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Empowering Advancement of Wood and Furniture Sector Through Key Digital and Sustainability Competencies

Osnaživanje napretka drvoprerađivačkog sektora putem ključnih digitalnih kompetencija i kompetencija održivosti

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ABSTRACT • *In the context of the growing importance of sustainable development and digitalization, our study examines which are the most important digital and sustainability competencies for wood science and technology graduates. This enabled us to map the development of competencies at the different levels of education across the entire vertical and determine the scope and type of competencies that graduates should have. To achieve this, we conducted surveys among experts and companies within the wood sector. The results underline that expectations placed on the digital and sustainability competencies of graduates for the transition of the sector are very high, which highlights the importance of ensuring that graduates are well equipped to navigate the evolving technological and sustainable landscape, and the importance of designing educational programs to meet both immediate and future needs. In addition, we found differences in stakeholder expectations that indicate a disparate adoption of digital technologies by companies and prioritization of sustainability. We can conclude that lower levels of education should focus primarily on general digital and sustainability competencies to provide a foundation for the subsequent levels of education where students are expected to have more profession-specific competencies.*

KEYWORDS: *key competencies; DigComp, GreenComp; digitalization and sustainability; wood and furniture sector*

SAŽETAK • *U kontekstu sve veće važnosti održivog razvoja i digitalizacije, ovo je istraživanje posvećeno određivanju najvažnijih digitalnih kompetencija i kompetencija održivosti za diplomante studija drvne znanosti i tehnologije. To nam je omogućilo da mapiramo razvoj kompetencija na različitim razinama obrazovanja po cijeloj vertikali te da odredimo opseg i vrstu kompetencija koje diplomanti trebaju usvojiti. Kako bismo to postigli, proveli smo ankete među stručnjacima i tvrtkama iz drvoprerađivačkog sektora. Rezultati pokazuju da su očekivanja vezana za digitalne kompetencije i kompetencije održivosti diplomanata za tranziciju sektora vrlo visoka, što naglašava potrebu da diplomanti budu dobro podučeni za snalaženje u tehnološkome i održivom krajoliku koji se razvija, te ističe važnost osmišljavanja obrazovnog programa za zadovoljenje trenutačnih i budućih potreba. Osim*

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toga, otkrili smo razlike u očekivanjima sudionika anketa koje upućuju na različito prihvaćanje digitalnih tehnologija u tvrtkama i davanje prioriteta održivosti. Stoga možemo zaključiti da bi se niže razine obrazovanja trebale ponajprije usredotočiti na opće digitalne kompetencije i kompetencije održivosti kako bi se osigurao temelj za sljedeće razine obrazovanja, na kojima se od studenata očekuje da imaju više kompetencija specifičnih za struku.

KLJUČNE RIJEČI: *ključne kompetencije; DigComp; GreenComp; digitalizacija i održivost; drvoprerađivački sektor*

1 INTRODUCTION
1. UVOD

Climate change and environmental degradation present unprecedented challenges to our planet. In an alarming "code red" warning, the International Panel on Climate Change has highlighted the accelerating pace of global warming due to human activities, threatening our ecosystems (UN, 2021). In light of these, as well as other pertinent challenges, the European Commission (EC) has outlined key objectives for the period 2019-2024 (von der Leyen, 2019), with a clear emphasis on facilitating the transition to a sustainable, circular, and climate-neutral economy, which is expected to bring about profound social, economic, and employment changes. Simultaneously, the EU's updated Industrial Strategy aims to cement Europe's status as a leading global industrial powerhouse, particularly with digital and green practices, acknowledging the crucial role of digitalization in advancing a sustainable circular economy (EC, 2020). Today's businesses face a paradigm shift as societal challenges necessitate a balance between public welfare and private interests (Dyllick and Muff, 2016). This balance often requires navigating through stricter regulatory measures, investing in innovation, realigning strategies to prioritize environmental stewardship, and potentially undergoing restructuring to adhere to emerging policies. To address these evolving challenges, many industries are turning to renewable materials like wood, which offers numerous environmental advantages. Wood is recognized for its biodegradability, its ability to sequester carbon, its lower energy consumption during processing, its durability, its versatility, etc., making it an invaluable resource. In Slovenia, wood plays an important role as a strategic and industrial material (MGRT, 2021); it is natural, renewable and currently underutilized. That is why wood-based industry, which is one of the conventional bioeconomy industries, can help address many environmental challenges and is identified as a sector of strategic importance at both national and EU levels, contributing also to rural preservation and offering extensive employment opportunities. Although the wood industry utilizes wood - an inherently eco-friendly material - the ecological impact of its technological processes, the materials used alongside wood, the lifecycle of the products, and their disposal present significant environmental challenges (Oblak and Jošt, 2011) that require careful consideration and sustainable practices.

Looking towards the future of work, it is crucial to adapt our mindset and skillset to meet the changing job demands. (Murawski and Bick, 2017). The EU's Green Deal Industrial Plan underscores the need for new skills and competencies across all occupations, both new and existing, as part of the green transition. The European Skills Agenda echoes this sentiment, indicating that quality education can equip young people for success in a greener economy (EC and DG EMPL, 2023). Organizational success hinges on competencies aligned with strategic goals – without them, even the most well-crafted strategies may fail in execution (Cardy and Selvarajan, 2006). Workforce's limited expertise or insufficient skills is acutely felt in the wood industry, where the level of education of employees is often low, which can hinder adaptability and innovation (Kropivšek *et al.*, 2009). That is why education and training of employees as a part of organizational learning is the key to ensuring their competency for the job, which in turn leads to their increased motivation and greater efficiency and quality of work (Kropivšek and Zupančič, 2016), also in the face of sustainable and digital transformation. Fostering organizational learning processes also leads to the development of firm-specific competencies.

To effectively navigate the intricacies of today's globalized societies, individuals require a robust and lifelong educational foundation. Therefore, high-quality and comprehensive knowledge, which is defined through goals and knowledge standards by the curriculum at various levels of the educational system, will also have to remain closely connected with a complex and pervasive system of objectives, standards, and content in the future (Krek and Metljak, 2011). This alignment is critical as the European Green Deal sets a policy framework that has sparked educational reform, placing a pronounced emphasis on digitalization and environmental sustainability. The National Environment Protection Program with programs of measures until 2030 (ReNPVO20-30, 2020) reflects the impact of European policies on national education, advocating for education for sustainable development and the transition to a low-carbon society at all educational levels in Slovenia. The ReNPVO20-30, alongside other national and international directives, focused on a green and digital transition, also underpin initiatives aimed at the renewal of

professional standards (Institute for Vocational Education and Training, 2022a, 2022b). The latter serves as the foundation for the design and implementation of vocational education and training programs and post-secondary study programs. The Resolution on National program of higher education 2030 (ReZrIS30, 2022) is the key document that defines the strategy and guidelines of higher education in Slovenia and encourages the inclusion of higher education in priority strategic areas of social development. A similar situation can be observed within national strategies for the wood sector, as one of the main measures of the implementation document for the development of the wood industry in Slovenia until 2030, which pursues the goals and directions of the Slovenian Industrial Strategy 2021-2023, is equipping graduates and employees with modern knowledge and skills (MGRT, 2022).

Complementing these efforts, in 2022 the European Commission's Joint Research Centre (JRC) updated the Digital Competence Framework for Citizens (DigComp), which has been defining the digital competencies of individuals for more than a decade (EC *et al.*, 2022). In addition to the updated DigComp framework in 2022, a competence framework for sustainability (GreenComp) was developed, as part of the European Green Deal (Bianchi *et al.*, 2022), which defines a set of sustainable competencies for their inclusion in educational programs and training in order for learners to develop competencies that encourage thinking, planning and acting with empathy, responsibility and concern for our planet and public health. These frameworks serve as references for various applications, including competency assessments and curriculum design, synergizing with competency-based education aims.

The concept of competencies has long been underway, its roots tracing back to when David McClelland, a notable psychology professor, introduced the notion of 'competency' in 1953, acknowledging a distinct human attribute (Chouhan and Srivastava, 2014). This concept has since evolved, accruing as many interpretations as there are scholars pondering its nuances (Muršak, 2008a; Wong, 2020). According to the European Centre for the Development of Vocational Training (CEDEFOP, 2011) competency is the ability to apply learning outcomes effectively across various settings, including education, work, and personal or professional development. It encompasses not just cognitive aspects like theory and knowledge but also practical skills, social or organizational abilities, and ethical values. Professional competencies can be divided into generic competencies, common across similar professions, and profession-specific competencies, which are characteristic of individual professions or fields of work. In the European context, the push to embed competencies into education gained significant traction in the 1990s. Initially, it permeated vocational and professional training, further crystallizing in higher education with the advent of the Bologna Process (Makovec *et al.*, 2013).

This study was undertaken to identify the key competencies essential for graduates from various educational levels within formal wood science and technology programs, aimed at bolstering a smooth digital and sustainable transition of the Slovenian wood and furniture sector. Recognizing that the labor market's expectations regarding graduate qualifications (Petanjek, 2021; Sabina, 2012) and the alignment between the labor market's needs and the educational system's output stands as a critical indicator of the system's quality (Muršak, 2008b), our research focused to encompass the needs of the industry.

2 MATERIALS AND METHODS
2. MATERIJALI I METODE

Based on the European framework for digital competencies (DigComp) (EC *et al*., 2022) and the framework for sustainability competencies (GreenComp) (Bianchi *et al.*, 2022), as well as considering the implementation document for the development of the Slovenian wood industry until 2030 (MGRT, 2022), we have developed a set of competencies that include both digitalization and sustainability. We have used DigComp and GreenComp for generic digital and sustainability competencies, while the formulation of profession-specific competencies was guided by the experts' suggestions that closely followed the key areas mentioned in the document for the development of the wood industry. To identify which competencies are crucial for the digital and sustainable transformation of the wood and furniture industry in Slovenia, we conducted surveys during July and August 2023, among experts and companies in the wood sector classified under NACE codes C16 (wood processing – except furniture) and C31 (manufacture of furniture).

The competencies were assessed by directors/human resources managers (n=16) in companies, and by experts (n=12), who were individuals from all levels of wood science and technology educational institutions, representatives of the wood and furniture industry and expert consultants in the wood sector (from the Institute of the Republic of Slovenia for Vocational Education and Training). This careful selection of stakeholders showcases a diversity that provides a comprehensive mix of practical in-field experiences and broader perspectives, covering all aspects of the sector.

The competencies were assessed based on "8" proficiency levels (Table 1) defined within DigComp 2.1 (EC *et al.*, 2017), where we have omitted the cognitive domain as it was not relevant for our study. In addition

Table 1 Rating scale for the expected proficiency level of competencies (EC *et al*., 2017)
Tablica 1. Ljestvica ocjenjivanja očekivane razine posjedovanja kompetencija (EC *et al*., 2017.)

Competencies levels *Razine kompetencija*	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Complexity of tasks ***s****ložen**o**st zadataka*	No task *nema zadatka*	Simple tasks *jednostavni zadatci*	Simple tasks *jednostavni zadatci*	Well-defined and routine tasks, and straightforward problems *dobro definirani i rutinski zadatci, a jednostavni problemi*	Tasks, and well-defined and non-routine problems *zadatci te dobro definirani i nerutinski problemi*	Different tasks and problems *razni zadatci i problemi*	Guiding others *vođenje drugih*	Resolve complex problems with limited solutions *rješavanje složenih problema ograničenim rješenjima*	Resolve complex problems with many interacting factors *rješavanje složenih problema s mnogo međusobno povezanih čimbenika*
Autonomy ***a****utonomija*	/	With guidance *uz vođenje*	Autonomy and with guidance where needed *autonomija, i uz vođenje gdje je potrebno*	On my own *na svom području*	Independent and according to my needs *samostalan i prema mojim potrebama*	Most appropriate tasks *najprikladniji zadatci*	Able to adapt to others in a complex context *sposobnost prilagođivanja drugima u složenom kontekstu*	Integrate to contribute to the professional practice and to guide others *integrirati se kako biste pridonijeli profesionalnoj praksi i vodili druge*	Propose new ideas and processes to the field *predložiti nove ideje i procese na terenu*

to the 8 levels, respondents could also choose "0" if they thought that the competencies were not needed for graduates of a certain level of education, or they could withhold an answer if they felt unable to assess.

They assessed the level of individual competencies that vocational and higher education graduates with different qualifications need for a smoother digital and sustainable transition of the wood sector. The qualifications were part of the entire vertical of formal education in wood science and technology in Slovenia, with the exception of short vocational education (EQF 3) and doctoral studies (EQF 8): 3 years of vocational education for "Carpenters" (EQF 4), 4 years of technical vocational education for "Technicians" (EQF 4), 2 years of higher vocational education for "Engineers" (EQF 5), 3 years of vocational/academic bachelor's degree program for "Bachelors of Wood Engineering" (EQF 6) and 2 years of master's degree program for "Masters of Wood Engineering" (EQF 7). A "box and whiskers plot", a graphical method for visualizing the distribution of data, was used to present the results. It consists of a rectangular box representing the interquartile range and the median. The whiskers, which represent the range of data without outliers or extreme values, extend from the box. Outliers are shown as individual data points.

3 RESULTS AND DISCUSSION
3. REZULTATI I RASPRAVA

Figures 1, 2 and 3 show a series of box-and-whisker plots, each illustrating the expected proficiency levels for different digital and sustainability competencies for wood science and technology graduates.

The results show that the higher the level of education, the higher the expected level of competencies, which is reflected in the increasingly higher medians that extend from lower to higher education. One notable observation is the wider variability of data for carpenters and technicians compared to their more highly educated counterparts, highlighting a considerable divergence in respondents' requirements regarding the importance of specific digital and sustainability competencies at these foundational levels. At the higher levels of education, the variability is present but less pronounced, suggesting greater consistency of respondents for the competencies required. Nonetheless, the variability observed at all levels could be a sign that the stakeholder's requirements are not homogenous, possibly due to a spectrum of digital adoption of wood and furniture companies (Kropivšek and Grošelj, 2020) and different prioritization of sustainable development.

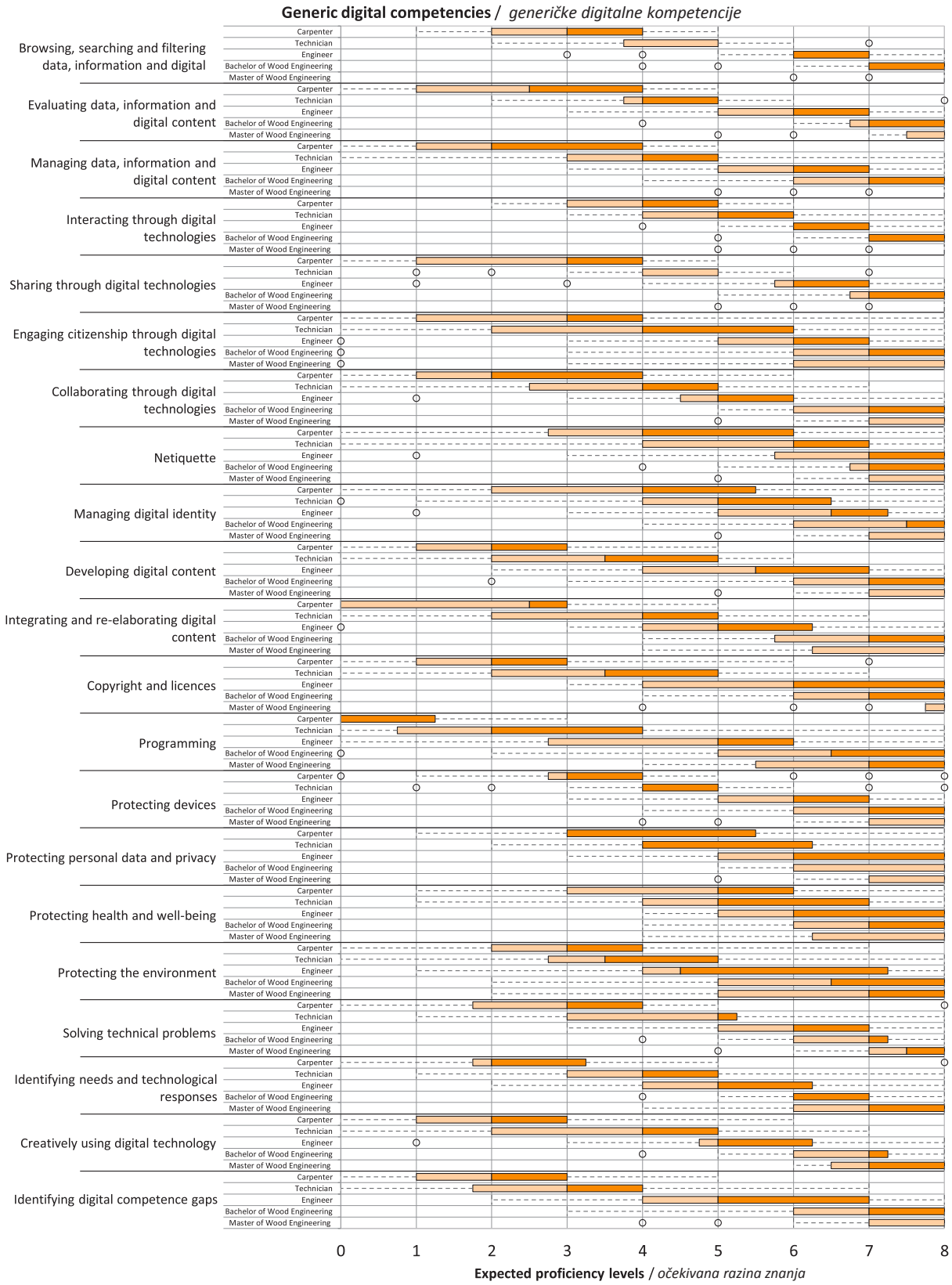

Figure 1 Box-and-whisker distribution of generic digital competencies for wood science and technology graduates in Slovenia: Carpenters (EQF 4), Technicians (EQF 4), Engineers (EQF 5), Bachelors of Wood Engineering (EQF 6), and Masters of Wood Engineering (EQF 7). Legend in Table 1

Slika 1. Distribucija generičkih digitalnih kompetencija za diplomante u području drvne znanosti i tehnologije u Sloveniji: stolari (EQF 4), tehničari (EQF 4), inženjeri (EQF 5), prvostupnici inženjeri drvne tehnologije (EQF 6) i magistri inženjeri drvne tehnologije (EQF 7); legenda u tablici 1.

In the following analysis of the results, the specific educational qualifications are discussed in detail, with the focus on the median values. This reflects the central point of the data and provides a revealing balance between the minimum and maximum values without outliers.

When analyzing the average of the generic digital competencies, shown by median line in Figure 1, it becomes clear that "protecting health and well-being" is the most important competency for carpenters, with a targeted proficiency of level 5. Not far behind, with a proficiency expectation of level 4, are competencies such as "interacting through digital technologies", "netiquette" and "managing digital identity". Half of the respondents believe that graduates at this level of education should achieve proficiency levels 2 to 3 in all other general digital competencies. The notable exception is "programming", which is considered non-essential for carpenters by 75 % of the surveyed experts and companies in the wood and furniture sector in Slovenia.

For wood technicians, "netiquette" is the highest rated competency, with an expected proficiency of level 6, surpassing that of carpenters by two levels. Competencies rated relatively high, at level 5, include "interacting through digital technologies", "managing digital identity" and "solving technical problems". Less critical competencies for technicians are in the level 3 to 4 range, with "programming' again being the least important.

Regarding wood engineers, half of the experts and companies surveyed agree that these professionals should have most general digital competencies at a level above 6. "Netiquette" is again at the top of the list, requiring a proficiency level of 7. Technicians completing their engineering degree face the challenge of increasing their "programming" skills by three levels in just two years, representing the biggest jump in proficiency expectations for this level of education.

In contrast to their peers with less advanced education, bachelor's graduates in wood engineering are expected to achieve the highest level of general digital competencies in "protection of personal data and privacy". With a few exceptions, namely "programming," "protecting the environment" and "identifying needs and technological responses", they should master all competencies at level 7 or higher. Technicians studying engineering at bachelor level must increase their competencies in the areas of "programming", "protecting personal data and privacy" and "identifying digital competence gaps" by up to four levels during their three-year academic journey, which creates an enormous gap.

Master's graduates in wood engineering are expected to reach level 8 in most general digital competencies, which is the highest point on the proficiency scale used in this study. At this proficiency level, graduates should demonstrate the ability to deal with complex, multi-layered problems. For the competencies "browsing, searching, and filtering data, information, and digital content", "managing data, information, and digital content", "interacting through digital technologies", and "sharing through digital technologies" all respondents, apart from a few outliers, agree that proficiency level 8 should be achieved. In contrast to bachelor's level, where a significant improvement in general digital competencies is required, progression to master's level requires only a modest increase in competency levels, no more than one level.

When analyzing the median values of the general sustainability competencies shown by box-and-whisker plots in Figure 2, it becomes clear that "supporting fairness", "promoting nature" and "individual initiative" are identified as the most important competencies for carpenters, from this set of competencies. These are expected to be at proficiency level 4 or more, by 75 % of respondents. The secondary competencies in this area are generally between proficiency levels 2 and 3, with "political agency" being seen as the least important competency.

Wood technicians are expected to demonstrate a relatively high level of proficiency, level 5 or higher, in key competencies such as "supporting fairness", "promoting nature", "collective action" and "individual initiative". The expectations for proficiency in other general sustainability competencies for technicians are moderate and target levels 2 to 3, with "political agency" again being classified as the least relevant competency.

For wood engineers, in addition to the competencies required by carpenters and technicians, a heightened emphasis is placed on "critical thinking", where they must improve their proficiency by more than two levels within a two-year study program. The minimum requirements for graduates at this level relate to "collective action" and "political agency".

It is expected that bachelor's graduates specializing in wood engineering achieve the highest level of proficiency in general sustainability competencies such as "promoting nature", "critical thinking", "collective action", "individual initiative" and "problem framing". Since "problem framing" appears to be less important at lower levels of education, technicians pursuing a bachelor's degree need to improve their proficiency by four levels by the time they graduate, which represents a considerable leap. A similar increase is expected for "political agency", as a proficiency level of 6 is required at this level.

Finally, graduates with a master's degree are expected to achieve the highest proficiency level 8 in some of the general sustainability competencies, which includes "critical thinking", "problem framing", "col-

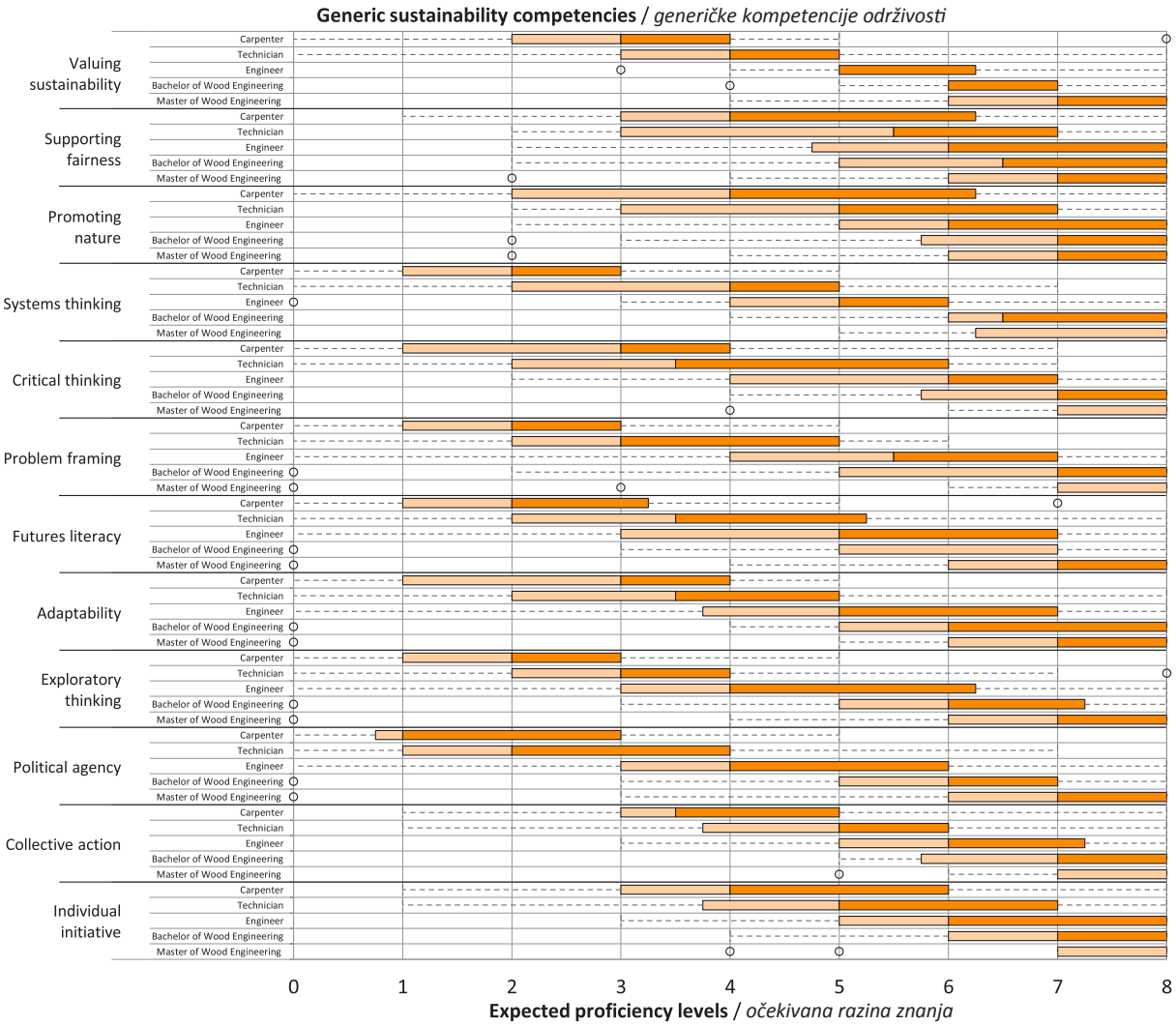

Figure 2 Box-and-whisker distribution of generic sustainability competencies for wood science and technology graduates in Slovenia: Carpenters (EQF 4), Technicians (EQF 4), Engineers (EQF 5), Bachelors of Wood Engineering (EQF 6), and Masters of Wood Engineering (EQF 7). Legend in Table 1

Slika 2. Distribucija generičkih kompetencija održivosti za diplomante u području drvne znanosti i tehnologije u Sloveniji: stolari (EQF 4), tehničari (EQF 4), inženjeri (EQF 5), prvostupnici inženjeri drvne tehnologije (EQF 6) i magistri inženjeri drvne tehnologije (EQF 7); legenda u tablici 1.

lective action", "individual initiative" and "systems thinking".

If we look at Figure 3, which represents the profession-specific digital and sustainability competencies, we can see that the highest proficiency required for carpenters in our list is for "wooden constructions", at proficiency level 4. The proficiency levels of the other competencies from this group, based on the opinions of most respondents, are between 1 and 3, apart from "digitalization of consumer behaviour monitoring", which is the least required competency for carpenters, as 75 % of experts and companies believe that they do not need it.

For wood technicians, in addition to "wooden constructions", "renewable resources and sustainable energy" is the highest rated competency, with a level 5. A competency that also stands out at this level is "digital technology and operations", as technicians must acquire 3 levels higher proficiency compared to carpenters, namely level 4. Graduates studying to become carpenters, who decide to continue their studies for technicians, must therefore acquire 3 additional proficiency levels in "digital technology and operations" in two years. The proficiency of the other competencies lies between level 2 and 4.

The requirements for wood engineers seem to be highest for "wooden constructions", at proficiency level of 7, closely followed by "computer-aided design". Most respondents believe that these graduates should have the lowest proficiency levels of 4 from the areas of "human-robot interactions" "industry symbiosis", "digitalization of consumer behaviour monitoring" and "pyramid of social responsibility". The highest jump in proficiency from technician to engineer seems to be in "energy-efficient and smart houses" as engineering graduates need to acquire 4 levels of proficiency in 2 years.

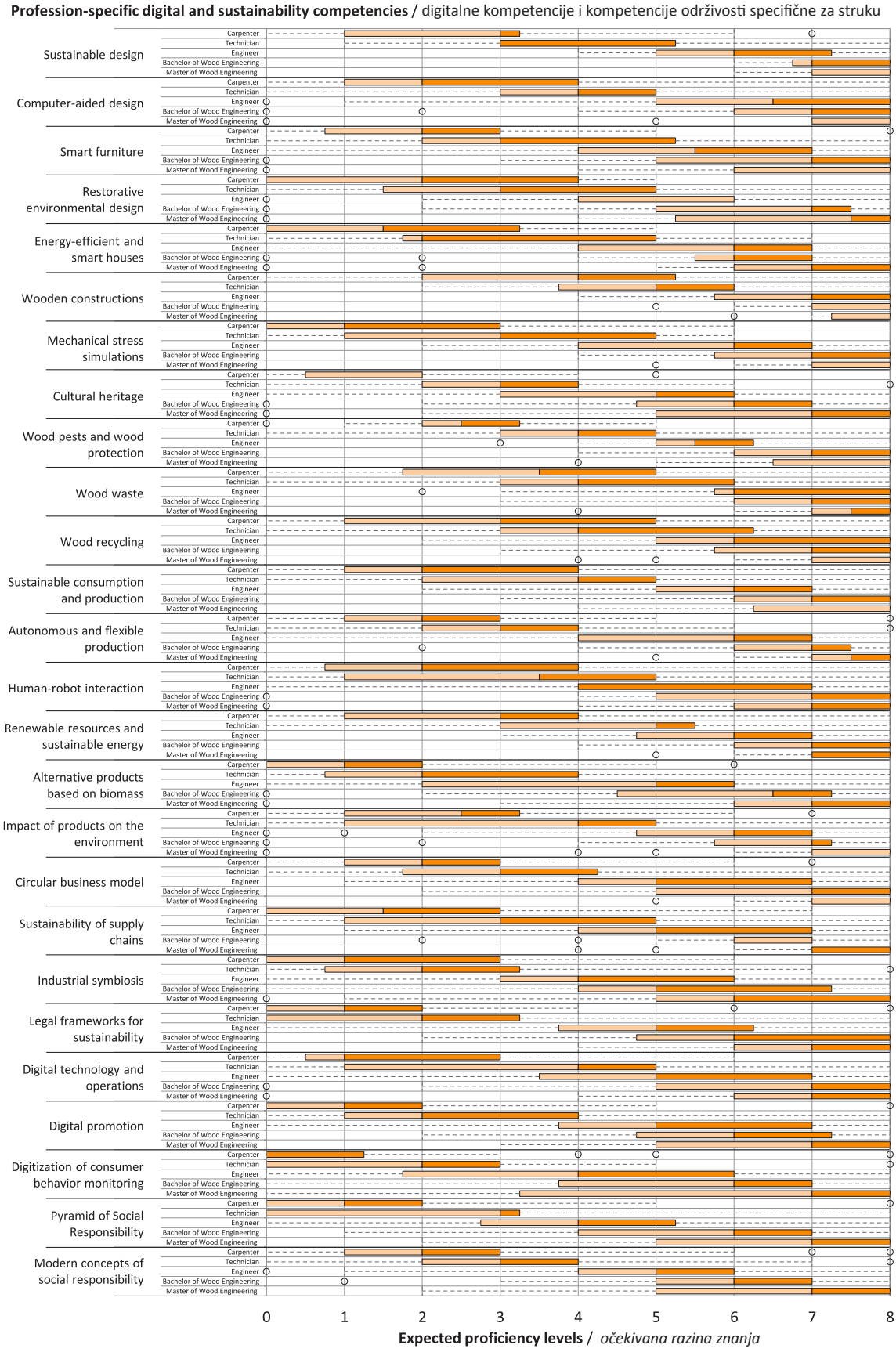

Figure 3 Box-and-whisker distribution of profession-specific digital and sustainability competencies for wood science and technology graduates in Slovenia: Carpenters (EQF 4), Technicians (EQF 4), Engineers (EQF 5), Bachelors of Wood Engineering (EQF 6), and Masters of Wood Engineering (EQF 7). Legend in Table 1

Slika 3. Distribucija generičkih digitalnih kompetencija i kompetencija održivosti specifičnih za struku za diplomante u području drvne znanosti i tehnologije u Sloveniji: stolari (EQF 4), tehničari (EQF 4), inženjeri (EQF 5), prvostupnici inženjeri drvne tehnologije (EQF 6) i magistri inženjeri drvne tehnologije (EQF 7); legenda u tablici 1.

As can also be seen in Figure 3, bachelor's graduates of the wood engineering are expected to achieve the highest level of proficiency in the field of "wooden constructions", for which they must achieve the highest level (8) on the scale used in our research. At this level, graduates must improve their competencies by 4 levels within 3 years, which also accounts for almost half of all competencies in this group of competencies. The least important seems to be "industrial symbiosis", for which they still need to improve their competencies by 3 levels from technician to bachelor graduate.

Graduates with a master's degree are expected to achieve the highest proficiency level, which is 8, in 10 out of the 26 profession-specific competencies from our list. For some competencies such as "wooden constructions", "human-robot interaction", "renewable resources and sustainable energy", "sustainability of supply chains" and "digital technology and operations", the required levels are the same as for engineers with a bachelor's degree. The least required competency appears to be "industrial symbiosis", at level 6.

It should be noted that in this research we have focused exclusively on digital and sustainability competencies, and it is possible that not all competencies have been considered. In addition, it is important to recognize that the development of digital and sustainability competences can also be indirectly supported by other knowledge, skills and attitudes that students acquire throughout their education, which at first glance may not be directly related to digitalization and sustainability, but they facilitate the acquisition of logical thinking, literacy, critical analysis, teamwork, adaptability, etc. Other competencies were also mentioned in some studies, but in a general context and not in relation to a specific level of education or a specific sector. Suciu *et al*. (2023), for example, highlighted the key competencies for a sustainable, resilient, and inclusive Industry 5.0, which are: "abilities of using, monitoring and controlling technological devices", "analytical and innovative thinking", "lifelong learning", "development of technological and programming solutions", "creativity, originality and initiative", "emotional intelligence", "leadership", "ability to solve complex problems". In an article highlighting the importance of soft skills in the labour market in the context of Industry 5.0 (Poláková *et al*., 2023), it was stated that even in technology-oriented fields such as "information technologies and engineering" or "production" and "logistics", employers place great emphasis on soft skills such as "critical and analytical thinking", "problem solving", "communication skills" and "creativity with flexibility" and that applicants are expected to have a good balance between soft skills and digital skills.

Nevertheless, the expectations placed on the digital and sustainability competencies of graduates of wood science and technology degree programs are growing as education increases. Lower levels of education should emphasize on general (digital and sustainability) competencies, while higher levels require a balanced mix of general and profession-specific competencies. This aligns with the diction of the White Paper on Education in the Republic of Slovenia, where it is noted that upper secondary education places a greater emphasis on general competencies, which ensures a foundation for further integration into education and enables more effective functioning in knowledge societies (Krek and Metljak, 2011).

Overall, for carpenters, "protecting health and well-being" is most important, while "programming" and "digitization of consumer behaviour monitoring" are considered least important. For technicians, "netiquette" is the most important competency, while "programming", "political agency" and 6 competencies from the list of profession-specific competencies are less important. Engineers must achieve a high level in the "netiquette" and "wooden constructions", while "exploratory thinking", "political agency" and some profession-specific competencies are least emphasized.

Bachelor graduates are expected to reach the highest level in "protecting personal data and privacy" and "wooden constructions", while "industrial symbiosis" is less prioritized. At this level of education, graduates must make the greatest leap in proficiency in many competencies. Master's engineers are expected to achieve the highest level in most competencies, while "industrial symbiosis" is at the bottom of the importance list.

4 CONCLUSIONS
4. ZAKLJUČAK

The principle of sustainable development, which focuses on people, their mutual relationships, and their relationship with the planet, must come to the fore, as the consequences of global warming are no longer just projections, but actual realities we are facing today. Against this backdrop, the potential of digitalization should also be harnessed and strategically aligned with these goals. By equipping individuals with key competencies and cultivating new professions, we have the opportunity to make a far-reaching and lasting impact (Meyer, 1977).

With this research, we have gained an insight into the scope and type of digital and sustainability competencies that are essential for graduates at different educational levels in the field of wood science and technology. It shows a clear progression of expected competencies depending on the level of education;

the further we move up the educational vertical, the more profession-specific competencies come to the fore. Carpenters are mostly expected to perform routine tasks and solve independently basic problems. The bar is much higher for university graduates, as they are expected to reach highest level of digital and sustainability competencies and tackle complex, multi-layered problems. The study also shows a clear gap in proficiency expectations between technicians and bachelor's graduates, with the latter facing the daunting task of bridging this gap within three years, which is a challenge, as the scaling of proficiency levels is not a simple linear progression, but rather a hierarchical model, following Bloom's Taxonomy (Table 1). In addition, this study found considerable variation in responses for all levels of education, suggesting that stakeholder's requirements are not homogenous, possibly due to a spectrum of digital adoption of industry and different prioritization of sustainable development.

It should be noted that we have focused exclusively on digital and sustainability competences and that we may not have included all of them, but the importance that companies and experts in the wood sector attach to digital and sustainability expertise underlines their central role in enabling continuous progress in this area. Our next goal is to assess the current competence level of graduates to determine whether they meet the needs of the sector. In addition, it is important for future research to investigate the adoption of digitalization and sustainability practices in the wood and furniture sector. A limitation of this research is that it is difficult to determine whether respondents' opinions are genuinely their own or whether they are simply behaving like 'mockingbirds', merely echoing the prevailing sentiments in this extensive discourse, currently dominated by the principles of digitalization and sustainability. Nonetheless, as Brečko (2001) points out, the competency needs of the sector should be continuously monitored to ensure the alignment of educational programs and thus equip students with the necessary competencies to cope with the future developments and challenges.

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