real-time discussions, share information, and work collaboratively on projects, cultivating a culture that values open communication, inclusivity, and the ability to work across diverse

teams. Moreover, the adoption of innovative technologies supports the creation of a flexible and adaptive work culture.

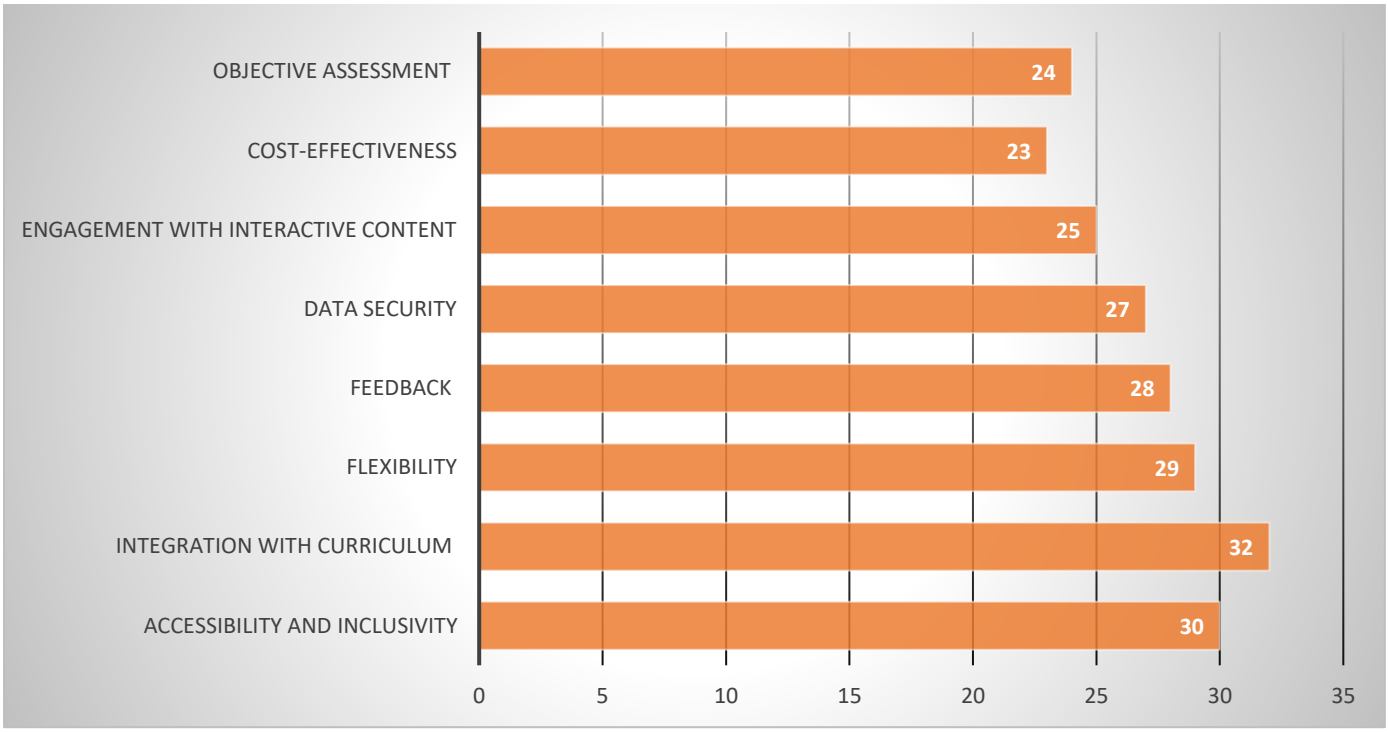

Figure 2. Requirements to innovative technologies used to form professional culture among future management specialists.

Remote work solutions, mobile applications, and digital communication tools enable future managers to balance work and life demands, contributing to a culture that values work-life integration, autonomy, and the ability to thrive in evolving work environments. In essence, the incorporation of innovative technologies not only equips future managers with essential skills but also shapes a professional culture that embraces change, values collaboration, and champions a forward-thinking approach to organizational success. Table 3 shows the analysis of advantages of using innovative technologies to form professional culture among future management specialists according to experts' opinions.

Table 3. Advantages of using innovative technologies to form professional culture among future management specialists according to experts' opinions.

Technology	Advantages
Learning Management Systems	• provide a centralized platform for managing educational resources, course content, and communication; • allow for the creation of flexible learning paths, catering to the diverse needs and learning styles of future managers; • offer anytime, anywhere access to learning materials; • facilitate collaborative learning through discussion forums, group projects, and virtual collaboration spaces; • enable the implementation of various assessment tools, including quizzes, assignments, and discussion participation metrics; • provide administrators and instructors with insights into learner progress through analytics and reporting features; • support the integration of multimedia elements, interactive modules, and gamified content.
Virtual Reality and Augmented Reality	• enable the creation of realistic simulations that replicate professional environments; • provide experiential learning opportunities by immersing learners in dynamic, interactive scenarios; • facilitate remote collaboration among future managers, overcoming geographical barriers;

	• allow for interactive training modules where future managers can access relevant information, statistics, or contextual details related to their surroundings, fostering a culture of continuous learning and adaptability; • enhance soft skills, such as communication, leadership, and interpersonal skills; • develop technological literacy and an appreciation for innovation; • offer customizable learning paths, tailoring experiences to individual learner needs.
Online collaboration tools	• enable future managers to collaborate seamlessly regardless of geographical locations; • offer real-time communication channels, including instant messaging, video conferencing, and discussion forums; • facilitate efficient collaboration on projects; • allow future managers to plan, organize, and track tasks; • serve as repositories for shared knowledge and resources; • facilitate cross-functional collaboration, allowing future managers from different departments or disciplines to work together seamlessly; • support virtual meetings and workshops, enabling future managers to participate in interactive sessions without physical proximity; • enable inclusive decision-making by providing platforms for input from all team members.
Data analytics and business intelligence tools	• enable the monitoring of key performance indicators and performance metrics; • support strategic planning and forecasting; • allow future managers to identify areas for improvement and optimization; • foster a culture of innovation by providing insights into emerging trends and market dynamics; • facilitate cross-functional collaboration by providing a common data platform; • simplify complex data into understandable visual formats; • enable future managers to assess and mitigate risks effectively; • help future managers stay responsive to market changes.
Social media platforms	• provide future managers with expansive networking opportunities; • facilitate knowledge sharing and collaboration; • allows future managers to participate in professional conversations and share relevant content; • enable future managers to communicate effectively and establish thought leadership; • facilitate the building of professional communities; • allow for the rapid sharing of information; • provide opportunities for receiving feedback and recognition.
Artificial Intelligence and Machine Learning	• enable data-driven decision-making by analyzing large datasets to identify patterns and trends; • automate routine and repetitive tasks; • personalize learning experiences by analyzing individual preferences and learning styles; • predict talent needs, identify high-potential employees, and optimize workforce planning; • provide timely feedback and support; • provide advanced analytics for strategic planning; • offer ethical decision support by analyzing potential ethical implications of decisions.
E-learning platforms and massive open online courses (MOOCs)	• provide flexibility in learning, allowing future managers to access courses and resources at their own pace and convenience; • offer global accessibility, allowing future managers from diverse geographical locations to access high-quality educational content;

	• offer cost-effective alternatives to traditional education; • support lifelong learning by providing a continuous and evolving stream of educational content; • incorporate interactive and engaging content, such as videos, quizzes, and discussion forums; • include practical case studies and real-world applications of concepts.
Blockchain technology	• ensures transparent and immutable records; • provides enhanced security and data integrity through cryptographic principles; • enables decentralized collaboration by eliminating the need for intermediaries; • enhances supply chain transparency by providing an immutable record of transactions and product movements; • allows for cross-organizational collaboration through shared and verifiable data; • encourages innovation in business models.
Gamification	• captures the attention of future managers by incorporating game-like elements, such as challenges, rewards, and competition; • offers a playful environment for skill development; • provides interactive learning experiences; • offers real-time feedback and performance metrics; • encourages team collaboration and healthy competition; • encourages continuous learning and development; • involves problem-solving scenarios and challenges; • fosters a positive learning culture by making the learning process enjoyable and interactive.
Adaptive learning systems	• customize learning paths based on individual strengths, weaknesses, and learning preferences; • identify and focus on areas where future managers require improvement, streamlining the learning process; • provide continuous assessment and real-time feedback; • adjust the complexity and format of content based on individual progress; • optimize study time by focusing on areas that require attention; • encourage self-directed learning; • help prevent knowledge gaps by continuously assessing and addressing areas of weakness; • allow for real-time monitoring of progress; • incorporate interactive elements such as quizzes, simulations, and multimedia content.

4.3 Difficulties hindering the process of formation of professional culture among future management specialists

Instructors face several challenges when attempting to form a professional culture among future managers within the educational process. Firstly, there is the hurdle of bridging the gap between theoretical knowledge and practical application. While classroom learning provides a foundation of concepts, future managers may struggle to translate these ideas into real-world scenarios. Instructors must design curriculum and learning experiences that emphasize hands-on application, simulations, and case studies to ensure that future managers not only comprehend theoretical concepts but also possess the skills to implement them effectively in professional settings. This challenge is compounded by the ever-evolving nature of business environments, requiring instructors to stay abreast of industry trends and continually update course content to reflect the current realities faced by future managers.

Secondly, cultivating a professional culture involves instilling soft skills such as communication, leadership, and emotional intelligence. These skills are crucial for effective management but are often more nuanced and challenging to teach than technical knowledge. Instructors face the task of creating environments that encourage the development of these interpersonal skills, which may involve integrating collaborative projects, group discussions,

and practical exercises into the curriculum. Additionally, assessing and providing constructive feedback on soft skills can be subjective, requiring instructors to develop comprehensive evaluation methods. Overcoming these challenges demands a holistic and multifaceted approach to education, where instructors go beyond traditional teaching methods to nurture a professional culture that extends beyond academic understanding and incorporates the interpersonal and practical skills essential for future managers. Table 4 shows the challenges hindering the process of formation of professional culture among future managers in the classroom according to experts' assessments.

Table 4. Challenges hindering the process of formation of professional culture among future managers.

Technology	Challenges hindering formation of professional culture
Learning Management Systems	• If not designed and implemented thoughtfully, can become monotonous, leading to a lack of enthusiasm among future managers. • Maintaining learner engagement requires dynamic and interactive content, timely updates. • Future managers may have different learning preferences, and a one-size-fits-all approach may not effectively cater to their individual needs. • Resistance to change among instructors and learners, technical issues, and the need for comprehensive training can hinder the seamless adoption of Learning Management Systems.
Virtual Reality and Augmented Reality	• Main difficulty is the cost associated with implementing VR and AR technologies. • Designing immersive and effective experiences requires expertise in both the subject matter and the technology itself. • Virtual Reality and Augmented Reality technologies are continuously evolving, and the hardware and software available at any given time may have limitations in terms of graphics, interactivity, or compatibility. • Concerns related to health and safety must be addressed.
Online collaboration tools	• The abundance of communication channels, messages, and notifications within online collaboration platforms can lead to a sense of overwhelm for future managers. • Written communication lacks the nuances of face-to-face interactions, and the absence of non-verbal cues can lead to misunderstandings among team members. • Online collaboration tools often rely on asynchronous communication, making it challenging to create a real-time and interactive exchange of ideas.
Data analytics and business intelligence tools	• Future managers may face difficulties in interpreting the results accurately and translating them into strategic actions. • Inaccurate or incomplete data can lead to flawed analyses and misguided decision-making.
Social media platforms	• Social media often blurs the lines between personal and professional life. • Social media platforms are susceptible to data breaches and privacy issues. • Communication on social media platforms lacks the context and nuances of face-to-face interactions, which can lead to misunderstandings. • Future managers may face challenges in managing their digital reputation.
Artificial Intelligence and Machine Learning	• The introduction of Artificial Intelligence and Machine Learning may create concerns among future managers about the potential automation of tasks traditionally handled by humans. • Future managers may encounter difficulties in understanding and trusting AI-generated insights, particularly if the decision-making process lacks transparency. • Future managers may not possess the necessary technical expertise to fully comprehend the workings of AI systems, potentially leading to a lack of confidence in utilizing these technologies.
E-learning platforms and massive open online courses (MOOCs)	• E-learning and MOOCs require self-directed learning, which can be challenging for individuals who lack self-discipline or struggle with motivation.

	• Access to technology and reliable internet connectivity is not uniform across all regions and demographics. • E-learning and MOOCs often lack the interpersonal interactions present in traditional classrooms. • The credibility of E-learning platforms and MOOCs can vary, and future managers may face challenges in discerning the quality of the educational content.
Blockchain technology	• Blockchain technology is inherently complex, involving cryptographic principles, decentralized networks, and consensus mechanisms. • Existing organizational structures and processes may resist the significant changes that come with adopting blockchain. • The regulatory landscape surrounding blockchain is still evolving, and future managers may encounter challenges in navigating legal frameworks. • Blockchain networks may lack interoperability. • There may be educational gaps related to blockchain understanding and awareness among future managers.
Gamification	• Traditional workplace cultures may resist the incorporation of gamified elements. • Designing gamified elements that are relevant, meaningful, and align with professional development goals can be challenging. • Gamification often includes competitive elements, which can lead to stressful work environment. • Individuals have diverse learning styles, and gamification may not appeal universally.
Adaptive learning systems	• Individuals accustomed to traditional learning methods may resist the adoption of adaptive learning systems. • Designing and implementing adaptive learning systems that effectively customize content to individual learning needs can be complex. • Adaptive learning relies heavily on data collection to personalize content, which raises privacy concerns. • Adaptive learning systems primarily focus on individualized learning paths, which may lead to challenges in fostering collaboration and teamwork. • The effectiveness of adaptive learning relies on the availability of high-quality data.

Building a model for the formation of professional culture among future managers is imperative as it provides a structured and systematic framework to guide the development of individuals within an organization. Such a model defines the values, behaviors, and competencies essential for success in managerial roles, aligning them with the organization's goals and industry requirements. By articulating the expectations for professional conduct, leadership qualities, and collaborative skills, the model serves as a roadmap for cultivating a cohesive and forward-thinking managerial culture. Moreover, it aids in the strategic integration of innovative practices, emerging technologies, and evolving industry standards into the professional fabric, ensuring that future managers are not only equipped with traditional skills but are also adaptive, ethical, and capable of leading in dynamic and diverse business environments. In essence, a well-constructed model for professional culture formation becomes instrumental in shaping the next generation of managers who can drive organizational success and contribute positively to the broader professional community.

5. Discussion

A pedagogical model refers to a comprehensive framework or approach that guides the design and delivery of educational experiences. It encompasses strategies, methodologies, and principles aimed at facilitating effective teaching and learning (Bertrand & Namukasa, 2023). This model outlines the teacher's role, instructional methods, assessment techniques, and the overall structure of the learning environment. It serves as a guiding structure to help educators create engaging and meaningful learning experiences for students.

The model of formation of professional culture among future managers is a comprehensive framework designed to systematically cultivate the values, skills, and behaviors essential for effective managerial roles (Yatsura, 2023). This model integrates educational, experiential, and cultural components to shape a holistic understanding of professional responsibilities. It outlines strategies for instilling leadership qualities, ethical decision-making, effective communication, and adaptability within future managers. The model addresses both traditional and contemporary aspects of management, emphasizing not only technical competencies but also the ability to navigate dynamic and diverse organizational landscapes. By incorporating emerging technologies, industry trends, and fostering a culture of continuous learning, this model ensures that future managers are well-equipped to lead with innovation, integrity, and resilience, contributing positively to both their organizations and the broader professional community.

The model of formation of professional culture among future managers typically comprises several interconnected components that collectively contribute to the development of well-rounded and effective managerial professionals (Kryshtanovych et al., 2021; Pyliaeva & Kochyna, 2020; Yatsura, 2023). Figure 3 shows the structure of the model of formation of professional culture among future managers.

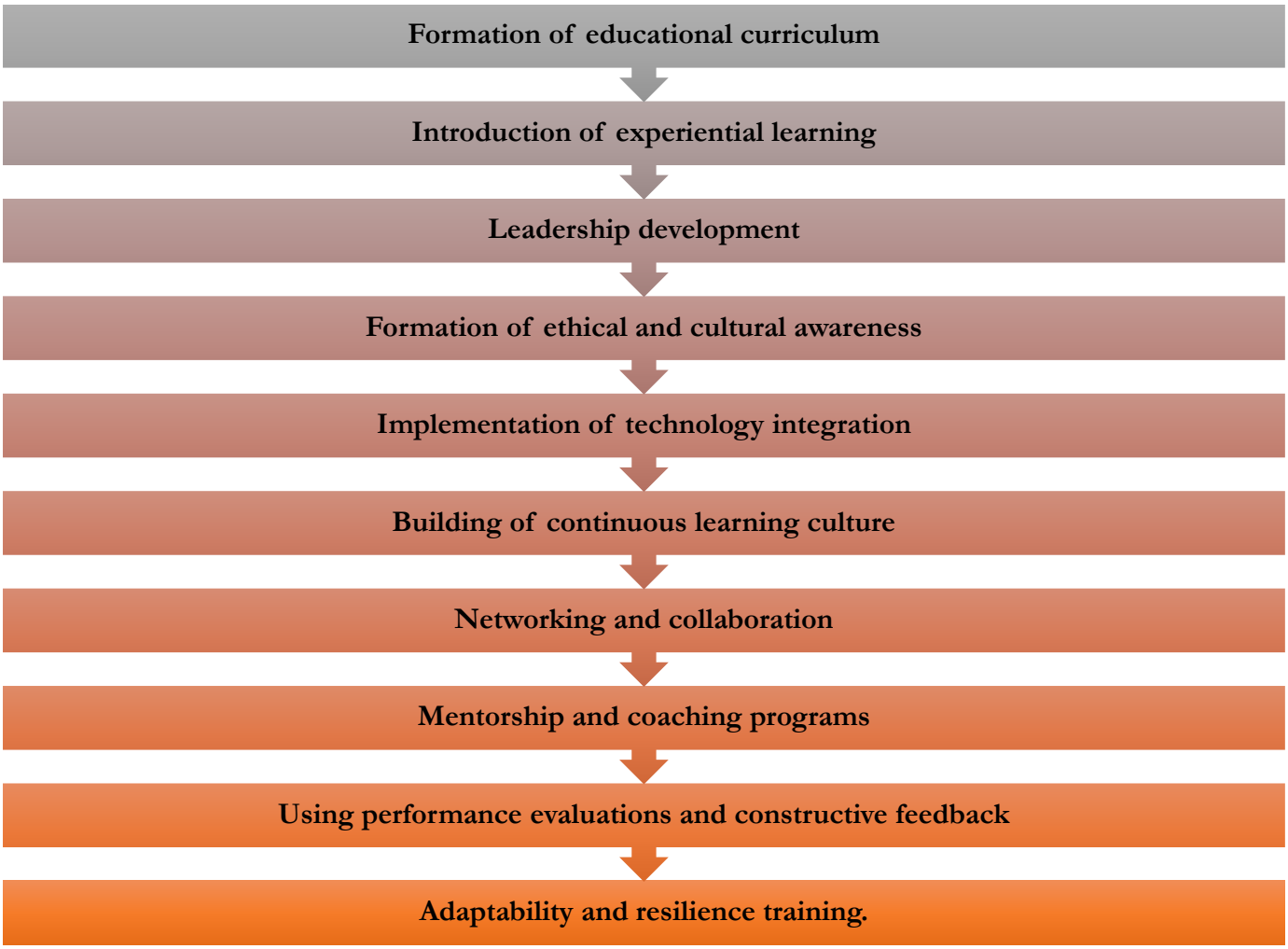

Figure 3. Structure of the model of formation of professional culture among future managers

Educational curriculum. The educational component focuses on a structured curriculum that covers essential management theories, principles, and practical skills (Vance, 1988). It encompasses academic courses, workshops, and training sessions designed to provide future managers with a solid foundation in business, leadership, communication, ethics, and other relevant disciplines.

Experiential learning is a vital component that involves hands-on experiences such as internships, practical projects, and simulations. This component allows future managers to apply theoretical knowledge in real-world situations, fostering problem-solving skills, critical

thinking, and a deeper understanding of the complexities of managerial roles (O'Dwyer et al., 2023).

Leadership development is a key component that focuses on nurturing the leadership qualities essential for managerial roles (Joseph & Kibera, 2019). This includes training in decision-making, conflict resolution, team management, and strategic thinking. Leadership development programs may involve mentorship, leadership workshops, and opportunities to lead projects or teams.

Ethical and cultural awareness emphasizes the importance of ethical decision-making and cultural competence in managerial roles. It includes modules on business ethics, diversity and inclusion training, and cross-cultural communication to ensure that future managers are equipped to navigate diverse workplace environments with integrity and sensitivity (Pyliaeva & Kochyna, 2020).

Technology integration. Given the rapidly evolving technological landscape, this component focuses on integrating technology-related skills into the managerial skill set (Walsh et al., 2021). It includes training on data analysis, digital communication tools, project management software, and other relevant technologies to ensure that future managers are adept at leveraging technological advancements.

Continuous learning culture. The model encourages a culture of continuous learning, where future managers are instilled with the mindset of ongoing professional development (Pyliaeva & Kochyna, 2020). This includes promoting self-directed learning, providing access to resources like webinars and industry publications, and fostering a proactive approach to staying updated on industry trends.

Networking and collaboration components emphasize the importance of building professional connections, both within and outside the organization. Future managers are encouraged to participate in networking events, industry conferences, and collaborative projects to enhance their interpersonal and relationship-building skills (Morales-Huamán et al., 2023; Oyefusi, 2022).

Mentorship and coaching programs are crucial components that provide future managers with guidance from experienced professionals (Joseph & Kibera, 2019). These programs facilitate knowledge transfer, career advice, and personal development, contributing to the overall growth and success of future managers.

Regular performance evaluations and constructive feedback mechanisms are integrated components that enable future managers to assess their progress and identify areas for improvement. This ensures a continuous feedback loop for refining skills and behaviors aligned with the desired professional culture (Kryshtanovych et al., 2021; Stupak, 2020).

Adaptability and resilience training. In response to the dynamic nature of business environments, this component focuses on developing adaptability and resilience skills (Curzi et al., 2019). Future managers are exposed to scenarios that require quick decision-making, flexibility, and the ability to navigate uncertainties effectively.

These components work synergistically within the model of formation of professional culture among future managers, creating a robust framework that addresses the multifaceted aspects of managerial development.

5. Conclusions

This research has delved into the multifaceted realm of utilizing modern technologies to shape the professional culture among future management specialists. The evolving landscape of the business world, coupled with rapid technological advancements, necessitates a proactive approach to preparing the next generation of managers. The overarching goal of this study has been to explore the potential, challenges, and implications of integrating modern technologies into the formation of professional culture for aspiring management specialists.

The findings underscore the transformative impact of technology on the various dimensions of professional culture. One significant revelation is the role of Learning Management Systems in providing a centralized platform for learning, collaboration, and skill development. Learning Management Systems not only facilitates the dissemination of knowledge but also fosters a collaborative learning environment, instilling a sense of teamwork and shared learning objectives among future management specialists. The efficiency and accessibility offered by Learning Management Systems align with the contemporary demands of remote work and global collaboration, contributing to the cultivation of a dynamic and interconnected professional culture.

Virtual Reality and Augmented Reality have emerged as powerful tools for immersive learning experiences. The ability to simulate real-world scenarios in a risk-free environment enhances the practical skills of future management specialists. The integration of Virtual Reality and Augmented Reality in training programs fosters a culture that values innovation, adaptability, and hands-on problem-solving. As these technologies continue to advance, they hold immense potential in shaping a professional culture that thrives on experiential learning and creative problem-solving.

Online collaboration tools have been instrumental in breaking down geographical barriers and promoting a collaborative ethos among future management specialists. The seamless exchange of ideas, real-time collaboration on projects, and the ability to work across time zones contribute to a globalized professional culture. This shift towards collaborative technologies underscores the importance of interpersonal skills, effective communication, and cross-cultural understanding in the makeup of future management specialists.

Data analytics and business intelligence tools have been identified as key enablers in informed decision-making. By equipping future management specialists with the ability to extract meaningful insights from data, these technologies contribute to a culture that values data-driven decision-making. However, the research also highlights challenges such as information overload and the need for a nuanced understanding of data findings, emphasizing the importance of a culture that promotes data literacy and the strategic use of information.

Social media platforms play a dual role in shaping the professional culture among future management specialists. While providing avenues for networking, knowledge sharing, and brand building, social media also presents challenges related to privacy, maintaining a professional image, and balancing personal and work-related interactions. Navigating these challenges requires a cultural emphasis on responsible social media use, digital etiquette, and aligning online activities with organizational values.

Artificial Intelligence and Machine Learning bring a new dimension to the skill set of future management specialists. The research emphasizes the importance of overcoming resistance to AI adoption and fostering a culture that values the collaboration between humans and intelligent systems. The ethical considerations surrounding AI highlight the necessity of instilling a culture that prioritizes responsible AI practices, transparency, and ongoing education on the ethical implications of AI in decision-making.

E-learning platforms and MOOCs have emerged as flexible and accessible avenues for continuous learning. However, challenges such as ensuring content relevance, customization, and addressing the diverse learning styles of future management specialists underscore the importance of a culture that values adaptability, user feedback, and the integration of diverse learning resources.

Blockchain technology introduces a decentralized and secure framework for transactions, contract management, and data integrity. Its integration into the professional culture necessitates a cultural shift towards embracing innovative solutions, adapting to decentralized models, and addressing concerns related to regulatory frameworks.

In conclusion, the research establishes that the use of modern technologies is not merely a tool but a transformative force in shaping the professional culture among future management specialists. The identified challenges underscore the need for a cultural shift – one that values continuous learning, embraces innovation, prioritizes ethical considerations, and fosters a collaborative and adaptive mindset among aspiring management professionals. As organizations continue to navigate the complexities of the digital age, the integration of modern technologies into the formation of professional culture becomes not only a strategic imperative but a cornerstone for the success of future management specialists in a dynamic and interconnected global landscape.

Several limitations are inherent in the research on the use of modern technologies to form professional culture among future management specialists. The study's findings may be influenced by the specificity of the context in which the research was conducted, potentially limiting the generalizability of results to diverse industries and organizational structures. The sample demographics, focusing on particular educational institutions or career stages, may not fully represent the broad spectrum of aspiring management professionals. Additionally, the fast-paced nature of technological advancements poses a challenge to the research's currency, potentially overlooking the influence of the latest technologies. The reliance on self-reported data introduces the possibility of bias, and ethical considerations related to data privacy and emerging technologies may not be exhaustively explored. The study also lacks a longitudinal perspective, hindering a deeper understanding of sustained effects over time. Despite its contributions, these limitations underscore the need for caution in generalizing

the findings and highlight areas for further research to enhance the depth and breadth of insights into the role of modern technologies in shaping professional culture among future management specialists.

References

Armstrong, S. J., & Mahmud, A. (2008). Experiential Learning and the Acquisition of Managerial Tacit Knowledge. *Academy of Management Learning & Education, 7*(2), 189–208. http://www.jstor.org/stable/40214535

Ashforth, B. E., & Mael, F. (1989). Social Identity Theory and the Organization. *The Academy of Management Review, 14*(1), 20–39. https://doi.org/10.2307/258189

Bertrand, M. G., & Namukasa, I. K. (2023). A pedagogical model for STEAM education. *Journal of Research in Innovative Teaching & Learning, 16*(2), 169-191. https://doi.org/10.1108/JRIT-12-2021-0081

Bloor, G., & Dawson, P. (1994). Understanding Professional Culture in Organizational Context. *Organization Studies, 15*(2), 275-295. https://doi.org/10.1177/017084069401500205

Curzi, Y., Fabbri, T., Scapolan, A. C., & Boscolo, S. (2019). Performance appraisal and innovative behavior in the digital era. *Frontiers in psychology, 10*, 1659. https://doi.org/10.3389/fpsyg.2019.01659.

Ellinas, C., Allan, N., & Johansson, A. (2017) Dynamics of organizational culture: Individual beliefs vs. social conformity. *PLoS ONE, 12*(6), e0180193. https://doi.org/10.1371/journal.pone.0180193

Fadieieva, L. O. (2023). Adaptive learning: a cluster-based literature review (2011-2022). *Educational Technology Quarterly, 3*, 319–366. https://doi.org/10.55056/etq.613 [Accessed 14 January 2024].

Fietz, B., Hillmann, J. & Guenther, E. (2021). Cultural Effects on Organizational Resilience: Evidence from the NAFTA Region. *Schmalenbach Journal of Business Research, 73*, 5–46. https://doi.org/10.1007/s41471-021-00106-8

Glaister, K. W. (2014). The contribution of management to economic growth: a review. *Prometheus, 32*(3), 227-244. https://doi.org/10.1080/08109028.2015.1023646

Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture, 2*(1). https://doi.org/10.9707/2307-0919.1014

Joseph, O. O., & Kibera, F. (2019). Organizational Culture and Performance: Evidence From Microfinance Institutions in Kenya. *SAGE Open, 9*(1). https://doi.org/10.1177/2158244019835934

Kryshtanovych, S., Bilyk, O., Shayner, H., Barabash, O., & Bondarenko, V. (2021). Study of the Experience of the Formation of Professional Competence in Future Managers of Physical Education and Sports. *Revista Romaneasca Pentru Educatie Multidimensionala, 13*(1Sup1), 162-176. https://doi.org/10.18662/rrem/13.1Sup1/390

Kucharska, W. (2021). Leadership, culture, intellectual capital and knowledge processes for organizational innovativeness across industries: the case of Poland. *Journal of Intellectual Capital, 22*(7), 121-141. https://doi.org/10.1108/JIC-02-2021-0047

Lamri, J., & Lubart, T. (2023). Reconciling Hard Skills and Soft Skills in a Common Framework: The Generic Skills Component Approach. *Journal of Intelligence, 11*(6), 107. https://doi.org/10.3390/jintelligence11060107

Lee, A. P. (2023). Cultural intelligence as a predictor of organizational outcome. *International Journal of Cross Cultural Management, 23*(2), 299-316. https://doi.org/10.1177/14705958231187473

McLean, G. N. (2002). Human Resource Development as a Factor in the Inevitable Move to Globalization. *Counterpoints, 180*, 191–211. http://www.jstor.org/stable/42976960

Morales-Huamán, H. I., Medina-Valderrama, C. J., Valencia-Arias, A., Vasquez-Coronado, M. H., Valencia, J., & Delgado-Caramutti, J. (2023) Organizational Culture and Teamwork: A Bibliometric Perspective on Public and Private Organizations. *Sustainability, 15*(18), 13966. https://doi.org/10.3390/su151813966

Morrison-Smith, S., & Ruiz, J. (2020). Challenges and barriers in virtual teams: a literature review. *SN Applied Sciences, 2*, 1096 (2020). https://doi.org/10.1007/s42452-020-2801-5

Muzam, J. (2023). The Challenges of Modern Economy on the Competencies of Knowledge Workers. *Journal of Knowledge Econony, 14*, 1635–1671. https://doi.org/10.1007/s13132-022-00979-y

O'Dwyer, M., Filieri, R. & O'Malley, L. (2023). Establishing successful university–industry collaborations: barriers and enablers deconstructed. *The Journal of Technology Transfer, 48*, 900–931 (2023). https://doi.org/10.1007/s10961-022-09932-2

Oyefusi, F. (2022). Team and Group Dynamics in Organizations: Effect on Productivity and Performance. *Journal of Human Resource and Sustainability Studies, 10*, 111-122. https://doi.org/10.4236/jhrss.2022.101008

Peterlin, J., Dimovski, V., Meško, M., & Roblek, V. (2021). Cultivating Management Education Based on the Awareness of Students' Multiple Intelligences. *SAGE Open, 11*(1). https://doi.org/10.1177/2158244020988277

Pronzato, R. (2023). Algorithms and hegemony in the workplace: Negotiating design and values in an Italian television platform. *Big Data & Society, 10*(1). https://doi.org/10.1177/20539517231182393

Pyliaeva, T., & Kochyna, V. (2020). Professional culture of the future manager: psychological and pedagogical aspect. *Adaptive Management: Theory and Practice. Series Pedagogics, 10*(19). https://doi.org/10.33296/2707-0255-10(19)-20

Strelcow, W. (2023). Exploring managerial conditions for the training of future international business specialists in the mode of mixed education. *Scientific Journal of Bielsko-Biala School of Finance and Law, 27*(4), 45–52. https://doi.org/10.19192/wsfip.sj4.2023.6

Stukalenko, N. M., Menlibekova, G. Z., Anarbek, N., & Abalakova, B. T. (2016). Managing the Process of Cognitive Activity Development in Students of Pedagogic Specialties in Higher Education. *International Review of Management and Marketing, 6*(3S), 246–251. Retrieved from https://www.econjournals.com/index.php/irmm/article/view/2220

Stupak, O. (2020). Educational technologies in training future managers. *Advanced Education, 7*(15), 97–104. https://doi.org/10.20535/2410-8286.200229

Szczepańska-Woszczyna, K. (2018). Strategy, corporate culture, structure and operational processes as the context for the innovativeness of an organization. *Foundations of Management, 10*(1), 33-44. https://doi.org/10.2478/fman-2018-0004

Vance, C. M. (1988). The Curriculum Imperative of Teaching Future Managers to Teach. *Journal of Management Development, 7*(1), 24-32. https://doi.org/10.1108/eb051663

Veselovská, L., & Hudáková, L. (2023). How the COVID-19 Pandemic Changed the Work of Managers: Case Study of Economic Managers. *Administrative Sciences, 13*(5), 130. https://doi.org/10.3390/admsci13050130

Wallo, A., Kock, H., Reineholm, C., & Ellström, P.-E. (2022). How do managers promote workplace learning? Learning-oriented leadership in daily work. *Journal of Workplace Learning, 34*(1), 58-73. https://doi.org/10.1108/JWL-11-2020-0176

Walsh, C., O'Reilly, P., Gleasure, R., McAvoy, J., & O'Leary, K. (2021). Understanding manager resistance to blockchain systems. *European Management Journal, 39*(3), 353-365. https://doi.org/10.1016/j.emj.2020.10.001

Weber, J. (1990). Measuring the Impact of Teaching Ethics to Future Managers: A Review, Assessment, and Recommendations. *Journal of Business Ethics, 9*(3), 183–190. http://www.jstor.org/stable/25072023

Wiesenfeld, B. M., Raghuram, S., & Garud, R. (1998). Communication Patterns as Determinants of Organizational Identification in a Virtual Organization. *Journal of Computer-Mediated Communication, 3*(1). https://doi.org/10.1111/j.1083-6101.1998.tb00081.x

Yatsura, M. (2023). The potential of innovative technologies in the formation of professional culture in future managers in the process of professional training in institutions of higher education. *Social Work and Education, 10*(3), 393–400. https://doi.org/10.25128/2520-6230.23.3.12

Yudina, O. (2018). Optimisation of the process of professional training the future managers for business communication in a foreign language. *Management and Entrepreneurship: Trends of Development, 2*(04), 8-14. https://doi.org/10.26661/2522-1566-2018-2/04-01.

Zarlenga, M. I., Ulldemolins, J. R., & Morató, A. R. (2016). Cultural clusters and social interaction dynamics: The case of Barcelona. *European Urban and Regional Studies, 23*(3), 422-440. https://doi.org/10.1177/0969776413514592