

Marta Alves
Helena Alves
Eugénia Pedro¹
João Capucho

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PERCEPTIONS OF HIGHER EDUCATION INSTITUTIONS IMPACT ON DIFFERENT DIMENSIONS OF QUALITY OF LIFE AND RESIDENTS' OVERALL LIFE SATISFACTION

Abstract: An innovative theoretical model analyses the association between community residents' perceptions of higher education institutions (HEI) impact on different dimensions of quality of life (economic, social, environmental, health and safety) and residents' overall life satisfaction. A total of 550 individuals who lived in a region of Portugal with an HEI participated in the study. The responses were analysed through a Partial Least Squares – Structural Equation Model (PLS-SEM). Results revealed that both economic and social dimensions of the perceived impact of HEI have a positive effect on citizens' own level of life satisfaction, and that environmental dimension shows a negative effect. No effects were observed concerning safety and health perceived impact. Therefore, several public policies must be implemented to sustain citizens' positive perception of economic and social dimension, transform the negative perception of the environmental impact of HEI, and promote a positive perception in terms of health and safety impact.

Keywords: Higher Education, Life Satisfaction, Quality of Life, Perception

1. Introduction

The important role of higher education institutions (HEI) has been highlighted with the implementation of the United Nations' 2030 Agenda and its sustainable development goals (SDGs) in May 2015. When aligned with SDGs, the activities developed by HEI go towards achieving those goals, enabling HEI to connect with external stakeholders and society, particularly through teaching and research or through third mission activities.

For HEI to be synergistic with their host regions, they must have an appropriate community engagement and the capacity to

articulate their missions with regional needs. Community engagement is an accredited path for HEI to address development challenges facing communities (Sheila et al., 2021), allowing a given region, in the long term, to become more sustainable. Community is understood as a territorial group, a settlement, a village, town or city, a tribe, a region or a nation where the members of a given group share the basic conditions of a life in common to achieve common aims (Fichter, 1973; Maciver & Page, 1973). In this study, the community is understood to be the region where HEI are located.

¹ Corresponding author: Eugénia Pedro
Email: eugenia@ubi.pt

Fitzgerald et al. (2012) observe that through involvement with the community, HEI can play a fundamental role in empowering stakeholders and communities by tracing new pathways to future sustainability. According to Olowu (2012), research has demonstrated that community involvement is a bridge between HEI, stakeholders and the community in general. Therefore, the way people perceive their living environment is an interesting issue for study, to deepen analyse HEI's influence on the community (Sheila et al., 2021).

According to Cárdenas et al. (2009), perceptions are an important expression of individual well-being, also having a significant role in formulating public actions and allocating government expenditure. In addition, the same authors indicate that perceptions can be a powerful instrument to shape public policies, as citizens have the power to translate what they consider to be their requests (e.g., political, economic, social, educational) concerning local or national government.

Various studies have assessed the local community's perceptions of a given institution, organisation or industry's impact on its region, which were found to be related to community's life satisfaction. For example, Kim et al. (2013) suggest that community residents' perceptions of tourism's impact (economic, social, cultural, and environmental) are associated with residents' satisfaction with particular life domains (material well-being, community well-being, emotional well-being, and health and safety well-being) and also with overall life satisfaction. Moreover, Woo et al. (2018) concluded that the more positive were residents' perceptions of tourism development, the more satisfied they were with their lives. Also, Zhou et al. (2021) found that perceived residential environment quality was positively correlated with life satisfaction of old adults in China.

As stated by Sheila et al. (2021), HEI's involvement with the surrounding

community is an important aspect in facing the challenges of regional development. However, for residents to feel involved, the authors stresses that is not easy to establish practical approaches to community involvement due to the lack of information about the population's perceptions of HEI's impact on the community. And, the present study aims to fill this gap, by examining how the impact of HEI on the community is perceived by the resident population and if these perceptions are associated with population's life satisfaction. Consequently, the following research question is formulated:

RQ: How the impact of HEI on the community, perceived by residents, is associated with satisfaction with life itself?

Several studies concluded that different dimensions of HEI's impact were related to students' satisfaction and quality of online learning in higher education (Ouajdouni et al., 2021), well-being and student-faculty interactions (Trolian et al., 2022), well-being and performance management in higher education workplace (Franco-Santos & Doherty, 2017), social anxiety and well-being in higher education (Russell & Topham, 2012); entrepreneurship education versus management students' entrepreneurial intentions (Boubker et al., 2021). However, in literature we did not found studies that focused on HEI's effects on the life satisfaction of the resident community.

To answer the formulated RQ, the objective of this study is to determine whether the perception of the impact (economic, social, environmental, health and safety) of HEI is a positive predictor of residents' life satisfaction. The expected implications and contributions for HEI and public policies should be related to environmental programmes formulated to encourage HEI's sustainability in order to influence residents' positive perception of the HEI's impact on life satisfaction. Similar implications can be drawn regarding economic, cultural and social policies and programmes. That is, this

article aims to present, describe and discuss a preliminary model to assess life satisfaction based on residents' perceptions of HEI's impact on the community to answer the main question, based on a literature review, a theoretical model is developed and tested.

2. Perceived benefits of HEI's impact on the community and life satisfaction

Numerous studies focus on the impact of HEI as an important component of the development of HEI and of the surrounding community. Generally, these studies consider the nature of the impact and how this can be managed to ensure optimal results (e.g., Hermansson et al., 2015; Pedro et al., 2021; Ulrich & Sigrid, 2019). The literature review revealed that HEI's impact can be analysed from different perspectives. For example, the study of Pedro et al. (2021) concludes that HEI's efficiency has an impact on the quality of life of the region's population at different levels, namely economy, health, education, the environment, leisure and safety. According to Hill et al. (2005), the higher education system can influence regional economic well-being in three ways. Firstly, through direct spending by the institutions, their employees and students, which impacts the local economy and leads to better living conditions. Secondly, it provides financial benefits through education, since the average salary is higher in communities with a substantial proportion of highly qualified workers; and non-financial benefits, such as a more educated population and a consequently lower crime rate. Thirdly, HEI are key sources of innovation in research and development, which can simultaneously benefit society and lead to economic growth. Moreover, Santoalha et al. (2018) mention higher education's contribution through a diversified regional supply of human capital. The growing expectations placed on HEI do not concern only the spread, production and

commercialization of knowledge, but also the strategy and regional policies adopted and/or to be adopted to improve HEI involvement with the region and its population (Marques et al., 2019). This perspective highlights the need for more wide-ranging evaluations and better understanding of the perceived benefits of HEI's impact on both the local community and its inhabitants' lives.

According to Otara (2011), perception is the sensory experience of the world surrounding us and involves the recognition of environmental stimuli in actions responding to those stimuli. The same author adds that through the perceptive process, information is obtained about properties and elements related to the environment that are critical for individuals' survival. According to the OECD (2021), people's perceptions affect their behaviour, for example, satisfaction at work and leaving work, voting and life satisfaction. Particularly, life satisfaction is generally described as the cognitive assessment of a person's quality of life according to certain standardized measures (Kardas et al., 2019). And the beneficial effects interpersonal relations, economic and health situation and residential environment quality are clearly part of satisfaction with life (Zhou et al., 2021). According to Uysal and Sirgy (2019), life satisfaction is considered to be on the top of a hierarchy of attitudes (or satisfaction) and therefore it is influenced by satisfaction with more specific life domains (for example, satisfaction with the community, family, work, social life, or health).

3. Hypotheses and model proposal

Considering the studies by Hill et al. (2005), Santoalha et al. (2018) and Pedro et al. (2021), HEI's impact on the region and/or community can be measured through economic, environmental, social, health and safety impacts. Thus, the perception of HEI's impact on the community will be measured through the dimensions of

perceived HEI economic impact, perceived HEI social impact, perceived HEI environmental impact, perceived HEI health impact, and perceived HEI safety impact.

The more positive is the perception of the HEI's economic, social, environmental, health and safety impact on the various life domains of the community's residents, the greater will be the positive feelings (and lower the negative ones). Thus, there is higher likelihood of those perceptions contribute to positive effects on various life domains (for example, financial life, health and safety, social life and environmental life) and consequently to satisfaction with life in general (Uysal & Sirgy, 2019). Overall life satisfaction is conceptualized as a one-dimensional construct, measured, for example, through items related to idealization of life, living conditions, and life expectations (Diener et al., 1985, 1999; Sachs, 2003; Woo et al., 2018).

Some studies have demonstrated a positive perception of HEI's economic impact on regional development (e.g., AIRO, 2004). For example, from the point of view of local leaders and business-people, Kimilu et al. (2020) demonstrated that the HEI, situated in a rural area, contributed to construction and the region's economic growth and development, through building roads and transport systems, greater access to electricity and water, and contributed consequently to improved life satisfaction among residents. It is therefore expected that the perception of a higher HEI's economic impact in the region will increase overall life satisfaction.

H1: Perception of HEI's economic impact on the region is predictive of increased overall life satisfaction.

Chen and Vanclay (2021) concluded that HEI can create significant social impacts on their local communities. AIRO (2004) states that the general public has a positive perception of HEI's social impact on the community through the activities carried out by these institutions, as teaching, research, or

knowledge transfer. It is expected that these activities can contribute positively to society and host communities by modifying infrastructure, providing and financing social investment, promoting genuine commitment to maximizing the opportunities of content, and providing the local population with training and support (Vanclay & Hanna, 2019). This contributes not only to expand and maintain social relations, but also to create conditions for individuals obtain stable emotional support (Huang, 2013) and strengthens their perception of HEI's social impact on the region. Thus, the perception of a higher HEI's social impact in the region is expected to be predictor of increased overall life satisfaction.

H2: Perception of HEI's social impact on the region is predictive of increased overall life satisfaction.

A person's psychological well-being can depend on the constancy between their desires and their perception of the environment and the capacity to manage their life satisfaction (Dissanayake et al. 2017). From this perspective, the community's perception of HEI's environmental impact on the region can affect individuals' life satisfaction. Although a HEI does not generally pretend to harm the local community, the study by Chen and Vanclay (2021) demonstrated that many residents in areas where there are HEIs complain about the negative environmental impacts caused by their presence. According to these authors, people who live in a pleasant area may consider that a HEI may disturb their environment and well-being through, for example, the construction of more buildings, the presence of incomers or the increase of traffic and noise. According to Canha et al. (2022), traffic is perceived and was identified as people's main source of concern, due to the negative impact this could have on their lives. Considering the above, the perception of a higher HEI's environmental impact in the region is expected to be a predictor of increased overall life satisfaction.

H3: Perception of HEI’s environmental impact on the region is predictive of decreased overall life satisfaction.

Tsouros et al. (2001) mentioned that HEI can carry out actions to encourage and protect the health of all their stakeholders, creating working, learning and life environments that promote health, protecting the environment and promoting sustainability, and the research in the field of health. Both Enders et al. (2011) and Tsouros et al. (2001) emphasise that perception of HEI’s health impact on the region can contribute to promoting the whole community’s well-being and health, both academic and non-academic. Consequently, it can be inferred that the perception of a higher HEI’s health impact in the region is predictive of increased overall life satisfaction.

H4: Perception of HEI’s health impact on the region is predictive of increased overall life satisfaction.

Few studies determine whether there is a positive or negative perception of HEI’s impact on safety on campus (Arasteh, 2018),

or in the surrounding community. Chen and Vanclay (2021) refers that the main impact perceived on safety in the region is depends on the presence of incomers and foreigners, increased traffic. In the meta-analysis carried out by these authors, for example, female residents mentioned that the increasing of noise levels and number of vehicles and the decreasing of safety had a negative impact on their well-being. On the other hand, elderly people and other vulnerable groups saw the development associated with HEI as opportunities to feel safer, as they can contribute to the development of more health facilities such as hospitals and hospices. This leads to the deduction that the perception of a higher HEI’s safety impact on the region is predictive of increased overall life satisfaction.

H5: Perception of HEI’s safety impact on the region is predictive of increased overall life satisfaction.

According to the above the proposed conceptual model is presented in Figure 1.

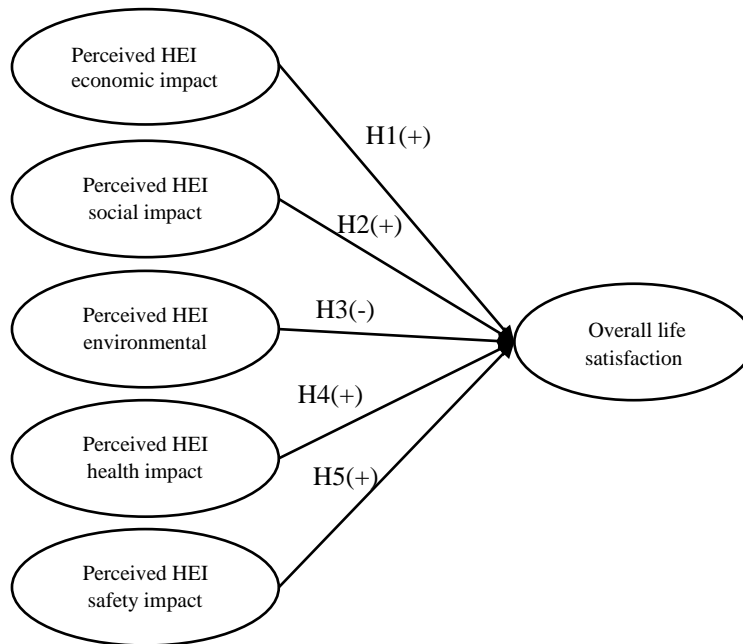


Figure 1. Conceptual model (Own elaboration)

4. Methodology

4.1. Research Design

The present study aims to identify, collect, and systematize indicators that could be used to measure the impact of HEI on the QoL of citizens of the regions where these institutions are located. An instrument was originally developed to assess the perceived HEI impact to achieve this purpose.

First, based on a wide-ranging literature review about QoL frameworks, namely OECD's Better Life Index (OECD, 2022) and World Happiness Report (Helliwell et al., 2022) several dimensions were identified and an item pool of QoL indicators was developed for each of those dimensions. Afterwards, all the items were reviewed by five academic experts in the areas of management and psychology. Finally, a total of 48 items, distributed over 11 QoL dimensions (income, housing, employment, skills development, health, safety, work-life balance, social networking, community involvement/civic behaviour, environmental quality, social environment) were submitted to a group of 8 stakeholders (75% men and 25% women) with an average age of 42.38 years (SD=13.01) from the central and northern regions of Portugal. The respondents were a director of a nursing home, a manager of a familiar company, a product manager of a clothing company, a professor of a HEI, a public security police, a coordinator of a local non-governmental organization, a director of a private school and a self-employed worker. Four of them have a bachelor degree, three have a master degree and one a doctoral degree. Respondents were asked to state the degree to which they consider the HEI in their region contributed to decreasing or increasing each of the 48 indicators of QoL in their local and regional community, using a 7-point scale (1= Great decrease; 4=No impact; 7=High increase).

Two open questions were added to collect more information about potentially relevant

indicators of regional quality of life (QoL) (i.e., Taking into account your knowledge and professional experience, please indicate the potential effects - positive and negative - of HEI in your region on the QoL of the community; In addition to the aforementioned indicators, in your opinion what others could be considered). The answers were analysed by the same group of experts. A total of 13 indicators were eliminated because they were not considered by the stakeholders as having an important impact (negative or positive) on the region. Specifically, items where most respondents answered, "no impact" and none of the stakeholders recognized it as an indicator with a high impact on their regions were removed from the questionnaire. Finally, three indicators were merged into others with similar content. Considering the answers to both the open questions, some items were adjusted, clarified and/or improved.

4.2. Variable Measurement

The final version of HEI Impact on Regional QoL Questionnaire included 50 items assessed through a 5-point Likert scale, ranging from 1 (Completely disagree) to 5 (Completely agree). Dimensions, constructs, indicators, and acronyms are presented in Table 1.

Respondents were asked to indicate to what extent they considered that the HEI in the region where they lived and/or worked contributed to their QoL, considering Economic, Social, Environmental, Health and Safety dimensions. Satisfaction with life was measured through the Portuguese version of the Satisfaction with Life Scale – SLS (Diener et al., 1985), adapted by Simões (1992). Before the final questionnaire dissemination, ten pre-tests were conducted to ensure all the instructions, items and response scale were understood by the respondents and some adjustments were made.

Table 1. Dimensions, constructs, indicators, and acronyms.

Dimensions	Constructs	Type	Indicators	Acronym
Perceived university's economic impact	Income (Q1.1+Q1.2+Q1.3)	F	There are more sources of income for families.	Q1.1
			Increase household income.	Q1.2
			Increase the feeling of financial security.	Q1.3
	Housing (Q2.1+Q2.2+Q2.3)	F	Decrease housing prices.	Q2.1
			Improve the living conditions of houses and apartments.	Q2.2
			Make it easy to find a house or apartment in good condition and at affordable price.	Q2.3
	Employment (Q3.1+Q3.2+Q3.3+Q3.4+Q3.5+Q3.6+Q3.7)	F	The average salary is higher	Q3.1
			Working hours are reduced	Q3.2
			Men and women have more equal working conditions	Q3.3
			Increase employment opportunities for young people	Q3.4
			Access to employment is easier for the general population	Q3.5
			There are better working conditions	Q3.6
			Increase the attraction and retention of companies (including technology)	Q3.7
	Skill development (Q4.1+Q4.2+Q4.3)	F	There are more opportunities to create local businesses	Q3.8
			Young people have access to more learning opportunities	Q4.1
Young people have access to more skills development opportunities			Q4.2	
Perceived university's social impact	Work life balance (Q9.1+Q9.2+Q9.3+Q9.4)	F	The community at large has more opportunities for skills development and lifelong learning	Q4.3
			Have more access to green spaces	Q9.1
			Decrease the time in daily commuting	Q9.2
			There are more bicycle paths	Q9.3
	Social networking (Q10.1+Q10.2+Q10.3)	F	There are more opportunities to practice sports	Q9.4
			Increase opportunities for more social activities and social interaction	Q10.1
			Have more cultural events	Q10.2
	Community involvement and civic behaviour (Q11.1+Q11.2+Q11.3)	F	Increase the number of sports events	Q10.3
			Have more opportunities to belong to groups and associations in the community	Q11.1
			Increase knowledge/number of studies related to social problems in the community	Q11.2
Perceived university's environmental impact	Environmental quality (Q5.1+Q5.2+Q5.3+Q5.4+Q5.5)	F	Be easier to influence those who make decisions in the community around us	Q11.3
			Decrease air pollution	Q5.1
			There is a decrease in the pollution of public spaces	Q5.2
			Physical and public spaces get more care	Q5.3
			There is a reduction in noise, particularly at night	Q5.4
	Social Environment (Q6.1+Q6.2+Q6.3+Q6.4+Q6.5+Q6.6)	F	Road traffic is lower	Q5.5
			The average age of the population increases	Q6.1
			There is a greater capacity to retain young people	Q6.2
			The family settlement capacity is higher	Q6.3
			There is a greater capacity to attract young people	Q6.4
There is a greater capacity to attract families	Q6.5			
There is a greater capacity of attraction and settlement of population from other regions and countries	Q6.6			
Risk behaviours for self and others are less frequent	Q6.7			

Perceived university's health impact	Health (Q7.1+Q7.2+Q7.3)	F	Have more opportunity for a healthy lifestyle	Q7.1
			Increase health literacy	Q7.2
			Have more opportunities for medical consultations and examinations	Q7.3
Perceived university's safety impact	Safety (Q8.1+Q8.2+Q8.3)	F	There is a decrease in crime	Q8.1
			There is an increase in safety at night in public spaces	Q8.2
			There is a decrease in the number of deaths from traffic accidents	Q8.3
Overall life satisfaction	Overall life satisfaction	R	My life seems, in almost everything, like I wanted it to be	Q13.1
		R	My living conditions are very good	Q13.2
		R	I am satisfied with my life	Q13.3
		R	So far, I have achieved the most important things in life that I wanted	Q13.4
		R	If I could start my life over, I would change almost nothing	Q13.5

Key: F=Formative; R=Reflexive

Source: Own elaboration

The responses were analysed through a Partial Least Squares – Structural Equation Model (PLS-SEM) model, which can cope appropriately with the data obtained (Hair et al., 2011; Hair et al., 2012; Pedro et al., 2020; Ouajdouni et al., 2021; Jia et al., 2022). The software used was the SmartPLS (version 3.3.9).

4.3. Participants and Sampling Procedure

The questionnaire developed was subsequently applied in all municipalities with at least one HEI, in the year 2021. The data was collected using an online survey

and physical questionnaire. The study population is the Portuguese society living in a municipality where an HEI is present. The statements and sections were obtained from the following national and international sources.

A total of 550 responses were received showing a high level of homogeneity in gender differences. The frequency and percentages of the gender, the age groups and the areas of Portugal represented at the level of NUTS 2 (Nomenclature of Territorial Units for Statistics) can be observed in Table 2.

Table 2. Profile and characteristics of respondents (n=550).

Attributes	Characteristic	Frequency	Percentage (%)
Gender	Male	272	49.45%
	Female	278	50.55%
Age	18-24	129	23.45%
	25-34	159	28.91%
	35-44	127	23.09%
	45-54	86	15.64%
	> 54	49	8.91%
NUTS 2	North	182	33.09%
	Centre	162	29.45%
	Metropolitan Area of Lisbon	102	18.55%
	Alentejo	52	9.45%
	Algarve	26	4.73%
	Islands (Autonomous Region of Azores and Autonomous Region of Madeira)	26 (13 + 13)	4.73%

5. Results

Descriptive statistics were generated and the distribution of average values between variables was found to be homogenous. Also, there are no problems with the correlation matrix and with the values for the Variance Inflation Factor (VIF) that are below or equal to 2.42 and the skewness and kurtosis tests, also suggest normality (see Ringle et al., 2022) (for all results see Table 3 in Appendix).

5.1. Assessment of the Measurement Model

Assessment of the measurement model, following Hair et al. (2019), aims to confirm and analyse the quality of adjustment, and the reliability and validity of the indicators and constructs. For the adjustment quality (estimated model and saturated model) Table 4 show that the original SRMR value in both models was under 0.08 (Hu & Bentler, 1998), and all the values of the five measures in the estimated models (SRMR, d_ULS, d_G, Chi-Square and NFI) are equal to the saturated models.

According to Hair et al., 2019), Outer Loadings and Convergent Validity are within the defined parameters. Outer loadings are greater than 0.708, and all the values of the constructs in the Cronbach’s Alpha and the rho_A are greater than 0.7 (Hair et al., 2012).

Table 4. Quality of adjustment (saturated model and estimated model).

Indicator	Conceptual model	
	Saturated Model	Estimated Model
SRMR	0.077	0.077
D_ULS	0.803	0.803
D_G	10.586	10.586
Chi-Square	7689.528	7689.528
NFI	0.408	0.408

Legend: SRMR: Standardized root mean square residual; d_ULS: unweighted least squares discrepancy; d_G: geodesic discrepancy; NFI: Normed Fit Index.

The results of the Composite Reliability (CR) test are all above 0.7 and below 0.95. “Perceived HEI Health Impact” and “Perceived HEI Safety Impact” presents a CR of 1 because they have only a measurement indicator. These results show internal consistency reliability, with all constructs being valid and measuring different impacts. Finally, Average Variance Extracted (AVE) test to analyse convergent validity, as all the values of the constructs are greater than 0.5, these same constructs can explain more than half the variance of the different indicators forming them (Avkiran & Ringle, 2018; Hair et al., 2019; Ringle et al., 2022) (see Table 5).

Discriminant validity is analysed through calculating the Heterotrait–monotrait (HTMT) ratio. To increase the robustness of the data analysis, we proceeded to the analysis performed by Ghasemy et al. (2020), suggesting that the value of HTMT is significantly lower than one using bootstrapping (see Table 6).

Table 5. Outer Loadings and Convergent Validity.

Constructs	Loadings	Cronbach Alpha	rho_A	CR	AVE
Perceived university’s economic impact		0.878	0.888	0.910	0.670
Income	0.872				
Housing	0.732				
Employment	0.851				
Skills Development	0.721				
Perceived university’s social impact		0.813	0.820	0.877	0.643
Community Involvement and Civic Behavior	0.967				
Social Networking	0.791				
Work-Life Balance	0.799				

Perceived university's environmental impact		0.717	0.724	0.876	0.779
Environmental Quality	0.954				
Social Environment	0.815				
Perceived university's health impact		1.000	1.000	1.000	1.000
Health	1.000				
Perceived university's safety impact		1.000	1.000	1.000	1.000
Safety	1.000				
Overall life satisfaction		0.878	0.887	0.910	0.670
Q13.1	0.812				
Q13.2	0.847				
Q13.3	0.844				
Q13.4	0.811				
Q13.5	0.778				

Table 6. Heterotrait–monotrait (HTMT) ratio, using bootstrapping.

Hypothesis	Original Sample (O)	Sample Mean (M)	5% 95%	Original Sample (O)	Sample Mean (M)	Bias	5% 95%
H1(+) Perceived university's economic impact → Life satisfaction	0.245	0.253	[0.138; 0.358]	0.245	0.253	0.008	[0.103; 0.338]
H2(+) Perceived university's social impact → Life satisfaction	0.349	0.347	[0.214; 0.471]	0.349	0.347	-0.002	[0.212; 0.469]
H3(+) Perceived university's environmental impact → Life satisfaction	-0.126	-0.116	[-0.194; -0.038]	-0.126	-0.116	0.009	[-0.213; -0.058]
H4(+) Perceived university's health impact → Life satisfaction	-0.059	-0.065	[-0.178; 0.049]	-0.059	-0.065	-0.006	[-0.167; 0.058]
H5(+) Perceived university's safety impact → Overall life satisfaction	0.005	0.006	[-0.090; 0.101]	0.005	0.006	0.001	[-0.092; 0.100]

5.2. Assessment of the Structural Model

Primary assessment of the structural model involves analysing: (i) the statistical coefficient (R^2), which determines the degree of adjustment of the model; (ii) statistical significance of the path coefficients; (iii) indirect effects through estimation of f^2 , the reference values being: $0.02 \leq f^2 < 0.15$ – small effects; $0.15 \leq f^2 < 0.35$ – moderate effects; $f^2 \geq 0.35$ – large

effects (Cohen, 1988); (iv) and the Stone – Geisser test (Q^2), which measures the predictive relevance of the dependent reflexive constructs ($Q^2 > 0$) (Avkiran & Ringle, 2018; Hair et al., 2019). Regarding the results for structural model, there are an acceptable predictive relevance (Q^2), and according to Cohen (1988), the degree of model adjustment is moderate (see Table 7).

Table 7. Structural Model Evaluation Results

Dimensions	Hypothesis	Path Coefficient (PC)	<i>t</i> -statistic	<i>p</i> -value	Supported Hypothesis	<i>f</i> ²	<i>R</i> ²	<i>Q</i> ²
Economic	H1(+) Perceived HEI economic impact → Life satisfaction	0.245	3.435	0.000	Yes	0.014		
Social	H2(+) Perceived HEI social impact → Life satisfaction	0.349	4.479	0.000	Yes	0.053		
Environmental	H3(-) Perceived HEI environmental impact → Life satisfaction	-0.126	2.415	0.008	Yes	0.004		
Health	H4(+) Perceived HEI health impact → Life satisfaction	-0.059	0.860	0.195	No	0.001		
Safety	H5(+) Perceived HEI safety impact → Overall life satisfaction	0.005	0.086	0.466	No	0.000		
Overall life Satisfaction							0.168	0.139

Additionally, we can say that the social dimension plays a decisive role and has major positive effects on the population's life satisfaction. The economic and environmental dimensions have significant effects on life satisfaction, but the economic dimension shows positive effects on overall life satisfaction while the environmental dimension has a negative effect on overall life satisfaction in Portuguese society.

Considering evaluation of the Structural Model, in Table 8, a PLSpredict is presented and discussed, to evaluate the out-of-sample predictive power of the model. The mean

absolute error (MAE) and the *Q*₂_predict values of the PLS model were analysed, as well as the MAE values of the linear model (LM) (Avkiran & Ringle, 2018; Hair, Risher, et al., 2019). The same table shows that all the *Q*₂_predict values were positive. The difference values between MAEPLS and MAELM indicate a high level of predictive performance outside the model sample, with none of the indicators yielding greater prediction errors compared to the naïve LM benchmark (Ghasemy et al., 2020; Pedro et al., 2020; Ghasemy et al., 2021).

Table 8. PLSpredict results based on assessing MAE values

Indicator	PLS results		LM results	MAEPLS - MAELM
	MAE	Q2_predict	MAE	
Q13.1	0.764	0.103	0.764	0.000
Q13.2	0.706	0.118	0.707	-0.001
Q13.3	0.739	0.079	0.745	-0.006
Q13.4	0.733	0.117	0.735	-0.002
Q13.5	0.989	0.031	0.990	0.001

Source: own elaboration

Observing the results obtained (see Fig. 2), it is evident that there is a good fitness and robustness of the data to be used in

estimating the model and testing the hypotheses, in terms of the PLS-SEM.

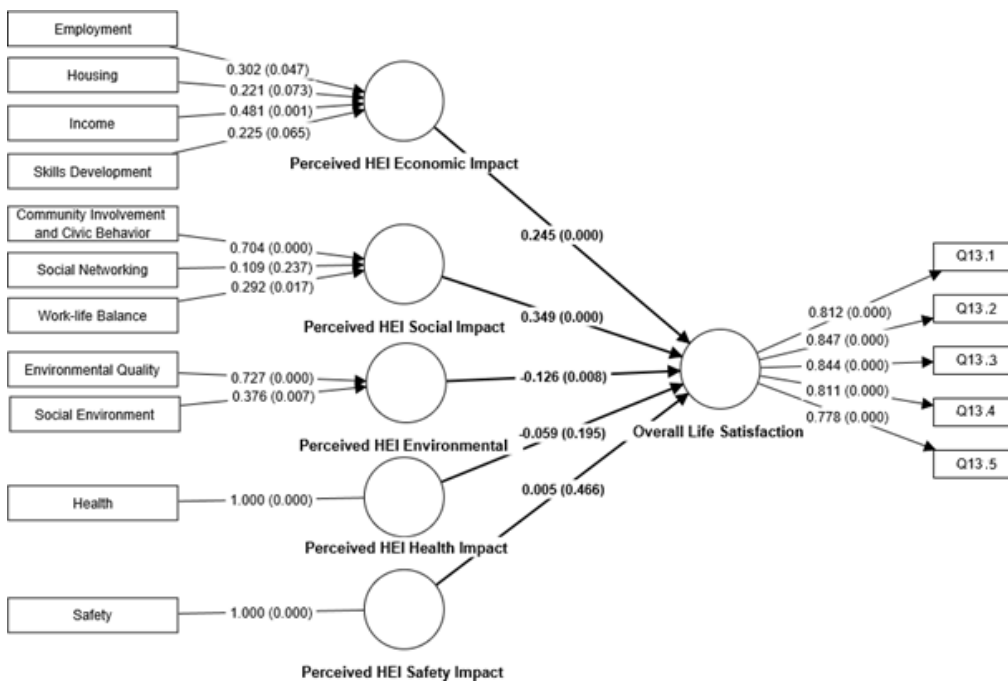


Figure 2. Final structural model, respective weightings, loadings and p-values

6. Discussion

According to the obtained results, and responding to the RQ: *How can we explain the links between the impact of HEI on the community as perceived by residents in that community and satisfaction with life itself?*, the dimensions with a positive and significant impact in life satisfaction were associated with economic and social perception. In addition, two of the five hypotheses presented were not rejected,

namely *H1: The perception of HEI's economic impact in the region is predictive of increased overall life satisfaction, (PC=0.245; p=0.000); and H2: The perception of HEI's social impact in the region is predictive of increased overall life satisfaction, (PC=0.349; p=0.000).* Regarding *H1*, the perception of HEI's economic impact in the region is positively and significantly predictive of increased overall life satisfaction, this result is in line with Uysal and Sirgy (2019), who indicated

that the perception of HEI's economic impact contributed positively to life satisfaction. For example, as stated by Kimilu et al. (2020), constructing roads and transport systems, constructing and/or improving electricity and water infrastructure, and other activities, will help the whole region's economic development and benefit all its inhabitants. That is, the more positive the perception of the economic impact on the various life domains of residents in the surrounding community, the greater the positive feelings (and fewer negative ones), with a consequently greater likelihood of those perceptions influencing their satisfaction with life in general.

As for *H2*, the results indicate that the perception of HEI's social impact on the region is predictive of increased overall life satisfaction. This result confirms the conclusion of Uysal and Sirgy (2019), who mentioned that life satisfaction was influenced by satisfaction with life domains linked to the social component, for example, satisfaction with the community, family, work, social life, health, and others. Furthermore, the same authors referred that satisfaction with a specific life domain, in this case social life, was also influenced by lower levels of concern about life in that domain, for example, in the specific case of HEI, the perceived impact of HEI on social events in the community and other activities. Therefore, efforts to interact with and better inform local residents about what happen, and it is done by HEI can help improve the community's general awareness, perceptions and satisfaction, and not just on campus (Kimilu et al., 2020), but also outside it.

In relation to *H3: Perception of HEI's environmental impact on the region is predictive of increased overall life satisfaction*, the hypothesis was not rejected ($p=0.008$) as there is a negative association ($PC=-0.126$). We may suppose that respondents who perceived a greater positive impact of HEI on the physical and social environment are citizens who are particularly aware of what goes on around them and at

the same time more demanding in relation to that dimension of quality of life. Indeed, recent studies have revealed that Portuguese citizens are aware and show concern about the country's physical environmental problems, such as air quality (e.g., Canha et al., 2022), and social ones, such as retaining young people in the region (e.g., Silva et al., 2021). Therefore, the negative association between perception and the impact of HEI and residents' satisfaction with life can be explained by the fact of high expectations in relation to what the institution's contribution to their region can be in environmental terms; or even the erroneous perception of the contribution of the different sources of environmental pollution, as mentioned by Canha et al. (2022). Therefore, the more residents recognise the positive impact of HEI on their surrounding environment, the more they consider those improvements as insufficient, generating less life satisfaction. The results support the view of Dissanayake et al. (2017), who conclude that a person's psychological well-being can depend on the consistency between their wishes and perception of the environment and their capacity to manage their life satisfaction. As suggested by Pedro et al. (2021), in the future it might be important to study people's expectations and level of well-being in relation to the different dimensions of quality of life.

Concerning the last two hypotheses, *H4: The perception of HEI's health impact on the region is predictive of increased overall life satisfaction* ($PC=-0.059$; $p=0.860$); and *H5: The perception of HEI's safety impact on the region is predictive of increased overall life satisfaction* ($PC=0,005$; $p=0,086$), both were rejected. Based on Herzberg's two-factor theory or Herzberg's dual-factor theory (Herzberg, 1959), the factors influencing job satisfaction (motivation factors) are different from those influencing job dissatisfaction (hygiene factors). We could assume that similar mechanisms are involved in life satisfaction. In addition, Diener's satisfaction with life scale is a measure that

focuses specifically on life satisfaction, more than on dissatisfaction. We may consider that economic and social dimensions of QoL can be more predictive of life satisfaction, as they are more related to positive aspects of life (i.e., well-being) and could be seen as motivational factors (i.e., their presence leads to satisfaction). In contrast, safety and health dimensions of QoL tend to focus more on the negative aspects of life (i.e., ill-being) and could be operationalized as hygiene factors (i.e., where absence generates dissatisfaction and presence does not cause satisfaction). Therefore, future studies could consider a measure that would be more sensitive to the negative aspects of life quality (e.g., a measure of depressive disorders or a measure of negative affectivity), in addition to a measure of life satisfaction.

7. Conclusions, limitations and future research

The aim of this research was to test a theoretical model linking community residents' perceptions of HEI's impact (economic, social, environmental, health and safety) with their overall life satisfaction. The model was tested using a survey of 550 respondents from communities with HEI and varying in their level of regional development. The results suggest that the perceived economic and social impacts of HEI have positive effects on the life satisfaction of Portuguese citizens living in regions with HEI.

These results have various implications and make theoretical and practical contributions to HEI and to public policies and society in general. Regarding the implications and contributions to HEI, it is hoped that from these results, the activities they carry out will make a positive contribution to society and their host communities, by building or improving infrastructures that the community can use; providing and financing social investment to support local sustainable social development; genuine commitment to

maximizing the opportunities of local content, i.e., more and better jobs for the population and the development of local commerce; and providing the local population with training and support, as mentioned by Vanclay and Hanna (2019). Related to health, HEI should consider actions that include community participation and allowing, for example, those who work in HEI to assume the responsibility to shape their well-being in the context in which they work and at the same time encourage an environment that supports health off campus (Tsouros et al., 2001). HEI need to recognise that they are part of a wider community and extend their responsibilities beyond the limits of campus. For example, if residents' perception of HEI's environmental impact is found to be a negative predictor of their life satisfaction, then HEI's environmental policies and programs should be formulated to encourage environmental sustainability development in ways that influence residents' positive perception of the environmental impact on their sense of health and safety well-being.

Similar implications can be deduced in relation to economic and social policies and programs. It is necessary to anticipate situations, for example, related to increased student numbers in HEI. For example, Chen & Vanclay (2021) say that urban development is related to the presence of incomers and growing competition for jobs increases the levels of stress in the region's resident population. This usually occurs inadvertently, mostly through ignorance of possible social problems, the lack of anticipation, not discussing/conversing with peers, inadequate planning and/or a lack of monitoring (van der Ploeg & Vanclay, 2018; Chen & Vanclay, 2021). So, there should be greater interaction between local political power and HEI, so that these situations are mitigated and do not cause any change or harm to the community in general.

Regarding society implications, HEI can create stricter environmental control measures in terms of economic, social,

environmental, health and safety in cities, neighbourhoods or public areas; and try to implement measures that increase and improve, for example, employment; better communication routes; better housing; more diversified and competitive commerce; encourage the adoption of electric vehicles, to reduce CO2 emissions and noise pollution in cities, so that the resident population has a better understanding of what is happening around them. They should also implement better information on all activities carried out in this regard.

There are some limitations to report. The study is contextual as it was conducted only in Portugal and so cannot be generalized. It would also be interesting to investigate society's sense of well-being regarding the five dimensions studied (i.e., sense of economic well-being; sense of environmental well-being; sense of safety well-being; sense of health well-being; and

sense of social well-being). Another future research proposal is to implement this study in different nations.

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Marta Alves

Faculty of Human and Social Sciences, University of Beira Interior (UBI); and NECE, Research Unit in Business Sciences, University of Beira Interior (UBI), Covilhã, Portugal
mpalves@ubi.pt
ORCID 0000-0002-8074-7168

Helena Alves

Faculty of Human and Social Sciences, University of Beira Interior (UBI); and NECE, Research Unit in Business Sciences, University of Beira Interior (UBI), Covilhã, Portugal
haves@ubi.pt
ORCID 0000-0001-5192-2310

Eugénia Pedro

Faculty of Human and Social Sciences, University of Beira Interior (UBI); and NECE, Research Unit in Business Sciences, University of Beira Interior (UBI), Covilhã, Portugal
eugenia@ubi.pt
ORCID 0000-0001-9829-8703

João Capucho

Faculty of Human and Social Sciences, University of Beira Interior (UBI); and NECE, Research Unit in Business Sciences, University of Beira Interior (UBI), Covilhã, Portugal
joao.capucho@ubi.pt
ORCID 0000-0003-3696-6467

Appendix

Table 3. Correlation coefficient matrix, descriptive statistics, and VIF

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Income	1															
2 Housing	0.498**	1														
3 Employment	0.569**	0.629**	1													
4 Skills Development	0.486**	0.361**	0.605**	1												
5 Work-life Balance	0.429**	0.612**	0.613**	0.391**	1											
6 Social Networking	0.440**	0.425**	0.598**	0.541**	0.591**	1										
7 Comm. Involvement and Behav.	0.492**	0.461**	0.642**	0.547**	0.629**	0.724**	1									
8 Environmental Quality	0.565**	0.620**	0.999**	0.602**	0.605**	0.596**	0.639**	1								
9 Social Environmental	0.487**	0.361**	0.606**	10,000**	0.391**	0.542**	0.548**	0.603**	1							
10 Health	0.555**	0.548**	0.690**	0.559**	0.656**	0.601**	0.651**	0.684**	0.560**	1						
11 Safety	0.431**	0.587**	0.596**	0.400**	0.694**	0.523**	0.575**	0.588**	0.400**	0.672**	1					
12 Q13.1	0.251**	0.219**	0.240**	0.189**	0.271**	0.280**	0.323**	0.238**	0.188**	0.254**	0.259**	1				
13 Q13.2	0.272**	0.215**	0.264**	0.223**	0.277**	0.311**	0.351**	0.262**	0.222**	0.273**	0.217**	0.604**	1			
14 Q13.3	0.245**	0.198**	0.250**	0.235**	0.237**	0.258**	0.295**	0.250**	0.236**	0.236**	0.213**	0.586**	0.675**	1		
15 Q13.4	0.277**	0.217**	0.267**	0.238**	0.292**	0.247**	0.338**	0.265**	0.239**	0.245**	0.241**	0.528**	0.578**	0.607**	1	
16 Q13.5	0.134**	0.157**	0.132**	0.084*	0.186**	0.143**	0.219**	0.128**	0.084*	0.104*	0.174**	0.597**	0.558**	0.595**	0.560**	1
VIF	1.64	1.751	2.397	1.665	1.767	2.245	2.419	1.572	1.572	1	1	1.955	2.217	2.321	1.883	1.954
Mean	-0.1982	0.080	0.0145	-0.1527	-0.1418	-0.0473	-0.2709	-0.0218	-0.0327	0.0236	-0.0818	3.3382	3.42	3.6127	3.6145	3.1345
Skewness	-0.627	-0.176	-0.79	-0.938	-0.547	-0.595	-0.414	-0.798	-0.934	-0.546	-0.315	-0.287	-0.242	-0.499	-0.513	-0.199
Kurtosis	-0.164	-0.956	0.325	0.525	-0.336	-0.317	-0.203	0.352	0.51	-0.496	-1	-0.242	-0.061	0.153	0.086	-0.877

** The correlation is significant at 0,01 (2 extremities).

* The correlation is significant at 0,05 (2 extremities).