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Social impact assessment in educational projects: Teachers' perspectives on social net present value

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ABSTRACT

This investigation evaluates professors' viewpoints on social net present value and its relevance in making decisions about educational projects. The aim of this paper is to examine the factors behind these perceptions and how social NPV should improve the value and social relevance of these projects. A descriptive and correlational research design with a quantitative approach was applied. The study applied a survey to a random sample of 100 teachers from the University State of Milagro selected through stratified random sampling. The information obtained underwent scrutiny using advanced statistical tools like factor analysis to establish the major perceptions towards the social NPV. The findings show that teachers believe social NPV is an important method to enhance the social impact of educational projects. On the other hand, important limitations concerning its implementation were also highlighted including training and insufficient resources. The factor analysis revealed two factors: a positive attitude towards social NPV and possibility – advantages of its use in evaluating educational projects. This paper emphasizes the need to incorporate social NPV in the appraisal of educational projects. However, the teacher sees a great opportunity in it to better connect the policies of education.

Contribution/Originality: This study integrates social net present value (social NPV) into the evaluation of educational projects combining advanced statistical methods with teacher perceptions. It offers a novel quantitative approach to assess the social impact in higher education providing empirical evidence for policy improvements aligned with sustainable development objectives.

1. INTRODUCTION

In the sphere of higher education, the ability of educational projects to create socioeconomic prosperity and enhance the well-being level of society is perceived to be equally important as their academic effectiveness (Higgins, Kelly, Munck, Kelly, & Grounds, 2024; Liu, Chung, Li, Robinson, & Gonzalez, 2022). However, traditionally, the evaluation of these projects has rarely incorporated social impact considerations systematically which has limited the full understanding of their true value (Caccialanza, De Nito, Canonico, & Favari, 2023; Lerena, 2023). Against

this background, the social net present value (social NPV) emerges as an innovative tool to integrate socioeconomic aspects in the evaluation of educational projects.

This work not only aims to identify the key elements that define the valuation of the social NPV but also to offer a detailed view of the possible areas for improvement in the implementation of educational policies that truly consider social impact as a fundamental component of their structure through the application of advanced statistical methods on a sample of professors from various colleges.

The relevance of incorporating the social dimension in project evaluation is not only an ethical or social imperative. It also represents an essential strategy to align educational objectives with the Sustainable Development Goals (SDGs) and enhance the role of educational institutions as catalysts for social change (Raiden & King, 2021). This study contributes to the existing literature by providing empirical evidence on the effectiveness of social NPV and promoting a reflection on traditional evaluation methods in higher education.

The assessment of social impact in education is fundamental for educational projects (Bowman, 2023; Liu et al., 2022). Social factors such as parents, teachers, friends, and the institutional environment significantly influence education (Bowman, 2023; Epstein & Sanders, 2006). Making an early investment in education is critical to solving issues related to education inequality and providing support for students over the long run (Deepa, Aparna, Lakshmanan, & Sreeja, 2019).

This research seeks to find out how teachers in charge of cradle- to- careers programs at the Universidad Estatal de Milagro understand and appreciate the importance of social NPV in educational project development. Within these bounds, we attempted to examine where the respondents come from (Cudeck, 2000) and what such respondents' educational model can result in the current society (Artiles, Kozleski, Dorn, & Christensen, 2006).

Finally, these are the research questions we value addressing: 1) How do the university teachers in your country assess the effects of social NPV in the evaluation of educational projects? 2) What are the main barriers and perspectives that enhance the efficient inoculation of social NPV? These questions are critical to addressing how universities improve the social impact level of educational interventions in practice. The interesting feature of the research is that it looks at education projects from a social rather than solely an economic perspective by including the assessment of social impact into the planning processes such as social net present value (social NPV) construing them as economic rather than social. Examining the perception and significance of social NPV among university teachers allows corroborating findings that can be used for the implementation of more adequate educational policies in accordance with the present-day social and economic realities. More importantly, it strengthens the university's social responsibility improving higher education to become more relevant, inclusive and sustainable so that universities can fulfill their role as change agents and enhance the quality and relevance of the education they offer in an ever more competitive world.

2. LITERATURE REVIEW

Previous works have explored the social aspects of educational projects approaching them from various angles. According to Bowman (2023) there is a need to combine education and social issues. In this way, the educational interventions can be improved but they can also lead to the creation of a more just and enlightened society (Bowman, 2023). A case study embraced with community-academia partnership showed that educational projects with a community dimension have the potential to affect the social sphere in a positive way enhancing the lives of disadvantaged people (Liu et al., 2022).

Raiden and King's research is also important since they support the inclusion of social values in education as a way of enhancing the implementation of the SDGs. According to their study, educational programs that integrate social impact into their interventions have the potential to transform the world through sustainable development.

However, most studies focus on assessing social impact through qualitative methods or case studies without a systematic quantitative evaluation of the value generated by these projects despite these advances. Artiles et al.

(2006) also acknowledges this problem, highlighting the necessity of more reliable and measurable ways to evaluate social effects in education (Artiles et al., 2006).

Ainscow's work goes beyond suggesting that for educational projects to be truly inclusive and represent current social needs, they must incorporate evaluations that measure not only academic success but also social impact in tangible and quantifiable terms (Ainscow, 2020).

Another key aspect is the differentiation between perceived social impact and real social impact where evaluations often remain at the level of perception without robust metrics that quantify the impact in absolute terms. In addition, there is a lack of research directly linking social impact to economic indicators such as NPV, which limits the ability of education policymakers to justify investments based on expected social return (Alomoto, Niñerola, & Pié, 2022).

The existing literature shows a notable absence of studies using social net present value to evaluate educational projects' social impact. Most current studies focus on qualitative or descriptive methods to assess social impact without incorporating an economic perspective that can quantify the social value generated by educational projects. It is this divergence that is problematic as social NPV not only presents a framework for the measurement of societal value but also a decision-making tool with the potential to support educational institutions with the best methods and strategies when designing and executing their projects.

This study tries to address this issue by putting forward the social NPV approach which would serve as an effective and sound financial approach for measuring how educational projects can help contribute to the well-being of society.

3. METHODOLOGY

The following methods were used to conduct the research:

3.1. Research Design and Justification

This present study is a quantitative research type in terms of data collection and analysis method but it has a descriptive and correlational research type design. This design is appropriate for identifying the attitude of university teachers towards the social NPV when selecting educational projects. It is possible to determine and estimate dependencies of several variables connected with the implementation of the social NPV establishing the basis for further deeper studies using such an approach.

The need for this study with teachers of a higher education institution is based on the need to reflect on and improve the social factor of educational projects particularly in a context where the need to increase the efficiency and effectiveness and social relevance of graduates is being pointed out.

3.2. Population and Sample

A total of one hundred teachers from the State University of Milagro were used in the study with the aid of the stratified random sample technique. The participants were students in the Schools of Science and Engineering and Social Sciences, Commercial Education and Law (FACSECYD). Among the teachers selected, those having teaching experience of at least three years in a higher learning institution were targeted for this study. For gender consideration and specialty issues, both male and female teachers were selected as well as teachers from different specialty fields. The choice of this sample is meant to capture as many and varied students' views on social NPV in as many different areas of education as possible.

3.3. Development of the Instrument

The questionnaire used in this study was developed to gauge the teachers' perceptions of what has been referred to as social net present value (social NPV). The questionnaire employed in this study comprised the

following 4 demographic questions: age, gender, experience in a higher education institution and the school the professor belongs to and 11 questions designed to measure the perception and appreciation that a professor of higher education institution has towards NPV social in the educational projects (see Table 2).

Content validation was conducted with the help of a panel of educational specialists to maintain the accuracy of the developed instrument. These experts then went through and rewrote the items so that they are relevant and easily understandable.

3.4. Development of the Instrument

The questionnaire used in this study was specifically designed to capture teachers' perceptions of social net present value (social NPV). The questionnaire used consisted of 4 demographic questions (age, gender, years of experience in higher education, and school to which they belong) and 11 questions to assess how professors of higher education institutions perceive and value the net present value (NPV social) in the decision-making process of educational projects (see Table 1). Content validation was carried out with the participation of a panel of educational experts to ensure the validity of the instrument. These experts reviewed and adjusted the items to ensure their relevance and clarity. A Likert scale with 5 response options was applied, configured as follows: 5 = strongly agree ; 4 = agree ; 3 = neutral ; 2 =disagree ; and 1 =strongly disagree .

Table 1. Assessment of professors' perceptions on social NPV in educational projects.

Items	Questions
1	I am familiar with the concept of social net present value (Social NPV) as applied to educational projects.
2	I believe that integrating social impact into the evaluation of educational projects is essential.
3	Social NPV provides a better evaluation of educational projects than traditional NPV by considering social impacts.
4	Social NPV is applicable and useful for educational projects in my institution.
5	There are significant challenges to implementing social NPV in project evaluation at my institution.
6	Social NPV offers significant opportunities to improve the social impact of educational projects.
7	The application of the social NPV in our institution is feasible with current resources and capabilities.
8	Social NPV should have a significant influence on educational project approval decisions.
9	More training and education on social NPV need to be provided to those involved in educational projects.
10	My institution is committed to the integration of the social NPV in the evaluation of educational projects.
11	I believe that the institutional environment at my university actively promotes the inclusion of social considerations in project evaluation.

3.5. Validation of the Instrument

The validity of the instrument was evaluated through several methods. First, content validation was performed to ensure that the items included in the questionnaire were representative of the constructs they were intended to measure. Then, an exploratory factor analysis (EFA) was carried out, demonstrating two main factors that effectively capture teachers' perceptions of the social NPV. Finally, the results obtained were compared with the indicators in Table 2 to ensure the criterion validity of the instrument, thus guaranteeing that the measurements are consistent and reliable.

Table 2. Indicators of reliability and internal consistency of the instrument.

Indicators	Description
Raw alpha	Cronbach's alpha for the data set if no items are removed. This is an indicator that the items consistently measure a common underlying construct.
Std.alpha	The standardized Cronbach's alpha provides a measure of internal consistency that considers the variance of the items.
G6(SMC)	Indicates the reliability calculated using the squared multiple correlation (SMC) method for each item concerning the other items in the set.
Average_r	The average of the correlations between the instrument's items suggests that the items are fairly well correlated which is favorable in an instrument designed to measure a single construct.
Y/N	The signal-to-noise ratio is indicative of the reliability of the measurement.
ASE	The standard error of alpha reflects the uncertainty in the measurement of internal consistency.

3.6. Processing and Analysis of the Results

After data collection, the data were processed using specialized statistical software. In this process, outliers were discarded and missing data were treated. Moreover, the Kaiser-Meyer-Olkin (KMO) test for sampling adequacy and Bartlett's test of sphericity were conducted in addition to the sampling adequacy measure (SAM). It was possible to establish two main factors through this analysis and the factors were rotated by using the Promax method to ease in results interpretation.

3.7. Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) is a statistical method utilized in different fields including social sciences and neuropsychology. Its aim is to find hidden variables that are behind the observed variables (Cudeck, 2000; Sellbom & Goretzko, 2023). It is appropriate in assessing theories, controlling measurement validity, and for overall reduction in dimensionality for further statistical analysis. While CFA is designed to test models of factors that have already been postulated (Bernstein, Garbin, & Teng, 1988) CFA is conceived for the construction of models of yet unknown factors (Bernstein et al., 1988). Another aspect that makes an important difference in CFA is that this technique does not presuppose any specific correlation among the assessed variables. It seeks to determine the patterns of inter-correlation or covariances between the variables through some common factors and thus achieve the common factors aim (Jiménez, Abad, Garcia-Garzon, & Garrido, 2023).

3.8. Factor Extraction

Proper evaluation of the factor extraction method is necessary while it has been identified that factor analysis is applicable to the data (Iantovics, Rotar, & Morar, 2019; Patnaik & Bhowmick, 2022). There are a few methods that can be used for extracting factors for instance, the Kaiser criterion, the screen test and Monte Carlo parallel analysis which assist in determining a number of factors to be retained (Gu, Yang, Gu, & Huang, 2021). Furthermore, methods of sampling factors including the rotation of factors, normalization and temporal alignment are employed to enhance the sample reliability of factors as well as enhance the accuracy of extractions (Jonnalagadda, Goyal, & Huffman, 2015). In the factor extraction process, the procedure involves the identification of the principal component vectors about the variance of the factors and concerning the effect size, therefore providing the best solution of the extraction. Such methodologies can help in the extraction of principal variables from large datasets making analysis easier and more effective in relation to the given elements.

4. RESULTS

4.1. Reliability Analysis

The reliability test results shown in Table 3 indicate that the instrument has excellent reliability and internal consistency based on a very high Cronbach's alpha, both in its raw and standardized form, and other associated indicators that show strong coherence and correlation between items. This suggests that the instrument is well suited to reliably measure the construct for which it was designed.

Table 3. Reliability analysis.

Raw_alpha	Std.alpha	G6(SMC)	Average_r	Y/N ASE	Mean SD	Median_r
0.96	0.96	0.97	0.68	24 0.0063	4 1.1	0.7

4.2. Results Processing and Analysis

4.2.1. Kaiser-Meyer-Olkin (KMO)

The overall KMO of 0.9 for all items in the data set indicates excellent suitability for factor analysis. This value close to 1 reflects that there is sufficient common correlation between the items allowing us to conclude that the observed variations can be effectively attributed to underlying factors.

4.2.2. Measure of Sampling Adequacy (MSA)

The results of the MSA values for each item are greater than 0.8. These values indicate that each item contributes positively to the factor model and correlates well with the other items. These values allowed us to perform a factor analysis and identify the underlying factors influencing the observed responses (see Table 4).

Table 4. MSA of the items.

P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
0.90	0.92	0.91	0.93	0.86	0.81	0.93	0.91	0.92	0.87	0.90

4.2.3. Barlett's Test of Sphericity

The results in Table 5 with a p-value equal to 0 indicate that the items studied are highly correlated to justify the factor analysis.

Table 5. Barlett's test of sphericity.

Chi sq	Df	p-value
0.90	0.92	0

5. FACTOR EXTRACTION

Several techniques were explored such as the screen test and Kaiser's rule to determine the optimal number of factors in the analysis (Baltzer, 2022). However, we selected to use the method of least residuals in component analysis since our data are on a Likert scale indicating a discrete character (Yuan, Jiang, & Cheng, 2017).

The results in Table 6 indicate that two factors capture 64.9% of the variability in our data. This suggests that factors MR1 and MR2 explain a significant proportion of the variance which is considered appropriate given the administrative and social context of our research.

Table 6. Loadings SS, explained variance, cumulative variance.

Variables	MR1	MR2
Sum squared of the loadings	3.674	3.465
Variance explained	0.334	0.315
Cumulative variance	0.334	0.649

Promax rotation was applied for factor extraction in response to the correlation observed between the factors. The results of the factor analysis presented in Table 7 indicate the need to eliminate items P3, P8, and P11 because their factor loadings do not reach at least the value of 0.6 (Yau, Wong, Lam, & McGrath, 2015). This suggests that the factors do not explain even 30% of the variance of items P3, P8, and P11.

Table 7. Item factor loadings.

Items	MR1	MR2
P1	-	0.727
P2	0.108	0.809
P3	0.472	0.491
P4	0.764	0.169
P5	0.899	-
P6	1.037	-0.151
P7	0.685	0.202
P8	0.522	0.466
P9	0.137	0.769
P10	-0.111	0.980
P11	0.443	0.414

The values of the factor loadings after eliminating variables P3, P8, and P11 are shown in Table 8. The new values of the factor loadings exceed 0.6 which indicates that the factors explain enough variance of each item to be represented in two factors.

Table 8. Item factor loadings.

Items	MR1	MR2
P1	-	0.688
P2	0.122	0.819
P4	0.748	0.202
P5	0.871	-
P6	0.964	-
P7	0.660	0.236
P9	0.157	0.765
P10	-	0.922

The factor analysis performed using the method of least residuals has concluded that the extraction of two factors is the most appropriate for our study. The first factor is composed of items P4, P5, P6, and P7 while the second factor includes items P1, P2, P9, and P10 as shown in the attached Figure 1.

It was decided to name the first factor "perception of social NPV", as it seems to capture the general perception of social net present value l (social NPV). On the other hand, the second factor has been named "feasibility and benefits of social NPV in education" reflecting its apparent association with the perception of the feasibility and benefits of social NPV specifically in the educational setting.

This denomination seeks to provide a clear identification of the constructs underlying each factor which facilitates the interpretation and understanding of the results obtained in the factor analysis. In this way, an adequate and reliable measurement scale is established to assess how the academic community of higher education institutions perceives and values the social net present value (social NPV) in the decision-making process of educational projects. The following two factors are defined: the first, which examines the perception of professors in the valuation of the social NPV in educational projects and the second which highlights the viability and benefits of assuming the commitment of the university in the face of a demanding working world for graduates.

5.1. Perception of Social NPV

The results shown in Table 8 highlight a significant factorial loading with a value of 0.964 which indicates a tendency among the professors surveyed to recognize the important opportunities that the social net present value (social NPV) offers to improve the social impact of educational projects. Similarly, another relevant factor loading is observed with a value of 0.871 reflecting that a considerable portion of faculty consider that there are significant challenges to implementing social NPV in the evaluation of educational projects at UNEMI. The factor loading indicated that the item is quite high with a value of 0. As for the measurement of the above-mentioned variable at the State University of Milagro, the figure of 0.871 points out that the teachers have a clear understanding of the tasks that are deemed to be herculean in the implementation of the social NPV as the tool for assessing educational projects.

5.2. Feasibility and Benefits of Social NPV

The findings laid down in Table 8 reveal highly significant factor loadings that shed light to the teachers' perception of social NPV on the appraisal of educational projects.

It emphasizes how much the faculty values the university's approach to the implementation of social NPV in the assessment of such ventures. This value indicates that a significant number of faculty may be aware of or are perhaps receptive to potential advantages that the integration of this value will bring. Furthermore, it is found that

the factor loading is also 0. 819 supports the views of a large percentage of the teachers on the topicality of the social impact factor in the evaluation of educational projects. This result suggests that the teachers are very much convinced of the fact that it is important to make references to the social context to assess the efficacy and importance of the educational initiatives more comprehensively and appropriately.

This perception denotes a view of a keen interest not only in embracing academic aspects but also in social and communal repercussions of educational programmes, thus more of a welfare-oriented outlook in higher education.

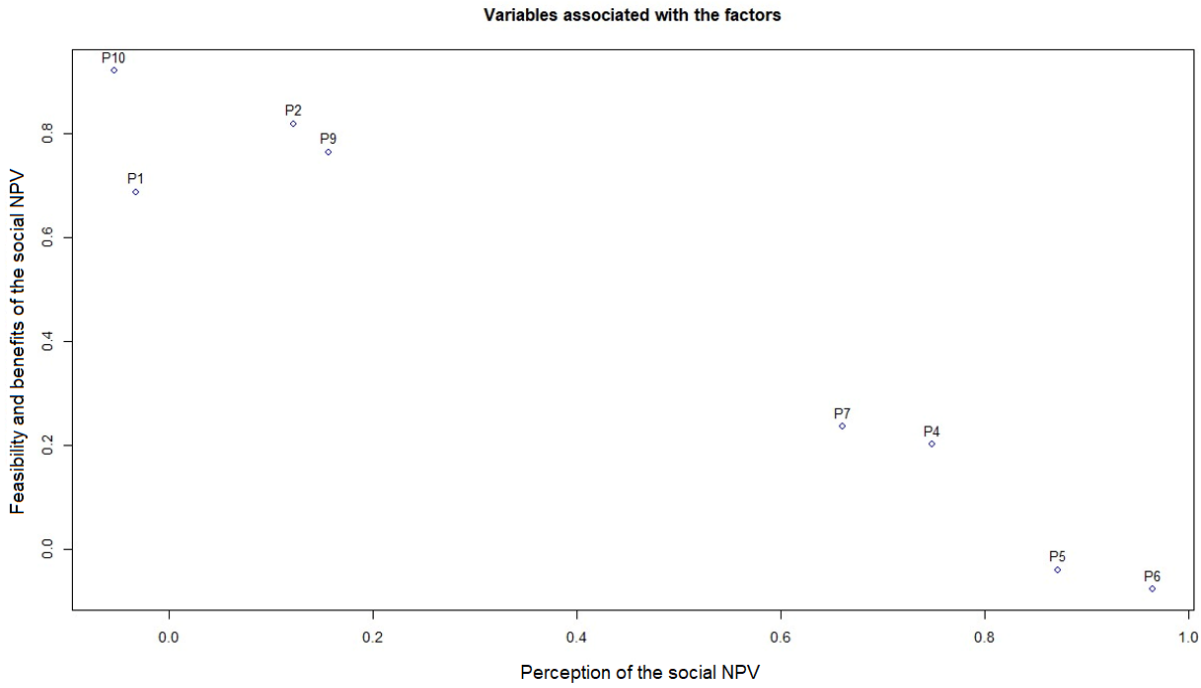

Figure 1. Variables associated with factor 1 and factor 2.

The study has given ample conclusion about the possibility of how the successful adoption of the social net present value (social NPV) model can greatly enhance the financing of educational projects from the teachers' perception in the State University of Milagro. The results obtained through factor analysis reveal two main components that influence teachers' perception and assessment of the social NPV: the whole attitude towards the social NPV and the possibility of its application and the advantages that can be gained from it.

6. DISCUSSION

The study has given ample conclusion about the possibility of how the successful adoption of the social net present value (social NPV model can greatly enhance the financing of educational projects from the teachers' perception in the State University of Milagro). The results obtained through factor analysis reveal two main components that influence teachers' perception and assessment of the social NPV: the whole attitude towards the social NPV and the possibility of its application and the advantages that can be gained from it.

However, the professors also identify significant challenges to the effective implementation of the social NPV, particularly highlighting the lack of resources and training. This finding aligns with research emphasizing the need for continuous support and consensus-building to overcome obstacles in implementing University Social Responsibility (USR) (Castro et al., 2016). In addition, this study indicates that the adoption of new methodologies in universities faces resistance due to a lack of preparedness, a challenge also evident in the results of this study (Yau et al., 2015).

Some researchers suggest that the social NPV could facilitate the adaptation of educational support for older people facing difficulties with technology adoption (Alzyoud & Bani-Hani, 2015) while others mention that its

application can mitigate the limitations imposed by social distancing and offer alternative international experiences through Virtual Mobility (VM) (Ferreira, Fuente, García, & Fernández, 2017). Therefore, the implementation of social VAN in educational projects could improve the universities' adaptability, sustainability, and competitiveness, increasing the quality of education and its social impact on the university environment.

Factor analysis of the data indicates that teachers perceive the integration of social NPV in the evaluation of educational projects as feasible and beneficial which aligns with studies from another research that highlights the importance of incorporating social aspects in academic evaluation to improve the effectiveness and value of educational projects (Piepenburg & Beckmann, 2022). In addition, the need for a more inclusive approach that considers both social and community aspects only confirms the importance of embedding social impact in project evaluation ensuring quality education (Raiden & King, 2021).

Real-world social impact initiatives such as student participation in service and community engagement opportunities to address actual problems within their local environment are well-recognized effective models for the promotion of students' sensemaking through authentic needs (Lehmann, Russi, Bala, Finkbeiner, & Fullana-i-Palmer, 2011). Furthermore, the social science literature is poised to help us understand and therefore reduce biases in algorithmic decision-making systems (see (Gerdon, Bach, Kern, & Kreuter, 2022)) as well as expand our understanding of how these new technologies may have an effect on already present forms of societally-based inequalities. This context related to university community educational projects may explain why the positive perceptions were higher in this aspect.

The findings of this study are very important for higher education policies. The adoption of social NPV may enhance not only the relevance and significance of education projects but also their alignment with Sustainable Development Goals (SDGs) as well as societal demands. These goals could be achieved through curricular reforms in higher education that incorporate the social NPV of several institutions and upgrade others' work as well.

Moreover, universities should foster the ecosystem that enables research and innovation on the social impact of education. They will address a specific need, like education for students with special needs or transport services for diverse population groups and they contribute to the SDGs by allowing innovation together with efficiency of resources. It enhances higher education´s role in advancing principles of social responsibility and sustainability.

In addition, we compare the results obtained in this study to those of others and appropriate leverage their relevance for educational policies focused on training and allocation of resources required to support social NPVs effectively. This recommendation is consistent with the suggestion of Neden (2022) that educational institutions adjust their curricula to include interventions oriented towards enhancing social.

7. CONCLUSION

In this study, we found that the social net present value (social NPV) plays a significant role in assessing educational projects and is capable of generating important returns when designing public policies for higher education. Factor analysis revealed two key factors: the teacher's affective attitude towards social NPV and implementation feasibility and perceived benefits. Findings shed light on how teachers perceived the benefits of social NPV for increasing relevance and reach but identified practical challenges that limited their ability to actually use it in practice—including desire for more training and resource support. Results of this study suggest that the educational sector has to further conceptualize social NPV to establish an orientation promoting education with impacts on social and economic development (even more than academic needs).

8. POLICY SUGGESTIONS

This study suggests some policies that can be drawn from its findings as a strategy to reinforce the inclusion of social net present value (social NPV) in educational project evaluations and implementation aimed at maximizing the social impact of educational projects and ensuring that higher education institutions are brought into line with

social and economic development objectives. The following are eight of the most critical suggestions put forward to help universities work towards more inclusive, eco-just and socially contextualised educational practices:

1. Social NPV in Curriculum Development: Social NPV should be integrated into the process of planning and assessing educational projects by including it as part of curriculum development to ensure that all stages in creating a syllabus are viewed through a social lens. Designed as In-Service Training:
2. The development of continuing education programs for teachers provides them with in-depth knowledge of the concept and implementation of social NPV and enables them to evaluate and suggest educational initiatives that have a social impact.
3. Resource Allocation for Social NPV of Education Projects: Ensure the availability of financial and technical resources to develop and implement the methodologies including software if any required to assess social impact in education to build databases etc.
4. Formation of Social Impact Assessment Units (SIAUs): These units will work as for-profit departments in educational institutions that are solely responsible to assist the teachers and students who are dealing with practical implications of social NPV ingredients within their projects.
5. Promotion of University Social Responsibility: To develop the culture of social responsibility at universities and to encourage schools or departments in selecting projects that have a positive effect on society among courses with content compatible with (SGDs) goals.
6. Development of Community Partnerships: Engage and develop relationships with community organizations and other stakeholders to collaboratively create educational programs that deliver civic good, addressing real societal needs.
7. Policy Evaluation and Continuous Improvement: Implement a system of continuous evaluation of educational policies related to social NPV, adapting and improving strategies based on the results obtained and international best practices.
8. Incentives for Projects with High Social Impact: Create incentives for professors and students to develop educational projects with high social impact such as recognition, preferential financing or inclusion in prestigious programs within the institution.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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