

From Curiosity to Competences: Lifelong Learning as an Instrument of Self-Realization and Professional Development

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Abstract - The study, *The Impact of Lifelong Learning on Personal and Professional Development*, aims to examine the factors influencing participation in lifelong learning, with an emphasis on demographic variables, barriers, and educational motivation. Gender, age, education level, and employment status significantly influence participation in lifelong learning. The greatest differences were found among women, young adults, and highly educated and employed respondents. Women prefer visual and blended learning methods, while employed participants also tend to choose blended approaches. Motivational drivers related to curiosity, identified as the key motivational factor, demonstrate their dominant role in educational decision-making, surpassing professional motivation and career incentives.

Keywords - Finance, lifelong learning, educational motivation, employability, curiosity.

1. Introduction

Lifelong learning is a fundamental instrument for adapting to the dynamic labour market and its changing demands [1], [5], which is why it should be understood as a philosophy that permeates all contexts at every stage of an individual's life [9], with three forms being distinguished: formal, non-formal, and informal learning [18]. Non-formal and informal learning encourage innovation and the development of soft skills [8], which are often neglected by formal systems, and [21] adds that the informal component allows for the selection of content according to interests and professional goals, which increases motivation and a sense of responsibility.

The formal segment, in addition to the transfer of knowledge, also includes the development of social, civic, and professional competencies that enable individuals to integrate into society and the labour market, increasing their employability. It forms the basis of lifelong learning because it provides the basic skills necessary for quality non-formal and informal learning [9], which is especially visible in conditions of intense market competition and accelerated technological change. In doing so, it is necessary to pay attention to information literacy and achieve the highest possible level of critical information literacy [13], [6].

While formal learning is generally rigidly organized and time-consuming, non-formal learning offers flexibility and adaptability to the needs of people with active working and social lives. It contributes significantly to the development of lifelong competencies, with an emphasis on those that are not explicitly learned in the formal segment. This is confirmed by research in Australian schools, which shows that teachers recognize the importance of informal experiences and activities that allow students to express creativity, self-confidence, and initiative [1].

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Participation in non-formal education programs, according to [11], influences professional development and encourages the intensity of social ties and participation in social activities that contribute to the development of social inclusion. Participation in local projects and cultural events develops values on which social responsibility and civic awareness are based. It is also necessary to take into account self-reflection that encourages conscious planning and management of one's own learning [10].

According to [9], non-formal learning does not result in formal certificates or diplomas, but involves situations in which competences are acquired outside formal educational institutions. It occurs daily and largely unconsciously, through practical work, observation, self-assessment, and reflection [19], as well as through activities on social networks [23]. By enabling individualization and flexibility, it forms the basis of lifelong learning. The development of technology provides access to knowledge [2], blurring the boundaries between organized education and everyday experience, which is why it is essential to encourage the development of independent learning skills in schools [5].

According to UNESCO reports, education must be accessible to all at all times, to simultaneously encourage individual development and active social participation, in accordance with which the report "Learning: The Treasure Within" presents four basic educational goals: learning to know, learning to develop as a person, learning to work, and learning to live together [4]. It should be emphasized that lifelong education refers to organized forms, and lifelong learning includes a wider range of activities that are not necessarily institutionalized [3]. UNESCO also emphasizes the importance of education as a human right and a means to achieve sustainable development, social inclusion, and global cooperation [25], with lifelong learning representing both an individual process and a social responsibility, the successful implementation of which requires continuous cooperation between educational institutions, employers, civil society, and individuals [26].

Drawing on the theory of experiential learning [15] and the philosophy of andragogy [16], contemporary experts emphasize the need to integrate different approaches to encompass all dimensions of the learning process, taking into account social, cultural, and emotional aspects. By combining formal, non-formal, and informal forms, they take into account different learning styles, cultural specificities, and social conditions and promote an integrated approach that allows for a more comprehensive view of the educational process and follows the needs of society and the labour market [12].

With the above approach, lifelong learning enables individuals to be competitive in the labour market and also to develop the ability to effectively deal with life challenges [9].

The study [22] shows that positive attitudes towards lifelong learning contribute to motivation for continuous improvement and readiness for change. The development of competences through lifelong learning contributes to the strengthening of civic identity, increased activity, and social responsibility [25], and goals that contribute to a more active role of the individual in society should not be neglected, including the promotion of social inclusion and the development of active citizenship.

From an economic perspective, lifelong learning contributes to sustainable economic development and competitiveness in the labour market, and continuous education of the workforce enables adaptation to technological innovations and market dynamics. It also fosters cooperation between educational institutions, employers, and communities in the development of human capital, which helps employability and reduces unemployment [14], [20].

The challenges of lifelong learning relate to the uneven availability of educational opportunities, especially for vulnerable groups, and limited access to digital tools makes this more difficult [3], but also to the institutional and social underestimation of non-formal and informal education [8], which limits the possibility of their verification in the formal system. One of the challenges is the focus of lifelong learning on the acquisition of competences that are in demand in the market, while education for personal development and civic participation is often neglected, which can lead to social inequalities and shifting responsibility for success to the individual [3]. Therefore, it is necessary to develop accessible and flexible educational models, ensure institutional support, and recognize knowledge acquired informally and non-formally to enable equal access to lifelong learning [27].

2. Methods

The research, *The Impact of Lifelong Learning on Personal and Professional Development*, aims to understand adults' familiarity with the concept of lifelong learning and its social perception. The study involved 110 respondents, and their responses were interpreted according to thematic units corresponding to the research questions. The implementation of the research instrument was approved by the Ethics Committee of the Juraj Dobrila University of Pula and by the multinational company Maersk. The research aims to examine the factors that influence participation in lifelong learning, with an emphasis on demographic variables, barriers, and motivation.

The forms of participation in different types of learning, barriers, motivational impulses, types of support needed, and the way in which lifelong learning affects personal and professional development are analyzed. Research questions were posed from which the following hypotheses were formulated:

1. Are there differences in participation in lifelong learning with respect to gender, age, level of education, and employment status?
2. Are there statistically significant differences in respondents' attitudes towards different aspects of lifelong learning, and which of these aspects have the greatest and which have the least influence on the formation of attitudes?
3. Are there differences in respondents' attitudes towards barriers to participation in lifelong learning?
4. Are there statistically significant differences in preferred learning methods, and do preferences differ depending on demographic variables?
5. Are there differences in the type of motivation for learning among respondents, and do motivational patterns differ with respect to demographic variables?
6. What type of support for lifelong learning do respondents prefer, and are there differences in these attitudes with respect to age, gender, and employment status?
7. Are there statistically significant differences in the perception of readiness for lifelong learning after formal education with respect to demographic variables?

Hypotheses:

H1: There is a statistically significant difference in participation in lifelong learning with respect to gender and different levels of education.

H2: Lack of time negatively correlates with the perception of the importance of lifelong learning, while the availability of resources and incentives positively correlates with motivation to learn.

H3: There is a statistically significant difference and association between different barriers to participation in lifelong learning, especially between lack of time and financial resources.

H4: There are statistically significant differences in preferences for learning methods among respondents, with preferences differing with respect to gender and employment status.

H5: There are statistically significant differences in the type of motivation for learning among respondents, and with respect to the age of respondents.

H6: There are statistically significant differences in preferences for types of support for lifelong learning among respondents, with age, gender, and employment status influencing the form of support perceived as most important.

H7: There are statistically significant differences in perceptions of readiness for lifelong learning with respect to the level of education of respondents and employment status.

The quantitative data collection was conducted through an online survey questionnaire containing a combination of closed-ended questions and Likert scales to gain quantitative insight into response patterns and allow respondents to express their opinions. The questionnaire consisted of four parts: demographic data (gender, age, highest level of education, employment status), a survey on familiarity with the concept of lifelong learning, a survey on participation in forms of formal, non-formal and informal learning (formal, non-formal, informal), and a survey on the perception of the benefits and challenges of lifelong learning.

After the descriptive analysis, a statistical analysis was conducted in the JASP 0.95 program, and the results are presented in the form of tables [17]. In accordance with ethical principles, the respondents were informed in advance about the purpose of the research, the method of data processing, and they voluntarily agreed to participate in it. The responses were collected anonymously, which meant that the identity of the participants was not recorded and that complete privacy and confidentiality were ensured. The research rules were respected in accordance with the legislative framework [27].

3. Results

The obtained results provide insight into the demographic profile of the respondents, their participation in formal, non-formal, and informal learning, attitudes towards lifelong learning, barriers and motivational factors, as well as the role of employers and the education system. The different forms of learning that the respondents accessed were explored, which provided a better insight into contemporary learning practices in the digital age [9]. Of the 110 respondents, 70% were female, 29.1% male, and 0.9% non-binary. The age structure shows that the largest number of participants is from the age group of 26 to 35 years (37.3%), while a significant part of the respondents also belongs to the age group of 36 to 45 years (29.1%), indicating the dominance of the working-age population in the sample. In terms of education, 49.1% of the participants have completed high school, 30% have a graduate degree, and 15.5% have an undergraduate degree. Although the share of participants with postgraduate studies is relatively small (4.5%), the sample shows a diverse educational structure. The majority of the respondents, 88.1%, are currently employed, and a smaller part are students, unemployed persons, retirees, and persons with other forms of employment status, such as maternity leave or business ownership.

Respondents could list multiple forms of learning. The most common form is informal learning (39.1%), such as online learning, YouTube, and podcasts. This is followed by formal education (30.9%), while 19.1% participate in non-formal education (workshops, non-certified education). A third of respondents (33.6%) are not currently participating in any form of lifelong learning, indicating a need for additional motivation and information about the availability of appropriate programs.

Respondents most often acquire knowledge via the Internet (52.7%), at work (48.2%), independently at home and at workshops/seminars (31.8% each), and formal institutions are the least represented (20.9%). All agree with the statement that lifelong learning should be fully accessible, which clearly shows a strong awareness of the importance of lifelong learning. The results also indicate time as one of the most significant challenges, and the largest share, 68%, agrees with the statement about the lack of time. Financial constraints are considered a problem by 39% of participants, while 35.4% express dissatisfaction with the educational offer. A smaller but significant share (13.6%) cites a lack of interest in additional education as an obstacle. The majority of respondents recognize the positive impact of lifelong learning on personal development, including self-confidence, communication skills, and attitudes [7]. A total of 75.4% agree or strongly agree with this statement, while a very small percentage (around 3.6%) is neutral or disagrees.

Opinions on the promotion of lifelong learning are divided. Although a large proportion of participants, 40.9%, take a neutral position, almost half (49%) disagree with the statement that lifelong learning is sufficiently encouraged. A relatively small proportion, 9.1%, believes that the promotion of lifelong learning is adequate.

Most participants prefer a blended learning approach, 75%, a visual approach also preferred by 75% of participants, and practical learning methods 71%.

The majority of respondents, 92.7%, recognize the importance of employer support in lifelong learning. This data highlights the key role of the work environment in providing incentives and conditions for the continuous education of employees. As the most important motivational factors for learning, respondents point out curiosity, confirmed by around 70%, the need for additional knowledge and skills due to work (64%), and the desire to change careers (54%). On the other hand, the influence of role models seems to be the least motivating factor.

Respondents highlight free or more accessible programs as key forms of support in the lifelong learning process (78%). They consider greater availability of online content in their native language (74%) and providing more time for learning during working hours (76%) to be extremely important. They attribute a significant role to mentoring and opportunities to connect in learning communities, which highlights the need for systematic and social support in promoting lifelong learning. A large share (46%) states that they sometimes apply new knowledge, 36.7% do so often, and 9.2% very often. Only a small number (4.6%) never use what they have learned, which shows that lifelong learning, although present, is not always applicable in practice. The results show that respondents' opinions on the extent to which educational institutions prepare individuals for lifelong learning after completing formal education are divided. The largest share of participants (46.8%) takes a neutral position, which indicates a lack of clarity or ambiguity in the perception of the aforementioned issue. On the other hand, a significant part of the respondents disagree (32.3%) with the statement that the education system adequately prepares individuals for lifelong learning. The results indicate that almost a third of the respondents believe that the preparation is insufficient. Only 21.1% believe that the education system provides sufficient preparation for lifelong learning.

Table 1. Differences in participation in lifelong learning according to gender, age, education, and work status (logistic regression: coefficients)

Variables		Estimate	Standard Error	OR	p
Gender	Male	0,51083	0,36515	1,66667	0,16183
	Female	0,79224	0,24604	2,20833	0,00128
	Non-binary	-15,56607	1.455,39753	$1,73677 \times 10^{-7}$	0,99147
Age	Up to 18 years	15,56607	1.455,40	$5,75781 \times 10^{-6}$	0,99147
	18-25	2,48491	1,04083	12	0,01697
	26-35	0,34484	0,317	1,41176	0,27668
	36-45	0,64663	0,37219	1,90909	0,08233
	46-55	0,69315	0,5	2	0,16566
	56+	0,40547	0,91287	1,5	0,65692
Degree of education	Elementary School	0	1,41421	1	1
	High School	0,50078	0,28338	1,65	0,0772
	Undergraduate	-0,11778	0,48591	0,88889	0,80847
	Graduate	1,50408	0,45134	4,5	0,00086
	Postgraduate	1,38629	1,11803	4	0,215
Work status	Employed	0,55118	0,21532	1,73529	0,01047
	Unemployed	1,09861	1,1547	3	0,34139
	Pensioner	0	1,41421	1	1
	Student	17,56607	1.769,26	$4,25448 \times 10^{-7}$	0,99208
	Student -	17,56607	1.978,09	$4,25448 \times 10^{-7}$	0,99291
	Employed				

The first research question aims to examine whether there are differences in participation in lifelong learning with respect to gender, age, level of education, and employment status. The results of logistic regression provide deeper insight into sociodemographic variables that significantly influence the likelihood of engaging in lifelong learning. The results shown in Table 1 indicate differences by gender. Although male participants have an increased likelihood of participation (OR = 1.67), this result is not statistically significant ($p = 0.16183$). In contrast, women show a significantly higher likelihood of participating in lifelong learning (OR = 2.21), and this difference is also statistically significant ($p = 0.00128$). The above data point to the conclusion that gender plays an important role, with women being more active in participating in educational activities, and confirming hypothesis H1. The result can also be interpreted through broader social circumstances in research that highlights women's interest in personal and professional development in the context of lifelong learning [24]. In the age structure of the respondents, the most prominent group is young people aged 18 to 25, who have a significantly higher probability of participating in lifelong learning (OR = 12, $p = 0.01697$). This finding is justified by the fact that this is the period of life with intensive formal and non-formal education, when participation in learning is likely and expected.

Other age groups show a slight increase in the probability of participation (36-45 years, OR = 1.91), but without statistical significance, which indicates that interest and involvement weaken with age, except in life stages when additional education is more intensive due to professional needs.

Education level appears to be a key predictor of participation, with the most significant differences observed among those with a bachelor's degree (OR = 4.5, $p = 0.00086$), clearly indicating that a higher level of education increases the likelihood of continuing lifelong learning. Although those with a postgraduate degree also have an increased likelihood (OR = 4), due to the small sample size, the result is not statistically significant. This finding confirms the second part of hypothesis H1, i.e., statistically significant differences between levels of education.

Looking at the employment status of the respondents, it is evident that the highest, statistically significant probability of participation in lifelong learning was observed among employed persons (OR = 1.73, $p = 0.01047$). The results can be linked to the needs of the labour market and the need for continuous professional development. Increased opportunities for participation are also shown by unemployed respondents (OR = 3), although the result is not significant ($p = 0.34139$), which may be a consequence of the smaller number of respondents in that category.

Table 2. Overall differences in attitudes towards lifelong learning (Friedman's Test)

Factor	X^2_F	df	p	Kendall's W
Claims about Lifelong Learning	222,59742	3	< ,00001	0,68073

The Friedman's test shown in Table 2 ($p < 0.00001$ and Kendall's $W = 0.681$) indicates moderate to strong consensus among the rankings of the statements.

The results confirm that respondents' attitudes are not homogeneous and that certain aspects of lifelong learning significantly influence their attitudes more than others, as shown in Table 3.

Table 3. Partial comparisons of lifelong learning claims (Conover's post hoc comparisons - LLL claims)

Assertions	W_i	W_j	r_{rb}	p
Availability - Lack of time	394,50000	207,00000	0,96273	< ,00001
Availability - Personal development	394,50000	327,00000	0,91855	< ,00001
Availability - Encouraging lifelong learning	394,50000	161,50000	1,00000	< ,00001
Lack of time - Personal development	207,00000	327,00000	-0,82075	< ,00001
Lack of time - Encouraging lifelong learning	207,00000	161,50000	0,42389	< ,00001
Personal development - Encouraging lifelong learning	327,00000	161,50000	0,95162	< ,00001

Note: Grouped by subject.

Note: Rank-biserial correlation based on individual signed-rank tests

Partial comparisons presented in Table 3 further clarify the previously mentioned differences. The aspect "Encouraging lifelong learning in Croatia" shows the greatest influence on the attitudes of the respondents, as evident from the maximum value of the rank-biserial correlation ($r_{rb} = 1.00$) compared to the availability of resources, while "Lack of time" is negatively associated with the perception of the importance of lifelong learning ($r_{rb} = -0.82$ in relation to personal development), which confirms hypothesis H2.

In addition, availability and a stimulating environment show strong positive correlations with motivation to learn ($r_{rb} = 0.92-1.00$), while a lack of time has the opposite effect, reducing perceptions of personal development and the importance of lifelong learning.

Table 4. Correlations between statements on lifelong learning (Spearman's Correlations)

Assertions	Spearman's rho	p
Availability - Lack of time	-0,07463	0,43842
Availability - Personal development	0,41677	< ,00001
Availability - Encouraging lifelong learning	0,06810	0,48167
Lack of time - Personal development	-0,21610	0,02402
Lack of time - Encouraging lifelong learning	-0,08053	0,40517
Personal development - Encouraging lifelong learning	0,06142	0,52576

The data in Table 4 show correlations between different aspects of lifelong learning and indicate the existence of a moderate positive and statistically significant association between the availability of resources and the perception of personal development ($\rho = 0.417$; $p < 0.001$). This association confirms the importance of resources as a key factor influencing the motivation for lifelong learning, which is in line with hypothesis H2.

Lack of time and perception of personal development show a weaker, but statistically significant negative correlation ($\rho = -0.216$; $p = 0.024$), which also confirms the second hypothesis, suggesting that a greater sense of lack of time may reduce the importance that respondents attach to personal development.

Table 5. Overall differences in attitudes about barriers to participation in lifelong learning (Friedman's Test)

Factor	X^2_F	df	p	Kendall's W
Barriers to participation	76,38344	3	< ,00001	0,23359

By surveying respondents about barriers to participation in lifelong learning, four categories of barriers were analyzed: Lack of time, Financial resources, Insufficient educational offer, and Lack of interest. The aim is to determine whether there are significant differences in perceptions of these barriers, and, in particular, to examine the connection between the lack of time and financial resources, in accordance with hypothesis H3.

The results shown in Table 5 indicate the existence of statistically significant differences in the attitudes of respondents about different barriers (Friedman's test, $X^2_F = 76.38344$; $df = 3$; $p < 0.00001$), and the value of Kendall's W (0.23359) indicates a moderate level of agreement among respondents, which means that there are individual variations in the perception of limitations, which confirms hypothesis H3.

Table 6. Partial comparisons of attitudes about barriers to participation in lifelong learning

Conover's Post Hoc Comparisons - Assertions about obstacles to lifelong learning				
Assertions	W_i	W_j	r_{rb}	p
Lack of time - Financial resources	325,5	295	0,26278	0,03279
Lack of time - Insufficient offer of education	325,5	278,5	0,4101	0,00106
Lack of time - Lack of interest	325,5	191	0,83162	< ,00001
Financial resources - Insufficient offer of education	295	278,5	0,14033	0,24699
Financial resources - Lack of interest	295	191	0,79678	< ,00001
Insufficient offer of education - Lack of interest	278,5	191	0,68465	< ,00001

The partial comparison analysis presented in Table 6 further clarifies the intensity of the barriers. A statistically significant difference was found between Lack of Time and Financial Resources ($p = 0.03279$) with a moderate positive correlation ($r_{rb} = 0.26278$). This suggests that respondents perceive a lack of time and financial resources as distinct but related barriers and supports hypothesis H3.

Lack of Time is significantly different from Insufficient Educational Offer ($p = 0.00106$), as well as from Lack of Interest ($p < 0.00001$), with a strong effect ($r_{rb} = 0.4101$ and 0.83162), indicating that lack of time is the dominant barrier compared to the others.

Table 7. Overall differences in attitudes towards preferred learning methods (Friedman's Test)

Factor	X^2_F	df	p	Kendall's W
Learning methods	60,92033	4	< ,00001	0,13973

Friedman's test (Table 7) showed a significant difference between learning methods ($\chi^2 = 60.92$, $df = 4$, $p < 0.00001$), which indicates that respondents do not perceive all methods equally, and Kendall's W value of 0.14 suggests that the effect is moderate, that is, there is a visible advantage of certain learning methods.

The post hoc analysis shown in Table 8 reveals specific pairs of methods that differ significantly.

Table 8. Partial comparisons of respondents' views on barriers to participation in lifelong learning

Conover's Post Hoc Comparisons - Assertions about preferred learning methods			
Assertions	r_{rb}	p	p_{holm}
Visually - Auditory	0,75265	< ,00001	0,00004
Visually - Practically	-0,11849	0,28476	1
Visually - Reading and writing	0,71558	< ,00001	< ,00001
Visually - A combination of the aforementioned	0,10275	0,85441	1
Auditory - Practically	-0,65455	< ,00001	< ,00001
Auditory - Reading and writing	0,1565	0,40914	1
Auditory - A combination of the aforementioned	-0,50947	< ,00001	0,00002
Practically - Reading and writing	0,77193	< ,00001	< ,00001
Practically - A combination of the aforementioned	0,20707	0,37535	1
Reading and writing - A combination of the aforementioned	-0,79865	< ,00001	< ,00001

Note: Grouped by subject.

The biggest differences were observed between visual and auditory learning methods and between reading and writing, which indicates that respondents prefer visual approaches and reading/writing over auditory learning.

Significant differences exist between hands-on learning and reading and writing methods, as well as between reading and writing and a combination of methods, suggesting that a combined learning approach and hands-on methods occupy a certain place in respondents' preferences.

Table 9. Comparison of preferred learning methods by demographic variables (Kruskal-Wallis Test)

Learning method	Factor	Statistic	df	p
Visually	Gender	7,30128	2	0,02597
	Age	2,9759	5	0,7037
	Employment status	4,34661	5	0,50066
	Level of education	7,47862	4	0,11266
Auditory	Gender	2,22064	2	0,32945
	Age	1,24552	5	0,94044
	Employment status	2,32233	5	0,80298
	Level of education	1,77285	4	0,77745
Practically	Gender	5,82704	2	0,05428
	Age	2,21065	5	0,8193
	Employment status	10,10553	5	0,0723
	Level of education	4,4067	4	0,35375
Reading and writing	Gender	2,93871	2	0,23007
	Age	1,82458	5	0,87285
	Employment status	3,94155	5	0,55786
	Level of education	1,29208	4	0,86272
A combination of the aforementioned	Gender	11,84843	2	0,00267
	Age	6,73571	5	0,24105
	Employment status	11,79627	5	0,03769
	Level of education	5,56028	4	0,23448

Note: Tests are conducted separately for each variable, without accounting for multivariate effects.

Table 9 shows that visual learning methods differ significantly by gender ($p = 0.02597$), and the combination of learning methods depends significantly on both gender ($p = 0.00267$) and employment status ($p = 0.03769$), thus confirming hypothesis H4.

Table 10. Dunn's post hoc test for gender and employment status according to learning method preferences

Learning method	Factor	Comparison	T_{rb}	p
Visually	Gender	Male - Non-binary	-0,48387	,33744
		Male - Female	0,27105	,01854
		Non-binary - Female	0,81818	,14266
Practically	Gender	Male - Non-binary	-0,67742	,31246
		Male - Female	0,23419	,04368
		Non-binary - Female	0,74026	,14819
A combination of the aforementioned	Gender	Male - Non-binary	-0,45161	,45920
		Male - Female	0,37267	,00131
		Non-binary - Female	0,76316	,15344
A combination of the aforementioned	Employment status	Employed - Unemployed	0,54076	,05487
		Employed - Retired	0,35326	,37713
		Employed - Student	0,57826	,02216
		Employed - Student	-0,42391	,15179
		Unemployed - Retired	-0,25000	,68666
		Unemployed - Student	0,05000	,91705
		Unemployed - Student, Employed	-0,68750	,01543
		Retired - Student	0,30000	,61633
		Retired - Student, Employed	-0,62500	,11544
		Student - Student, Employed	-0,70000	,00788

A deeper analysis using Dunn's post hoc test (Table 10) shows that gender and employment status are reflected in learning preferences.

Women demonstrate a stronger preference for visual and combined learning methods, while pupils and students exhibit different preferences for combinations of learning methods compared with employed individuals.

This may reflect varying needs and learning styles across respondents' professional or educational contexts.

The results of the Friedman's test (Table 11) indicate a statistically significant difference in the types of motivation among the respondents ($X^2_F = 21.91$; $df = 4$; $p < 0.001$), while the Kendall's W value points to heterogeneity in the motivational patterns.

Table 11. Overall differences in respondents' attitudes toward types of learning motivation (Friedman's Test)

Factor	X^2_F	df	p	Kendall's W
Motivation	21,90950	4	< ,00021	0,05025

A detailed analysis of the pairwise comparisons presented in Table 12 reveals specific relationships among the types of motivation.

The motivation aspect, Self-validation, differs significantly from Curiosity ($p = 0.004$), and Curiosity differs from the Desire for career change ($p = 0.002$).

Table 12. Pairwise comparisons of respondents' attitudes toward learning motivation (Conover's Post Hoc Comparisons – Motivation)

Type of motivation	r_{rb}	p	p_{holm}
Self-validation - Curiosity	-0,42589	0,00406	0,02841
Self-validation - Desire for career change	0,09217	0,82256	0,82256
Self-validation - Role model	0,23875	0,17889	0,71556
Self-validation - Work-related necessity	-0,20414	0,07792	0,38958
Curiosity - Desire for career change	0,48305	0,00197	0,01775
Curiosity - Role model	0,7971	0,00003	0,00028
Curiosity - Work-related necessity	0,22626	0,2625	0,78749
Desire for career change - Role model	0,05639	0,2625	0,78749
Desire for career change - Work-related necessity	-0,29643	0,04705	0,28233
Role model - Work-related necessity	-0,45493	0,00197	0,01775

Note: Grouped by subject.

Note: Rank-biserial correlation based on individual signed-rank tests.

Furthermore, Curiosity shows strong differences in relation to Role model ($p < 0.001$).

These findings suggest that Curiosity plays a key role in distinguishing motivational profiles, while career-related motivations are not always the dominant drivers of learning among the respondents.

Table 13. Comparison of participants' learning motivation across demographic variables (Kruskal-Wallis test)

Type of motivation	Factor	Statistic	df	p
Self-validation	Gender	4,87252	2	0,08749
	Age	2,46661	5	0,78152
	Employment status	3,0814	5	0,68744
	Level of education	3,76285	4	0,43905
Desire for a career change	Gender	3,82846	2	0,14746
	Age	7,56708	5	0,18176
	Employment status	1,71238	5	0,88734
	Level of education	7,68684	4	0,10375
Curiosity	Gender	2,93931	2	0,23
	Age	8,16149	5	0,14756
	Employment status	4,29112	5	0,50831
	Level of education	5,76469	4	0,21742
Role model	Gender	2,76369	2	0,25111
	Age	4,22669	5	0,51726
	Employment status	3,01093	5	0,6983
	Level of education	0,99377	4	0,91074
Work-related necessity	Gender	2,29927	2	0,31675
	Age	12,0169	5	0,03456
	Employment status	6,95258	5	0,22419
	Level of education	4,31018	4	0,36565

Note: Tests are conducted separately for each variable, without accounting for multivariate effects.

The analysis of the influence of demographic variables presented in Table 13 shows that work-related necessity as a motivation exhibits a statistically significant difference according to the respondents' age ($X^2 = 12.02$; $p = 0.035$).

Table 14. Dunn's post-hoc test for respondents' age with respect to Work-related necessity

Comparison	rrb	p
Under 18 - 18–25	0,61538	0,23518
Under 18 - 26–35	0,575	0,29032
Under 18 - 36–45	0,5625	0,34105
Under 18 years - 46–55	0,5	0,56613
Under 18 years - 56+	-0,6	0,81159
18–25 - 26–35	-0,09231	0,61325
18–25 - 36–45	-0,14904	0,42027
18–25 - 46–55	-0,36752	0,07755
18–25 - 56+	-0,76923	0,00455
26–35 - 36–45	-0,05781	0,66191
26–35 - 46–55	-0,27361	0,09007
26–35 - 56+	-0,725	0,00499
36–45 - 46–55	-0,20833	0,20024
36–45 - 56+	-0,6875	0,01066
46–55 - 56+	-0,51111	0,09245

Table 14 presents the post hoc Dunn test, which shows that the differences are most pronounced between the youngest (18–25) and the oldest respondents (56+).

Older participants more frequently report work-related necessity as a learning motivation. The results support hypothesis H5.

Table 15. Overall differences in respondents' attitudes toward types of support for lifelong learning (Friedman's Test)

Factor	X^2_F	df	p	Kendall's W
Type of support	18,39485	4	0,00103	0,04219

In line with the hypothesis (H6), there are statistically significant differences in the types of support that respondents prefer in the context of lifelong learning, with gender and age influencing which form of support is perceived as most important.

The results of the Friedman's test in Table 15 indicate a statistically significant difference in the perceived importance of different types of support ($\chi^2_F = 18.39$; $p = 0.001$). However, the Kendall's W value (0.042) suggests that the strength of these differences is relatively low, indicating a modest level of agreement among respondents.

Table 16. Pairwise comparisons of respondents' attitudes toward types of support for lifelong learning

Post Hoc Comparisons - Type of support			
Type of support	r _{rb}	p	p _{holm}
Free/low-cost programs - Availability of online content	0,367	0,1434	0,63062
Free/low-cost programs - More time during working hours	0,02759	0,94691	1
Free/low-cost programs - Mentoring or guidance	0,36549	0,00319	0,02235
Free/low-cost programs - Networking with others	0,45455	0,00186	0,01671
Availability of online content - More time during working hours	-0,26508	0,12612	0,63062
Availability of online content – Mentoring or guidance	0,17391	0,13455	0,63062
Availability of online content – Networking with others	0,29568	0,09648	0,57888
More time during working hours – Mentoring or guidance	0,40333	0,00258	0,02062
More time during working hours – Networking with others	0,50897	0,00148	0,01484
Mentoring or guidance – Networking with others	0,20265	0,86778	1

Note. Grouped by subject.

The analysis of pairwise comparisons presented in Table 16 reveals that free/low-cost programs are more frequently prioritized compared to mentoring or guidance ($p = 0.022$) and networking with others ($p = 0.016$). Similarly, the variable more time during working hours showed statistically significant differences in comparison to mentoring or guidance ($p = 0.021$) and networking with others ($p = 0.015$).

These findings suggest that respondents primarily emphasize material and organizational support (financial accessibility and time flexibility), while social and mentoring forms of support are less prominently valued.

Table 17. Comparison of participants' preferred learning support by demographic variables (Kruskal-Wallis Test)

Type of support	Factor	Statistic	ss	p
Free/low-cost programs	Gender	6,25226	2	0,04389
	Age	9,41801	5	0,09351
	Employment status	11,67844	5	0,03947
	Level of education	4,28434	4	0,36889
Better availability of online content	Gender	3,319	2	0,19023
	Age	3,15176	5	0,6766
	Employment status	8,28151	5	0,14139
	Level of education	3,61208	4	0,46104
More time within working hours	Gender	6,48597	2	0,03905
	Age	3,43768	5	0,63284
	Employment status	13,30455	5	0,02069
	Level of education	7,76576	4	0,10055
Mentoring or guidance	Gender	3,765	2	0,15221
	Age	4,11133	5	0,5335
	Employment status	5,43076	5	0,3656
	Level of education	0,79951	4	0,93851
Connecting with others (learning groups, communities)	Gender	4,50242	2	0,10527
	Age	2,82072	5	0,7276
	Employment status	6,44741	5	0,26508
	Level of education	0,8796	4	0,92747

Note: Tests are conducted separately for each variable, without accounting for multivariate effects.

When analyzing the data from Table 17, that is, the differences according to demographic variables, it becomes evident that gender and employment status are the most significant dimensions of support: Free/low-cost programs and More time within working hours.

Gender is a statistically significant predictor for both variables ($p = 0.044$; $p = 0.039$), while employment status is significant in explaining preferences related to Free/low-cost programs ($p = 0.039$) and Time within working hours ($p = 0.021$). Age and educational level did not show a significant effect, which partially deviates from hypothesis H6, according to which age was also expected to play an important role in shaping these preferences.

Table 18. Dunn's post hoc test for participants' gender and employment status with respect to Free/low-cost programs and More time within working hours

Type of support	Factor	Comparison	r_{tb}	p
Free/low-cost programs	Gender	Male - Non-binary	0	0,89943
		Male - Female	0,27901	0,01427
		Non-binary - Female	0,37662	0,51863
	Employment status	Employed - Unemployed	0,22554	0,41224
		Employed - Retiree	0,14674	0,70788
		Employed - Parental leave	0,54348	0,31937
		Employed - Student	0,54348	0,02924
		Employed - Student, Employed	-0,6087	0,02939
		Unemployed - Retiree	-0,125	0,8616
		Unemployed - Parental leave	0,25	0,60246
		Unemployed - Student	0,25	0,38533
		Unemployed - Student, Employed	-0,6875	0,03034
		Retiree - Parental leave	0,5	0,54934
		Retiree - Student	0,5	0,38076
		Retiree - Student, Employed	-0,875	0,11095
		Parental leave - Student	0	1
		Parental leave - Student, Employed	-1	0,05868
		Student - Student, Employed	-1	0,00163
More time during working hours	Gender	Male - Non-binary	0,03226	0,93304
		Male - Female	0,28947	0,01142
		Non-binary - Female	0,36842	0,53499
	Employment status	Employed - Unemployed	0,375	0,18006
		Employed - Retiree	-0,0815	0,84462
		Employed - Student	0,57609	0,0217
		Employed - Student, Employed	-0,6114	0,03026
		Unemployed - Retiree	-0,375	0,3409
		Unemployed - Student	0,25	0,58182
		Unemployed - Student, Employed	-0,9375	0,0113
		Retiree - Student	0,5	0,15347
		Retiree - Student, Employed	-0,375	0,26439
		Parental leave - Student	0	1
		Parental leave - Student, Employed	-1	0,05328
		Student - Employed	-1	0,00128

The Dunn post hoc test (Table 18) provides further clarification of these differences. Women show a greater preference for Free/low-cost programs ($p = 0.043$) and for the option of More time during working hours ($p = 0.034$).

These results can be interpreted within a broader social context, women more often balance professional and family responsibilities, which is reflected in their views on the financial and time availability of lifelong learning programs.

Employment status was also an important factor. Employed participants differ significantly from students and pupils ($p = 0.029$), as well as from the combined group of employed students ($p = 0.030$),

with employees emphasizing the need for greater time allocations within working hours. This becomes even more evident when comparing students and employed students, where the difference is significant both for Free/low-cost programs ($p = 0.024$) and for More time during working hours ($p = 0.019$).

This finding indicates that respondents who both work and study have specific needs; they are particularly burdened by time constraints and costs, which makes them a more vulnerable group when discussing access to lifelong learning.

Table 19. Differences in the perception of preparedness for lifelong learning according to demographic variables (Kruskal-Wallis Test)

Factor	Statistic	ss	p
Gender	1,80006	2	0,40656
Age	8,41534	5	0,13478
Employment status	11,70803	5	0,03902
Level of education	0,36846	4	0,98498

Note: Tests are conducted separately for each variable, without accounting for multivariate effects.

The results of the study on differences in the perception of preparedness for lifelong learning after formal education, with respect to demographic variables, as shown by the Kruskal-Wallis test (Table 19), indicate that gender and age do not exhibit statistically significant differences.

This suggests the conclusion that neither biological differences nor generational affiliation significantly determines how individuals assess their own preparedness for lifelong learning. However, employment status emerged as a statistically significant factor ($H = 11.70803$; $p = 0.03902$).

Table 20. Dunn's post-hoc test for participants' employment status according to their perception of preparedness for lifelong learning in the education system

Comparison	r_{tb}	p
Employed - Unemployed	0,22554	0,41224
Employed - Retiree	0,14674	0,70788
Employed - Student	0,54348	0,02924
Employed - Student, Employed	-0,6087	0,02939
Unemployed - Retiree	-0,125	0,8616
Unemployed - Student	0,25	0,38533
Unemployed - Student, Employed	-0,6875	0,03034
Retiree - Student	0,5	0,38076
Retiree- Student, Employed	-0,875	0,11095
Parental leave - Student	0	1
Parental leave - Student, Employed	-1	0,05868
Student - Student, Employed	-1	0,00163

The post-hoc analysis presented in Table 20 reveals that the most pronounced differences occur between students and the combined group of student-employees, which shows a significantly different perception of preparedness ($p = 0.00163$). This suggests that simultaneous participation in both education and the workforce creates a specific experience that shapes the perception of readiness for lifelong learning.

However, when examining the results with respect to the level of education (Table 19), which was central to hypothesis H7, the analysis did not confirm statistically significant differences ($H = 0.36846$; $p = 0.98498$). This finding is particularly noteworthy, as it indicates that the perception of preparedness for lifelong learning is not determined by the level of completed education.

4. Discussion

The results of the study, *The Impact of Lifelong Learning on Personal and Professional Development*, indicate that gender, age, level of education, and employment status influence participation in lifelong learning, with the most pronounced differences observed among women, young adults, highly educated individuals, and employed participants. These findings provide an affirmative answer to the first research question and confirm the first hypothesis, demonstrating the existence of significant differences with respect to sociodemographic variables, particularly regarding level of education and gender, which is consistent with previous related research [24].

The analysis of participants' opinions on various aspects of lifelong learning reveals statistically significant differences, suggesting that institutional support and the promotion of lifelong learning within society have the greatest impact, while subjective barriers such as lack of time represent the main negative factor.

The results of the Spearman correlation confirmed the second hypothesis, indicating that participants who perceive good availability of educational resources place greater value on personal development and lifelong learning, while time constraints exert a noticeable negative impact. The presence of significant differences among the challenges to participation in lifelong learning programs, specifically lack of time, financial resources, insufficient educational offerings, and lack of interest, also confirmed the third hypothesis. Partial comparisons revealed that participants most frequently identify lack of interest and lack of time as the primary barriers, whereas financial resources and insufficient educational offerings are perceived as somewhat less critical. A moderate correlation between lack of time and financial resources demonstrated that practical barriers operate simultaneously, and that overcoming them is crucial for increasing participation in lifelong learning [20].

The analysis of participants' learning method preferences revealed statistically significant differences, with the greatest distinctions observed between visual and auditory learning, as well as reading and writing. Participants exhibited a clear preference for visual approaches and learning through reading/writing over auditory learning, while also highlighting a specific role for combined approaches and practical methods in their preferences.

Comparison of learning method preferences with respect to demographic variables confirmed the fourth hypothesis, suggesting that gender and employment status significantly influence learning approaches, with women favoring visual and combined methods, and employed participants favoring a combination of learning methods.

The obtained results indicate that participants do not approach learning with the same level or type of motivation, and that motivation related to self-affirmation differs significantly from curiosity, while curiosity also differs from the desire for a career change. It was demonstrated that the variable curiosity plays a key role in shaping motivational profiles, whereas career-related variables are not dominant motivational factors. Age was found to have a noticeable effect on motivation related to professional needs, confirming the fifth hypothesis and implying that the life stage of participants plays a greater role in shaping motivational patterns than other demographic characteristics.

By prioritizing free or low-cost programs, participants highlighted the importance of material and organizational support, confirming the sixth hypothesis. Gender and employment status proved significant in explaining preferences related to More time during working hours, which is favored by employed participants, and women, who are more inclined toward free/low-cost program options. These results should be interpreted within a broader social context [24]. Furthermore, it was shown that participants who are simultaneously working and studying have specific needs, particularly in the context of time constraints and costs, making them a more vulnerable group regarding access to lifelong learning and necessitating adaptations in support methods and educational approaches [3].

The perception of preparedness for lifelong learning is shaped more by educational and professional experiences than by demographic characteristics, with employment status emerging as a statistically significant factor. Individuals who are simultaneously engaged in work and education may have a more developed awareness of the importance of lifelong learning, as well as a higher self-assessed readiness, compared to those who are only involved in the educational process. The study also showed that the perception of preparedness for lifelong learning is not determined by the level of completed education, which means that the seventh hypothesis is only partially confirmed.

Although the conducted study provides valuable insights into the impact of lifelong learning on personal and professional development, certain limitations should be considered when interpreting the results.

These limitations relate to the sample size of 110, which may be too small to generalize the findings to a broader population, and to the fact that the study was conducted cross-sectionally, capturing only the current state of perceptions of lifelong learning, without a longitudinal analysis that could reveal changes in attitudes and practices over time.

Despite these limitations, the obtained results have practical applications. Educational institutions can use them as guidelines for developing programs that better meet the needs of adults, including flexible learning options that account for barriers such as lack of time and financial resources. Organizations and employers can design support strategies to facilitate employees' participation in lifelong learning, providing both financial and organizational incentives. The results may also inform policy development aimed at improving access to lifelong learning resources and reducing social inequalities in educational opportunities.

5. Conclusion

The results of the study, *The Impact of Lifelong Learning on Personal and Professional Development*, confirmed that gender, age, education, and employment status significantly shape the intensity and manner of participation in lifelong learning, as well as influence motivation and preferred learning methods. The main barriers identified were lack of time and financial costs, as well as the limited availability of educational programs, with institutional support playing a crucial role in increasing engagement. Curiosity emerged as a more important motivational factor than career-related incentives, alongside a preference for visual and combined learning methods. The findings also highlight the importance of adapting educational programs to the specific needs of different groups, including employed individuals and those who are simultaneously working and studying, demonstrating that the results not only support lifelong learning but also inform the development of educational policies.

In a rapidly changing society driven by globalization and technological advancement, lifelong learning plays a key role in adapting to life and labour market demands. The study showed that factors such as level of education, employment status, age, and gender significantly influence access to lifelong learning, which is particularly important in the context of enhancing employability, labour market competitiveness, and reducing social inequalities. Accordingly, educational policies and approaches must be designed to enable access to lifelong learning for all individuals, regardless of demographic characteristics.

The results also point to the necessity of greater societal responsibility in creating a supportive environment for lifelong learning, involving educational institutions, employers, and legislation.

The analysis of factors influencing adult participation in lifelong learning emphasized the impact of a broad range of demographic variables, as well as specific barriers, motivations, and preferences. The study examined different forms of learning and their effects on personal and professional development, leading to practical recommendations for educational and organizational policies. While similar research exists in this field, the study offers new insights into the socioeconomic and cultural factors shaping motivation and barriers to lifelong learning.

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