Master Thesis

Launching an artistic career during the digital revolution: are young performing artists well-equipped?

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Abstract

In this research, the author analyzes demographic and socioeconomic determinants of digital literacy level of young performing artists in Latvia in the midst of the fourth industrial revolution which is creating needs and skills gaps in the cultural sector. The determinants are chosen from various studies examining the diffusion of innovations theory and digital literacy, and a new digital literacy self-assessment questionnaire is created by adapting the methodologies of Vuorikari et al. (2022), Clifford et al. (2020) and Creative Skills Europe (2021). After the data collection is done in the form of an online survey, the impact of - age, gender, education, artistic profession type, parents' job type and perception of the need to use digital technologies at their job – on the digital literacy level is analyzed with the help of t-tests, analysis of variance (ANOVA) and ordinary least squares regressions. It is concluded that age, education and parents' job type have no significant effect on the level of digital literacy, and the artist's perception of need to use digital technologies in their job has a positive statistically significant effect on the level of digital literacy. Gender and profession type show varying results of significance across different statistical methods with no significance in the t-tests and analysis of variance (ANOVA) but strong significance in the ordinary least squares regression. Within the regression, men exhibit statistically significantly higher digital literacy scores than women while classical dancers display statistically significantly higher digital literacy scores than classical musicians.

Keywords: Digital literacy, performing arts, artistic labor market, diffusion of innovations theory, EU DigComp.

1. Introduction

Fourth industrial revolution with its focus on human-machine interaction, advanced use of data and analytics has been happening for more than a decade already, and its effect can strongly be felt in the conditions of the global labor market (McKinsey, 2022). A multitude of companies, organizations and even industries as a whole are going through digital transformation which entails to foster more inclusion of digital technologies in the organizational and creative processes of everyday work in hopes to increase competitive advantage or decrease costs (McKinsey, 2023). The rise of generative artificial intelligence softwares in 2022 marks a particularly transformational point in the fourth industrial revolution so far (McKinsey, 2022).

The performing arts industry has not undergone relatively as many changes as other industries due to its main product being human performance and digital technologies playing a less important role (Creative Skills Europe, 2021). However, in the recently published Future of Jobs Report, the performing arts industry (as a pillar of media, entertainment and sports category) is projected to experience the relatively biggest changes in terms of upskilling and reskilling its labor market in multiple digitization-related factors (adoption of new technologies, adoption of digital platforms and apps, broadening digital access) in the next five years - when compared to the other 17 categories of industries in the report (World Economic Forum, 2023). Moreover, multiple European Union Initiatives (Creative Pact for Skills Manifesto, 2020, Creative Skills Europe, 2021, CYANOTYPES, 2023) have also identified an existing digital skills gap in the labor market participants of cultural and creative industries and have emphasized on a strong likelihood of demand increase for digitally competent artists in the artistic labor market.

All aforementioned points make a compelling argument for a study focusing on the labor market participants of performing arts industry in the context of digital skills and competences, or, as the academia most commonly names it – digital literacy (Tinmaz et al., 2022). The focus of this study is to create a suitable digital literacy questionnaire for performing artists, evaluate the proficiency of digital literacy of performing artists and attempt to seek if demographic and socioeconomic factors impact the proficiency levels of digital literacy of performing artists. Moreover, I choose to format this research as a case study and concentrate its scope on young Latvian performing artists aged 16-26 - aiming to focus only on those labor market participants who are yet to enter the market or have just

entered it, and on a country which has a high demand for gaining educational qualifications in performing arts (Kunda et al., 2018) but has lower digital literacy levels than the European Union average (Clifford et al., 2020). Thus, I ask: **How do demographic and socioeconomic factors influence digital literacy of young performing artists from Latvia?**

The academic relevance of this study lies in the limited existing literature connecting digital literacy to performing arts, creation of a new digital literacy scale for performing artists that can later be used in other studies, the contribution to the discussion of various determinants of digital literacy and the significance of their effect, and expansion of knowledge regarding the traits of a rarely researched – Latvian – sample of cultural labor market participants. The societal relevance of this study concerns three stakeholder groups – cultural policymakers, performing arts educators and performing artists themselves. For policymakers and performing arts educators, this research helps to identify and evaluate the current situation of the digital skills gap of young performing artists. From this, they can gain useful conclusions and make changes in current educational guidelines, better evaluate and predict the degree of employability, as well as the scale of reskilling and upskilling in the future job market of performing arts. For performing artists themselves, the self-assessment digital literacy scale can help to evaluate their own skillset, identify strengths and weaknesses, and assist to raise awareness and discussions about the necessity of digital skillset in their professional lives.

In the following sections of this study, theoretical framework, methodology, results and discussion, as well as the conclusion are presented. The theoretical framework section touches upon the peculiarities of an introduction of a new innovation – the necessity of digital skills – to performing labor market participants by combining the diffusion of innovations theory (Rogers, 2003) with the notions of artistic labor market (Throsby, 1994) and intrinsic motivation (Bille, 2020), summarizes the conclusions made by World Economic Forum (2023) and European Union initiatives (Creative Pact for Skills Manifesto, 2020, Creative Skills Europe, 2021, CYANOTYPES, 2023) regarding digital skillset and performing arts industry, introduces the academic notion of digital literacy (Gilster, 1997), its measurement types and potential determinants of digital literacy, and presents the research question and hypotheses. The methodology section provides justification for choosing a quantitative case study method and t-tests, ANOVA and regressions as the data analysis method, as well as describes the data collection, sampling process, operationalization and quality criteria and ethics in detail. Results and discussion are presented in the form of descriptive tables, and their interpretation according to the literature, and the conclusion summarizes this study.

2. Theoretical Framework

2.1 Cultural Entrepreneurship in the Performing Arts

2.1.1 General Description

Chang & Wyszomirski (2015) define cultural entrepreneurship as a "management process through which cultural workers seek to support their creativity and autonomy, advance their capacity for adaptability, and create artistic as well as economic and social value" (p.24). This area of research looks into how different cultural entities participate in the market with their cultural product or service – which can sometimes be the artist himself (Dobreva & Ivanov, 2020).

From the perspective of performing arts, participants of cultural entrepreneurship can be characterized as both – large cultural organizations, likely with strong historical heritage (e.g. national theatres, national opera houses) and small firms or individual cultural entrepreneurs (Towse, 2020). As McIntyre et al. (2023) summarizes the characteristics – for artists attached to a building or a specific team (orchestra, opera, ballet) – full time employment and contractual agreements are common and expected while for other performing artists (e.g. solo musicians, commercial dancers, or bands) short-term gigs, higher career precariousness and fluctuations in income is a more dominating characteristic. The latter case is much more common in the cultural and creative industries due to a multitude of reasons (e.g. high product differentiation, intangible value, high uncertainty, flexibility, informality); therefore, it can be argued that if an artist is considering making money with their artistic occupation, there is a substantial probability that they will also need other types of skills besides artistic to reach that goal because of the aforementioned characteristics and fragmentation of the labor market.

Due to the effects of digital transformation and the emergence of fourth industrial revolution, all industries have gone through varying degrees of change in terms of labor market conditions, job needs and skills, productivity and automation tools in the past decade (World Economic Forum, 2023). With performing arts serving as an industry where humans and their performances are the main product, it has not seen relatively as many changes as the other industries until now (McIntyre et al., 2023); however, several public policy bodies (European Union, 2020, 2021, 2023; World Economic Forum, 2023) have expressed the needs of upskilling and reskilling in the performing arts industry, and added digital skills as a frontrunner disruptor in the next five years – hinting that the job conditions in the labor

market of performing arts (for example, higher barriers to entry due to the importance of an artist's digital identity management, or favoring certain artists for employment depending on how skilled they are in terms of developing virtual reality performances) - are likely to change because of this.

2.1.2   Diffusion of Innovations Theory

Diffusion is defined as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p.5). An innovation does not necessarily have to be a product – it can also be an idea or practice (Rogers, 2003); therefore, qualifying arising new skills needs in the artistic labor market as an innovation – a new practice to be adopted. The core topic of this paper – digital literacy – is a new group of skills in the arts world that has been hypothesized to be a disruptor of several labor market conditions (e.g. changing job responsibilities) due to the rapid improvements in the usefulness of digital practices in both technical and creative aspects of a job in the arts industry (World Economic Forum, 2023). Therefore, in this particular case, the diffusion of innovations theory can be useful to interpret how digital practices are adopted within the individuals that are participants in the artistic labor market – more specifically, performing arts labor market.
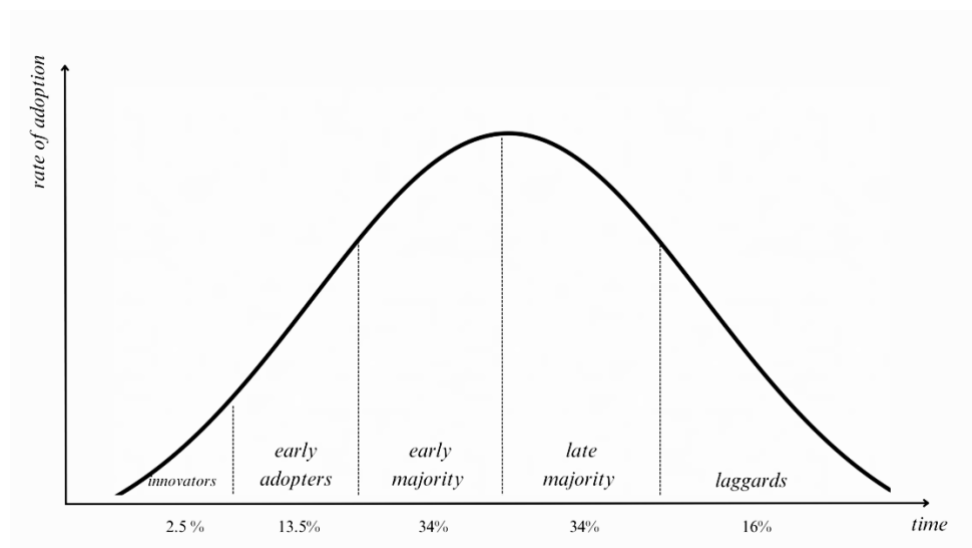

Figure 1. Visual description of Diffusion of Innovations theory

Normal distribution curve is split into five parts, each of which represent a group of people with different innovation adoption characteristics and a percentage share of the whole population. Made by the author by using Rogers (2003) diffusion of innovations theory.

Rogers (2003) categorizes the groups of people by their characteristics of adoption and quantifies the sizes of each group by using a normal distribution – into innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%) and laggards (16%). At the opposite ends of the spectrum, innovators can be characterized as risk-takers with a high degree of openness and entrepreneurial mindset while the laggards are traditionalists who are not fond of change or do not have the time or resources to adopt a new innovation (Rogers, 2003). By applying these characteristics to my research, it can be interpreted that innovators are those performing arts labor market participants who possess a relatively high digital skillset and are ready to take on the changes in the job market, and laggards - performing arts labor market participants who possess a relatively low digital skillset and are likely to fall behind as the job market changes.

It is important to mention that the diffusion of innovations theory has a pro-innovation bias – it assumes that the adoption of an innovation is the desirable outcome for all individuals in the social system (Rogers, 2003). Desirable outcome in this statement can be interpreted as a welfare increase or a non-existence of a welfare decrease - it is the opposite of a dysfunctional outcome, and it "depends on how the innovation affects the adopters" (Rogers, 2003, p. 380). In the context of this research, the bias can be reworded as – adoption of a digital skillset is the desirable outcome for all individuals in the performing arts labor market. This statement may potentially contradict with other theories describing the peculiarities of the arts labor market, making it a unique area to look at from a diffusion of innovations point of view. For example, Throsby's (1994) work preference model looks at the artists' labor market by focusing on the tradeoff between labor and leisure for artists - by artists seemingly preferring working on their art instead of leisure, assuring that their minimal income is achieved – that is not the norm within a normal labor market model. Moreover, when choosing between a non-arts job with a higher wage rate and an arts job with a lower wage rate, artists will choose the latter, indicating that maximizing their artistic work is the priority (Throsby, 1994). In her summary of artistic labor markets, Bille (2020) also mentions that artists are "intrinsically driven to create" (p.48) which brings the notion of intrinsic motivation into the picture. Intrinsic motivation is a type of motivation that is not based on a tangible reward to be received but instead doing "something from inner conviction, such as artistic drive or social conscience" (Borowiecki, 2020, p.146), showing yet another way of thought on why artists may not pose acquiring a new innovation - digital skills - as a necessary part to enter the artistic labor market.

By combining the theoretical points of intrinsic motivation and work preference model with the diffusion of innovations theory, it can be argued that if an artist perceives digital skills to be as a direct enhancer of their artistic process, then adoption of a digital skillset will be considered as the desirable outcome for all individuals in the performing arts labor market. If an artist does not perceive digital skills to be a direct enhancer of their artistic process, there will be no intrinsic motivation or utility to acquire those, and thus, it will not be considered a desirable outcome for them in the performing arts labor market. But realistically, digital skillset is a wide theme and for an artist it can be considered a grey area in terms of being an arts or non-arts job. Arguments can be made for both sides – for example, knowing how to incorporate virtual reality elements into a performance can be deemed an artistic job as it directly influences the artistic end result; however, knowing how to create a digital poster for an artistic event can be categorized as a non-arts job for the performing artists themselves. Thus, it is hard to predict the adoption level of digital skills in the performing arts labor market, and the desirable outcome for market participants in the midst of a worldwide digital transformation. It is also not known how skewed the innovation adoption distribution of types of market participants (e.g. innovators and early adopter artists with high digital skillset, laggard artists with low digital skillset) may be due to the unique characteristics of the artistic labor market, and how the market would react to changing job roles and tasks due to digitalization and automation – knowing that artists are mainly intrinsically motivated.

To properly distinguish this theme further, most of all, it is important to prove whether and how digital transformation is expected to change the performing arts labor market. While there is a shortage of academic sources on this matter, organizations like World Economic Forum and European Union have delved into the predicted effects and skills needs of the artistic labor market for the past decade that are described in the next two subchapters.

2.1.3   World Economic Forum Future of Jobs Report

World Economic Forum first created the Future of Jobs Report in 2016 with the goal to show how the fourth industrial revolution impacts the labor market. Since then, the report has added other important trends to its research scope, such as sustainability, macroeconomic factors and supply chain shifts (World Economic Forum, 2023). Within the 2023 report, the relative comparison diagrams between all 18 industries show that overall, the next five years

(2023-2027) are expected to be highly transformational for the labor market of the Media, Entertainment and Sports industry in which performing arts is included – 96% of all companies in the industry are expecting to go through increased adoption of new technologies (highest percentage of all 18 industries) and broadening digital access (second highest percentage of all 18 industries). From the point of technology adoption, 100% of Media, Entertainment and Sports companies are likely to adopt digital platforms and apps in their companies, 95% - big data analytics, 87% - artificial intelligence, text, image and voice processing (World Economic Forum, 2023). 65% of Media, Entertainment and Sports companies also believe that augmented and virtual reality, as well as education and workforce development technologies will create new jobs in the next five years while 11% of the companies expect robots to displace jobs and 5% - by artificial intelligence (World Economic Forum, 2023). The Top 3 skill priorities for reskilling and upskilling in the next five years in the Media, Entertainment and Sports industry are projected to be AI and big data, analytical thinking and creative thinking (World Economic Forum, 2023). For example, an employer might ask a performing artist to participate in programming sound or light algorithms for their performances, or to use artificial intelligence technologies to come up with creative ideas or build draft versions for their performances. It can be argued that performing artists are only a small part of the industry and the technological and skill transformations may be more pronounced with other professions included in the media, entertainment and sports industry– however, seeing the highly strong percentages (e.g. 100%, 96%, 87%) in expectations of change regarding digital transformation, I conclude that the effects of technology use, reskilling and upskilling are also likely to be felt in the labor market of performing arts, even if with a lower intensity.

2.1.4 European Union Initiatives

Improving digital skills for people working in the creative industries has been appearing in several recent European Union initiatives, also strengthening the relevance of the topic. Creative Skills Europe (2021) is a platform supported by European Commission which focuses on the European audiovisual and live performance sectors with the goal to identify skills that "professionals need to enter and remain in employment" (Creative Skills Europe, 2014, About Us, para. 1) and ways to "contribute to a dynamic sector that foresees and anticipates change" (Creative Skills Europe, 2021, About Us, para. 1). From 2014 to 2016, research was conducted from qualitative analysis and statistical labor market data of eight EU countries to identify existing skill gaps in the audiovisual and live performance

sector and the results were published in a report (Tepper, 2016). In the report, Tepper (2016) summarizes the characteristics of the labor market of live performance sector – it is "mostly composed of small to very small companies, self-employment is already extremely prevalent and expanding at a very fast pace, (…) work is organized on a project basis, (…) the employment demand (…) is largely higher than the employment offer (…), many professionals find they have to develop an extended skillset over the course of their careers, either within their original sector or outside the arts field – in order to ensure their income streams in between projects" (p.70). Digital transformation and economic instability (e.g. economic crises, funding problems) are identified as the two biggest disruptors of the live performance sector – which consequently leads Tepper (2016) to conclude that the biggest skill gap groups for live performers are digital skills and entrepreneurial skills.

To equip employees of audiovisual and live performance sectors with appropriate resources, Creative Skills Europe made a number of publications focusing on practical advice about entrepreneurial skills of performing artists, as well as digital learning cards as a way to improve digital skills from 2017 to 2021 (Creative Skills Europe, 2021). Digital learning cards were created by combining the digital skills needs of audiovisual and live performing artists and knowledge of existing digital professionals in the EU, and the cards consist of three categories – creation, production and distribution, each containing digital resources to help with each of the three steps of creating a performance. Although the cards are meant as an experimental pilot tool and do not claim to comprehend every possible digital skill or resource that is needed for a performing artist, it may be the most detailed list of specific digital skills useful for performing artists to this date and serves as a useful resource to understand the overlap between the digital environment and performing arts – therefore, I choose to use this resource to build my survey questionnaire on which I elaborate more in the methodology section. Digital skills displayed on digital learning cards can be seen on Appendix C.

Creative Pact for Skills Manifesto (2020) is another European Union initiative – a strategy roadmap that exists as a part of a large-scale partnership project with 140 members (educational institutions, creative industry professionals and SMEs, international, national and regional networks and organizations, etc.) all over Europe. Similarly to Creative Skills Europe (2021), Creative Pact for Skills Manifesto (2020) looks at market transformation but focuses on a broader sphere – all cultural and creative industries (CCIs). The manifesto names the most crucial skills needs of the sector according to the 140 existing members, with digital skills deemed as a first priority to keep up with the changing market, and particular

skills mentioned are "copyrights protection, engagement with audiences, online marketing (…), social media communications, (…) use of artificial intelligence, of extended reality, data analytics" (para. 13).

CYANOTYPES (2023) is a project funded by Erasmus+, consisting of 20 members and 28 associated partners (education institutions, international and regional networks, industry professionals and companies) with a goal to address needs and skills gaps of the CCIs in the EU by creating a practical training program adaptable to vocational institutions and universities that teach young CCI professionals. Although CYANOTYPES (2023) is currently only at its research phase and concrete conclusions are yet to come, the project members have identified the three main groups of urgent skills to be technological, social and ecological which again at least partly drives the attention to digital skills deemed to be important for creative professionals.

In conclusion, all currently existing European Union initiatives that surround the cultural and creative industry ecosystem and its skills gaps, consider digital skills to be an important driver of change for the labor market conditions. However, all these initiatives are focused on policy making, creating frameworks, advice schemes or training methodologies; thus, my research which is created with a goal to assess the digital skill level empirically at this point of time can serve as a useful piece of literature that looks at a current issue from a different – a more empiric assessment angle.

2.2   Digital Literacy

2.2.1   General Description

Digital literacy was first termed by Gilster (1997) as "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers" (p. 1). Since then, the definitions have varied and expanded, adding the dimensions of digital content consumption, creation and sharing, digital problem solving, internet and data safety, and, most recently – literacy of artificial intelligence (Tinmaz et al., 2022) to the scope of what digital literacy describes. In a non-academic sense, digital literacy is usually used interchangeably with notions like digital competencies or digital skills; however, academically, the latter two are focused more on technical and practical proficiency while digital literacy combines practical skills with critical thinking and understanding, depicting a broader overall meaning (Tinmaz et al., 2022).

From the standpoint of performing arts, digital literacy can be considered as a subgroup of skills which is becoming more and more prevalent in the cultural sector (McIntyre et al., 2022) due to fourth industrial revolution and digital transformation. The effects of the fourth industrial revolution in the business world can be felt in the recent accelerated efforts of digital transformation which can be defined as "the process of developing organizational and technology-based capabilities that allow a company to continuously improve its customer experience and lower its unit costs; and over time sustain a competitive advantage" (McKinsey, 2023, para. 5). For a performing arts company or an individual entrepreneur, examples could look like using social media or pricing data analytics to create more demand or using augmented reality in the performance to create a more differentiated product.

Although research directly connecting performing arts and digital literacy is lacking, several papers talk about the use of digital technologies in arts-related occupations. Meissner (2016) finds out that digital tools improve the audience development for independent filmmakers. Benghozi & Paris (2014) conclude that availability of technology helps to diminish the role of intermediaries as well as foster an environment in which new forms of content, audience and ways of marketing appear for cultural entrepreneurs. Walzer (2017) summarizes that the emergence of digital software and technological improvements lower the barriers to entry the market for independent music creators who are proficient at it. All aforementioned research strengthens the point that digital technologies are here to stay in the cultural sector and can be used as a way to help artists to grow their careers.

2.2.2 Measuring Digital Literacy

Digital literacy studies are most frequently constructed with one of two goals – either to create a new digital literacy question scale and test its reliability on respondents, or to use an existing or a modified digital literacy scale and see how different types of determinants are connected to digital literacy (Reddy et al., 2023). New or modified digital literacy scales are being created due to a multitude of reasons – firstly, there is no one agreed definition of digital literacy, making its scope to be decided based on every author subjectively; secondly, the amount of digital proficiencies shift and increase due to frequent technological improvements; and thirdly, the fit of certain digital literacy measurement scales are tested only on a particular sample, bringing the question of generalizability to the front (Ustundag et al., 2017, Reddy et al., 2023). Practically, digital literacy is assessed with the help of self-

completed survey questionnaires consisting of statements about specific proficiencies and respondents then evaluating how skilled do they perceive to be in the particular given proficiency (Reddy et al., 2023).

As the sample of my research is focused on people aged 16-26, I focus on finding existing quantitative studies that investigate digital literacy in the context of young people (e.g. high school students, higher education students, adolescents, young adults) and demographic or socioeconomic variables on Web of Science. I aim on reviewing digital literacy studies made no earlier than 2022 – which is when artificial intelligence became more widely used in everyday lives – thus, likely skewing the scope of the studies. Altogether I choose to highlight 8 studies – 1 of which focuses on creating and validating a new digital literacy scale (Reddy et al., 2023), 5 that use existing digital literacy scales and try to connect digital literacy with demographic or socioeconomic variables (Lahiri et al., 2022, Silva-Quiroz & Morales-Morgado, 2022, Yoleri & Anadolu, 2022, Pegalajar Palomino & Rodriguez Torres, 2023, Ayalon & Aharony, 2024) and 2 that combine both (Morgan et al., 2022, Aydinlar et al., 2024). 2 studies give their digital literacy surveys to high school students while 6 studies – to university students of different programs (e.g. business students, pedagogy students, health program students, fashion design students).

Of all digital literacy scales used in these studies, 3 have been created in 2012, 2017 and 2021; and therefore, are deemed unsatisfactory as potential scales for my research due to likely not fitting today's scope of digital literacy. Of the remaining 5 studies, 3 use their own digital literacy scale (Morgan et al., 2022, Reddy et al., 2023, Aydinlar et al., 2024), 1 uses an adapted digital literacy scale from the European Union DigComp framework (Vuorikari et al., 2022) and 1 uses a combined scale from EU DigComp framework (Vuorikari et al., 2022) and UNESCO Institute for Statistics (2018) Digital Literacy Global framework. With Morgan's et al. (2022) and Aydinlar et al. (2024) scales being very specified towards university a specific type of students' (business students and health program students), Reddy's et al. (2023) scale being dominated by beginner-level statements due to Fiji having low rates of digital literacy, and UNESCO Institute of Statistics (2018) scale being outdated due to it being made in 2018, Vuorikari's et al. (2022) theoretical framework – European Union DigComp is deemed most suitable for this research not only because of its flexibility of being used in multiple proficiency levels (foundation, intermediate, advanced, highly specialized) but also it being tested on a European citizen sample which are the subject of my paper. An additional argument for using Vuorikari et al. (2022) theoretical framework as a base for my digital literacy scale lies in a version of its derived empirical questionnaire –

DigCompSAT - being previously tested on a Latvian sample which is discussed more in the next section.

2.2.3 European Union DigComp & DigCompSAT

The Digital Competence Framework for Citizens (DigComp) is an EU-recognized tool created to "improve citizens' digital competence, help policymakers formulate policies that support digital competence building, and plan education and training initiatives to improve the digital competence building, and plan education and training initiatives to improve the digital competence of specific target groups" (Vuorikari et al., 2022, p.2). The work on creating a conceptual reference framework for digital competences began in 2010 where a combination of actions – academic literature, policy document and existing framework review, conceptual mapping, case study analyses, and expert opinion – were taken into account to launch DigComp 1.0 in 2013 – which categorized digital competences into 5 categories and 21 subcategories (Vuorikari et al., 2022).
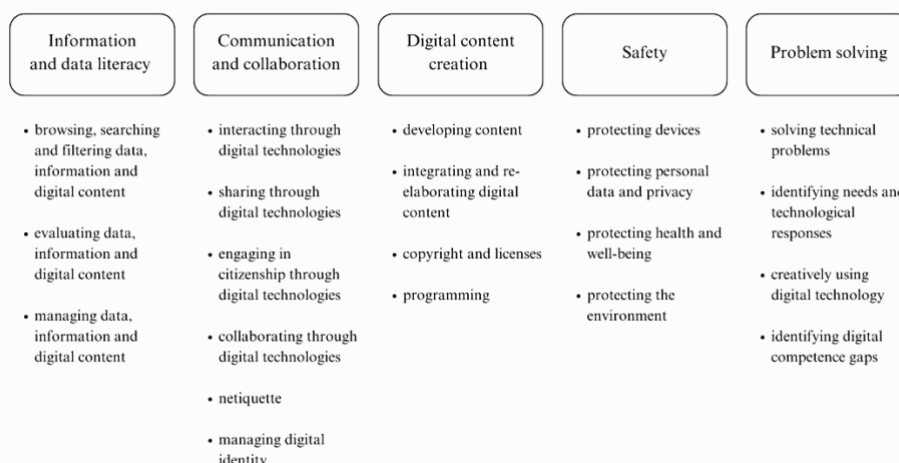
Information and data literacy	Communication and collaboration	Digital content creation	Safety	Problem solving
• browsing, searching and filtering data, information and digital content	• interacting through digital technologies	• developing content	• protecting devices	• solving technical problems
• evaluating data, information and digital content	• sharing through digital technologies	• integrating and re-elaborating digital content	• protecting personal data and privacy	• identifying needs and technological responses
• managing data, information and digital content	• engaging in citizenship through digital technologies	• copyright and licenses	• protecting health and well-being	• creatively using digital technology
	• collaborating through digital technologies	• programming	• protecting the environment	• identifying digital competence gaps
	• netiquette			
	• managing digital identity			

Figure 2. Visual description on DigComp 2.2. categories and subcategories

Digital Competence Framework for Citizens splits digital competences into 5 categories and 21 subcategories.

Made by the author by using Vuorikari, R. et al. (2022) DigComp 2.2. framework.

With later versions, each subcategory gained three dimensions – knowledge (theoretical understanding), skills (practical ability) and attitudes (motivation to perform an action) – for which different levels of proficiency could be attached (Vuorikari et al., 2022). The newest version – DigComp 2.2 adds more real-life examples and use cases to each subcategory, recognizing the novities emerging from the global digital transformation, such as "misinformation and disinformation in social media and news sites (…), datafication of

internet services and apps (…), citizens interacting with artificial intelligence systems (…), emerging technologies such as Internet of Things (…), environmental sustainability concerns" (Vuorikari et al., 2022, p.5). A particular focus is brought to artificial intelligence with 73 additional examples of its use added as illustrations of digital competence.

It is important to distinguish that DigComp is a categorization framework with examples, not a questionnaire by itself. Instead, a different EU-referenced instrument, DigCompSAT – Digital Competence Self-Assessment Tool (Clifford et al., 2020) – seeks to "design and trial an item bank of questions covering all 21 competences of DigComp 2.1, to be used in a self-administered test" (p.10). Clifford et al. (2020) make a reliable and ready-to-use questionnaire with a Cronbach's Alpha of 0.987 that can be used to self-administer digital literacy (Clifford et al., 2020).

2.2.4   Potential determinants of Digital Literacy

Out of the aforementioned studies that focus on digital literacy in the context of young people (Lahiri et al., 2022, Morgan et al., 2022, Silva-Quiroz & Morales-Morgado, 2022, Yoleri & Anadolu, 2022, Pegalajar Palomino & Rodriguez Torres, 2023, Reddy et al., 2023, Ayalon & Aharony, 2024, Aydinlar et al., 2024) and the DigCompSAT study (Clifford et al., 2020), seven studies touch upon demographic and socioeconomic variables and their impact on digital literacy. To help to choose variables and formulate hypotheses for my research, I summarize the findings of effects of different demographic and socioeconomic variables here. Additionally, potential determinants of digital literacy in the context of diffusion of innovations theory (Rogers, 2003) are looked upon at.

2.2.4.1   Age

In Morgan's et al. (2022) study which focuses on Australian business students, age was deemed insignificant as a determinant of digital literacy with the exception of the subcategory for digital etiquette where younger students claimed to be significantly more proficient at 95% confidence level. In Ayalon & Aharony's (2024) study about Israel high school students, a similar conclusion is made with age not being associated with any significant differences in digital literacy levels with the exception of the subcategory of socio-emotional literacy which is "the ability to conduct effective interactions in a (…) virtual setting" (p.2). Other studies do not use age as a potential determinant of digital literacy.

2.2.4.2 Gender

In Aydinlar et al. (2024) study of Turkish university health program students, men have significantly higher total digital literacy scores than women and are also deemed as significantly more proficient in four subsections of digital literacy (hardware, software and multimedia, security, interest-knowledge). Pegalajar Palomino & Rodriguez Torres (2023) report men scoring significantly higher in three subcategories of digital literacy (understanding of ICT functioning and concepts, development of skills for research and information, communication and collaboration from digital media and environments), Yoleri & Anadolu (2022) – also in three subcategories (daily use, general knowledge and functional skills, professional production), and Ayalon & Aharony (2024) – in two subcategories (information literacy, socio-emotional literacy). Only one study reports women scoring significantly than men at all, and that is concluded in the context of the digital literacy subcategory of ethics and responsibility (Yoleri & Anadolu, 2022). In Morgan's (2022) research, gender had no effect on digital literacy.

2.2.4.3 Education

Morgan et al. (2022) uncovers that the number of years of studying affects the level of digital literacy by concluding that the more years a university student has been studying, the better digital literacy score he or she shows in the subcategories of accessing data, using data and digital etiquette. Lahiri et al. (2022) show a similar trend by deducing that Indian fashion design students with more years of studying score significantly higher in the subcategories of software management and digital citizenship than students with less years of studying. Aydinlar et al. (2024) report weak correlations in regards to higher levels of digital literacy and the subcategories of software and multimedia, ethics, interest and knowledge.

2.2.4.4 Occupation type, parents' occupation type & perception of use of digital technologies in the desired occupation

In this paper, the adoption of digital literacy in the performing arts labor market is looked at from the angle of the diffusions of innovation theory. Given the nascent stage of digital literacy studies, I found it useful to look at determinants of innovation adoption to find out more potential quantifiable determinants that ought to be useful for my research. Rogers (2003) analyzes more than 900 empirical studies looking at determinants of innovation adoption, and apart from general socioeconomic variables (e.g. age, education, income) also identifies numerous personality and behavioral variables, some of which can be quantifiable.

For example, higher exposure to communication channels and belonging to highly interconnected systems are deemed as important determinants of innovation adoption (Rogers, 2003) – which in my case could be translated as having access to more information about digital literacy. For young people, which is the desired sample of this study, influential environments with potentially more access to information about digital literacy are – school, work, and home. And while school (education level) is a variable already represented in the previous paragraphs in the plans to be used in the research, work and home are not – therefore; I deduce profession type (as a proxy for work environment) and parent's occupation type (as a proxy for home environment) to be suitable variables to include as potential determinants of digital literacy in the performing arts labor market from the point of the diffusion of innovations theory.

Rogers (2003) also mentions knowledge of innovations, media exposure and favorable attitude towards change and coping with uncertainty as determinants of innovation adoption – painting a picture that the individual's perception of the particular innovation (and the changes caused may also play a role. From these, I also form a quantifiable variable – perception of need of digital skillset in the performing arts labor market as a potential determinant of digital literacy.

2.2.4.5 Others

More determinants like being an international or a domestic student, work hours (Morgan, 2022), location and type (private/public) of the educational institution (Silva-Quiroz & Morales-Morgado, 2022), internet usage time (Yoleri & Anadolu, 2022), faculty type (Yoleri & Anadolu, 2022, Pegalajar Palomino & Rodriguez Torres, 2023) prove to have significant effects on the self-perceived level of digital literacy; however, they are not used in this paper due to not fitting the specifics of a Latvian sample. Detailed reasoning for the inclusion or non-inclusion of variables can be seen in Appendix H.

2.3   Research Questions & Hypotheses

From this literature review, I develop the following research question and derive specific hypotheses:

- How do demographic and socioeconomic factors influence digital literacy of young performing artists from Latvia?
    - H_1: Age does not have a significant effect on digital literacy of young performing artists.
    - H_2: Male performing artists have a higher level of digital literacy than female performing artists.
    - H_3: Performing artists with higher education (bachelor's or master's degree) have a higher level of digital literacy than performing artists without higher education (vocational, secondary, or primary education).
    - H_4: Performing artists in non-classical occupations have a higher level of digital literacy than performing artists in classical occupations.
    - H_5: Performing artists with at least one parent working in a highly digitized occupation have a higher level of digital literacy than performing artists not having any parent working in a highly digitized occupation.
    - H_6: Performing artists with a high perception of need to use digital technologies in their jobs have a higher level of digital literacy than performing artists with a low perception of need to use digital technologies in their jobs.

3. Methodology

3.1 Research Design

To answer the research question, I implemented a quantitative case study method. A quantitative study calls for a "deductive approach to the relationship between theory and research, in which the accent is placed on the testing of theories" (Bryman, 2012, p. 36), fitting the narrative of empirically testing digital literacy in young performing artists, which is the subject of this research.

A case study is focused on a "detailed and intensive analysis of a single case" (Bryman, 2012, p.66), and it is deemed the best research method for obtaining in-depth information about a particular setting. Two most used forms of case studies are survey research and interviews (Bryman, 2012). Due to the topic of this research being relatively novel, I argue that the research scope should be to establish and evaluate the current situation with a relatively larger sample first, and only then dive into qualitative reasoning - thus, surveys were chosen as the form of data obtainment as they posed an opportunity to get a bigger sample of respondents than interviews.

3.2 Data Collection

Data was obtained by creating a self-completed survey questionnaire that combined the information from DigComp framework by Vuorikari et al. (2022), DigCompSAT questionnaire by Clifford et al. (2020) and Digital Learning Cards by Creative Skills Europe (2021) as there was no existing survey instrument that measured the digital literacy of young performing artists. The combination process of creating the final questionnaire can be seen at Appendix C. Adjusting the DigComp framework to fit more specific research needs is a frequent practice in academia – Evangelinos & Holley (2016) adjust the framework for student-nurses, Guitert et al. (2021) – for European primary and secondary schools, Budai et al. (2023) – for public administration students. The methodology of the statement structure and answer types followed that of Clifford et al. (2020) as their questionnaire had been tested on a sample of Latvian population in Latvian language beforehand. The questionnaire consisted of:

- 6 demographic and socio-economic questions (age, gender, education level, chosen performing arts profession, parent's occupation, perception of use of digital technologies in performing arts);

- 1 sample fit detection question (determining whether the respondent considers music or dance their profession or hobby);

- 21 statements representing the 21 subcategories of EU DigComp framework about knowledge of digital literacy which the survey respondents will have to evaluate by choosing one of four statements that represent no skill/knowledge, basic skill/knowledge, intermediate skill/knowledge, advanced skill/knowledge as in Clifford et al. (2020).
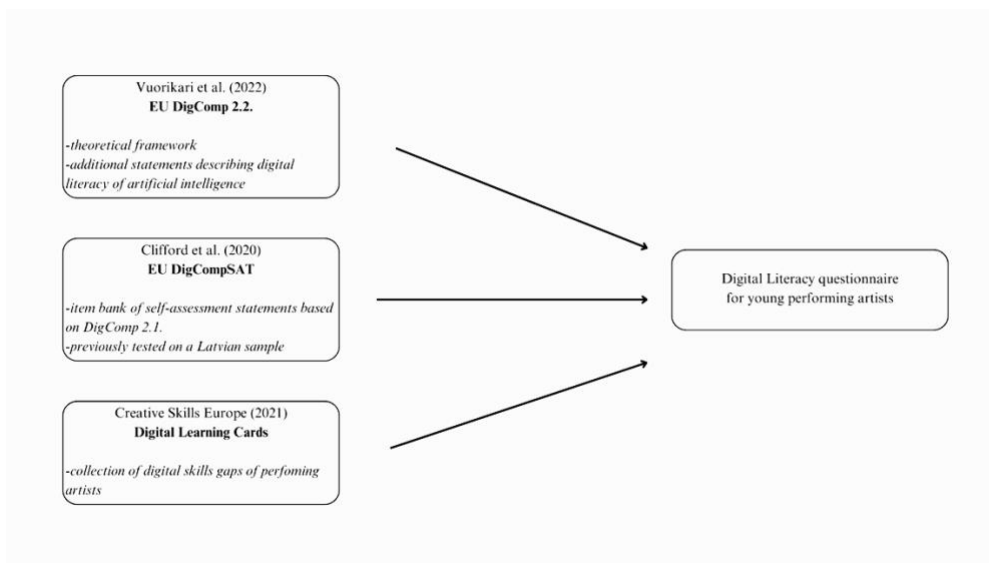

Figure 3. Visual description of digital literacy questionnaire for young performing artists

All sources of creation (Clifford et al., 2020, Creative Skills Europe, 2021, Vuorikari et al., 2022) that have been used to develop the final questionnaire of this study. Made by the author.

Closed questions with a fixed number of possible answers are considered the optimal method in research about factual knowledge (Bryman, 2012); therefore, it was fitting to use in this paper where digital literacy was measured. Closed questions also fit the goal of the study which is to establish the current state of a novel topic on a bigger scale, rather than choosing open ended questions that are more fitting to a goal that hopes to explore the reasons behind obtaining certain digital literacy scores. I was confident in using the closed question and answer structure by Clifford et al. (2020) as their questionnaire was piloted in Latvia which is the sample of my study – with it receiving a particularly high reliability score when tested (Cronbach's Alpha = 0.987). Additionally, after the Clifford et al. (2020) pilot, the respondents were encouraged to share their feedback about their experience filling in the questionnaire, after which some alterations were made to the final questionnaire, thus, increasing the readability. A particular feedback that was unique for the Latvian respondents was that the questionnaire was perceived to be too long. Clifford et al. (2020) questionnaire

had 82 questions in total, with each of 21 subcategories of DigComp having 3-4 questions. The 3-4 questions tested different dimensions of each DigComp subcategory – knowledge, skills and attitude (Clifford et al., 2020). Due to the feedback of Latvian respondents in Clifford et al. (2020) and the feasibility of this research, I reduced the number of questions per subcategory from 3-4 to 1 and only used the dimensions of knowledge or skill, as the overall attitude is already covered in the socio-economic variable section (perception of use of digital technologies in performing arts). All survey questions can be seen in Appendix A, and all digital literacy statements separately can be seen in Appendix B.

It is important to distinguish that the respondents were not directly tested on their digital literacy skills but instead asked to evaluate their digital literacy skills to ensure feasibility of this research. The survey was distributed online in the Qualtrics platform and the survey was created in Latvian language to ensure a sample fit of Latvian performing artists. The survey was open from April 23, 2024 to June 4, 2024. To reach respondents, an email was sent to the student councils of the 3 biggest high schools and higher education institutions in Latvia that focus on educating performing artists with the survey link and a request to share it with the students (the list of institutions can be seen in Appendix D). Knowing that some performing artists may have been omitted by only contacting these educational institutions, the survey was also shared and distributed via social media (Instagram and Facebook). In the end of the survey, it was possible to opt in at a lottery for a grocery store gift card of EUR 20 to help to ensure higher response rates. The lottery was done after the survey had been closed by putting respondent e-mails in a random generator that then chose the winner of the gift card. The winner was contacted by e-mail.

3.3 Sample

The following sample criteria were used in this research:

- *The respondent is undergoing training to become a professional performing artist or has performing arts as their profession.* This study aims to identify the digital literacy levels of performing artists who aim to participate in the artistic labor market with their profession, thus, people who consider performing arts to be their hobby, are excluded.
- *The respondent is 16-26 years old.* This research focuses on performing artists who are either on the verge of entering the artistic labor market or have recently entered it; therefore, it starts with a typical high school age and ends with a

typical university graduation age in Latvia. Performing artists who are older are already assumed to be having a job or having their careers more or less established; therefore, they may be less susceptible to labor market changes, and are, thus, not chosen to be included in this research.

- *The respondent is (an aspiring) professional musician or dancer.* This study seeks to identify differences between occupations that portray differences in their typical job models (classical artists and large organization employment versus non-classical artists and short-term project employment). Music and dance both portray these differences in occupation types, and, in addition, are the two most popular types of performing arts, and, thus, are chosen as fitting contenders for sample criteria.

- *The respondent is Latvian.* This research looks at a novel topic that explores the need for upskilling or reskilling the artistic labor market from the point of digital literacy. With Latvians showing below average digital literacy level in the EU, being one of the pilot test objects of DigCompSAT survey instrument (Clifford et al., 2020) and showing a high interest in arts-related jobs, it creates a compelling argument for Latvia to be chosen as a case study for this topic.

To derive the estimate of the population (all Latvian young musicians or dancers aged 16-26 who are either undergoing training to become a professional performing artist or have performing arts as their profession), statistical information from Latvian governmental websites (Oficiālais statistikas portāls, 2024, Latvijas Nacionālais Kultūras centrs, 2024) about the number of graduates from performing arts educational institutions was taken. By calculating the average population estimate (2681) and approximating it to a round number, it was deduced that there are currently approximately 2700 Latvian young musicians or dancers aged 16-26 who are either undergoing training to become a professional performing artist or have performing arts as their profession. All detailed population estimation process, assumptions, data and calculations can be seen in Appendix G. By taking feasibility of this study into account (e.g. time and cost constraints), the sample size of this research was anticipated to be around 150-300 – translated into 5.6%-11% of the population. While 5.6-11% implied a numerically high proportion of the population, it is important to be wary of generalization for such small populations as this one because each individual has a larger weight and can potentially skew results more.

With the survey being distributed through personal social media and social media of educational institutions, the method of finding respondents can be described as a mix between convenience sampling – "one that is simply available to the researcher by virtue of its accessibility" (Bryman, 2012, p. 201) and snowball sampling which includes "contact(ing) with a small group of people who are relevant to the research topic and then us(ing) these to establish contacts with others" (Bryman, 2012, p.202). While both of these sampling methods have imminent downsides of low generalizability, I argue that contacting the three biggest performing arts educational institutions in Latvia still allows to gain useful conclusions and motivate further research.

3.4 Operationalization

Each respondent had 27 raw data values – 6 demographic and socio-economic variables and 21 self-assessed scores, each corresponding to one subsection of digital literacy, and each answer was given a numerical score based on the skill level (0 - I don't know how to do it / I have no knowledge of this; 1 - I can do it with help / I have only a limited understanding of this; 2 - I can do it on my own / I have a good understanding of this; 3 - I can do it with confidence and, if needed, I can support/guide others / I fully understand this topic/issue and I could explain it to others). In two demographic questions (education and profession), it was possible to choose the answer "other" with an additional text window. All "other" answers were recategorized into the closest possible already existing group of profession and educational categories (see Appendix I for detailed information). Six additional aggregate variables were created to capture the five subcategories of digital literacy in the DigComp framework and overall digital literacy:

$$DATA_i = BROWSE_i + EVAL_i + MANAGE_i$$

where $BROWSE_i$ =score determining the proficiency of browsing, searching and filtering data, information and digital content, $EVAL_i$ =score determining the proficiency of evaluating data, information and digital content, $MANAGE_i$ =score determining the proficiency of managing data, information and digital content, and $DATA_i$ =score determining overall information and data literacy for each respondent i.

$$COMM_i = INTER_i + SHARE_i + ENGAGE_i + COLL_i + NETT_i + IDEN_i$$

where INTER$_i$ =score determining the proficiency of interacting through digital technologies, SHARE$_i$ =score determining the proficiency of sharing through digital technologies, ENGAGE$_i$ =score determining the proficiency of engaging in citizenship through digital technologies, COLL$_i$ =score determining the proficiency of collaborating through digital technologies, NETT$_i$ =score determining the proficiency of netiquette, IDEN$_i$ =score determining the proficiency of managing digital identity, and COMM$_i$ =score determining overall digital communication and collaboration for each respondent i.

$$CONT_i = DEVE_i + INTEG_i + COPY_i + PROG_i$$

where DEVE$_i$ =score determining the proficiency of developing content, INTEG$_i$ =score determining the proficiency of integrating and re-elaborating digital content, COPY$_i$ =score determining the proficiency of copyright and licenses, PROG$_i$ =score determining the proficiency of programming, and CONT$_i$ =score determining overall digital content creation for each respondent i.

$$SAFE_i = DEVI_i + PRIV_i + HEALTH_i + ENVI_i$$

where DEVI$_i$ =score determining the proficiency of protecting devices, PRIV$_i$ =score determining the proficiency of protecting personal data and privacy, HEALTH$_i$ =score determining the proficiency of protecting health and well-being, ENVI$_i$ =score determining the proficiency of protecting the environment, and SAFE$_i$ =score determining overall digital safety for each respondent i.

$$PROB_i = TECH_i + NEED_i + CREAT_i + GAPS_i$$

where TECH$_i$ =score determining the proficiency of solving technical problems, NEED$_i$ =score determining the proficiency of identifying needs and technological responses, CREAT$_i$ =score determining the proficiency of creatively using digital technology, GAPS$_i$ =score determining the proficiency of identifying digital competence gaps, and PROB$_i$ =score determining overall digital problem solving for each respondent i.

$$SCORE_i = DATA_i + COMM_i + CONT_i + SAFE_i + PROB_i$$

where SCORE$_i$ = overall score determining digital literacy for each respondent i.

Additionally, percentage values for $SCORE_i$, $DATA_i$, $COMM_i$, $CONT_i$, $SAFE_i$ and $PROB_i$ were calculated as some categories had differing maximum scores. Transforming the variables into percentage helps to understand and interpret results better.

3.5 Data Analysis

After the surveying was completed, all data was put into MS Excel and screened for any significant outlier values or incomplete and incorrect fillings of the survey. All used variables in the research and their computations can be seen in Appendix E. Statistical software "R" was used for data analysis. Methods for data analysis were taken from existing quantitative digital literacy studies with t-tests and ANOVA (Lahiri et al., 2022, Silva-Quiroz & Morales-Morgado, 2022, Yoleri & Anadolu, 2022, Pegalajar Palomino & Rodriguez Torres, 2023, Ayalon & Aharony, 2024, Aydinlar et al., 2024) being used to uncover statistically significant differences between different demographic and socioeconomic groups in the context of digital literacy, and regressions (Morgan et al., 2022) - to test the effects of multiple demographic and socioeconomic factors together on digital literacy. The theoretical relevance of using the particular demographic and socioeconomic variables in connection with digital literacy can be found on the subsection 2.2.4. of the theoretical framework.

Firstly, summary statistics (mean, median, standard deviation, minimum and maximum) were derived to show different variables:

- Demographic and socio-economic variables;

- Overall scores of digital literacy;

- Scores of 5 dimensions of digital literacy (Information and Data Literacy, Communication and collaboration, Managing digital identity, Safety, Problem solving);

- Scores of 21 subdimensions of digital literacy (Browsing, searching and filtering data, information and digital content, Evaluating data, information and digital content, Managing data, information and digital content, Interacting through digital technologies, Sharing through digital technologies, Engaging in citizenship through digital technologies, Collaborating through digital technologies, Netiquette, Digital content creation, Developing content, Integrating and re-elaborating digital content, Copyright and licenses, Programming, Protecting devices, Protecting personal data and privacy, Protecting health and well-being, Protecting the environment, Solving technical problems, Identifying needs and technological responses, Creatively using digital technology, Identifying digital competence gaps).

Secondly, t-tests were performed on demographic and socioeconomic variables with two subgroups (gender, parents' job, perception) and analysis of variance was performed on demographic and socioeconomic variables with more than two subgroups (education, profession, age). Thirdly, a linear regression was used to analyze the relationship between the demographic and socioeconomic variables and the summatic total self-assessed score of digital literacy. The formula is:

$$SCORE_i = \beta_0 + \beta_1 AGE_i + \beta_2 GEND_i + \beta_3 SEC_i + \beta_4 VOC_i + \beta_5 BACH_i +$$
$$+ \beta_6 MAST_i + \beta_7 DANC_i + \beta_8 DANN_i + \beta_9 MUSN_i + \beta_{10} PARE_i + \beta_{11} PERC_i + \varepsilon_i$$

where $SCORE_i$ = overall score determining digital literacy, AGE_i = numerical value of age, and the rest of the variables are dummies coded for a specific rule. If the rule is satisfied, the dummy has a value of 1, and if the rule is not satisfied, the dummy has a value of 0 - $GEND_i$ =1=woman, 0=man, SEC_i =1=the highest education level is a secondary school degree, 0=the highest education level is not a secondary school degree, VOC_i =1=the highest education level is a vocational degree, 0=the highest education level is not a vocational degree, $BACH_i$ = 1=the highest education level is a Bachelor's degree, 0=the highest education level is not a Bachelor's degree, $MAST_i$ = 1=the highest education level is a Master's degree, 0=the highest education level is not a Master's degree, $DANC_i$ = 1=classical dance (ballet), 0=not classical dance (ballet), $DANN_i$ = 1=non-classical dance (commercial, hiphop, contemporary dance), 0=not non-classical dance (commercial, hiphop, contemporary dance), $MUSN_i$ = 1=non-classical music (pop, musical, jazz, etc.), 0= not non-classical music (pop, musical, jazz, etc.), $PARE_i$ = 1=at least one parent works a highly digitized job, 0=no parents work a highly digitized job, and $PERC_i$ = 1=believes in the need to use digital technologies at their (future) job, 0=does not believe in the need to use digital technologies at their (future) job.

3.6 Quality Criteria and Ethics

With keeping in mind that the survey sample included minors and to ensure ethical data obtainment for the participants of the questionnaire, all respondents were required to read the terms of participation which describe the theme, goal, expected timing and the question design, as well as indicate that the participation is voluntary, the respondent is allowed to stop at any time, and ensure that all data collected is used only for research purposes. At the end

of the terms of participation, respondents had to click that they have read the terms, agree with them and wish to continue which was considered as a consent variable of the survey.

It is important to note that the final list of questions was created by combining multiple existing methodologies together – thus, it was necessary to confirm the reliability and the consistency of the created questionnaire. This was done by calculating Cronbach's Alpha which is a common test that calculates internal reliability and provides insight on how coherent the questionnaire is.

To ensure the quality of data, all data obtained from the survey was manually cleaned to exclude any unfinished entries from the final dataset. After data cleaning, visual scatterplots of each variable were created to identify any possible outlier or false values. Regarding econometric validity, R^2 and regression's p-value were obtained to validate the model fit, homoskedasticity assumption was tested by performing the Breusch-Pagan test, the normality of residuals was checked by generating a quantile-quantile plot, and multicollinearity was checked by showing the variance inflation factor (VIF).

Regarding the overall reliability of this study, it is important to note that performing arts in relationship with digital literacy is a relatively novel field of research. In this paper, several methodologies and sources are combined to fit the field of performing arts and the sample size is relatively small, possibly lowering the reliability of this research. However, all steps of development in this paper are explained in detail, and the importance of validity measures for the statistical analysis and for the questionnaire itself are taken seriously – thus increasing the reliability as much as possible. Replicability of this study is ensured by transparency in quantitative reasoning, showing formulas, and adding detailed explanations as well as the full survey questionnaire in the appendices.

4. Results & Discussion

4.1 Descriptive statistics of demographic and socioeconomic variables

Overall, 285 responses were recorded in Qualtrics platform. Respondents who were not between the age of 16-26 or considered music or dance only as their hobby, were brought to an early survey exit after the demographic questions, leaving a usable response number to 217. Moreover, 67 of those had not been completed until the end, leaving the current final response number to be 150. Summary statistics of the demographic variables are presented here:

Table 1
Descriptive statistics of demographic and socioeconomic variables
N = 150. Mean stands for the mean value, median - the middle value, standard deviation – standard deviation value, min - the minimum value, max - the maximum value. Obtained by the author from R analysis.

|	Min	Median	Mean	Standard Deviation	Max
Age	16	21	20.76	3.14	26
Gender	0	1	0.70	0.46	1
Primary education	0	0	0.19	0.39	1
Secondary education	0	0	0.12	0.33	1
Vocational education	0	0	0.43	0.50	1
Bachelor's degree	0	0	0.23	0.42	1
Master's degree or higher	0	0	0.04	0.20	1
Classical musician	0	0	0.47	0.50	1
Non-classical musician	0	0	0.26	0.44	1
Classical dancer	0	0	0.09	0.29	1
Non-classical dancer	0	0	0.18	0.39	1
Parents' job	0	0	0.28	0.45	1
Perception	0	1	0.81	0.40	1

Age is correctly shown ranging from 16 to 26 as expected, with mean and median being around 21 years. Regarding gender, 70% of respondents are women which can be considered a little skewed; however, it can also be argued to be a representative measure for music and dance where in general, more women are present (see Appendix G for proportions in higher education graduates of programs in Music and Performing Arts in Latvia from 2016-2023). As for education levels, all five groups are represented with 19% of respondents having a primary school degree as their highest one, 12% - a secondary school degree, 43% - a vocational school degree, 23% - a bachelor's degree and 4% - master's degree or higher. The high percentage of vocational school degrees can be explained with the Latvian

education system where art schools with specializations like music and dance are classified as vocational schools until the age of 18 (Kunda et al., 2018). In professions, 47% of the sample are classical musicians, 26% - non-classical musicians, 9% - classical dancers (ballet) and 18% - non-classical dancers. Once again, the sample can be interpreted as skewed, but it has to be taken into account that music is a more popular profession to choose than dance is (see Appendix G for proportions in vocational high school graduates of programs in Music and Dance in Latvia from 2016-2023). As for the two additional measurements, 28% of the respondents have at least one of their parents working in a highly digitized job while 81% of the respondents believe that they will have to heavily use digital technologies in their performing arts jobs. The last number can be interpreted as a particularly positive result, and it can be an indication that the majority of Latvian young performing artists are aware of the likely changes in the artistic labor market and its needs for particular skills.

4.2   Descriptive statistics of digital literacy

Figure 4
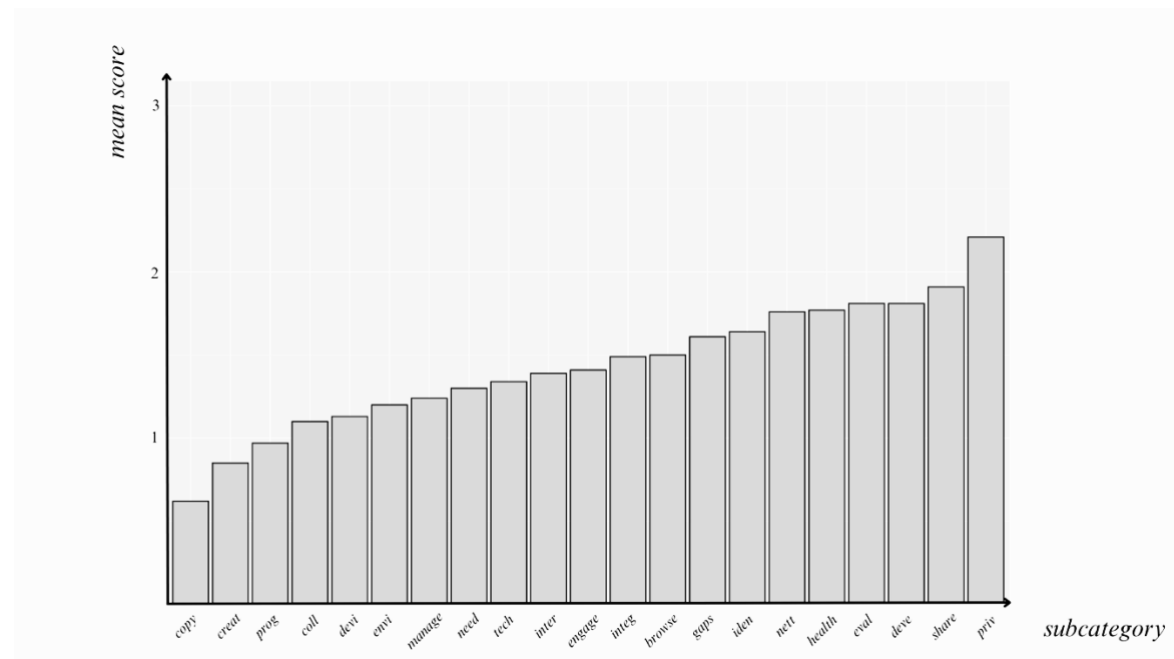**Digital literacy levels of young Latvian performing artists**
N = 150. Digital literacy levels are portrayed as a score with a possible range from 0 to 63. The dotted lines represent where the mean value is, and its distance from one standard deviation and two standard deviations. Obtained by the author from R analysis.
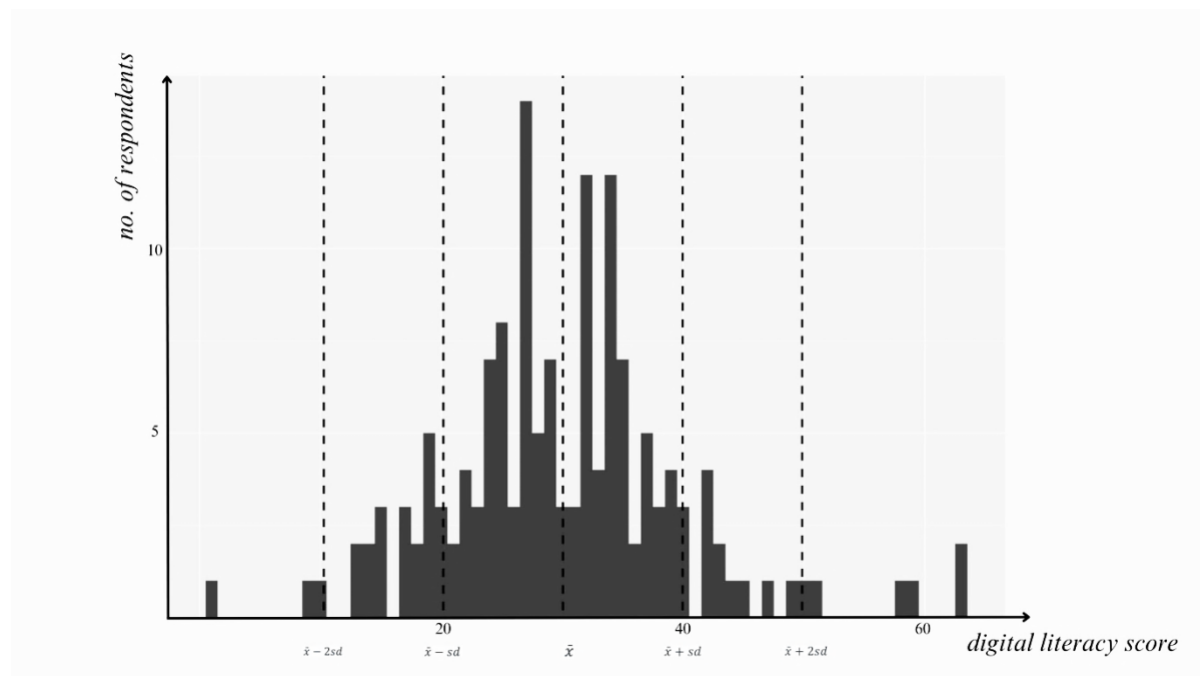
As it can be seen from the graph, the overall digital literacy level of young Latvian performing artists from 16 to 26 years old is quite dispersed with the lowest score of 1 and the highest score of 63. The mean value of digital literacy score is 30.6 points. A positive skewness value of 0.53 indicates that more than half of the respondents are portrayed on the

left side of the graph while there are a few respondents with exceptionally high digital literacy scores that elongate the right tail of the distribution – those could be termed as "innovators" according to the diffusion of innovations theory. More precisely, by adapting the conditions of Rogers (2003) approximation of different types of characters to this graph, it can be concluded that 6 respondents (or 4% of all respondents) can be classified as innovators (above two standard deviations of the mean value), 13 respondents (8.6%) – as early adopters, and 23 (15.3%) – as laggards from the perspective of adoption of digital skills as an innovation in the performing arts labor market. By combining these numbers to the theory of Rogers (2003), it can be deduced that overall, young Latvian performing artists are undertaking digital skills as an innovation in the performing arts labor market a bit slower than in the normally-distributed model shown by Rogers (2003) (for example, the sum of innovators and early adopters constitutes 16% of all population for Rogers (2003), but for young Latvian performing artists it is only 12.6% of the sample) which could indicate some small reservations about the need of this innovation or simply a shortage of performing artists with personalities fitting those of innovators or early adopters described by Rogers (2003). However, it should also be noted that neither the skewness value or the percentages of innovators, early adopters and laggards are very far from those of normal distribution, indicating that there are no huge protests against or huge rush for this innovation - and from the angle of artistic labor market model (Throsby, 1994) and intrinsic motivation (Bille, 2020), it may just be that the opinion of the necessity of digital skills differs among performing artists.

Figure 5
Means of digital literacy scores in all 21 subcategories for young Latvian performing artists
N = 150. Mean score of each subcategory. The minimum possible mean is 0, the maximum – 3.
Obtained by the author from R analysis.

Out of all 21 questions about digital literacy, young Latvian performing artists scored the highest in the subcategories of developing content (*I know how to create a poster for my music/dance event by using a digital software,* mean score=1.81), sharing through digital technologies (*I know to be mindful of what kind of content to share on my professional social media accounts to add value for myself and others,* mean score=1.91) and protecting personal data (*I know which personal data I should not share and display on my professional social media accounts online,* mean score=2.21) on average. All of the high-scoring statements are connected to the maintenance of a performing artist's digital public image; therefore, it may indicate that this is an aspect that is particularly important to them, relatively to other digital pursuits.

Young Latvian performing artists scored the lowest in the subcategories of programming (*I know that my understanding about the technological details of the profession of a musician or dancer (e.g. stage production, sound production, digital marketing, website creation) can be improved by learning a programming language,* mean score=1.10), creatively using digital technology (*I can use the help of virtual reality (VR), augmented reality (AR) and mixed reality (MR) technologies while creating a performance,* mean score=0.85), and copyright and licences (*I know how to protect the copyright of the self-made artistic content I put online,* mean score=0.62) on average. The first two statements imply possible new additions into the process of the creation of a performance (e.g. using

programming for stage production, using virtual reality elements in a performance) – the reasons for the low score may be resistance to include digital means in performance creation, simply not being aware of these particular digital tools or methods, or not having the time or resources to get acquainted with those. Regarding knowledge of digital copyright, it again could be time or resources preventing artists of protecting their digital rights, disinterest or fear of complicated processes or bureaucracy. With statements regarding creatively using digital technology, and copyright and licences scoring below 1 on average – indicating that a substantial number of respondents answered that they have no skills or knowledge about these subjects at all, it can serve as a useful point to policymakers and educators to see what needs the most attention regarding digital education of young performing artists.

Table 2
Descriptive statistics of digital literacy scores and five categorical scores
N=150. Mean stands for the mean value, median - the middle value,
min - the minimum value, max - the maximum value. All variables are shown in percentages (0-100%) for better comparison
due to having different numerical total scores. Obtained by the author from R analysis.

	Min Possible	Minimum	Median	Mean	Standard Deviation	Maximum	Max Possible
Overall digital literacy	0%	1.59%	46.03%	47.71%	15.70	100%	100%
Information & data literacy	0%	11.11%	44.44%	50.59%	20.46	100%	100%
Communication & collaboration	0%	0.00%	50.00%	51.19%	17.72	100%	100%
Digital content dreation	0%	0.00%	41.67%	40.72%	19.70	100%	100%
Safety	0%	0.00%	50.00%	52.56%	18.89	100%	100%
Problem solving	0%	0.00%	41.67%	42.50%	21.65	100%	100%

From the data of overall digital literacy, it can be seen that median and mean are 46.03% and 47.71%, showing that at least half of the respondents were not able to get at least 50% of all possible points. In the information & data literacy category, every respondent had at least some literacy level; however, in all other categories the minimum value was 0, meaning that at least one respondent had no knowledge of those categories at all. Digital content creation is the only category with its median higher than the mean, showing that the overall level of literacy of this category may be higher, only with some respondents posting low scores which drive the average lower. The means of categories indicate that the respondents were on average the most proficient in safety (52.56%), and the least proficient in digital content creation (40.72%). The highest standard deviation of the 5 categories of digital literacy goes to problem solving, indicating that this is the category with the biggest differences in literacy.

4.3   T-tests in various subsamples

Table 3
Two sample t-tests with demographic and socioeconomic variables
Mean stands for the mean value, st. dev. – standard deviation value, t – t-value, df – degrees of freedom.
Obtained by the author from R analysis.

	Digital literacy scores		Two sample t-test		
	Mean	**St. Dev.**	**t**	**df**	**p-value**
Overall digital literacy (N=150)	30.06	9.89			
Female (N=105)	29.70	10.00	0.70	85.86	0.49
Male (N=45)	30.91	9.68			
Parents' job highly digitized (N=42)	29.52	10.71	0.39	68.10	0.70
Parents' jobs not highly digitized (N=108)	30.27	9.60			
High perception of using digital technologies at work (N=121)	31.12	9.82	-2.86	45.04	0.006***
Low perception of using digital technologies at work (N=29)	25.66	9.09			

*p<0.1; **p<0.05; ***p<0.01

By using the methodologies from Silva-Quiroz & Morales-Morgado (2022), Yoleri & Anadolu (2022), Pegalajar Palomino & Rodriguez Torres (2023) and Aydinlar et al. (2024), t-tests were performed among the demographic and socioeconomic variables that had no more than two comparison groups – gender, type of parents' job and perception of using digital technologies at work. When simply looking at the means of the groups, the numbers for gender and perception of using digital technologies at work are in line with literature – men have a higher mean of digital literacy scores than women, and respondents with high perception of using digital technologies at work have a higher mean of digital literacy scores than respondents with low perception of using digital technologies at work. However, for the type of parents' job, the results contradict the literature with respondents with at least one parent working a highly digitized job scoring lower in digital literacy on average than respondents with no parent working a highly digitized job - although, it has to be mentioned that the means are not notably far apart. As for the t-test, the goal was to assess if there are any statistically significant differences between the means of the two variables of each group. For the first two comparison groups, the p-value of the t-test came back insignificant, showing no statistically significant differences between the digital literacy score means for female and male respondents, and respondents with at least one parent working a highly digitized job and no parents working a highly digitized job. However, the perception variable showed statistically significant differences between the means of digital literacy scores for respondents with high perception of using digital technologies at work in comparison with respondents with low perception of using digital technologies at work at 99% confidence level (p-value: 0.006***).

4.4 Analysis of variance (ANOVA) of various subsamples

Table 4
Analysis of variance (ANOVA) with demographic and socioeconomic variables
Mean stands for the mean value, st. dev. – standard deviation value, df – degrees of freedom.
Obtained by the author from R analysis.

	Digital literacy scores		ANOVA		
	Mean	St. Dev.	df	f-value	p-value
Overall digital literacy (N=150)	30.06	9.89			
Primary education (N=28)	33.21	9.59			
Secondary education (N=18)	30.22	13.93			
Vocational education (N-64)	29.02	9.27	4	1.005	0.41
Bachelor's degree (N=34)	29.09	9.27			
Master's degree or higher (N=6)	31.50	5.54			
Classical musician (N=70)	28.69	9.18			
Non-classical musician (N=39)	30.92	10.24	3	0.873	0.46
Classical dancer (ballet) (N=14)	31.71	7.10			
Non-classical dancer (N=27)	31.52	12.21			
Age (separate groups not shown for increased viewability of the table as there are eleven in total, N=150)			10	1.159	0.32

*p<0.1; **p<0.05; ***p<0.01

With a similar goal to t-tests, analysis of variance (ANOVA) was performed for the groups of demographic and socioeconomic variables with more than two groups within (Lahiri et al., 2022, Yoleri & Anadolu, 2022, Pegalajar Palomino & Rodriguez Torres, 2023, Ayalon & Aharony, 2024). – education (5 groups), profession (4 groups) and age (11 groups). When observing the means of digital literacy scores, the education category poses a downward trend with respondent with higher degrees showing lower average scores, with the exception of respondents with a master's degree who have a higher mean than respondents with a bachelor's degree. As for the profession, both classical and non-classical dancers show higher average scores than classical and non-classical musicians. When attempting to uncover any significant differences between the means of digital literacy scores with ANOVA, none can be found for neither – education, profession or age groups.

4.5   Regression analysis

Table 5
The output of regressions on the digital literacy score of young Latvian performing artists
Made by the author using R analysis. The table shows the estimated β coefficients and the standard deviations of the respective variables in the brackets for the ordinary least squares regression before (1) and after (2) adjustments to increase econometric validity.

	Dependent variable:	
	Digital Literacy Score	
	(1)	(2)
Age	-0.245	0.222
	(0.392)	(0.263)
Gender	-1.914	-2.932**
	(1.957)	(1.443)
Secondary Education	-1.358	
	(3.306)	
Vocational Education	-3.414	
	(2.481)	
Bachelor's Degree	-2.349	
	(3.582)	
Master's Degree	0.673	
	(5.359)	
Education		-1.150
		(0.724)
Classical Dancer (ballet)	4.942	5.697***
	(3.008)	(2.166)
Non-classical Dancer	1.367	1.077
	(2.381)	(1.770)
Non-classical Musician	-0.012	-0.392
	(2.087)	(1.556)
Parents' Job	-0.445	-0.289
	(1.890)	(1.439)
Perception	5.900**	3.209*
	(2.354)	(1.764)
Constant	33.262***	26.143***
	(7.865)	(4.898)
Observations	150	132
R^2	0.097	0.111
Adjusted R^2	0.025	0.054
Residual Std. Error	9.768 (df = 138)	6.887 (df = 123)
F Statistic	1.347 (df = 11; 138)	1.926* (df = 8; 123)
Note:		*p<0.1; **p<0.05; ***p<0.01

In accordance with the methodology of Morgan et al. (2022), an ordinary least squares regression was done to try to quantify how different demographic and socioeconomic factors together impact the digital literacy score of young Latvian performing artists. After performing the regression, it became imminent that with the low R2 (9.7%) and non-significant F-statistic, some of the OLS regression assumptions may be violated. Firstly, the assumption of linearity was looked upon with seeking for a better model fit – an attempt was made for transforming some variables into logarithm forms or trying regression types that are meant for count data with many zeroes (Poisson and zero-binomial) – which describes my dataset well. However, none showed an increase in the model fit. Secondly, homoskedasticity, normality of residuals and multicollinearity were tested (detailed results of tests can be seen in Appendix F), and non-normality of residuals was revealed in the QQ plot. Then, by visually assessing the plot, 28 data entries with their residuals located the furthest from the red line of the QQ plot were removed from the sample in attempts to increase the linearity of the sample, improve validity of the coefficients and provide useful results by still using the majority of the sample that showed signs of linearity (81.3% of the sample). Regarding multicollinearity, no variance inflation factors larger than five were observed; however, two of the education dummy variables (vocational education, bachelor's degree) showed VIF values of 2.37 and 3.53 – thus, I set on using a different form of the education variable not in the form of five different dummies, but one cohesive education variable instead (1=primary education, 2=secondary education, 3=vocational education, 4=bachelor's degree, 5=master's degree). Although by using this form it was not possible to separate the effect of each type of education, it improved the model fit and lowered VIF values (see Appendix F for comparison). After these changes, another ordinary least squares regression was ran with an improved R2 (11.1%) and adjusted R2 (5.4%), significant p-value of F-statistic (see Table 5 for comparison), improved homoskedasticity, normality of residuals and lowered multicollinearity (see Appendix F for comparison) – therefore, this regression is chosen for analysis.

In the regression, the gender coefficient shows up with a negative sign, indicating that male performing artists have a significantly higher level of digital literacy than female performing artists at 95% confidence interval. This result is in line with the findings of Yoleri & Anadolu (2022), Pegalajar Palomino & Rodriguez Torres (2023), Ayalon & Aharony (2024) and Aydinlar et al. (2024). Additionally, classical dancers (ballet) also present a positive significant connection with the level of digital literacy scores. This coefficient can be interpreted as – classical dancers have a significantly higher level of digital literacy than

classical musicians (the dummy variable control group) with 99% confidence. This contradicts McIntyre et al. (2023) statement about the performing arts labor market where they argue that artists employed in non-classical professions are likely to need a bigger skillset than just artistic skills to enter the labor market in comparison with classical artists who just may wish to be employed by big, historical organizations. Finally, it can be concluded that performing artists with a high perception of need to use digital technologies in their jobs have a significantly higher level of digital literacy than performing artists with a low perception of need to use digital technologies in their jobs with 90% confidence. This finding is in line with Rogers (2003), as well as complimenting the previously performed t-test of this variable (see Table 3). All other coefficients of variables are insignificant.

4.6   Summary of results and discussion

Table 6
Summary of hypotheses and the results
ANOVA stands for analysis of variance. Regression stands for ordinary least squares regression.
Obtained by the author from R analysis.

	t-test	ANOVA	regression	status
H₁: Age does not have a significant effect on digital literacy of young performing artists.		not significant	not significant	accepted
H₂: Male performing artists have a higher level of digital literacy than female performing artists.	not significant		significant	partially accepted
H₃: Performing artists with higher education (bachelor's or master's degree) have a higher level of digital literacy than performing artists without higher education (vocational, secondary, or primary education).		not significant	not significant	rejected
H₄: Performing artists in non-classical occupations have a higher level of digital literacy than performing artists in classical occupations.		not significant	significant*	rejected
H₅: Performing artists with at least one parent working in a highly digitized occupation have a higher level of digital literacy than performing artists not having any parent working in a highly digitized occupation.	not significant		not significant	rejected
H₆: Performing artists with a high perception of need to use digital technologies in their jobs have a higher level of digital literacy than performing artists with a low perception of need to use digital technologies in their jobs.	significant		significant	accepted

variables were significant when comparing classical dancers to classical musicians, but no significance was found regarding any non-classical artists was indicated in H₃.

To validate the acceptance or rejection of hypotheses, results from all – t-tests, ANOVA and ordinary least squares regressions are taken into account. For age as a possible

determinant of digital literacy, the previous literature, ANOVA and regression results all form a uniform stance and show enough evidence to accept *H1: Age does not have a significant effect on digital literacy of young performing artists.* For education and parents' job type as possible determinants of digital literacy, also, all statistical analysis pose uniform stance, giving strong evidence to reject *H3: Performing artists with higher education (bachelor's or master's degree) have a higher level of digital literacy than performing artists without higher education (vocational, secondary, or primary education)* and *H5: Performing artists with at least one parent working in a highly digitized occupation have a higher level of digital literacy than performing artists not having any parent working in a highly digitized occupation.* Knowing that age, education and parents' job type were insignificant as determinants of digital literacy, and seeing that even with econometric validity improvements, the R^2 of the regression was 11.13% which is quite low, it can be argued that there were some omitted variables that were not captured by this study. This can motivate further research to search for new determinants to better understand the influential factors of digital literacy.

For the artists' profession, the hypothesis (H4) was formulated by comparing non-classical musicians and dancers to classical musicians and dancers based on differences in employment types described in section 4.5. While neither the ANOVA or the regression were significant regarding this matter, leading to the rejection of *H4: Performing artists in non-classical occupations have a higher level of digital literacy than performing artists in classical occupations* – the regression did show positive significance regarding classical dancers in comparison with classical musicians. In addition to the fact that the means of digital literacy scores for both classical and non-classical dancers were higher than those of musicians, it may be useful for further research avenues to take up profession as a variable divided not by employment types but by professions themselves (for example, musicians versus dancers).

For gender, the results in the t-test and the regression were varying, showing enough evidence to only partially support *H2: Male performing artists have a higher level of digital literacy than female performing artists.* Finally, for perception, results of statistical analysis are uniform, showing strong evidence to accept *H6: Performing artists with a high perception of need to use digital technologies in their jobs have a higher level of digital literacy than performing artists with a low perception of need to use digital technologies in their jobs.* These may serve as useful conclusions to educators and policymakers to obtain additional resources to increase the interest, knowledge and skills about the digital realm for female

performing artists, and to spread more information about the practical usefulness of high digital literacy in the performing arts – thus, increasing the perception of it for the artists.

4.7 Questionnaire

Knowing that the questionnaire created for this study combined multiple methodologies together (Vuorikari et al., 2022, Clifford et al., 2020, Creative Skills Europe, 2021), it was important to test its cohesive validity. After doing the calculations for all 21 digital literacy statements together, Cronbach's Alpha of the digital literacy questionnaire for young performing artists scored 0.886, thus, posing very strong reliability and consistency. This indicates that this newly made questionnaire instrument is useful and has both academically and societal value – it can potentially be used in other future research focusing on digital literacy of young performing artists, can be used by educators or artists themselves to evaluate their digital literacy, or used as a benchmarking statistical tool by policymakers to help formulate certain policies surrounding education of performing artists.

5. Conclusion

In this quantitative case study, I attempted to find demographic and socioeconomic determinants of digital literacy for young Latvian performing artists. Age, gender, education, profession type, parents' job type and perception of need to use digital technologies in jobs were chosen as potential determinants by combining sources from existing literature on the diffusion of innovations theory (Rogers, 2003) and digital literacy (Lahiri et al., 2022, Morgan et al., 2022, Silva-Quiroz & Morales-Morgado, 2022, Yoleri & Anadolu, 2022, Pegalajar Palomino & Rodriguez Torres, 2023, Ayalon & Aharony, 2024, Aydinlar et al., 2024). In addition, a self-assessment survey questionnaire for measuring digital literacy of performing artists was built by combining the methodologies of Vuorikari et al. (2022), Clifford et al. (2020) and Creative Skills Europe (2021). To analyze the data of 150 survey respondents, t-tests, analysis of variance (ANOVA) and ordinary least squares regressions were used.

To answer the research question - **How do demographic and socioeconomic factors influence digital literacy of young performing artists from Latvia?** – it was discovered that age, education and parents' job type have no significant effect on the level of digital literacy. Perception of need to use digital technologies in the jobs had a statistically significant effect on the level of digital literacy for young performing artists with those having a high perception of need to use digital technologies in their jobs scoring significantly higher than those having a low perception of need. Gender and profession type had differing results across various statistical methods with gender being insignificant within a t-test, profession type being insignificant within analysis of variance (ANOVA), but both being significant in the ordinary least squares regression. In the regression, men were proven to show statistically significantly higher digital literacy scores than women while classical dancers were proven to show statistically significantly higher digital literacy scores than classical musicians.

Implications of these conclusions can be useful for performing arts policymakers and educators – with knowing that certain demographic and socioeconomic factors influence the digital literacy levels, they can focus their action plans on those at a disadvantage. Moreover, not only the results of the determinants but the digital literacy scores themselves pose useful learning points – it is helpful to know that young performing artists score the lowest in the subcategories of programming, creatively using digital technology, and copyright and

licences, or to see that in performing arts, there are less people with the personality types of 'innovators' and 'early adopters' (12.6%) than in the normal distribution model (16%) posed by Rogers (2003) when looking at digital skillset as an innovation in the performing arts job market. For academia, this research adds to the discussion on the possible determinants of digital literacy with their statistically significant values. Finally, the creation of the survey questionnaire that specifically measures digital literacy for performing artists can be useful for all – academia, policymakers and educators as a tool of assessment.

It is important to also mention the limitations of this study. Firstly, quantitative studies like these pose a risk for omitted variable bias – it is very difficult to measure all the possible variables that could serve as potential determinants of digital literacy, and if some variables are omitted, the coefficients may not be as precise. Secondly, the sample of the respondents was small (N=150), unbalanced in some categories (for example, 9% classical dancers versus 47% classical musicians) and collected by convenience (for example, random sampling is considered a superior method). This can lead to skewed results as they may not be generalizable of the population, lower the reliability of any 'between-group' results in statistical tests due to small subsamples (for example, the subsample for ballet dancers was N=14 which is considered a low number to do t-tests, ANOVA or regressions) or create issues with the normality of the data. Due to dealing with residual non-normality issues, the final regression can be considered a bit aggregated which, again, can be a reason for imprecise or skewed coefficients. Thirdly, the questionnaire itself posed a bias due to it being self-assessment-based rather than an actual skills test of digital literacy – increasing the possibility of untruthful self-assessments. Additionally, there was only 1 question determining the level of literacy of each subcategory, not 3-4, as recommended by Clifford et al. (2020), resulting in possibly skewed and imprecise assessment of each subcategory level.

Nevertheless, due to shortage of literature and information on the matter of performing arts together with digital literacy, I find this study to be an important stepping stone in establishing the relationship that young performing artists have with digital literacy in the midst of fourth industrial revolution. Further research suggestions include using qualitative methods (e.g. interviews) to uncover more potential determinants of digital literacy, broadening the scope and adapting the questionnaire to all professions of cultural and creative industries to have a wider view of the whole industry, or add the time dimension by doing a cohort study on artists where they have to complete the digital literacy questionnaire multiple times – before and after a specific event (e.g. an educational program) to measure the effect in real time.

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7. Appendices

Appendix A: *Survey questionnaire in Latvian and English language and their relevance represented.* Made by the author by combining methodologies of Creative Skills Europe (2021), Vuorikari et al. (2022) and Clifford et al. (2020).

Question in Latvian	Question in English	Relevance of the question
Šī pētījuma mērķis ir izprast jauno mūziķu un dejotāju digitālās prasmes Latvijā. Aptaujas aizpildīšanas laiks ir apmēram 5-7 minūtes un tā sastāv no dažādiem apgalvojumiem, kas atspoguļo digitālo prasmju līmeni no dažādiem rakursiem. Aptaujas ietvaros pieminētie "sociālie tīklu profili/konti/digitālā identitāte" jāuztver tikai profesionālā (t.i. posti, kas saistīti ar karjeru – priekšnesumu video, pasākumu afišas) ne personīgā (t.i., posti par savu atvaļinājumu) kontekstā. Piedalīšanās šajā tiešsaistes aptaujā ir brīvprātīga. Pildot aptauju, ir iespējams apstāties jebkurā laikā bez iepriekšēja brīdinājuma. Visi aptaujas dati ir anonīmi un tiks izmantoti tikai pētījuma nolūkos. Jautājumu gadījumā par šo pētījumu rakstīt uz 694368kc@eur.nl. Ja vēlies piedalīties loterijā RIMI dāvanu kartes iegūšanai 20 EUR vērtībā, ievadi savu e-pastu attiecīgajā lodziņā pēc pēdējā jautājuma izpildīšanas. Epastu dati tiks izmantoti tikai loterijas uzvarētāja noteikšanai. Atzīmējot "es piekrītu", Tu apstiprini, ka esi izlasījis/-usi un sapratis/-usi informāciju par šī pētījuma aptauju un tās datu apstrādi. • Es piekrītu un vēlos turpināt	The purpose of this study is to understand the digital skills of young musicians and dancers in Latvia. The survey takes about 5-7 minutes and consists of various statements that reflect the level of digital skills from different angles. The "social media profiles/accounts/digital identity" mentioned in the survey should only be perceived in a professional (i.e. career-related posts, videos of performances, event posters) context and not in a personal (i.e. vacation posts) context. Participating in this online survey is voluntary. It is possible to stop at any time without notice when filling out a survey. All survey data is anonymous and will only be used for research purposes. In case of questions, reach out to the 694368kc@eur.nl about this study. If you wish to participate in a lottery to obtain an EUR 20 RIMI gift card, enter your email in the designed row after completing the last question. The email information will only be used to determine the winner of the lottery. By clicking "I agree," you confirm that you have read and understood the information about the survey for this study and its data processing. • I agree and wish to continue	• represents user consent
Tavs vecums: • 16 • 17 • 18 • 19 • 20 • 21 • 22 • 23 • 24 • 25 • 26 • cits	Your age: • 16 • 17 • 18 • 19 • 20 • 21 • 22 • 23 • 24 • 25 • 26 • other	• represents variable = age; • filters out people outside the sample age range (people that tick the option "other" cannot continue the survey)
Tavs dzimums: • Sieviete • Vīrietis • Cits	Your gender: • Female • Male • Other	• represents variable = gender

• Nevēlos atbildēt	• Prefer not to answer	
Kāds ir Tavs pašreizējais izglītības līmenis? • Pamatizglītība • Vidējā izglītība • Profesionālā vidējā izglītība • Augstākā izglītība (bakalaura grāds) • Augstākā izglītība (maģistra grāds vai augstāks) • Cits	What is your highest level of education? • Primary education • Secondary education • Vocational secondary education • Higher education (bachelor's degree) • Higher education (master's degree or higher) • Other	• represents variable = education
Atzīmē apgalvojumu, kuram Tu visvairāk piekrīti. • Mūzika vai deja ir mana profesija. • Es mācos, lai kļūtu par profesionālu mūziķi vai dejotāju. • Mūzika vai deja ir mans hobijs.	Tick the statement with which you agree the most. • Music or dance is my profession. • I am studying/training to become a professional musician or dancer. • Music or dance is my hobby.	• filters out people outside the sample criteria (people that tick the option "music or dance is my hobby" cannot continue the survey)
Kāda ir Tavas esošās vai topošās profesijas galvenā darbības sfēra? • Mūziķis-instrumentālists (klasiskā mūzika) • Mūziķis-instrumentālists (džezs, populārā mūzika, folkmūzika u.c.) • Mūziķis-vokālists (klasiskā mūzika) • Mūziķis-vokālists (džezs, populārā mūzika, folkmūzika u.c.) • Dejotājs (balets) • Dejotājs (modernā deja – contemporary) • Dejotājs (commercial, hip-hop, u.c.) • Cits	What is the main field of your profession? • Musician-instrumentalist (classical music) • Musician-instrumentalist (jazz, popular music, folk music etc.) • Musician-vocalist (classical music) • Musician-vocalist (jazz, popular music, folk music etc.) • Dancer (ballet) • Dancer (contemporary dance) • Dancer (commercial, hip-hop dance, etc.) • Other	• represents variable = profession
Vai vismaz viens no Taviem vecākiem strādā darbu, kurā pastiprināti jāizmanto digitālās tehnoloģijas? (piem. digitālās reklāmas vadītājs, mājaslapu izstrādātājs) • Jā • Nē	Does at least one your parents work a highly-digitized job with digital technologies (e.g. digital advertiser, website developer)? • Yes • No	• represents variable = parents' job
Vai Tu domā, ka savas profesionālās karjeras laikā Tev būs jāizmanto daudz digitālo tehnoloģiju? (piem. datori, skaņu aprīkošanas ierīces, dažādas aplikācijas un lietojumprogrammas (software)) • Jā • Nē	Overall, do you think you will use a lot of digital technologies in your professional career? (e.g. computers, sound devices, various applications and softwares) • Yes • No	• represents variable = perception
Es zinu, kā sameklēt darba iespējas (piem. īstermiņa darbi – spēlēšana/dejošana dažādos pasākumos vai ilgtermiņa darbavietas) interneta vidē. • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to search for job opportunities (e.g. short-term gigs - playing/dancing in various events or long-term employment) on the internet. • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of browsing, searching and filtering data, information and digital content

Es zinu, kā identificēt nepatiesu un maldinošu informāciju par savu profesiju interneta vidē. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I know how to identify false and misleading information surrounding my profession on the internet. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of evaluating data, information and digital content
Es zinu, kā sekot līdzi datu analītikai (piem. engagement, clicks) par saviem sociālo mediju postiem un salīdzināt datus starp dažādām platformām. • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to track and compare the analytical results (e.g. enagagement, clicks) of my social media posts about my professional life across different platforms. • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of managing data, information and digital content
Es zinu, kādus digitālās komunikācijas rīkus izmantot, lai sazinātos ar savu auditoriju (piem. potenciālajiem koncerta apmeklētājiem) un palielinātu savu sekotāju bāzi. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I know which communication tools to use to engage with my audience (e.g. potential concert goers) and build my community. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of interacting through digital technologies
Es piedomāju pie tā, ar kādu saturu es dalos savos sociālo mediju kontos, lai dotu pievienoto vērtību sev un citiem. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I know to be mindful of what kind of content to share on my professional social media accounts to add value for myself and others. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of sharing through digital technologies
Es sekoju līdzi tam, kā digitālo tehnoloģiju un mākslīgā intelekta izmantošana ietekmē mūzikas/dejas industriju un tās trendus. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I can recognize how the use of digital technologies and artificial intelligence is impacting the performing arts industry and its trends. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of engaging in citizenship through digital technologies
Es zinu, kā vizualizēt radošas idejas (piem. video scenārijus) interneta vidē, izmantojot tiešsaistē atrodamos vizuālos rīkus, kuros var sadarboties vairāki cilvēki reizē (piem. Miro, Mural). • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to map and visualize creative ideas (e.g. stage script, video frame-by frame) on the internet, using collaborative online visual boards (e.g. Miro, Mural). • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of collaborating through digital technologies
Es zinu, kā rīkoties, ja kāds cits neadekvāti komunicē manos sociālo tīklu profilos (piem. draud, publicē aizskarošus komentārus). • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu	I can take the right measures if someone is doing the wrong thing on my professional social media accounts (e.g. an offensive comment, threats). • I have no knowledge of this • I have a limited understanding of this	• represents variable = literacy of netiquette

• Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	• I have a good understanding of this • I fully understand this topic and I could explain it to others	
Es zinu, kā izveidot un menedžēt savu profesionālo profilu digitālajā vidē caur dažādiem saziņas tipiem (piem. mājaslapa, video, foto, teksts). • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to create and manage a profile in digital environments for professional purposes across different media types (e.g. website, video app, photo app, text app). • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of managing digital identity
Es zinu, kā izveidot afišu savam mūzikas/dejas pasākumam, izmantojot digitālus rīkus. • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to create a poster for my music/dance event by using a digital software. • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of developing content
Es zinu, kā pievienot teksta subtitrus un/vai balss ierakstus (voiceovers) savam mūzikas/dejas priekšnesumam, kas ticis ierakstīts video formātā. • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to put text subtitles and/or voiceovers over a video of my music/dance performance. • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of integrating and re-elaborating digital content
Es zinu, kādas darbības veikt, lai aizsargātu autortiesības saviem oriģināli radītajiem māksliniecistajiem darbiem interneta vidē. • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to protect the copyright of the self-made artistic content I put online. • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of copyright and licenses
Es zinu, ka mana izpratne par tehnoloģiskajām detaļām mūziķa vai dejotāja profesijā (piem. gaismu producēšana, skaņas producēšana, digitālais mārketings, mājaslapas izveide) var tikt paaugstināta, iemācoties kādu programmēšanas valodu. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I know that my understanding about the technological details of the profession of a musician or dancer (e.g. stage production, sound production, digital marketing, website creation) can be improved by learning a programming language. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of programming
Es zinu, kā rīkoties, ja kādā no maniem digitālajiem profiliem ir noticis drošības pārkāpums (piem. uzlauzts profils). • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I know how to respond appropriately to a security breach of my professional digital identity (e.g. social media accounts, email). • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of protecting devices

Es zinu, kurus savus personas datus man nevajadzētu izpaust vai rādīt publiski savos sociālo tīklu kontos interneta vidē. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I know which personal data I should not share and display on my professional social media accounts online. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of protecting personal data and privacy
Es zinu, kā kontrolēt digitālo tehnoloģiju izmantošanu savas profesijas sakarā (piem. limitēt telefona izmantošanu), lai pasargātu savu veselību un labsajūtu. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I know how to balance the use of digital technologies in my professional life (e.g. limit phone use) to protect my health and wellbeing. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of protecting health and well-being
Es zinu, kādus ilgtspējības principus jāievēro, iegādājoties digitālās ierīces, kas nepieciešamas manai profesionālajai karjerai (piem. digitālās klavieres, tumbas) – es izvēlos produktus ar mazāku enerģijas patēriņu, mazāku piesārņojuma risku apkārtējai dabai. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I know 'green' behaviours to follow when buying digital devices for my professional career (e.g. digital piano, speakers) - I choose products with less energy consumption, less polluting and less toxicity for the environment. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of protecting the environment
Es zinu, kā atrast risinājumus interneta vidē vai ar mākslīgā intelekta programmatūru palīdzību brīžos, kad mana mūzikas/dejas priekšnesuma veidošanas laikā ir izveidojusies tehniska problēma (piem. nestrādā mikrofons, nestrādā tumbas). • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to find solutions on the internet or with the help of AI when facing a technical problem in a performance (e.g. microphone not working, speakers not playing the music). • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of solving technical problems
Es zinu, kā izmantot mākslīgā intelekta programmatūras, lai tās man palīdzētu ģenerēt teksta, bilžu vai priekšnesumu idejas manas profesionālās karjeras vajadzībām. • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to use AI to help me generate text, image or performance ideas in my professional career. • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of identifying needs and technological responses
Es esmu atvērta/-s izmantot virtuālās realitātes (VR), paplašinātās realitātes (AR) vai jauktās realitātes (MR) tehnoloģijas savu mūzikas/dejas priekšnesumu izveidē. • Man nav zināšanu par šo tematu • Es daļēji saprotu šo tematu • Es labi saprotu šo tematu • Es pilnībā saprotu šo tematu un, ja nepieciešams, varētu to paskaidrot citiem	I can use the help of virtual reality (VR), augmented reality (AR) and mixed reality (MR) technologies while creating a performance. • I have no knowledge of this • I have a limited understanding of this • I have a good understanding of this • I fully understand this topic and I could explain it to others	• represents variable = literacy of creatively using digital technology

Es zinu, kā atrast un izmantot tiešsaistes mācību rīkus (piem. online kursi), lai uzlabotu digitālās prasmes, kas ir nepieciešamas manai profesionālajai karjerai. • Es nezinu, kā to izdarīt • Es to varu izdarīt ar palīdzību • Es to varu izdarīt patstāvīgi • Es to varu izdarīt patstāvīgi ar pārliecību un, ja nepieciešams, varu palīdzēt to izdarīt citiem	I know how to use online learning tools (e.g. video tutorial, online courses) to improve digital skills that are relevant for my professional career. • I don't know how to do it • I can do it with help • I can do it on my own • I can do it with confidence and, if needed, I can guide others	• represents variable = literacy of identifying digital competence gaps
Ja vēlies piedalīties loterijā RIMI dāvanu kartes 20 EUR vērtībā iegūšanai, tad atstāj savu e-pasta adresi šeit:	If you want to participate in a lottery to win an EUR 20 RIMI gift card, leave your email address here:	• collects email addresses for the lottery

Appendix B: *Final survey statements determining digital literacy of young performing artists that represent 21 subcategories of DigComp.* Made by the author by combining methodologies of Creative Skills Europe (2021), Vuorikari et al. (2022) and Clifford et al. (2020).

Information and data literacy	
Browsing, searching and filtering data, information and digital content	*I know how to search for job opportunities (e.g. short-term gigs - playing/dancing in various events or long-term employment) on the internet.*
Evaluating data, information and digital content	*I know how to identify false and misleading information surrounding my profession on the internet.*
Managing data, information and digital content	*I know how to track and compare the analytical results (e.g. enagagement, clicks) of my social media posts about my professional life across different platforms.*

Communication and collaboration	
Interacting through digital technologies	*I know which communication tools to use to engage with my audience (e.g. potential concert goers) and build my community.*
Sharing through digital technologies	*I know to be mindful of what kind of content to share on my professional social media accounts to add value for myself and others.*
Engaging citizenship through digital technologies	*I can recognize how the use of digital technologies and artificial intelligence is impacting the performing arts industry and its trends.*
Collaborating through digital technologies	*I know how to map and visualize creative ideas (e.g. stage script, video frame-by frame) on the internet, using collaborative online visual boards (e.g. Miro, Mural).*

| Netiquette | *I can take the right measures if someone is doing the wrong thing on my professional social media accounts (e.g. an offensive comment, threats).* |
| Managing digital identity | *I know how to create and manage a profile in digital environments for professional purposes across different media types (e.g. website, video app, photo app, text app).* |

Digital content creation

Developing digital content	*I know how to create a poster for my music/dance event by using a digital software.*
Integrating and re-elaborating digital content	*I know how to put text subtitles and/or voiceovers over a video of my music/dance performance.*
Copyright and licences	*I know how to protect the copyright of the self-made artistic content I put online.*
Programming	*I know that my understanding about the technological details of the profession of a musician or dancer (e.g. stage production, sound production, digital marketing, website creation) can be improved by learning a programming language.*

Safety

Protecting devices	*I know how to respond appropriately to a security breach of my professional digital identity (e.g. social media accounts, email).*
Protecting personal data and privacy	*I know which personal data I should not share and display on my professional social media accounts online.*
Protecting health and well-being	*I know how to balance the use of digital technologies in my professional life (e.g. limit phone use) to protect my health and wellbeing.*
Protecting the environment	*I know 'green' behaviours to follow when buying digital devices for my professional career (e.g. digital piano, speakers) - I choose products with less energy consumption, less polluting and less toxicity for the environment.*

Problem solving

Solving technical problems	*I know how to find solutions on the internet or with the help of AI when facing a technical problem in a performance (e.g. microphone not working, speakers not playing the music).*
Identifying needs and technological responses	*I know how to use AI to help me generate text, image or performance ideas in my professional career.*
Creatively using digital technology	*I can use the help of virtual reality (VR), augmented reality (AR) and mixed reality (MR) technologies while creating a performance.*
Identifying digital competence gaps	*I know how to use online learning tools (e.g. video tutorial, online courses) to improve digital skills that are relevant for my professional career.*

Appendix C: *Creation steps of the final survey questionnaire.* Made by the author by combining methodologies of Creative Skills Europe (2021), Vuorikari et al. (2022) and Clifford et al. (2020).

Vuorikari et al. (2023) DIGCOMP 2.2. CATEGORIES	Vuorikari et al. (2023) DIGCOMP 2.2. SUBCATEGORIES	Clifford et al. (2020) DIGCOMPSAT EMPIRICAL DIGITAL LITERACY QUESTION SCALE DESIGNED BASED ON DIGCOMP 2.1.	Creative Skills Europe (2021) DIGITAL LEARNING CARDS CARDS IDENTIFYING RELEVANT DIGITAL SKILLS GAPS FOR PERFORMING ARTISTS	Vuorikari et al. (2022) DIGCOMP 2.2. NEW STATEMENT SUGGESTIONS THAT WERE NOT INCLUDED IN PREVIOUS VERSIONS OF DIGCOMP	FINAL CHOSEN STATEMENT
Information and data literacy	Browsing, searching and filtering data, information and digital content	I know that different search engines may give different search results, because they are influenced by commercial factors. **I know which words to use in order to find what I need quickly (e.g. to search online or within a document).** When I use a search engine, I can take advantage of its advanced features. I know how to find a website I have visited before.	I know how to be informed of the emerging technologies that might impact the arts. I know how to find academic research articles about the performing arts industry. I know how to keep up to date with online theatre creation tools. I know how to find information about discounts and deals for arts non-profit companies. **I know how to find casting opportunities, networking opportunities tips and tricks and arts industry insights on the internet.**		**I know how to search for job opportunities (e.g. short-term gigs - playing/dancing in various events or long-term employment) on the internet.**
	Evaluating data, information and digital content	I know how to differentiate promoted content from other content I find or receive online (e.g. recognising an advert on social media or search engines). I know how to identify the purpose of an online information source (e.g. to inform, influence, entertain, or sell). **I critically check if the information I find online is reliable.** I know that some information on the Internet is false (e.g. fake news).	**I know how to use tools to help me identify false and misleading information in my professional life.**		**I know how to identify false and misleading information surrounding my profession on the internet.**
	Managing data, information and digital content	I know about different storage media (e.g. internal or external hard disk, USB memory, pen drive, memory card). I know how to organise digital content (e.g. documents, images, videos) using folders or tagging to find them back later. I know how to copy and move files (e.g. documents, images, videos) between folders, devices or on the cloud. **I know how to manage and analyze data using software (e.g. sorting, filtering, calculations).**	**I know how to track and compare the analytical results of my song across various platforms where it has been posted.** **I know how to manage social media content across various platforms.** I know how to optimize my project management processes by using digital tools. I know how to find digital tools to help me monitor and forecast finances of a performance project. I know how to find open source softwares for practical performance management (creating spreadsheets, editing documents, creating databases).		**I know how to track and compare the analytical results (e.g. enagagement, clicks) of my social media posts about my professional life across different platforms.**

Communication and collaboration	Interacting through digital technologies	I know how to send, reply and forward e-mails. I know that many communication services and social media are free of charge because they are paid for by advertising. I know how to use advanced videoconferencing features (e.g. moderating , recording audio and video). **I know which communication tools and services (e.g. phone, email, video conference, text message) are appropriate to use in different circumstances.**	I know how to use smartphones to make news video, radio, and multi-platform stories as a journalist. I know how to engage with an interactive tools (e.g. shrink your own image, put slides behind you, integrate video, change backgrounds, pre-record a mp4 to save) on video conferencing devices. **I can use interactive storytelling to engage with my audience and build my community.**		**I know which communication tools to use to engage with my audience (e.g. potential concert goers) and build my community.**
	Sharing through digital technologies	I am open towards sharing digital content that I think might be interesting and useful to others. I know how to use cloud services (e.g. Google Drive, DropBox and OneDrive) to share my files. I know how to change who I share content with (e.g. friends, friends of friends, everyone). I know how to reference the source of documents (e.g. the author or web address) that I found online.	I know how to livestream my performances to others.	**I know how to curate content on content sharing platforms so as to add value for oneself and others.**	**I know to be mindful of what kind of content to share on my professional social media accounts to add value for myself and others.**
	Engaging citizenship through digital technologies	I know how to apply for a job using a digital platform (e.g. fill in a form, upload my CV and photo). I know that many public services are available on the Internet (e.g. booking a health visit, submitting tax declaration, requesting birth, marriage, residence and other certificates). I know how to pay for goods and services that I buy online (e.g. using direct bank transfer, credit/debit cards, other online payment systems). It matters to me to debate social or political issues online (e.g. in online forums, news sites, Facebook, Twitter).		**I know that AI per se is neither good nor bad. What determines whether the outcomes of an AI system are positive or negative for society are how the AI system is designed and used, by whom and for what purposes.** I recognize that while the application of AI systems in many domains is usually uncontroversial (e.g. AI that helps avert climate change), AI that directly interacts with humans and takes decisions about their life can often be controversial (e.g. CV-sorting software for recruitment procedures, scoring of exams that may determine access to education).	**I can recognize how the use of digital technologies and artificial intelligence is impacting the performing arts industry and its trends.**
	Collaborating through digital technologies	I understand the benefits of remote collaboration (e.g. reduced commuting time). I know how to edit a shared, online document. **I know how to invite others and give appropriate permissions to collaborate on a shared document.** I am aware that I should ask permission from a person before publishing or sharing photos about them.	I know how to use gamification to digitally brainstorm creative ideas. I can create a theater performance only through digital technologies (e.g. digital theatre). **I know how to map and visualize creative ideas with collaborative online whiteboard tools (e.g. Mural, Miro).** I know how to co-create a stage script (track the positions, movement of performers and scenery throughout the show) for a performance by using a digital tool. I know how to use automation tools to optimize TV production and newsroom organizational processes I know how to use a digital collaborative tool to review and improve production processes in creative teams.		**I know how to map and visualize creative ideas (e.g. stage script, video frame-by frame) on the internet, using collaborative online visual boards (e.g. Miro, Mural).**

	Netiquette	I know how to recognise online messages and behaviors that attack certain groups or individuals (e.g. hate speech). **I can take the right measures if someone is doing the wrong thing online (e.g. an offensive comment, threats).** I know how to behave online according to the situation (e.g. formal vs informal).			**I can take the right measures if someone is doing the wrong thing on my professional social media accounts (e.g. an offensive comment, threats).**
	Managing digital identity	I know my digital identity is everything that identifies me in online environments (e.g. usernames, likes and posts on social media, petitions signed online). **I know how to create a profile in digital environments for personal or professional purposes.** I know that the EU introduced regulation on The Right to Be Forgotten (i.e. to have one's private information removed from the Internet). I know how to configure the settings in my Internet browser to prevent or limit cookies.			**I know how to create and manage a profile in digital environments for professional purposes across different media types (e.g. website, video app, photo app, text app).**
Digital content creation	Developing digital content	I know how to create and edit digital text files (e.g. Word, OpenDocument, Google Docs). I know how to express myself by creating digital content on the Internet (e.g. blog post, video on Youtube). **I know how to produce a multimedia presentation with text, images, audio and video elements.** To express myself, I am careful to choose the right type of digital media depending on the audience and my aim (e.g. using social media to promote a project).	I know how to record sound for my performance at my home. **I know how to edit photos.**		**I know how to create a poster for my music/dance event by using a digital software.**
	Integrating and re-elaborating digital content	I am keen to create new digital content by mixing and modifying existing digital resources (e.g. a presentation with photos and a soundtrack found on the Internet). I know that some digital content can be reused and reworked legally (e.g. public domain or with Creative Commons licences). I know how to edit or make changes to digital content that others have created (e.g. insert a text into an image, edit a wiki). **I know how to create something new by mixing different types of content (e.g. text and images).**	**I know how to create video captions or subtitles and add them to my performance video.** **I know how to automatically create a voice or voice over based on a text.** I know how to transform audio or video to text. I know how to turn my powerpoint into a video . I know how to create quickly and easily social media ads in a video format without having to record any original material		**I know how to put text subtitles and/or voiceovers over a video of my music/dance performance.**
	Copyright and licences	**I am careful to follow the rules about the copyrights and licenses of digital content that I find.** I know that downloading or sharing digital content (e.g. music, software, films) may have ethical or legal consequences. I can detect when digital content is made available illegally (e.g. software, movies, music, books, TV).		**I know how to choose the most suitable strategy, including the licensing, for the purpose of sharing and protecting one's own original creation.**	**I know how to protect the copyright of the self-made artistic content I put online.**

		I know which different types of licences apply to the use of digital content (e.g. Creative Commons licences).			
	Programming	I am interested in finding out how a task can be broken down into steps so that it can be addressed by writing a computer program. **I know that programming languages (e.g. Python, Visual Basic, Java) are used to provide a digital device instructions to carry out a task.** I can write scripts, macros and simple applications to automate the execution of a task. I know that there could be different algorithmic solutions to accomplish a specific computational task (e.g. sorting and searching).			**I know that my understanding about the technological details of the profession of a musician or dancer (e.g. stage production, sound production, digital marketing, website creation) can be improved by learning a programming language.**
Safety	Protecting devices	I understand the benefits and also the safety risks when using Internet-connected devices or systems (e.g. smart watches, smart home devices). I know about the importance of keeping the operating system, antivirus and other software up-to-date in order to prevent security issues. I know how to configure the settings of a firewall on different devices. I know how to recover digital information and other content (e.g. photos, contacts) from a backup.		**I know how to respond appropriately to a security breach (i.e. an incident that results in unauthorised access to digital data, applications, networks or devices, the leaking of personal data such as logins or passwords).**	**I know how to respond appropriately to a security breach of my professional digital identity (e.g. social media accounts, email).**
	Protecting personal data and privacy	I know how to restrict or refuse access to my geographical location. I know how to check that the website where I am asked to provide personal data is secure. I know how to check that the website where I am asked to provide personal data is secure (e.g. https sites, safety logo or certificate). **I know which personal data I should not share and display online (e.g. on social media).**			**I know which personal data I should not share and display on my professional social media accounts online.**
	Protecting health and well-being	I am careful about checking the privacy policies of the digital services that I use. **I am aware that I should manage the time I spend on my digital devices.** I know how to protect myself from unwanted and malicious online encounters and materials (e.g. spam messages, identity theft e-mails). I know about digital tools that can help older people or people with special needs.			**I know how to balance the use of digital technologies in my professional life (e.g. limit phone use) to protect my health and wellbeing.**

	Protecting the environment	I seek out ways in which digital technologies could help me to live and consume in a more environmentally friendly way. I know that old digital devices and consumables (e.g. computers, smartphones, batteries) must be appropriately disposed to minimise their environmental impact. I know how to reduce the energy consumption of my devices (e.g. change settings, close apps, turn off wifi). **I know 'green' behaviours to follow when buying or using digital devices (e.g. purchase devices with Eco-label, restrain from unnecessary printing of digital files, do not leave mobile phones and laptop chargers connected without the device).**			**I know 'green' behaviours to follow when buying digital devices for my professional career (e.g. digital piano, speakers) - I choose products with less energy consumption, less polluting and less toxicity for the environment.**
Problem solving .	Solving technical problems	When I face a technical problem, I try step-by-step to identify the problem. I know some reasons why a digital device may fail to connect online (e.g. wrong wifi password, airplane mode on). **When I face a technical problem, I am able to find solutions on the Internet.** I am able to edit the configurations of the operating system of my digital devices to solve technical problems (e.g. automatic stop/start of services, modify registry keys).			**I know how to find solutions on the internet or with the help of AI when facing a technical problem in a performance (e.g. microphone not working, speakers not playing the music).**
	Identifying needs and technological responses	**I usually try to find out if there is a technology solution that might help me address a personal or professional need.** I know the main functions of the most common digital devices (computer, tablet, smartphone). I know how to select the right tool, device or service to perform a given task (e.g. select a smartphone for my needs, choose a tool for a professional videocall). I know technical solutions that can improve the access and use of digital tools such as language translation, magnification or zoom and text-to-voice functionality.	I know how to identify performance production processes that repeat from time to time and create a digital template for them (e.g. sound and video production checklist, financial budgeting template).	**I know how to identify and use AI systems: product recommenders (e.g. on online shopping sites), voice recognition (e.g. by virtual assistants), image recognition (e.g. for detecting tumours in x-rays) and facial recognition (e.g. in surveillance systems). (AI)**	**I know how to use AI to help me generate text, image or performance ideas in my professional career.**
	Creatively using digital technology	**I know that digital technology can be used as a powerful tool to innovate processes and products.** I am willing to take part in challenges and contests, aimed at solving intellectual, social or practical problems through digital technologies. I can use data tools (e.g. databases, data mining and analysis software) that manage and organize complex information to make decisions and solve problems.	**I can use the help of VR, AR and XR technologies while creating my performance.** I know how to create immersive online experiences for my performances.		**I can use the help of virtual reality (VR), augmented reality (AR) and mixed reality (MR) technologies while creating a performance.**

| | Identifying digital competence gaps | I am willing to help people in my community improve their digital skills.

I am curious about new digital devices and applications and I am keen to experiment with them whenever I find the opportunity.

I know how to use online learning tools to improve my digital skills (e.g. video tutorial, online courses).

I know about new trends in the digital world and how they impact on my personal or professional life. | **I know how to find video tutorials about online presence of performers, online casting techniques, self-taping (video recording, voice recording, editing, distribution) for artists, etc.** | | **I know how to use online learning tools (e.g. video tutorial, online courses) to improve digital skills that are relevant for my professional career.** |

Appendix D: *Distribution places of the survey.* Table made by the author.

Name of the educational institution in Latvian language	Name of the educational institution in English language	Institution type	Relevant education focuses	Way of distribution
Jāzepa Vītola Latvijas Mūzikas akadēmija	Jāzeps Vītols Latvian Academy of Music	University	• classical music • vocal music • jazz music • choreography	Through email communication with the student council
Latvijas Kultūras akadēmija	Latvian Academy of Culture	University	• contemporary dance	Through email communication with the student council
Mākslu Izglītības kompetences centrs "Nacionālā Mākslu vidusskola"	Arts Education competence centre "National School of Arts"	High school	• classical music • vocal music • jazz music • ballet • contemporary dance	Through email communication with the student council

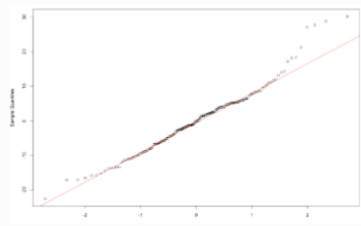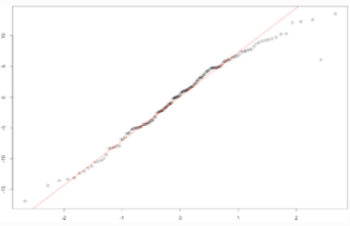**Appendix E:** *The full list of used variables.* Table made by the author.

Variable	Formula/description
Age	Numerical value from 16 to 26
Gender	1=female 0=male
Primary Education	1= the highest education level is a primary school degree 0= the highest education level is not a primary school degree
Secondary Education	1= the highest education level is a secondary school degree

	0= the highest education level is not a secondary school degree
Vocational Education	1= the highest education level is a vocational school degree 0= the highest education level is not a vocational school degree
Bachelor's Degree	1= the highest education level is a bachelor's degree 0= the highest education level is not a bachelor's degree
Master's Degree or Higher	1= the highest education level is a master's degree or higher 0= the highest education level is not a master's degree or higher
Education	1= primary education 2= secondary education 3=vocational education 4=bachelor's degree 5=master's degree or higher
Classical Music	1= the profession of the respondent is classical music 0= the profession of the respondent is not classical music
Non-classical Music	1= the profession of the respondent is non-classical music (e.g. jazz, pop, folk, etc.) 0= the profession of the respondent is not non-classical music (e.g. jazz, pop, folk, etc.)
Classical Dance (ballet)	1= the profession of the respondent is classical dance (ballet) 0= the profession of the respondent is not classical dance (ballet)
Non-classical Dance	1= the profession of the respondent is non-classical dance (e.g. contemporary, hip-hop, etc.) 0= the profession of the respondent is not non-classical dance (e.g. contemporary, hip-hop, etc.)
Profession	1=classical music 2=non-classical music 3=classical dance 4=non-classical dance
Parents' job	1= at least one parent works a highly digitized job; 0= no parent of this respondent works a highly digitized job
Perception	1= the respondent believes in the need to use digital technologies at their job 0= the respondent does not believe in the need to use digital technologies at their job
Browsing, searching and filtering data, information and digital content	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Evaluating data, information and digital content	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Managing data, information and digital content	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Interacting through digital technologies	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Sharing through digital technologies	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Engaging citizenship through digital technologies	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic

Collaborating through digital technologies	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Netiquette	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Managing digital identity	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Developing digital content	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Integrating and re-elaborating digital content	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Copyright and licences	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Programming	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Protecting devices	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Protecting personal data and privacy	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Protecting health and well-being	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Protecting the environment	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Solving technical problems	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Identifying needs and technological responses	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Creatively using digital technology	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic 2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Identifying digital competence gaps	0= no skill/knowledge of this topic 1= basic skill/knowledge of this topic

	2= intermediate skill/knowledge of this topic 3= advanced skill/knowledge of this topic
Information and data literacy	= browsing, searching and filtering data, information and digital content + + evaluating data, information and digital content + + managing data, information and digital content
Communication and collaboration	= interacting through digital technologies + sharing through digital technologies + + engaging citizenship through digital technologies + + collaborating through digital technologies + + netiquette + managing digital identity
Digital content creation	= developing digital content + integrating and re-elaborating digital content + + copyright and licences + programming
Safety	= protecting devices + protecting personal data and privacy + + protecting health and well-being + protecting the environment
Problem solving	= solving technical problems + identifying needs and technological responses + + creatively using digital technology + identifying digital competence gaps
Digital literacy	= information and data literacy + communication and collaboration + + digital content creation + safety + problem solving
% score of information and data literacy	= information and data literacy * 100 / 9 (nine is the maximum possible score)
% score of communication and collaboration	= communication and collaboration * 100 / 18 (eighteen is the maximum possible score)
% score of digital content creation	= digital content creation * 100 / 12 (twelve is the maximum possible score)
% score of safety	= safety * 100 / 12 (twelve is the maximum possible score)
% score of problem solving	= problem solving* 100 / 12 (twelve is the maximum possible score)
% score of digital literacy	= digital literacy * 100 / 63 (sixty-three is the maximum possible score)

Appendix F: *Econometric validity tests before adjustments and after adjustments).* Table made by the author.

	OLS regression (N=150)	OLS regression (N=132) with an adjusted sample due to non-normality of residuals
R2	0.097	0.11
p-value	0.205	0.06*
QQ plot		
Breusch-Pagan test p-value	0.17	0.87
variance inflation factor test (VIF)	age 2.377741 gender 1.264738 secondary education 1.814417 vocational education 2.367263 bachelor's degree 3.534899 master's degree 1.733724 classical dance (ballet) 1.203568 non-classical dance 1.315983 non-classical music 1.318040 parents' job 1.131626 perception 1.358079	age 1.905789 gender 1.240275 education 1.882469 classical dance (ballet) 1.238317 non-classical dance 1.253850 non-classical music 1.289136 parents' job 1.143454 perception 1.330132

Appendix G: *Population estimation calculations using data by Oficiālais statistikas portāls (2024), Latvijas Nacionālais Kultūras centrs (2024) and Latvijas Kultūras akadēmijas Kultūras un mākslu institūts (2023).* Tables made by the author.

Firstly, the scope of graduation years for performing artists aged 16-26 at the time of the survey was assumed to be between 2016-2025. Afterwards, data of graduates from 2016 to 2023 was obtained, forecasts of 2024 and 2025 graduates were calculated and all the data was summed together to create a cohesive estimate of the population. It was decided to compare two population estimates – one derived from the number of graduates of vocational high schools with specialization in music or dance, and the other – from the number of graduates in higher education institutions with specialization in music or dance due to claims made in an existing research about cultural education in Latvia (Kunda et al., 2018). The study concluded that for young dancers it is far more popular to immediately enter the job market after graduating a vocational high school and to not pursue higher education than for young musicians from whom getting a university degree is important (Kunda et al., 2018).

While none of the graduate numbers were perfect in terms of estimation (number of vocational high school graduates does not include any non-classical dancers since no such educational programs existed until 2023 while the number of higher education graduates includes not only musicians and dancers but also theatre program graduates), they are the closest statistical units that are available in terms of precision. The number of graduates of vocational high schools with specialization in music or dance from 2016-2025 was calculated to be 1720, and the number of graduates in higher education institutions with specialization in music or dance from 2016-2025 was calculated to be 2248.

Number of graduates in vocational high schools in Latvia with specialization in music or dance (2016-2023, est. 2024-2025).

	2016	2017	2018	2019	2020	2021	2022	2023	2024*	2025*	SUM
Music	111	130	147	152	172	184	184	181	183	183	1627
Dance	7	4	6	10	5	8	9	19	12	13	93
											1720

Note. Data from 2016-2023 by Latvijas Nacionālais Kultūras centrs (2024). Data from 2024-2025 is calculated by the author by taking the average number of graduates from the previous three years.

Number of graduates in higher education institutions in Latvia in the profession category "Music and performing arts" divided by gender (2016-2023, est. 2024-2025).

	2016	2017	2018	2019	2020	2021	2022	2023	2024*	2025*	SUM
Men	83	66	57	62	47	70	53	50	58	54	599
Women	188	184	223	161	137	198	145	119	154	139	1648
All	271	250	280	223	184	268	198	169	212	193	**2248**

Note. Data from 2016-2023 by Oficiālais statistikas portāls (2024). Data from 2024-2025 is calculated by the author by taking the average number of graduates from the previous three years.

To account for young performing artists that do not have any formal education, percentage point coefficients from the research of Latvijas Kultūras akadēmijas Kultūras un mākslu institūts (2023) were used. The study reports that 74% of the interviewed employers in the cultural and creative industry sectors believe that a diploma from a vocational high school or a higher education institution focused on the particular artistic qualification is necessary to get employed in their company (Latvijas Kultūras akadēmijas Kultūras un mākslu institūts, 2023). In terms of my population estimation calculations, the other side of this percentage (26%) is interpreted as a projection of the share that non-formally educated performing artists take up in the artistic labor market, driving the final population estimates to 2324 and 3037, and the average population estimate – 2681.

Population estimates with vocational high school or higher education institution graduates as baseline

	Number	Percentage in job market	Final population estimate
Graduates in vocational high schools in Latvia with specialization in music or dance (2016-2025)	1720	74%	2324
Graduates in higher education institutions in Latvia in the profession category "Music and performing arts" (2016-2025)	2248	74%	3037
Average population estimate			2681

Note. Data from 2016-2023 by Latvijas Nacionālais Kultūras centrs (2024) and Oficiālais statistikas portāls (2024). Data from 2024-2025 is calculated by the author by taking the average number of graduates from the previous three years. Data of percentage in the job market is taken from a survey done by Latvijas Kultūras akadēmijas Kultūras un mākslu institūts (2023). Final population estimate is calculated by adding a coefficient of 0.74 to the number of graduates to account for young performing artists in the job market who have not taken formal education in music or dance.

Appendix H: *Reasoning for used and unused determinants of digital literacy in this research, and previous studies using these variables.* Table made by the author.

Determinant	Used/ not used	Why not used	Previous studies
Age	Used	-	Morgan (2022), Ayalon & Aharony (2024)
Gender	Used	-	Morgan (2022), Yoleri & Anadolu (2022), Pegalajar Palomino & Rodriguez Torres (2023), Aydinlar et al. (2024), Ayalon & Aharony (2024)
Education	Used	-	Morgan et al. (2022), Lahiri et al. (2022), Aydinlar et al. (2024)
Occupation type	Used	-	Rogers (2003)*
Parents' occupation type	Used	-	Rogers (2003)*

Perception of use of digital technologies in the desired occupation	Used	-	Rogers (2003)*
International/domestic student	Not Used	Irrelevant – the sample are Latvians	
Work hours	Not Used	The sample includes 16-17 year old individuals, possibly resulting in skewed results	
Location of the educational institution	Not Used	Irrelevant – all contacted cultural educational institutions are in Riga	
Private/public educational institution	Not Used	Irrelevant – private educational institutions in Latvia are rare	
Internet usage time	Not Used	Chosen digital literacy scale is not only focused on internet-related digital skills	
Faculty type	Not Used	Irrelevant – research is focused on specific occupations, not quality of education	

*Note. Rogers (2003) used variables of similar meaning, not these exact ones.

Appendix I: *Re-categorization of "other" answers in the education and profession groups.*
Table made by the author.

Other (education)

"Other" answers	Re-categorized group	No. of people
Higher vocational education	Vocational education	2
Bachelor's degree in progress	Secondary education	1

Other (occupation)

Musicologist	Classical music	3
Conductor	Classical music	3
Singer in musicals	Non-classical music	2
Mainly non-classical musician but can also do classical	Non-classical music	1
Singer, DJ, producer	Non-classical music	1
Singer in folk music	Non-classical music	1
Dancer in folk music	Non-classical dance	1
Dancer, theater movement & rhythmics teacher	Non-classical dance	1