A Needs Analysis for Embedding Sustainable Finance Competences into Vocational Business Education in the Baltic Region

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Abstract

Aim. The aim of this article was to analyse relevant literature as well as financial services sector professionals' expectations on future sustainability competence needs among vocational business graduates as part of an ideation process to design an open online course within the project "Sustainability in Finance – SuFi" (2020-2022).

Methods. The online mixed-method survey was elaborated using Google Forms and Webropol and distributed via email among finance services industry pro-

fessionals in Finland, Latvia, Estonia, and Aland Islands. In total, 221 responses were obtained. The qualitative and quantitative data analysis was performed using NVivo and SPSS.

Results. Qualitative data analysis revealed that the conceptual knowledge of business graduates was the most frequently mentioned category, followed by procedural knowledge. Among the key competencies in sustainability, the most necessary was intra-personal competence, followed by inter-personal competence. Quantitative data analysis revealed that the top three sustainable finance competencies in demand within respondents' organisations were: to understand relevant driving sustainable forces, to think and operate with a long-term perspective, and to communicate sustainable financial information in a meaningful way.

Conclusion. In the Baltic Region's finance sector, there is a need for a more holistic view for understanding the market as part of society as a whole and also the meaning of understanding long-term horizons. The competencies that financial services sector professionals found important for vocational business graduates in future work were used as an input for elaborating vocational business education study courses.

Keywords: competencies, needs analysis, sustainable finance, vocational education and training

Introduction

In 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development, a new global framework to redirect humanity towards a sustainable path (United Nations, 2015). At the core of the 2030 Agenda are universal, transformational, and inclusive 17 Sustainable Development Goals (SDGs) which describe the major complex challenges humanity has to face. To create a more sustainable world as described in the SDGs, individuals need a capacity that empowers them to contribute to sustainable development (e.g., to make informed decisions and act responsibly). Education for sustainable development can develop key competences for sustainability that are relevant to all SDGs (UNESCO, 2017).

Nowadays, humanity is facing many economic, social, and environmental issues, where the last ones are the most challenging. The European Green Deal is a response to climate and environment-related challenges which require transforming the European Union's (EU) economy for a sustainable future (European Commission, 2019, 2022). According to Flash Eurobarometer 478 results, young people aged 15-30 believe that fighting climate change and protecting the environment should be a priority for the EU in the years to come (European Union, 2019). Currently in the EU, developing a European sustainability competence framework (GreenComp) is an important policy action to facilitate education and training on environmental sustainability for the green transition in any learning context, comprising four interconnected aspects such as sustainability values, complexity in sustainability, sustainable futures, and acting for sustainability (Bianchi et al., 2022). GreenComp is based on the method developed and used by

the Joint Research Centre, the European Commission's science and knowledge service, to elaborate the Digital competence framework for citizens (DigComp), the Entrepreneurship competence framework (EntreComp), and the European framework for personal, social, and learning to learn key competence (LifeComp).

The common priorities of the European vocational education and training (VET) system have been highlighted in the European policy documents and have been linked to the European Commission's strategy to transform human capital skills depending on the demands of the labour market, with a special emphasis on green and digital skills. VET for sustainable competitiveness, social fairness, and resilience has been defined recently as an enabler of recovery and just transitions to digital and green economies (Cedefop, 2021; European Commission, 2019, 2020a, 2020b; The Council of the European Union, 2020). During the last decade, the changing nature and role of VET in Europe have been investigated deeply, comprehensively, and thoroughly (Cedefop, 2017a, 2017b, 2017c, 2018a, 2018b, 2018c, 2019a, 2019b). In light of the green and digital transitions, there is an urgent need to significantly expand and enhance the offer of VET for both young people and adults, while also increasing the attractiveness and quality of initial VET (The Council of the European Union, 2020). Sustainability issues should be advanced in VET (especially in vocational business and management education), and not only from an ecological perspective, but also from an ethical point of view (Eizaguirre et al., 2019; Hermann & Bossle, 2020; Hesselbarth et al., 2015; The Council of the European Union, 2020; Tormo-Carbó et al., 2018).

The project "Sustainability in Finance – SuFi" (2020-2022) (hereinafter: the SuFi project) aimed at accelerating and aligning vocational business education with the SDGs, sustainability principles, and new sustainability competence needs, focusing on quality and alignment in sustainable finance.

The goal of this article was to analyse scientific and grey literature as well as financial services sector professionals' expectations on future sustainability competence needs among vocational business graduates as part of an ideation process to design an open online module "Sustainability in finance" within the SuFi project.

Literature review

Sustainable development versus sustainability

While policy-makers and academics agree on the necessity to embed sustainability concepts and competences in education, there is no common system of using terminology, for instance, in spite of a conceptual difference between "sustainable development" and "sustainability", these notions are often used as synonyms interchangeably: *sustainability* could be described

as a long-term goal prioritising the needs of all life forms by ensuring that human activity does not exceed planetary boundaries, while *sustainable development* refers to the many pathways to achieve development (progress or growth) in sustainable ways (Bianchi, 2020; Bianchi et al., 2022). Therefore, it can be argued that *education for sustainable development* (Kioupi & Voulvoulis, 2019; Laurie et al., 2016; UNESCO, 2017; United Nations, 2012; Tilbury, 2011) emphasises the idea that education is a process to equip learners with the necessary set of attitudes, values, knowledge, and skills throughout their lives to enact a sustainable development, but *sustainability education* (Bianchi, 2020; Bianchi et al., 2022) is more integrative and inclusive, whereby sustainability is integrated with education in all spheres and aims to change the behaviour of individuals to live in harmony with their society and environment.

Towards sustainability as a competence

There were many efforts to define competences for sustainable development (Lambrechts et al., 2013), key competences for sustainability (UNESCO, 2017), key competences in sustainability (Arizona State University, 2018; Redman & Wiek, 2021; Wiek et al., 2011), sustainability core competences (Eizaguirre et al., 2019; Glasser & Hirsch, 2016), sustainability competences (Bianchi, 2020; Bianchi et al., 2022), and an elaborate competence framework for advancing transformations towards sustainability (Bianchi et al., 2022; Redman & Wiek, 2021). The European sustainability competence framework (GreenComp) is created to be a reference for learning schemes fostering sustainability as a competence made of 12 interconnected building blocks organised into the four areas:

- comprising complexity in sustainability (e.g., critical thinking, systems thinking, and problem framing);
- embodying sustainability values (e.g., fairness and nature);
- conceiving sustainable futures (e.g., adaptability, exploratory thinking, and futures literacy);
- acting for sustainability (e.g., individual initiative, collective action, and political agency) (Bianchi et al., 2022).

In the GreenComp framework, sustainability is defined as a competence which empowers to embody sustainability values and embrace complex systems in order to act responsibly maintaining ecosystem health, enhancing justice, and generating visions for sustainable futures with a special emphasis on "developing sustainability knowledge, skills, and attitudes for learners so they can think, plan, and act with sustainability in mind, to live in tune with the planet" (Bianchi et al., 2022, p. 12). Many scholars focused their attention on context- or discipline-dependent sustainability issues and competences in higher education, e.g., in business and management studies (Dimante et al., 2016; Eizaguirre et al., 2019; Lambrechts et al., 2013), in professional accounting and finance education (Mburayi & Wall, 2018), in education for cir-

cular economy (Dimante et al., 2016; Sumter et al., 2021), in business ethics and corporate social responsibility education (Tormo-Carbó et al., 2018), and bringing an entrepreneurial focus to sustainability education towards achieving an entrepreneurial-oriented sustainability education (Hermann & Bossle, 2020). In the EntreComp conceptual framework, ethical and sustainable thinking is one of the 15 interrelated and interconnected building blocks of entrepreneurship as a competence (Bacigalupo et al., 2016).

Financial literacy as a path to sustainability

The sustainable finance landscape is featured by heterogeneous concepts, definitions, and standards as proposed by the European Commission (n.d.), Deloitte (2019, 2021), Marco Migliorelli (2021), and Dirk Schoenmaker (2020). Based on the EU policy, sustainability finance is the money to support economic development while decreasing environmental pressures and considering the social and governance facets (European Commission, n.d). Similarly, according to Deloitte (2019), sustainable finance is an all-encompassing term that does not create any difference between ESG investing, justifiable investing and responsible investing and refers to any method of monetary service that integrates ESG standards into business or investor choices for the improved advantages of investors and society in general. Another research conducted by Schoenmaker (2020) stated that sustainable finance denotes the distribution of investment and loan offerings to sustainable administrative institutions, companies and projects and hastening the changes to a low--carbon, circular, and wide-ranging economy. Also, Migliorelli (2020) defined sustainable finance as the money to support areas or events that help in the attainment of or the enhancement of more than one of the appropriate sustainability scopes and; therefore, *sustainable finance* could also be used as a synonym of *finance for sustainability*. Sustainable behaviour of people is crucial in finance for sustainability; consequently, this has made financial literacy as a route to sustainability to obtain high substantial research topic in link with the necessity to enhance monetary knowledge and the abilities of people to make evidence-based financial decisions and act responsibly (Krechovská, 2015; Mavlutova et al., 2022; Muñoz-Céspedes et al., 2021; Praveena & Rachel, 2018; Swiecka et al., 2020). Sustainable financial literacy (or financial literacy for sustainability) can contribute to global economic growth, sustainable development, and sustainability, taking into account environmental, social, and governance considerations when making financial decisions, not only for business but also for personal finance in order to achieve a financially balanced, sustainable, ethical, and responsible lifestyle (OECD-GFLEC, 2018; Praveena & Rachel, 2018).

Sustainable finance skills and learning needs in demand within finance industry

Nowadays the development of finance sustainability competences (A4S CFO Leadership Network, 2018), sustainable finance skills and talent (Delo-

Table 1

The Most Important Sustainable Finance Skills and Learning Needs in Ireland, Canada, and Singapore

	Deloitte (2019)	Deloitte (2021)	Tan (2022)
The most important *sustainable finance skill*s in demand within financial services industry organisations	1. Baseline technical knowledge. 2. Knowledge of sustainable finance frameworks and regulations. 3. Dedicated non-financial analysis of ESGs within an organisation or an asset. 4. Design of sustainable finance products.	1. ESGs risk management. 2. Qualitative and quantitative scenario analysis. 3. Baseline technical knowledge. 4. Frameworks and strategies related to impact and ESGs investing.	1. Carbon markets and decarbonisation strategies management. 2. Climate change management. 3. Natural capital management. 4. Taxonomy application. 5. Impact indicators, measurement, and reporting. 6. Non-financial industry sustainability developments. 7. Sustainable insurance and re-insurance solutions and applications. 8. Sustainable investment management. 9. Sustainable lending instruments structuring. 10. Sustainability reporting. 11. Sustainability risk management. 12. Sustainability stewardship development.
The most important *learning needs* in demand within financial services industry organisations	Integrating the specific ESGs issues into financial products and services. Developing a strategic approach to sustainability for the institution (for instance, integrating sustainability into values, strategies, products, services, etc.). Integrating ESGs / sustainability into product innovation and development. Integrating sustainability into the institution's client / investment value proposition and guide clients / investees towards more sustainable business models and practices.		

Note: This table was created by the authors based on several sources.

Source: Deloitte (2019, 2021) and Tan (2022).

itte, 2019, 2021), as well as the skills and competences required for a career in sustainable finance (Tan, 2022) have become crucial for the financial services industry (e.g., fund services, banking, insurance, asset management, etc.). According to the results obtained within the research conducted by Deloitte (2019, 2021), the majority of financial services industry professionals believe that there is demand for sustainable finance skills within their enterprises and institutions; furthermore, the supply is not adequate and further upskilling is required; they expect more in terms of sustainable finance skills from post-secondary graduates than they did three or more years ago (Deloitte, 2019, 2021). Taking into account that the sustainable finance scene is quickly changing the planning because it is not focusing on creating a whole new skill set. Still, it is concerned with blending the available money abilities with risk, data management, and ESG skills to react to the complexity and interconnection of the challenges (Deloitte, 2021).

Therefore, "sustainability must be integrated into the curricula of schools, universities and all professional financial qualifications" (Deloitte, 2019, p. 10), and the integration of sustainability issues in finance/business education programmes will accelerate sustainable finance skills acquisition (Deloitte, 2021). The most important sustainable finance skills and learning needs identified in Ireland (Deloitte, 2019), Canada (Deloitte, 2021), and Singapore (Tan, 2022) are summarised in Table 1.

Methodology

Research aim

The aim of the online mixed-method survey was to find out the financial services sector professionals' expectations on future sustainability competence needs among vocational business graduates, particularly within business education in finance.

Research questions

The research question of the empirical study conducted within the SuFi project was as follows: Which competences are important for vocational business graduates in future work? And more specifically, which sustainability competences in finance education are important for employers? This question was structured into two sub-questions, the first one addressing the qualitative comments and the second one the quantitative assessment:

Research sub-question 1 (RSQ1): Which were the most important future competences and training opportunities for employees within the area of sustainability in finance according to the financial services sector professionals?

Research sub-question 2 (RSQ2): How have finance services industry professionals rated the importance of the sustainability competences in finance education for their business/their employees? Were there any sta-

tistically significant differences between respondent groups depending on respondents' demographic profile (age, gender, education level, and working experience in the field)?

Data collection procedure and sampling

During October – December 2020, the online mixed-method survey (containing a five-point Likert scale ranking, closed-ended and open-ended questions) was elaborated in English, Finnish, Swedish, Estonian, and Latvian using Google Forms and distributed via email to the financial services sector professionals from the countries mentioned above. In January 2021, the survey was moved to Webropol due to indications that Google Forms were not approved by all organisations and sent out again to the potential respondents. At the beginning of March 2021, 221 respondents were reached (Table 2).

Table 2

Respondents' Demographical Profile

Demographic characteristics		Country				Total
		Latvia, n (%)	Aland Islands, n (%)	Estonia, n (%)	Finland, n (%)	
Gender	Male	11 (9.8)	2 (1.8)	8 (7.1)	91 (81.3)	112
	Female	32 (30.8)	1 (1.0)	5 (4.8)	66 (63.5)	104
	Prefer not to say	-	-	-	5 (100.0)	5
Age	21–30	11 (28.2)	-	1 (2.6)	27 (69.2)	39
	31–40	13 (19.7)	1 (1.5)	5 (7.6)	47 (71.2)	66
	41–50	13 (23.6)	1 (1.8)	4 (7.3)	37 (67.3)	55
	> 50	6 (10.0)	1 (1.7)	3 (5.0)	50 (83.3)	60
Education level	VS	2 (7.7)	-	1 (3.8)	23 (88.5)	26
	BA	10 (90.9)	-	1 (9.1)	-	11
	MA	13 (11.4)	3 (2.6)	10 (8.8)	88 (77.2)	114
	PhD	14 (30.4)	-	1 (2.2)	31 (67.4)	46
	Other	4 (16.7)	-	-	20 (83.3)	24
Work experience	≤ 5 years	15 (30.6)	-	3 (6.1)	31 (63.3)	49
	6–15 years	14 (18.7)	1 (1.3)	5 (6.7)	55 (73.3)	75
	> 15 years	14 (14.4)	2 (2.1)	5 (5.2)	76 (78.4)	97

Note: Education level: VS – vocational school, BA – bachelor's degree, MA – master's degree, PhD – doctorate.

Source: own research.

Regarding the demographics of the sample (Table 2), 50.7% of survey participants were male and 47.1% were female, 29.9% were 31-40 years old and 27.6% were more than 50 years old, 51.6% were with a Master's degree, and 43.9% with working experience in the field more than 15 years. All the four SuFi project partners' countries were represented in the research as

follows: 73.3% from Finland, 19.5% from Latvia, 5.9% from Estonia, and 1.4% from the Aland Islands.

Data processing and analysis methods

The qualitative data (RSQ1) were processed and analysed using NVivo software, applying content analysis with coding for investigating the respondents' replies to the open-ended questions (e.g., Which sustainable finance competencies should a business graduate have to be employed in your organisation/enterprise? What are the most important future competences in the financial sector? How do you today educate and train your employees within the area of sustainable finance? Your advice to a student that is a potential employee… Something you would like to add…). A combination of deductive and inductive approaches to coding (Linneberg & Korsgaard, 2019) was used.

The quantitative data (RSQ2) analysis was performed using SPSS software. Reliability analysis (Cronbach's Alpha) was carried out to assess the internal consistency of the research instrument (a five-point Likert scale, 14 items, α = .913) and for each category used within the instrument: knowledge-based competencies (7 items, α = .851), skills-based competencies (4 items, α = .782), and behaviour-based competencies (3 items, α = .768). Cronbach's Alpha results indicated good and acceptable internal consistency for each category and excellent internal consistency for the research instrument as a whole. Frequencies, measures of central tendency, and measures of variability were employed using Descriptive Statistics to outline the general features of a data set. The distribution of data was checked for normality using the Kolmogorov-Smirnov Test. For the comparison respondents' rating of the importance of the sustainable finance competencies depending on their demographic profile, the two non-parametric tests (i.e., Mann-Whitney U Test for the comparison by gender and Kruskal-Wallis H Test for the comparison by age, education level, and working experience) were employed. The *U*-value, *H*-value, and *p*-value were used to specify statistically significant differences between respondent groups, then a measure of effect size was calculated and interpreted (Cohen, 1992; Lenhard & Lenhard, 2016) for statistically significant differences determined.

RESULTS

Qualitative data (i.e., the financial services sector professionals' replies to the open-ended questions within the online survey, in total contained 6 149 words) were coded based on the revised version of Bloom's Taxonomy of Educational Objectives (Anderson et al., 2001; Krathwohl, 2002) and the unified framework of competences for advancing sustainability transformations (Redman & Wiek, 2021) as well as applying the additional codes (marked *in italics* in Table 3) generated while examining the col-

Table 3

The Results of Qualitative Data Coding and Analysis of Respondents' Replies Regarding the Necessary Sustainable Finance Competences Depending on Respondents' Gender

Thematic categories and codes	Code frequencies by gender		Total	Examples of respondents' expressions
	Male	Female		
The main knowledge dimension categories (Anderson et al., 2001; Krathwohl, 2002)				
Factual knowledge	19	10	29	Basic knowledge of financial concepts and terms is enough for a graduate.
Conceptual knowledge	31	33	64	Understanding of economic processes, economic driving forces, long-term consequences of activities.
Procedural knowledge	24	19	43	Understand how to apply your knowledge to make effective decisions in a variety of financial situations.
Metacognitive knowledge	13	18	31	Look at things from different perspectives and try to see the big picture clearly.
The main cognitive process dimension categories (Anderson et al., 2001; Krathwohl, 2002)				
Remembering	2	5	7	Recognising the basic finance sector terms.
Understanding	42	39	81	Understanding of the impact of different megatrends on the investment market.
Applying	4	14	18	Applying the knowledge of tax policy into practice.
Analysing	14	19	33	An ability to analyse financial indicators.
Evaluating	7	9	16	Assessing sustainability risks and opportunities in different industry sectors.
Creating	5	4	9	Developing sustainable finance products.
Key competences in sustainability (Redman and Wiek, 2021)				
Systems-thinking competence	8	20	28	An ability to understand things from different angles, to visualise complex contexts and systems.
Futures-thinking competence	21	11	32	Long-term thinking, considering future visions and perspectives.

Thematic categories and codes	Code frequencies by gender		Total	Examples of respondents' expressions
	Male	Female		
Values-thinking competence	17	17	34	How the financial sector can contribute to sustainable development taking into consideration the EU taxonomy for sustainable activities.
Strategies-thinking competence	8	4	12	Risk management.
Implementation competence	7	5	12	Adapting new products / services to consumer needs and preferences.
Integration competence	5	3	8	Analysis and solution of complex problems. Complex decision making.
Inter-personal competence	48	25	73	An ability to work in a team. Counselling and negotiation skills.
Intra-personal competence:				
Responsibility	23	15	38	Responsibility is integrated into every work-related activity and promotes self-development.
Empathy	1	3	4	Empathy must be maintained.
Resilience	3	3	6	Stress coping. Psychological resilience.
Activity, initiative	12	4	16	We need people who are active, enthusiastic, and courageous. Be a creator and a good example maker.
Curiosity, open-mindedness	30	27	57	Be open to new ideas and approaches. Be positively curious.
Flexibility	7	23	30	We believe that the ability to adapt and respond quickly to changes is one of the most important competences in any industry.
Independence	4	1	5	Think with your mind, not with the formulas given outside. Be able to manage yourself, the work is independent and requires systematic and purposeful action from the employee.
Self-efficacy	6	2	8	Good performance. Try to complete each given task as best you can.
General competences (Redman and Wiek, 2021)				

Thematic categories and codes	Code frequencies by gender		Total	Examples of respondents' expressions
	Male	Female		
Critical thinking	5	5	10	There is a need to think critically (e.g., distinguishing between what is greenwashing and what is not).
Logical thinking	2	4	6	Logically and causally justify your actions and decisions.
Creativity, *innovativeness*	6	7	13	Thinking outside the box. It is necessary to improve/facilitate your creativity.
Learning	38	51	89	Be prepared to learn continuously. Internal training sessions are carried out systematically for all employees of our company.
Digital proficiency	10	19	29	An ability to use new technologies.
Disciplinary competences (Redman and Wiek, 2021)	48	30	78	Financial literacy. You must have good sales skills in order to sell finance services and products. Understanding of end-to-end value chains, climate risks, sustainable investing strategies, etc.
Total	470	449	919	

Source: own research.

Table 4

Respondents' Assessment of the Importance of the Sustainable Finance Competencies (Descriptive Statistics Results)

Item	Not important, n (%)	Slightly important, n (%)	Moderately important, n (%)	Important, n (%)	Very important, n (%)	Mean (*M*)	Standard deviation (*SD*)	Mode (M_o)
A – To understand relevant driving sustainable forces affecting the investment market and the society as a whole	1 (0.5)	2 (0.9)	15 (6.8)	83 (37.6)	120 (54.3)	4.44	.702	5
C – To think and operate with a long-term perspective, focusing on long-term value drivers as relevant for a long-term time horizon	3 (1.4)	3 (1.4)	17 (7.7)	76 (34.4)	122 (55.2)	4.41	.802	5
B – To communicate sustainable financial information in a meaningful and understandable way	1 (0.5)	6 (2.7)	22 (10.0)	81 (36.7)	111 (50.2)	4.33	.801	5

Item	Not important, n (%)	Slightly important, n (%)	Moderately important, n (%)	Important, n (%)	Very important, n (%)	Mean (*M*)	Standard deviation (*SD*)	Mode (M_o)
A – To know different sustainable financial products	6 (2.7)	6 (2.7)	17 (7.7)	85 (38.5)	107 (48.4)	4.27	.919	5
A – To demonstrate how sustainability trends can impact the organisation's value creation and destruction	1 (0.5)	7 (3.2)	26 (11.8)	94 (42.5)	93 (42.1)	4.23	.811	4
A – To be aware of global warming, environmental, and social issues as well as the consequences	3 (1.4)	5 (2.3)	35 (15.8)	93 (42.1)	85 (38.5)	4.14	.860	4
A – To understand different financial investments, their risk and impact on climate change and the assets	2 (0.9)	6 (2.7)	41 (18.6)	91 (41.2)	81 (36.7)	4.10	.858	4
B – To adapt knowledge of sustainability issues, frameworks, and guidance into action	3 (1.4)	8 (3.6)	38 (17.2)	100 (45.2)	72 (32.6)	4.04	.876	4
A – To understand how to create new sustainable financial products	5 (2.3)	10 (4.5)	38 (17.2)	94 (42.5)	74 (33.5)	4.00	.946	4
C – To collaborate with different teams and functions to find innovative solutions for complex sustainability problems	6 (2.7)	10 (4.5)	38 (17.2)	94 (42.5)	73 (33.0)	3.99	.965	4
C – To appreciate the advantages of engaging widely with internal and external stakeholders, responding to their needs	2 (0.9)	10 (4.5)	44 (19.9)	101 (45.7)	64 (29.0)	3.97	.868	4
B – To interpret, apply, and communicate sustainability accounting guidance and standards as relevant to inform decisions for the organisation/enterprise and other stakeholders	3 (1.4)	11 (5.0)	50 (22.6)	98 (44.3)	59 (26.7)	3.90	.899	4
A – To be informed about international agreements and regulations related to sustainable development	5 (2.3)	15 (6.8)	58 (26.2)	85 (38.5)	58 (26.2)	3.80	.981	4
B – To employ the necessary accounting skills for integrating sustainability	5 (2.3)	24 (10.9)	59 (26.7)	87 (39.4)	46 (20.8)	3.66	1.000	4

Note: A − knowledge-based competencies, B − skills-based competencies, C − behaviour-based competencies. The system was adapted from the "Tool 8 – finance sustainability competencies" developed by A4S CFO Leadership Network (2018).

Source: own research.

lected data. The results of qualitative data coding and analysis (Table 3) revealed that the conceptual knowledge (i.e., knowledge of classifications, principles, models, etc.) was the most frequently mentioned category of the knowledge dimension, followed by procedural knowledge (i.e., knowledge of subject-specific algorithms, techniques, methods, etc.). Within the main cognitive process dimension categories, the most important was understanding (n = 81) followed by analysing (n = 33). Among the key competencies in sustainability, the most necessary was intra-personal competence (n = 164), followed by inter-personal competence (n = 73). Curiosity, open--mindedness (n = 57), followed by responsibility (n = 38) and flexibility (n = 30) were the most crucial components of intra-personal competence. Among general competences, learning, e.g., lifelong, life-wide, workplace, etc. (n = 89), was the most required, followed by digital proficiency (n = 29). Disciplinary competencies (context- or discipline-dependent) were mentioned 78 times.

The respondents were also asked to evaluate the importance of the fourteen sustainable finance competencies for their business and their employees using a five-point Likert scale from 1 − not important to 5 − very important. The results have been sorted by mean in descending order (Table 4).

The top three sustainable finance competences in demand within respondents' organisations were knowledge-based competence "to understand relevant driving sustainable forces affecting the investment market and the society as a whole" (M = 4.44, SD = .702), behaviour-based competence "to think and operate with a long-term perspective, focusing on long-term value drivers as relevant for a long-term time horizon" (M = 4.41, SD = .802), and skills-based competence "to communicate sustainable financial information in a meaningful and understandable way" (M = 4.33, SD = .801).

According to the Mann-Whitney U Test results provided in Table 5, it can be concluded that females have rated the ability to communicate sustainable financial information in a meaningful and understandable way statistically significantly higher (with a small effect) than males (U = 6661.500, p = .044, d_{Cohen} = .25). The other research items (i.e., sustainable finance competences) did not show a gender difference (p > 0.10).

Table 5

Statistically Significant Differences between Respondents' Assessment of the Importance of the Sustainable Finance Competences Depending on Respondents' Gender (Mann-Whitney U Test Results)

Item	Respondents' gender		U-value
	Male	Female	
	Mean rank	*Mean rank*	
To communicate sustainable financial information in a meaningful and understandable way	101.02	116.55	6661.500*

Note. ** $p < .001$; * $p < .05$

Source: own research.

The Kruskal-Wallis H test (Table 6) showed that there was a statistically significant difference with a small effect in assessment of the knowledge about global warming, environmental and social issues, and the consequences depending on respondent's education level ($H(4) = 11.174$, $p = .025$, $d_{Cohen} = .371$): the respondents with a Master's degree have rated the knowledge statistically significantly higher than the respondents with a Doctorate. Also, there was a statistically significant difference with an intermediate effect in the assessment of understanding of relevant driving sustainable forces affecting the investment market and the society as a whole depending on the respondent's education level ($H(4) = 20.280$, $p < .001$, $d_{Cohen} = .571$): the respondents with a Master's degree have rated the understanding statistically significantly higher than the respondents with a Doctorate and vocational school graduates.

Table 6

Statistically Significant Differences between Respondents' Assessment of the Importance of the Sustainable Finance Competences Depending on Respondent's Education Level (Kruskal-Wallis H Test Results)

Item	Respondent's education level					H-value
	Vocational school	Bachelor degree	Master degree	Doctor degree	Other	
	Mean rank	*Mean rank*	*Mean rank*	*Mean rank*	*Mean rank*	
To be aware about global warming, environmental and social issues, and the consequences	97.56	101.91	122.87	91.07	110.25	11.174*
To understand relevant driving sustainable forces affecting the investment market and the society as a whole	81.35	115.68	125.43	91.01	110.75	20.280**

Note. ** $p < .001$; * $p < .05$.

Source: own research.

There were no statistically significant differences between respondents' assessment of the importance of the sustainable finance competencies depending on respondents' age and working experience in the field.

Discussion and conclusion

When comparing the current research results to the most important sustainable finance skills in the finance sector identified by Deloitte (2019, 2021) and Lester Tan (2022), it seems that there is a need for a more holistic view for understanding the market as part of the society as a whole and also the meaning of understanding long-term horizons. Also, according to Deloitte (2019, 2021) and Tan (2022), a special emphasis was on competences such as technical knowledge and qualitative and quantitative scenario analysis. On the other hand, the current research results highlighted the importance of communicating sustainable financial information in a meaningful and understandable way. Nevertheless, taking environmental, social, and governance issues into consideration was parallel when comparing with previous research. Being aware of global warming, environmental and social issues, and the organisation's value-creating was rated at least important by the majority of respondents.

This research was conducted by analysing the empirical data gathered in the Baltic Region. The competences that financial services sector professionals found important for vocational business graduates in future work were used as an input for elaborating business education study courses for VET. These courses have been piloted in the Baltic Region under several VET institutions. The learners will be educated to explain and analyse current drifts in sustainability and finance, recognise various sustainable asset divisions and tools as well as compare diverse forms of sustainable finance products. Moreover, the courses' learning goals will include disapprovingly assessing sustainability dangers and opportunities and establishing profound reasoning in the sector of sustainability investment procedures. Learners will identify and discuss conditions for countries to benefit from growing sustainable investment opportunities, explain the process of creating functional, sustainable asset allocation, and use sustainable finance representations and approaches to an actual case study.

Sustainability competences are by far the most essential generic competencies for employees in the future, which calls for the necessity to implement the content into VET degree and diploma programs. A transition into a green economy is a significant facilitator on providing courses such as circular economy, sustainable finance, and responsible business to VET learners. Many customers, workers, societies, and national states expect organisations to have a substantial duty in decarbonising the global economy. However, the climate hazards are regarded as a critical investment menace. That will also dramatically change the knowledge base needed in

the future. Every VET institution should implement these competencies into the educational curriculum and educate the students that will be the flagship of this social transformation in the future. Each organisation will be changed to a net zero emission ecosphere. Therefore, the VET providers are asked if we will take control or be controlled.

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Ethics statement

Research ethics have been followed at every stage during the research. The survey data has been stored in a protected hard drive under Haaga-Helia University of Applied Sciences. Individual respondents cannot be identified when performing methodology analysis and publishing the results.