

# Investigating Ethical Issues for Workplace Lifelong Learning Digital Technologies: A Survey Study

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**Abstract:** Lifelong learning in the workplace has expanded rapidly, accelerated by the COVID-19 pandemic and the integration of Artificial Intelligence (AI). While many studies explore the digital adoption using within the post-COVID periods, limited attention has been given to the ethical implications of these technologies used at the workplaces for lifelong learning, particularly with the increasing integration of Artificial Intelligence (AI) usage. This paper investigates ethical issues surrounding digital technologies for workplace lifelong learning, focusing on Estonia, a digitally advanced society. Holistically, the research sought answers for questions bordering on i) main motivations underpinning the quest to pursue lifelong learning, ii) digital tools being used for lifelong learning at the workplace, and iii) ethical awareness, concerns or violations perceived or encountered in the use of digital technologies for lifelong learning. The study adopted a survey as the research design, using both quantitative and qualitative approaches. A total of 70 participants were engaged in the study, and they were recruited through purposive and snowball sampling techniques. The qualitative and quantitative data were collected using thematic and descriptive statistical approaches, respectively. The study established that i) upskilling, staying active, health, productivity and reskilling were the drivers for lifelong learning; ii) Zoom, Microsoft Teams and Google Meet were frequently used for virtual meetings; for MOOC platforms for lifelong learning, EdX, Coursera, Udacity and Udemy were technologies used; and for social media, YouTube, Facebook and WhatsApp are the topmost three digital technologies used. The study further established Ethical consciousness and accountability gaps in lifelong learning technologies are explained by three broad themes, namely i) awareness vs. perceived ethical violations, ii) caring about ethics vs. reported violations and iii) ethical violations vs. systemic issues. Based on the outcome of the study, the following recommendations were made: i) Increased awareness and training on digital ethics for employees and employers in organisations, and ii) structures to monitor ethical breaches and accountability are needed at the work settings.

**Keywords:** Lifelong learning, Workplace Learning, Ethics, Digital Technologies

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## 1. Introduction

The adoption of digital technologies for workplace learning has grown rapidly, driven by workforce demands and market dynamics. Platforms such as GetSetUp, Chinese EdTech solutions, and Lido Learning exemplify this trend. The COVID-19 pandemic accelerated adoption, creating new opportunities and challenges. National strategies in Estonia, Germany, and the US emphasise digital tools to support evolving job markets, where upskilling and reskilling are essential. Immersive and experiential learning technologies are increasingly seen as viable complements to traditional education. However, rapid digitalisation raises ethical questions. Fairness, inclusiveness, transparency, and accountability are critical to avoiding bias, misuse, and privacy breaches (Gaskins, 2023). AI-powered tools, while promising, require scrutiny to ensure ethical design and equitable service delivery. This study investigates user perceptions of these ethical issues, focusing on Estonian professionals across industries. To this end, this paper reports on the ethical issues surrounding the use of digital technologies for workplace lifelong learning in Estonia. Holistically, the research sought answers for questions bordering on i) main motivations underpinning the quest to pursue lifelong learning, ii) digital tools being used for lifelong learning at the workplace, and iii) ethical awareness, concerns or violations perceived or encountered in the use of digital technologies for lifelong learning.

## 2. Literature Review

### 2.1 Lifelong Learning in Workplaces

Workplace learning is integral to lifelong education, encompassing both formal and informal contexts (Jacobs & Park, 2009). Digital technologies have shifted learning from physical to virtual spaces (Karhapää et al., 2025), supporting constant skill adaptation in response to technological and market changes (Pammer-Schindler & Rosé, 2022). Motivations extend beyond career advancement. Older adults engage in lifelong learning to stay active, healthy, and socially connected (Merriam & Kee, 2014; Tam & Gray, 2016) or to share knowledge with

younger generations (Charungkaittikul et al., 2022). Self-directed learning for professional competence is also common (Curran et al., 2019).

## **2.2 Ethics of Digital Technologies**

The recent advances in digital technologies, especially those used in lifelong learning and education, have necessitated the need to consider the ethical aspects of these technologies increasingly. ChatGPT is one of the digital technologies powered by artificial intelligence (AI) innovations that have entered mainstream education and learning. However, recent studies have raised concerns about these technologies. In a study by (Hsiao and Tang, 2024), the authors cautioned against not weighing technological advantages with ethical factors and personal motivations for using Generative AI tools. Similarly, (Rawas, 2024) reiterates that it is essential to proceed with care and have a thorough grasp of both the potential benefits and the obstacles present in ChatGPT implementation.

Ethical Considerations in the face of human and technology interactions have become a topical subject. Answers are being sought for human values to be sustained. For instance, (Van de Poel, 2020) advocates a proactive approach to designing AI technologies. This approach should support ethical lifelong practices and ensure AI-powered systems enhance rather than undermine human values. Additionally, (Zirar, Ali, Islam, 2023) highlight the importance of developing ethical guidelines and policies to address the balance between AI (technology) integration and preserving human work in lifelong learning environments.

Researchers' views of ethical concerns about AI-enabled systems are quite diverse. In their study, (Pammer-Schindler and Rosé, 2022) explored how AI-driven scaffolding and situated learning in the workplace can tackle ethical issues related to data in informal professional learning.

They identified three main themes:

1. Relevant data for learning analytics extends beyond just the learner to include colleagues, clients, and contextual factors, often involving private or proprietary information.
2. Manual tracking allows learners significant control over their data.
3. Informal professional learning often lacks a shared goal, which is ethically concerning since much relevant data is not collected for learning purposes.

These themes present challenges for AI in education (AIED) research that must be overcome to develop effective technologies for informal and situated learning contexts.

Through a Delphi study, (Mouta, Torrecilla-Sánchez, Pinto-Llorente, 2024), to create a toolkit for educators to facilitate a smooth and ethical integration of artificial intelligence into education while prioritising educational development, found that examining the ethics of AI in education also prompts a broader reflection on educational ethics overall. The scenarios illustrate the necessity of balancing the advantages and disadvantages of AI systems, particularly regarding educational objectives and the dynamics among various educational participants.

Privacy is one of the most important ethical concerns for workplace digital technologies. Studies such as (Chowdhary et al, 2022) show how averse, workers can be to well-being sensing technologies regarding privacy issues.

## **3. Method**

### **3.1 Participants**

The study adopted a survey research design, and both quantitative and qualitative approaches were used. The qualitative and quantitative data were collected using thematic and descriptive statistical approaches. The study is within the Republic of Estonia. In all, 70 participants participated in the study. Purposive and snowball sampling techniques were used in recruiting the subjects of the study. All the questions were presented in both English and Estonian languages. This encouraged the participation of both indigenous and international employees in the study. Data analysis was done in collaboration with a native Estonian speaker.

### 3.2 Materials and Procedure

A bilingual (English/Estonian) Google Form included closed questions used in eliciting qualitative data, four open-ended questions used in gathering the qualitative data (see Table 1), and demographic questions.

**Table 1: Contents of data collection material**

Research Approach	Focus or Theme(s) for Data/Information Elicitation
Quantitative	Motivation/Reason for Engaging in Lifelong Learning
	Educational technologies/digital tools used for lifelong learning
	Ethical concerns associated with the use of the educational technologies/digital tools
Qualitative	Awareness about ethical issues inherent in the use of technologies for lifelong learning
	Extent of care about whether technologies should or should not be ethically compliant
	Instances of ethical violation encounters or unethical observation during technology usage for lifelong learning
	Description of a specific case of ethical violation

During the data collection process, no identifiable personal data were collected. The survey link was disseminated online and through professional networks over three weeks, as well as using snowball sampling to reach prospective respondents.

### 3.3 Data Analysis

Quantitative data were analysed using descriptive statistics. Open-ended responses underwent thematic analysis (Braun & Clarke, 2012), following iterative coding and validation among co-authors. The data analysis was done in collaboration with the native Estonian language speaker; this ensured that the original meaning of the inputs from the native Estonian language speakers was not diluted.

## 4. Results

### 4.1 Demographic Data

Most respondents were young professionals (67% aged 26–40), highly educated (93% tertiary degrees), and working in Estonia’s technology (31%) or finance (29%) sectors. This reflects the country’s digital economy and the researchers’ networks. These results could be influenced by the lists and groups chosen to spread the questionnaire. As the authors are more in the technology discipline, the network reached might be skewed.

### 4.2 Quantitative Data

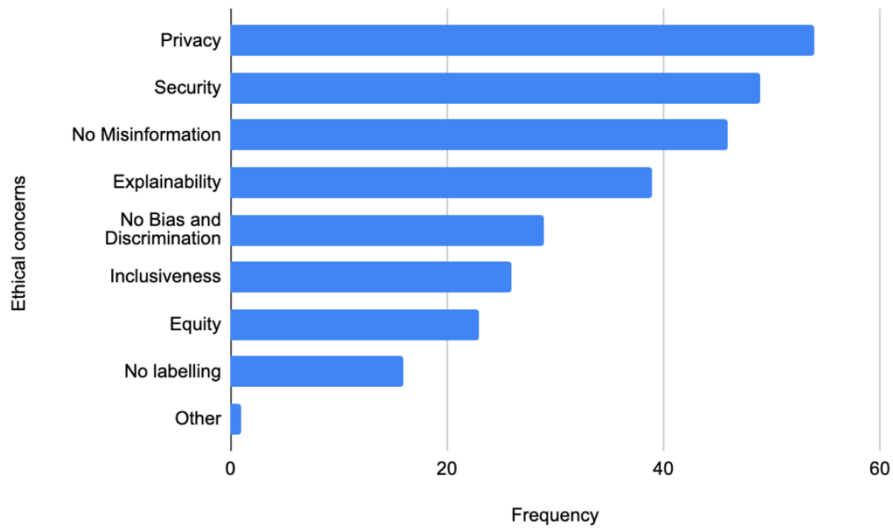
#### Motivation/Reason for Engaging in Lifelong Learning

The results reveal that the vast majority of the respondents are motivated by the need for upskilling (77%), followed by the need to stay active, healthy, and productive (49%). This is especially true for sustainable aging societies, where older adults, for example, can earn income by reskilling (29%) and staying socially responsible (23%), such as retirees providing training for younger people.

#### 4.2.1 Educational Technologies/Digital Tools Used for Lifelong Learning.

The results show that Virtual learning/meeting environments such as Zoom, Microsoft Team, and Google Meet (70%), MOOC platforms such as EdX, Coursera, Udacity, and Udemy (63%), and Social-media such as YouTube, Facebook, and WhatsApp (63%), webinars (46%), and podcasts (46%) are the three most popular lifelong learning digital technologies used by the respondents.

The most pressing ethical issues were privacy (77%), security (70%), and misinformation (66%) (Figure 1). Other concerns included bias, inclusiveness, and transparency.



Note: Other - Avoiding AI-generated content consumption

**Figure 1: Ethical concerns.**

Awareness about ethical issues inherent in the use of technologies for lifelong learning

#### 4.2.2 Qualitative Data

Ethical awareness varied: 22 respondents reported full awareness, while most others were partially aware, uncertain, indifferent, or unaware. Many equated awareness with data privacy policies but admitted limited technical understanding. The awareness levels are thus defined with a five-point scale, namely

1. **Not Aware** - means respondents who clearly stated they were unaware of ethical considerations.
2. **Partial Awareness** - means respondents who indicated they have some awareness level but lacked in-depth knowledge.
3. **Full Awareness** - means respondents who claim to be well-informed about ethical considerations and are concerned.
4. **Indifference** - means respondents who did not consider ethical issues relevant to their learning experience.
5. **Uncertain** - means respondents who were unsure of ethical considerations.

The results suggest that most respondents answering the question on awareness were unaware or partially aware. Further insights about the subject under review are presented in Tables 2a and 2b to showcase additional comments from the respondents regarding their positions about ethical awareness.

**Table 2a: Full awareness respondents**

Full Awareness Respondents (FAR)	Responses to Ethical Awareness Question(s)
FAR 1	"I am aware that many technologies for lifelong learning incorporate ethical considerations, though the extent varies by platform. For example, MOOC platforms like Coursera and EdX focus on inclusivity and privacy, ensuring equal access to learning materials while protecting user data. Maxybyte, which offers learning via Zoom, also emphasises inclusiveness and privacy. However, not all platforms are transparent about their bias prevention strategies or how they handle misinformation. I prioritize technologies that address concerns like data privacy, inclusiveness, and the absence of discrimination or bias in their educational content."
FAR 2	"Yes, usually they use cookies to get the consent of the visitors that come to their sites with options to select OK, reject all and select preferences.'" and 'select preferences'."

Full Awareness Respondents (FAR)	Responses to Ethical Awareness Question(s)
FAR 3	"Yes, I know that some technologies used for lifelong learning consider ethics, like protecting user data and making sure everyone has equal access. However, I don't always look into the specific details of these policies. I am aware that platforms have rules about data use, but I usually don't read them closely."

**Table 2b: Partial awareness respondents**

Partial Awareness Respondents (PAR)	Responses to Ethical Awareness Question(s)
PAR 1	"Partially yes, but not technically competent enough [to] comprehend how these are addressed."
PAR 2	"I will try to make sure that [the] platform that I use [is] led in an ethical manner." Another respondent said, "I am aware to some extent based on the information available to me." On being indifferent, one respondent said, "I don't pay attention to the ethical considerations"
PAR 3	"I'm not aware since I do not know the technical part of those technologies. I cannot check the declarations of technology owners."

The analysis suggests that ethical considerations in lifelong learning technologies are not uniformly recognised, emphasising the need for increased awareness and education on this critical topic.

Care about ethical issues, fifty-three responses were received regarding the question, "How much do respondents care about whether lifelong learning technologies are ethical?" The majority (36 respondents) of the 53 respondents who answered the question indicated that they are concerned about the ethical use of digital technologies for lifelong learning.

Twelve had little concerns, two were unconcerned, and three were indifferent. We further coded the respondents' responses to determine what they care about, and the results show broad themes: Data privacy, well-being and security concerns (20), and Algorithmic bias and misinformation (10). Eight responses also reveal that the individual is responsible for ensuring the ethical use of digital technologies, and one indicated addictive or influential content. However, 14 respondents indicated nothing, regardless of their concern level.

Concerning data privacy, well-being, and security, the positions of selected respondents are as presented in Table 3 as follows:

**Table 3: Response to concerns about data privacy, well-being, and security question(s)**

Respondent (R)	Response to Concerns About Data Privacy, Well-being, and Security,
R1	"I care a great deal about ethics in lifelong learning technologies." Another indicated, "I care so much. As I put my data to sign up and use it almost regularly, I [am] most concerned [about] what my data is used for and if it is ethical or if they have some ethical law protecting [us], the consumer."
R2	"I am genuinely concerned about the ethics of lifelong learning technologies because they play a crucial role in shaping trust, fairness, and accessibility. It's important that these platforms safeguard privacy and security to protect personal data. Ensuring inclusiveness and equity means that everyone, regardless of their background or ability, can take part. Avoiding bias and misinformation is key to creating a learning environment that is free from discrimination and inaccuracies. In the end, ethical technologies help create a more just, transparent, and effective learning experience."
R3	"I care. I want to learn good stuff from good places; I don't want to do or support any harm with my personal growth."

With respect to responses to algorithmic bias and misinformation, selected responses showcasing the respondents' position is presented on Table 4. The findings highlight a strong collective concern for creating a fair, secure, and trustworthy learning environment.

Cases of experiencing unethical lifelong learning technologies and the exploration of ethical challenges associated with digital technologies employed for lifelong learning revealed a diverse array of respondent experiences. Out of fifty-four participants, seven reported encountering ethical issues, thirteen expressed uncertainty. Thirty-four denied any experiences of ethical violations, and sixteen chose not to respond to the question.

**Table 4: Responses to algorithmic bias and misinformation**

Respondents	Responses to Algorithmic Bias and Misinformation
R1	"Understanding the attitudes and needs of culturally diverse populations is crucial. Today, the internet makes this process much easier than in the past. When administering e-learning surveys to culturally and linguistically diverse groups, academic researchers must first build trust and rapport with community partners to foster a safe space for communication. From a subjective standpoint, focusing on lifelong learning technologies is essential for creating a fair, responsible, and trustworthy learning environment. For example, adhering to ethical standards is not only required by regulations such as GDPR in the EU, CCPA in California, etc., but it also reflects a commitment to the responsible development and implementation of technology."
R2	"Not so much, as the priority is learning and acquiring a skill and my contact with such learning technologies [is] usually short-lived in each situation (until the skill is acquired)." Finally, another respondent said,
R3	"Yes. It is the responsibility of the information consumer to filter what is accurate."

The reported ethical issues were varied, encompassing both the technologies themselves and the pedagogical practices employed. Further insights about the subject of the discussion are present in Table 5.

**Table 5: Response to Cases of Unethical Experiences**

Respondents	Responses to Instances of Experiencing Unethical Situations During the Use of Digital Technologies
R1	"Yes, some use indirect ways to obtain personal information."
R2	"For example, some platforms have been found to collect and share user data without clear consent, compromising privacy. In other cases, AI-driven tools used biased algorithms, leading to unequal learning opportunities or skewed recommendations. Additionally, some learning apps have embedded manipulative advertising or monetisation tactics that exploit users, particularly younger learners. These situations reflect the ongoing challenges in ensuring that lifelong learning technologies consistently adhere to ethical standards."
R3	"For example, YouTube has addictive features. Suggestions in Kindle books are most of the time related to topics one is interested [in], but it is also possible to find books with harmful ideas. Not all philosophy is good, but some of it is good. Some educated people might be able to read those harmful books, identifying what is good from them and what is harmful. However, some people less prepared might develop wrong ideas that become behaviours. But the problem might not be in the technologies but in the ethical education we have, or we lack."

These insights stress the necessity for rigorous ethical standards and considerations in the development and application of digital technologies for lifelong learning.

## 5. Discussion

Findings align with prior studies showing that upskilling and reskilling drive workplace learning (Poquet & De Laat, 2021). However, unique motivations such as financial sustainability in aging societies emerged. Ethical awareness is inconsistent, with gaps between concern and actionable knowledge. This disconnection mirrors broader patterns of limited ethical literacy noted in AI-enabled education research (Chounta et al., 2022). Persistent concerns over bias, data privacy, and manipulative algorithms highlight the urgency for digital literacy initiatives and systemic transparency. The emerging themes from qualitative data analysis represent how users

perceive or fail to perceive ethical issues in lifelong learning technologies. Based on our results, we can summarise the final themes as follows:

### **5.1 Awareness vs. Perceived Ethical Violations**

Some respondents expressed concerns about privacy, bias, and manipulative practices, while others were unaware of these issues. Awareness levels varied, with some lacking knowledge or technical understanding of ethical considerations. Those who were aware linked ethical concerns to data privacy, misinformation, and bias in AI-driven learning tools. Despite these concerns, many could not recall specific violations, indicating a lack of transparency or personal experience with unethical practices. These findings are discussed below.

1. **Lack of Awareness and Indifference** Many respondents had never considered the ethical implications of lifelong learning technologies or viewed them as irrelevant to their experiences. Some did not actively seek information on ethical policies, indicating a low priority for these considerations when selecting platforms.
2. **Partial Awareness and Uncertainty** Some respondents acknowledged ethical concerns but lacked the technical knowledge to understand them fully. Others recognised the presence of ethical policies but were unsure of their effectiveness, highlighting the need for greater transparency.
3. **Full Awareness and Concerns** Respondents with full awareness focused on privacy and data protection. While some mentioned encryption, transparency, and security policies, they remained sceptical about platforms' commitment to protecting user data. Ethical concerns extended beyond privacy to include bias and fairness in AI-driven learning. Some respondents noted ongoing challenges and expressed concerns about the potential for manipulative AI use.

The distinction between awareness of ethical considerations and recognition of ethical violations remains blurred due to individual priorities, knowledge, and experiences. Chounta et al (2022) found that Estonian K-12 teachers had a limited understanding of AI and its potential applications in their work. Similarly, Hsiao and Tang (2024) emphasised the need for continuous ethical reflection when using Generative AI tools, particularly concerning plagiarism and intellectual property rights. Educators play a key role in fostering discussions on these issues, establishing responsible use guidelines, and encouraging ethical behaviour.

### **5.2 Caring About Ethics vs. Reported Violations**

Some respondents accepted unethical practices as inevitable, prioritising functionality and convenience over ethical considerations as discussed below.

1. **Addictive or Influential Content:** Algorithm-driven platforms, such as YouTube or Kindle, may promote prolonged engagement, raising concerns about exposure to harmful content. Monetisation strategies, including excessive AI driven promotions, may further exacerbate these issues.
2. **Data Privacy, Well-being, and Security** Many respondents reported unauthorised data collection and sharing. Ethical concerns included privacy, data security, AI bias, and transparency. Despite recognising these risks, many assumed platforms adhered to ethical standards without verification. Some also raised concerns about misinformation and exposure to harmful content. In particular, there exists a gap between awareness and action, as many users assume that platforms adhere to ethical considerations without verification.

Chowdhary et al (2023) found that power dynamics in workplace wellbeing technologies led to "meaningless" consent, highlighting the need for structural changes to ensure meaningful user agreement.

3. **Algorithmic Bias and Misinformation** Participants also recognised that ethical concerns extend beyond privacy to include bias and fairness issues in AI-driven learning. Although respondents acknowledged efforts to mitigate bias, they identified ongoing challenges and expressed concern over the potential for manipulative use of AI. This theme reflects heightened apprehension regarding digital privacy, the ethical use of personal data, and the ethical complexities of AI in education, particularly concerning fairness and bias.
4. **Personal Responsibility:** A subset of participants felt that the onus of ethical responsibility rested with them as users, while others asserted that platforms should bear this responsibility. This divergence highlights contrasting perspectives: Some believe users should verify the ethical implications of their choices, whereas others argue that platforms are obligated to uphold ethical standards proactively. Other studies such as Curran et al (2019) also indicated that individuals assume "ownership of their

own thoughts and actions". Thus, there are many personal responsibilities demand from those engaging in lifelong learning to be aware of the process, tools, and actions enshrined in lifelong learning.

### **5.3 Ethical Violations vs. Systemic Issues**

Respondents identified ethical violations, including data privacy breaches, bias in learning content, and exploitative monetisation tactics. Some noted that ethical concerns were not always explicit, but industry-wide practices, such as misinformation amplification on social media, raised doubts about technology providers' accountability. The findings are discussed below.

1. **Bias in learning content** Bias in lifelong learning technologies remains a significant yet overlooked issue. AI-driven platforms often prioritise popular content, reinforcing Western perspectives while neglecting diverse cultural view-points.

Algorithmic bias can favour specific groups, limiting equitable access to knowledge. Social media-based learning platforms risk amplifying biased or misleading content, raising concerns about information accuracy.

2. **Lack of Transparency** Concerns persist regarding transparency in user data handling, content recommendations, and AI-driven decision-making. Unclear privacy policies and a lack of explicit consent contribute to these concerns. Opaque AI algorithms fuel suspicions of bias in learning content.
3. **Exploitative Monetization Tactics** Hidden monetization strategies, including manipulative advertising and profiling, raise ethical concerns. Some platforms prioritize trending topics for profit rather than learning value, while data sharing practices often lack clear disclosure.

Ala-Mutka, Punie, and Redecker (2008) emphasised the importance of digital literacy, particularly among young users, to enhance awareness of security, privacy, and ethical content creation. Similarly, Marín and Tur (2024) noted that ethical considerations in educational technology remain underexplored.

### **5.4 Limitations**

While this study offers valuable insights into the ethical concerns surrounding lifelong learning technologies, it is important to interpret its findings with caution due to potential biases. For instance, although the qualitative responses provide valuable perspectives, some are vague or lack sufficient detail, making it challenging to draw nuanced conclusions. Also, methodological limitations, such as sample size and possible contextual constraints, should be considered. Future studies could address these gaps by including larger and more diverse samples, employing mixed-method strategies, and performing comparative analyses across various technological and regulatory contexts.

## **6. Conclusion and Implications**

The COVID-19 pandemic has expanded the role of digital technologies in lifelong learning, making ethical considerations increasingly critical. Our findings highlight gaps between ethical awareness, concern, and action. While many users value ethics, their ability to recognise or respond to violations is inconsistent. Addressing these gaps requires a comprehensive approach (Pammer-Schindler & Rosé, 2022), including targeted support to help stakeholders understand and manage ethical issues. Similarly, Mouta et al. (2024) emphasize that educators must assess the risks and benefits of AI in education and define clear purposes for its use.

Concerns about privacy, security, and bias vary widely, indicating the need for greater platform transparency and ethically grounded design. Digital literacy initiatives are vital to raise awareness and foster accountability. Stronger platform responsibility, reinforced by data protection laws like GDPR, algorithm audits, and ethical certifications, is essential to ensure innovation balances with fairness, safety, and equitable learning opportunities. In light of the findings it is recommended that organisations i) increase awareness and training on digital ethics for employees and employers, and ii) structures to monitor ethical breaches and accountability are needed at the workplaces.

### **Ethics Declaration**

Ethical clearance for this study was not needed.

## **AI Declaration**

The authors confirm all major contributions—study design, data preparation, analysis, and writing—were made by humans. ChatGPT assisted with data analysis only. No conclusions or decisions were delegated to AI. The authors independently reviewed and approved all work, adhering to ethical guidelines for the responsible use of AI in academic research.

## **Authors' Contributions Principal Author**

The first author was responsible for instrument design, data collection and analysis, and text composition. Co-author 1: Instrument design, data collection, text composition, proofreading responding to reviewers' queries. Co-author 2: Instrument design in Estonian Language, data collection reviewing and responding to reviewers' queries

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