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Innovative Social Problem Solving as a Determinant of Student Social Entrepreneurial Aspiration in Malaysia

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ABSTRACT

Although socially innovative capacities are relevant to entrepreneurship education, their association with students' pre-venture social entrepreneurial aspirations remains insufficiently examined. This study examines the relationship between innovative social problem solving (ISPS) and student social entrepreneurial aspiration (SSEA) among higher education students in Northern Malaysia. A quantitative cross-sectional online survey was conducted in Kedah, Penang, Perak, and Perlis using purposive and convenience recruitment. Of 310 submitted records, 220 complete cases were analysed after consent, eligibility, and completeness screening, including the exclusion of 76 otherwise eligible records with incomplete aspiration items. Researcher-adapted five-point Likert measures were analysed using descriptive statistics, Cronbach's alpha, Pearson correlation, and simple linear regression. HC3 heteroscedasticity-consistent standard errors were applied following a significant Breusch-Pagan test. Mean ISPS scores were above the scale midpoint (M = 3.41), whereas SSEA scores were below it (M = 2.34). ISPS was positively associated with SSEA ($r = .371$, $p < .001$). The regression coefficient was positive (B = .404), and the model explained 13.8% of the observed variation in SSEA ($R^2 = .138$). The association remained statistically significant under HC3 inference ($p < .001$). These findings identify socially innovative problem-solving orientation as a correlate of pre-venture social entrepreneurial aspiration, complementing research on psychological and educational antecedents. However, the findings do not demonstrate causal effects or the effectiveness of educational interventions. Generalisability and interpretation are constrained by non-probability sampling, limited psychometric validation, and exclusions due to incomplete aspiration items.

Keywords: Innovative social problem solving; Social entrepreneurial aspiration; Social entrepreneurship; Higher education; Malaysia

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1. INTRODUCTION

Social entrepreneurship has emerged as an important approach to addressing societal challenges through entrepreneurial activities that prioritise social value creation alongside economic sustainability. Unlike conventional entrepreneurship, in which economic value capture is typically a central objective, social entrepreneurship places particular emphasis on addressing unmet social needs through innovative and sustainable responses (Mair & Martí, 2006). Innovation is therefore closely connected to the social entrepreneurial process, particularly in recognising neglected problems, developing alternative solutions, and mobilising resources to

generate social benefits. However, much of the social innovation literature has examined these activities after individuals or organisations have begun developing and implementing solutions (Mulgan, 2006; van Wijk et al., 2019). Comparatively less attention has been directed toward how an orientation toward socially innovative problem solving relates to individuals' entrepreneurial aspirations before venture creation. Understanding this earlier stage is particularly relevant to higher education, where students are developing the interests, competencies, and future-oriented commitments that may inform their eventual participation in social entrepreneurship.

The relevance of this issue is evident in Malaysia, where social entrepreneurship has attracted policy attention as a potential means of promoting inclusive economic development and addressing community needs. Zulkifle and Aziz (2023) documented the development of Malaysia's social entrepreneurship policy framework and highlighted the challenges associated with translating institutional ambitions into social enterprise formation. At the university level, research has increasingly examined factors associated with students' willingness to pursue social entrepreneurship. Saufi and Hong (2024) identified attitudes, subjective norms, and social entrepreneurship awareness as relevant correlates of intention among Malaysian public university students, while Yellangan Koval et al. (2025) examined the contributions of empathy, moral obligation, self-efficacy, and social support. These studies demonstrate the importance of psychological and social conditions but provide a less direct account of how students' orientation toward identifying and addressing social problems relates to their entrepreneurial aspirations. This distinction is particularly relevant because recognising social needs and considering possible solutions do not necessarily imply a commitment to establishing or participating in a social enterprise.

The present study focuses on student social entrepreneurial aspiration (SSEA), defined as students' expressed interest, willingness, commitment, and future plans to establish or participate in entrepreneurial activities primarily directed toward creating social value. SSEA is closely related to social entrepreneurial intention, which concerns an individual's intention to engage in social venture creation (Mair & Noboa, 2006). Entrepreneurial intention research establishes that planned entrepreneurial activities are preceded by motivational and cognitive processes that orient individuals toward potential action (Krueger et al., 2000). Nevertheless, the distinction between aspiration and intention requires conceptual care. Whereas intention generally emphasises commitment to performing a specified future behaviour, aspiration is used in this study to encompass a broader pre-venture orientation, including interest, willingness, commitment, and prospective plans. These domains overlap with established measures of entrepreneurial intention, and the present study does not claim to establish aspiration as a psychometrically distinct construct. Rather, the term reflects the breadth of the future-oriented responses examined among students who may not yet have translated their entrepreneurial interests into definite venture-creation commitments.

Research on the antecedents of social entrepreneurial intention provides an important foundation for understanding this pre-venture orientation. The Theory of Planned Behaviour (TPB) identifies attitudes toward behaviour, subjective norms, and perceived behavioural control as proximal determinants of intention (Ajzen, 1991). A meta-analytic examination by Zaremohzzabieh et al. (2019) supported the relevance of TPB-related constructs to social entrepreneurial intention while demonstrating the value of alternative model specifications. Bergner et al. (2022) further organised person-based antecedents into personality, cognition, and entrepreneurial exposure, illustrating that social entrepreneurial intention is associated with multiple complementary influences. Educational research has also identified experiential learning as relevant to intention-related outcomes. Hockerts (2018) found that experiential social entrepreneurship education was associated with improvements in self-efficacy, perceived social support, and social entrepreneurial intention, while Al Issa et al. (2025) reported that self-efficacy partially mediated the relationship between experiential learning and social entrepreneurial intention among Malaysian university students. Taken together, these findings suggest that social

entrepreneurial aspirations are associated with a combination of psychological evaluations, perceived capabilities, social influences, and educational experiences rather than any single individual characteristic.

Despite these developments, the literature offers a less complete explanation of how students orient themselves toward social problems before evaluating social entrepreneurship as a possible future activity. Established models have concentrated primarily on motivational, normative, and efficacy-related factors, while innovation-related attributes have often been embedded within broader entrepreneurial competencies. This creates an important distinction between believing that social entrepreneurship is desirable or feasible and having an orientation toward recognising social needs and developing potentially useful responses. Although these processes may be related, they are not conceptually identical. Evidence from China, for example, indicates that opportunity recognition competency is positively associated with social entrepreneurial intention alongside sustainability values and TPB-related factors (Lyu et al., 2024). However, opportunity recognition competency does not necessarily capture the broader combination of social problem awareness, creative response generation, social-value considerations, practical problem solving, and collaboration that characterises an orientation toward socially innovative problem solving. A more focused examination of this orientation may therefore complement existing accounts of social entrepreneurial aspiration.

Social innovation scholarship offers a conceptual basis for developing this perspective. Early contributions described social innovation in terms of novel responses to societal needs and the creation of social value through improvements over existing approaches (Mulgan, 2006; Phills et al., 2008). Subsequent institutional perspectives emphasised the processes through which innovative solutions are developed, negotiated, implemented, and embedded across social and organisational contexts (van Wijk et al., 2019). These perspectives are valuable for understanding social innovation as an implemented process or outcome. Nevertheless, their principal analytical focus differs from the individual orientations that may exist before an innovation is realised. University students can recognise community needs, consider alternative solutions, and express interest in social improvement without having established an organisation or implemented a social innovation. Examining such tendencies requires distinguishing an individual's orientation toward innovative problem solving from the successful production or implementation of innovation.

Building on this distinction, innovative social problem solving (ISPS) is conceptualised in the present study as a student's self-reported tendency to recognise unmet social needs, generate creative and potentially workable responses, consider their social value and practical feasibility, and engage collaboratively in addressing community challenges. The construct concerns a pre-venture orientation rather than demonstrated entrepreneurial performance or the successful implementation of social innovations. An empirical foundation for examining socially innovative tendencies at the individual level was established by Bulut et al. (2013), who developed a unidimensional eight-item social innovation tendency scale among university students. Subsequent research has expanded attention to social innovation-related competencies in higher education, including the social innovation profile examined by Glasserman-Morales et al. (2024). Importantly, Muñoz-Valle et al. (2025) found a two-dimensional structure, distinguishing behavioural and attitudinal elements, when examining social innovation tendency among Mexican university students. The divergence between these measurement findings indicates that individual social innovation tendency should not be assumed to have an invariant dimensional structure across settings. Consequently, ISPS is treated here as a conceptually specified, researcher-adapted orientation whose measurement properties require empirical scrutiny rather than as an already established universal scale.

Clarifying the boundaries of ISPS is also necessary because several neighbouring constructs address innovation-related individual differences. Individual social entrepreneurship

orientation includes dimensions such as social passion, innovativeness, risk-taking, and proactiveness, representing a broader entrepreneurial disposition rather than a specific orientation toward resolving social problems (Satar & Natasha, 2019). Entrepreneurial creativity similarly concerns creative capabilities within entrepreneurial contexts but does not necessarily require an explicit social-value orientation (Ip, 2025). Research treating social innovation as part of a wider competence profile also differs from examining socially innovative problem solving as a focal individual characteristic (Glasserman-Morales et al., 2024). Accordingly, ISPS is not intended to replace these established constructs. Its analytical usefulness lies in directing attention to how students identify socially significant problems, consider creative and feasible responses, and contemplate collaborative action. This narrower conceptual focus provides a basis for investigating a relationship that may be obscured when innovativeness is incorporated into a broader entrepreneurial orientation.

The anticipated relationship between ISPS and SSEA can be understood through an intention-based theoretical perspective. According to the TPB, evaluations of a behaviour, perceived social expectations, and perceived behavioural control are relevant to the formation of intentions (Ajzen, 1991). Students who regularly recognise unmet social needs and contemplate workable responses may be more inclined to regard socially oriented entrepreneurship as a meaningful and potentially actionable future activity. Attention to social value may be relevant to the perceived attractiveness of social entrepreneurship, while consideration of feasible solutions and collaborative possibilities may be related to perceptions of whether socially oriented action can be undertaken. These connections provide a theoretical rationale for expecting a positive association between ISPS and SSEA. However, ISPS is not itself a component of the original TPB, and the proposed psychological processes are not directly measured in the present research. The TPB therefore provides a supporting interpretive perspective rather than a fully specified explanatory model. No claim is made that attitudes, subjective norms, perceived behavioural control, or other unmeasured processes mediate the relationship under investigation.

Empirical findings concerning related innovation-oriented constructs provide qualified support for this expectation. Naveed et al. (2021) reported positive relationships between dimensions of individual social entrepreneurial orientation and social entrepreneurial intention among entrepreneurship students, with social entrepreneurship education also playing a moderating role. However, their analysis examined dimensions within a broader orientation framework rather than isolating socially innovative problem solving as defined in the present study. Ip (2025) identified entrepreneurial creativity as a moderator of relationships between selected antecedents and social entrepreneurial intention, indicating that creative capabilities may also operate by conditioning other relationships rather than functioning solely as direct predictors. Meanwhile, Lyu et al. (2024) identified opportunity recognition competency as positively associated with social entrepreneurial intention, suggesting the relevance of opportunity-related cognition. Contrasting evidence from Luc et al. (2021) showed that risk-taking propensity had no direct relationship with social entrepreneurial intention in their Vietnamese student sample, with perceived feasibility mediating the relationship. Although these studies examine different constructs and are not directly contradictory, they demonstrate that individual entrepreneurial dispositions and cognitive capabilities do not necessarily relate to intention through the same pathways. The relationship between a specifically social problem-solving orientation and students' entrepreneurial aspiration therefore remains an empirical question rather than an established consequence of general innovativeness or creativity.

This question is particularly relevant to Malaysian higher education. Existing Malaysian studies have examined social entrepreneurial intention primarily through psychological, normative, and educational perspectives. Saufi and Hong (2024) found subjective norms to be especially prominent among the predictors included in their analysis, while Yellangan Koval et al. (2025) identified self-efficacy as a particularly important correlate in their student sample. Al Issa et al. (2025) further demonstrated the relevance of experiential learning and self-efficacy. In a

related but analytically different line of research, Mustapha et al. (2026) positioned social innovation readiness as an outcome associated with entrepreneurial intention, although the small purposive sample limits the generalisability of that evidence. Collectively, these studies suggest that Malaysian scholarship has considered socially innovative capacities and entrepreneurial motivations, but has not adequately clarified whether an individual's orientation toward recognising and responding to social problems is associated with social entrepreneurial aspiration when examined as the focal explanatory variable. Furthermore, findings from other national contexts cannot be assumed to transfer directly because educational environments, social expectations, and opportunities for social entrepreneurship may differ.

Three connected gaps emerge from this synthesis. First, a conceptual gap remains between research examining social innovation as an implemented organisational process and research examining socially innovative tendencies among individuals who have not yet engaged in venture creation. Second, the available evidence linking innovation-related characteristics to social entrepreneurial intention is fragmented across constructs with different theoretical meanings and analytical roles, including general entrepreneurial creativity, opportunity recognition, and multidimensional entrepreneurial orientation. This limits conclusions about the specific association between innovative social problem solving and social entrepreneurial aspiration. Third, the relationship remains insufficiently examined in the Malaysian higher education context, where prior research has predominantly emphasised established psychological, normative, and educational antecedents. These gaps do not imply that socially innovative individual tendencies have been ignored or that ISPS represents an entirely new construct. Rather, they indicate the need for a more explicitly defined and empirically examined relationship between socially oriented problem-solving tendencies and pre-venture entrepreneurial aspiration.

Against this background, the present study examines whether ISPS is positively associated with SSEA among students enrolled in higher education institutions in Kedah, Penang, Perak, and Perlis in Northern Malaysia. By focusing on students at different levels of higher education, the research considers a population in which social entrepreneurial interest and future-oriented commitment may be present even when venture creation has not occurred. The study employs a cross-sectional survey and evaluates the relationship between the two constructs through correlational and regression analyses. Accordingly, the proposed relationship concerns variation across respondents rather than temporal prediction or causal influence. Although ISPS is specified as the predictor within the statistical model, the research does not establish that ISPS precedes, produces, or independently determines SSEA. Based on the conceptual reasoning and related empirical findings discussed above, the following hypothesis is proposed:

H1: Innovative social problem solving is positively associated with student social entrepreneurial aspiration among higher education students in Northern Malaysia.

The study aims to contribute to social entrepreneurship and higher education research in three respects. Conceptually, it distinguishes a pre-venture orientation toward socially innovative problem solving from implemented social innovation and from broader entrepreneurial dispositions, thereby clarifying the level of analysis at which socially innovative tendencies may be examined. Empirically, it investigates the association between ISPS and SSEA as two explicitly defined constructs, complementing previous studies in which innovation-related characteristics have been incorporated into multidimensional orientations or assigned different analytical roles. Contextually, it provides evidence from higher education students in Northern Malaysia, a setting in which the relationship between socially oriented problem-solving tendencies and entrepreneurial aspiration warrants closer investigation. For entrepreneurship educators, the study may also help identify a potential connection between students' socially innovative orientations and their interest in future social entrepreneurial activity. Any educational

interventions intended to strengthen this relationship, however, require evaluation through designs capable of assessing change and causal effects.

2. METHOD

This section contains the design or research design carried out. In this section, at least contains the type of research, subject/object of research, techniques/instruments of data collection, and data analysis.

Research Design and Study Setting

This study employed a quantitative, cross-sectional correlational survey design to examine the association between innovative social problem solving (ISPS) and student social entrepreneurial aspiration (SSEA) among higher education students in Northern Malaysia. A cross-sectional design was appropriate because the research sought to estimate the direction and magnitude of the relationship between two self-reported constructs measured at a single point in time, rather than evaluate an intervention or examine changes over time. The individual student constituted the unit of analysis. ISPS was specified as the predictor and SSEA as the outcome in the statistical model, consistent with the research hypothesis. However, this analytical specification does not establish temporal precedence or causality because both variables were assessed simultaneously. The methodological reporting was informed by relevant principles of transparency for observational research outlined in the STROBE statement (von Elm et al., 2007).

The study was conducted among students enrolled in higher education institutions located in Kedah, Penang, Perak, and Perlis, the four northern states of Peninsular Malaysia. The target population included students at different stages of higher education, comprising foundation or pre-university, diploma, bachelor's, master's, and doctoral programmes. Participation was not restricted to Malaysian nationals or undergraduate students. The geographical scope was selected as the setting within which recruitment and data collection were undertaken. Consequently, the findings are interpreted in relation to the participating students and cannot be assumed to represent the wider population of Malaysian higher education students.

Participants, Sampling, and Data Collection

Participants were recruited using a non-probability sampling strategy combining purposive eligibility criteria with convenience-based recruitment. The purposive component required respondents to be currently enrolled at a higher education institution in Northern Malaysia. The convenience component reflected the recruitment of eligible students who were accessible through the available academic and student networks and willing to participate. This approach was adopted in the absence of a complete sampling frame covering the intended population. Because selection probabilities were unknown and not all higher education institutions were necessarily represented, the sampling procedure does not support probability-based claims of population representativeness.

Data were collected between February and June 2026 through a structured, self-administered online questionnaire. The survey was distributed through student networks, WhatsApp groups, email, and relevant academic contacts. Prospective respondents were informed of the study's purpose and asked to provide consent before completing the substantive questionnaire items. Respondents were also required to confirm their enrolment status to establish eligibility. Participation was voluntary, and respondents completed the questionnaire through the online survey format without an interviewer administering the substantive questions. The online recruitment approach allowed participation across the four states, although it depended on accessibility through the distribution channels and voluntary response. Such characteristics are relevant when interpreting potential self-selection bias in web-based survey research (Eysenbach, 2004).

A total of 310 submitted records were obtained during the data collection period. These records were screened sequentially for blank or repeated header entries, informed consent, confirmation of study eligibility, and completeness of the two principal measures. Four records were removed because they were blank or repeated header entries, four were excluded because informed consent had not been provided, and six were excluded because eligibility as a student in Northern Malaysia could not be established. Among the remaining eligible records, 76 were excluded because responses to items C7 and C8 of the SSEA measure were incomplete. Consequently, 220 respondents with complete data on the two focal constructs were retained for the final analyses.

The study applied complete-case analysis, meaning that the descriptive, correlational, reliability, and regression results were based on the same analytical sample of 220 respondents. The concentration of incomplete responses in two SSEA items represents a potential source of selection bias because the retained respondents may differ systematically from those excluded. The available analysis did not establish the missing-data mechanism or evaluate whether the excluded cases were comparable to retained cases. Accordingly, the complete-case estimates should be interpreted with this limitation in mind. No a priori statistical power analysis or formal sample-size calculation was conducted before recruitment. The final analytical sample represents the number of respondents satisfying the reported screening and completeness criteria rather than a predetermined probability-based sample size.

Research Instrument and Measurement

Data were obtained using a structured questionnaire consisting of three sections. Section A collected respondent characteristics, including gender, age, educational level, field of study, nationality, state of study, previous participation in general entrepreneurship courses, previous participation in social entrepreneurship courses, and prior involvement in community, volunteering, or social enterprise activities. These variables were used to describe the composition of the analytical sample and were not included as covariates in the primary regression model. The analysis therefore examined the unadjusted association between ISPS and SSEA rather than an association controlling for demographic, educational, or experiential characteristics.

Section B measured innovative social problem solving through ten researcher-adapted items informed principally by the individual-level social innovation tendency instrument developed by Bulut et al. (2013). The operationalisation was also informed by the broader conceptual literature on social innovation. ISPS was defined as students' self-reported orientation toward recognising unmet social needs, considering creative responses, evaluating the social value of possible solutions, judging their practical feasibility, and collaborating in efforts to address community challenges. The measure was intended to capture socially innovative problem-solving tendencies rather than demonstrated innovation performance or actual venture creation. The items were adapted to reflect the higher education context and the pre-venture focus of the research.

Section C measured student social entrepreneurial aspiration through eight researcher-adapted items guided by established research on social entrepreneurial intention and its educational antecedents (Hockerts, 2018; Mair & Noboa, 2006). SSEA was operationalised as students' reported interest, willingness, commitment, and future plans to establish or participate in entrepreneurial activities directed primarily toward creating social value. Although aspiration is conceptually situated within the broader literature on entrepreneurial intention, the operationalisation was intended to capture the range of future-oriented responses examined in the questionnaire. The measure therefore represents the specified composite of aspiration-related responses rather than a separately validated distinction between aspiration and entrepreneurial intention.

All items in Sections B and C employed a five-point Likert response format ranging from 1 (strongly disagree) to 5 (strongly agree). For each respondent, the ISPS score was calculated as the arithmetic mean of the ten ISPS items, while the SSEA score was calculated as the arithmetic mean of the eight SSEA items. This procedure assigned equal weight to the constituent items and retained both composite scores on the original one-to-five response metric, with higher scores representing stronger endorsement of the respective constructs. The resulting composite scores were treated as approximately continuous variables for the correlational and regression analyses.

Measurement Quality and Potential Method Bias

The questionnaire items were checked for clarity and conceptual relevance before the full survey distribution. Internal consistency was subsequently assessed using Cronbach's alpha for each composite measure, with the coefficients reported in the Results section. Cronbach's alpha was used to describe the internal consistency of responses across the items constituting each scale. However, internal consistency alone does not establish construct validity, dimensionality, or discriminant validity, particularly when instruments have been adapted from existing measures (Flake et al., 2017; Tavakol & Dennick, 2011).

The study did not report exploratory or confirmatory factor analysis of the adapted instruments. Consequently, the dimensional structure of the ten-item ISPS measure and the eight-item SSEA measure was not empirically established through factor-analytic procedures in the reported analysis. Similarly, the study did not report separate assessments of convergent or discriminant validity. The composite scores were therefore operational measures based on the stated conceptual definitions and item adaptations, rather than measures for which comprehensive psychometric validation had been demonstrated in the present sample. This distinction is important when interpreting the association between the two constructs.

Both principal constructs were measured through self-report responses collected from the same participants during a single survey administration. The questionnaire placed the ISPS and SSEA items in separate sections and assured respondents of anonymity, providing limited procedural safeguards against response-related biases. Nevertheless, collecting predictor and outcome information from the same source introduces the possibility of common method variance, including effects associated with response tendencies and shared measurement context (Podsakoff et al., 2003). No statistical assessment of common method variance was conducted. Accordingly, the extent to which shared method effects may have contributed to the observed relationship remains undetermined.

Data Analysis

Data analysis was conducted using IBM SPSS Statistics. The statistical procedure consisted of descriptive analysis, internal consistency assessment, bivariate correlation, simple linear regression, and regression diagnostics. Descriptive statistics were calculated to summarise the demographic and educational characteristics of the analytical sample. Means, standard deviations, skewness, and kurtosis were examined for the ISPS and SSEA composite scores to describe their central tendency, dispersion, and distributional characteristics. Cronbach's alpha was calculated separately for the two measures to assess internal consistency.

Pearson's product-moment correlation coefficient was used to estimate the direction and magnitude of the bivariate relationship between ISPS and SSEA. This analysis was consistent with the hypothesis proposing a positive association between the two constructs. Simple ordinary least squares (OLS) linear regression was then estimated with SSEA as the dependent variable and ISPS as the independent variable. The regression model included an intercept and a single predictor, allowing the estimated association to be expressed through the unstandardised regression coefficient and the proportion of variance in SSEA statistically accounted for by ISPS.

The regression model was specified as $SSEA = \beta 0 + \beta 1(ISPS) + \varepsilon$, where $\beta 0$ represents the intercept, $\beta 1$ represents the estimated regression coefficient for ISPS, and ε represents the

residual term. The regression analysis provided an estimate of the expected difference in SSEA associated with a one-unit difference in ISPS across respondents. Model evaluation included the regression coefficient, standard error, standardised coefficient, t statistic, F statistic, coefficient of determination (R^2), adjusted R^2, statistical significance, and confidence interval. Because the analysis involved one predictor, it was intended to estimate a bivariate statistical relationship rather than isolate an independent effect after controlling for other potential determinants of entrepreneurial aspiration.

Regression diagnostics included the Durbin-Watson statistic, Cook's distance, and the Breusch-Pagan test. The Durbin-Watson statistic was reported as a residual autocorrelation diagnostic, although its substantive relevance is more limited for an unordered cross-sectional sample than for temporally ordered observations. Cook's distance was examined to identify potentially influential observations, while the Breusch-Pagan test was used to assess heteroscedasticity in the regression residuals (Breusch & Pagan, 1979). These diagnostics addressed selected features of the fitted model and should not be interpreted as a comprehensive assessment of every regression assumption.

The Breusch-Pagan test indicated a violation of the homoscedasticity assumption. Accordingly, heteroscedasticity-consistent standard errors using the HC3 estimator were calculated after this diagnostic result as a robustness analysis rather than as a prespecified analytical procedure. The HC3 approach adjusts the estimated covariance matrix used for statistical inference under heteroscedasticity without changing the underlying OLS coefficient estimates (MacKinnon & White, 1985). The use of heteroscedasticity-consistent inference is also supported in applied regression methodology when conventional standard errors may be unreliable (Hayes & Cai, 2007). Both conventional OLS inference and HC3-adjusted inference were reported to make the effect of heteroscedasticity on the statistical conclusion transparent. Statistical significance was evaluated using a two-sided significance level of $\alpha = .05$, with 95% confidence intervals reported for the regression coefficient.

No multivariable adjustment, mediation analysis, moderation analysis, structural equation modelling, or longitudinal analysis was included in the reported analytical model. The results therefore address the specified bivariate hypothesis and do not establish the mechanisms, temporal order, or causal effects underlying the observed association.

Ethical Considerations

Participation in the research was voluntary. Before responding to the substantive questionnaire items, participants were informed of the study's purpose and were required to provide informed consent. Records without documented consent were excluded from the analytical dataset. No personally identifying information was collected through the reported questionnaire, and responses were treated anonymously. The collected information was used for the academic research purposes described in the study.

Formal institutional ethics approval was not obtained before data collection. According to the institutional review arrangements described by the authors, the applicable ethics review process at the time was limited to questionnaire-based research conducted as part of Master's thesis requirements, whereas the present study did not fall within that pathway. This explanation describes the reported institutional circumstances but does not constitute an independently documented ethics exemption or approval. The authors therefore do not claim that the study received formal institutional ethics approval or a formal exemption determination. Compliance with the journal's research ethics requirements remains subject to editorial assessment.

3. RESULTS AND DISCUSSION

Data Screening and Respondent Characteristics

The initial dataset comprised 310 submitted records, which were screened for completeness, informed consent, and eligibility. Four records were excluded because they were blank or repeated header entries, four were removed because informed consent was not provided, and six were excluded because enrolment at a higher education institution in Northern Malaysia could not be established. A further 76 otherwise eligible responses were excluded because items C7 and C8 of the student social entrepreneurial aspiration (SSEA) measure were incomplete. Complete-case analysis consequently yielded a final analytical sample of 220 respondents. All descriptive, reliability, correlational, and regression analyses reported in this section were based on these 220 complete cases.

The concentration of incomplete responses in two SSEA items warrants particular attention. Although the exclusion procedure ensured consistent analytical sample sizes, the available results do not establish why these items were disproportionately incomplete or whether respondents with complete data differed systematically from those excluded. The potential implications of this missing-data pattern for the interpretation of the findings are considered in the discussion.

Table 1 presents the demographic, educational, and experiential characteristics of the analytical sample. Female respondents represented the largest gender category (50.9%), while most participants were aged between 18 and 23 years. Bachelor's degree students constituted the majority of the sample (62.3%), although respondents from foundation or pre-university through doctoral levels were also represented. Business, management, and entrepreneurship formed the largest individual field-of-study category (24.1%), indicating that the sample included students from multiple academic disciplines rather than exclusively from entrepreneurship programmes.

Malaysian nationals accounted for 74.5% of respondents, and Kedah contributed the largest geographical share (43.2%). Previous exposure to entrepreneurship education was uneven. Although 38.2% reported completing a general entrepreneurship course, only 15.0% reported completing a course specifically concerned with social entrepreneurship. Nearly half of the respondents (48.2%) reported previous involvement in community, volunteering, or social enterprise activities. These characteristics describe the composition of the sample but were not examined as statistical predictors or moderators of SSEA in the present model.

Table 1. Respondent Characteristics (n = 220)

Variable	Category	n	%
Gender	Female	112	50.9
	Male	95	43.2
	Prefer not to say	11	5.0
	Other	2	0.9
Age	Below 18 years	3	1.4
	18 to 20 years	64	29.1
	21 to 23 years	91	41.4
	24 to 26 years	40	18.2
	27 years and above	17	7.7
	Prefer not to say	5	2.3
Level of study	Foundation or pre-university	16	7.3
	Diploma	32	14.5
	Bachelor's degree	137	62.3
	Master's degree	27	12.3
	Doctoral degree	7	3.2

	Other	1	0.5
Field of study	Business, management or entrepreneurship	53	24.1
Variable	**Category**	**n**	**%**
	Social sciences	34	15.5
	Engineering	32	14.5
	Information technology or computer science	31	14.1
	Arts and humanities	21	9.5
	Education	18	8.2
	Health sciences	16	7.3
	Environmental or natural sciences	7	3.2
	Other	8	3.6
Nationality	Malaysian	164	74.5
	International student	49	22.3
	Prefer not to say	7	3.2
State of study	Kedah	95	43.2
	Penang	63	28.6
	Perak	39	17.7
	Perlis	23	10.5
Prior entrepreneurship course	Yes	84	38.2
	No	116	52.7
	Not sure	20	9.1
Prior social entrepreneurship course	Yes	33	15.0
	No	161	73.2
	Not sure	26	11.8
Community, volunteering or social enterprise activity	Yes	106	48.2
	No	88	40.0
	Not sure	26	11.8

Descriptive Statistics and Internal Consistency

Table 2 summarises the descriptive statistics and internal consistency coefficients for the two study constructs. Innovative social problem solving (ISPS) recorded a mean of 3.41 (SD = 0.69), which was above the theoretical midpoint of the five-point response scale. In contrast, SSEA recorded a mean of 2.34 (SD = 0.75), which was below the midpoint. This descriptive pattern indicates that respondents reported comparatively stronger endorsement of socially innovative problem-solving tendencies than of future-oriented social entrepreneurial aspiration. However, the means represent different adapted composite measures, and no inferential comparison between the two construct means was conducted. The observed difference should therefore be

interpreted descriptively rather than as evidence of a statistically established difference between equivalent psychological attributes.

The distributions showed no extreme skewness or kurtosis according to the reported summary statistics. ISPS was slightly negatively skewed, whereas SSEA exhibited positive skewness, indicating a greater concentration of aspiration responses toward the lower end of the response scale. Cronbach's alpha coefficients were .847 for ISPS and .853 for SSEA, indicating satisfactory internal consistency within the analysed sample. Nevertheless, these coefficients describe the consistency of responses across the constituent items and do not independently establish the dimensionality or construct validity of either researcher-adapted measure.

Table 2. Descriptive Statistics and Internal Consistency (n = 220)

Construct	M	SD	Skewness	Kurtosis	Cronbach's α
Innovative social problem solving (ISPS)	3.41	0.69	-0.305	-0.225	.847
Student social entrepreneurial aspiration (SSEA)	2.34	0.75	0.561	0.090	.853

Association Between Innovative Social Problem Solving and Social Entrepreneurial Aspiration

Pearson's product-moment correlation indicated a statistically significant positive association between ISPS and SSEA, $r = .371$, $p < .001$, based on 220 respondents. The magnitude of the correlation suggests a moderate positive relationship in the analysed sample. Students reporting stronger socially innovative problem-solving tendencies also tended to report stronger aspirations toward participation in social entrepreneurial activity.

This finding is consistent with the direction proposed in H1. However, the correlation does not establish which construct precedes the other, whether the relationship reflects a direct psychological process, or whether unmeasured characteristics contribute to both variables. These questions cannot be resolved through the present cross-sectional bivariate analysis.

Regression Analysis and Hypothesis Testing

Simple ordinary least squares regression was conducted to estimate the association between ISPS and SSEA, with ISPS specified as the predictor and SSEA as the dependent variable. As shown in Table 3, the regression model was statistically significant, $F(1, 218) = 34.77$, $p < .001$. The model produced $R = .371$, $R^2 = .138$, and adjusted $R^2 = .134$, indicating that ISPS statistically accounted for 13.8% of the observed variation in SSEA within the fitted single-predictor model.

The unstandardised regression coefficient for ISPS was positive and statistically significant, $B = 0.404$, $SE = 0.069$, $\beta = .371$, $t = 5.90$, $p < .001$, with a 95% confidence interval of [0.269, 0.539]. The fitted regression equation was:

$$\mathbf{SSEA = 0.964 + 0.404(ISPS)}$$

The coefficient indicates that a one-unit higher ISPS composite score was associated with an estimated 0.404-unit higher SSEA score across respondents in the fitted model. This estimate describes a between-respondent statistical association and should not be interpreted as the expected effect of increasing an individual's ISPS through an intervention.

The regression diagnostics identified no marked influence from individual observations based on the reported maximum Cook's distance of 0.067. The Durbin-Watson statistic was 2.24, although its substantive importance is limited in an unordered cross-sectional survey. The Breusch-Pagan test was statistically significant ($p = .003$), indicating evidence of heteroscedasticity and therefore a violation of the constant-error-variance assumption.

To address the implications of heteroscedasticity for statistical inference, HC3 heteroscedasticity-consistent standard errors were computed. The estimated ISPS coefficient remained $B = 0.404$, with a robust standard error of 0.067, $t = 6.04$, $p < .001$, and a 95% confidence interval of [0.272, 0.536]. The positive association remained statistically significant under both

conventional and HC3-adjusted inference. This robustness check supports the stability of the statistical significance conclusion with respect to the detected heteroscedasticity, although it does not address potential selection bias, omitted variables, measurement error, or causal identification.

Table 3. Simple Linear Regression and HC3 Robust Estimates (n = 220)

Model / predictor	B	SE	β	t	p	95% CI
Ordinary least squares						
Constant	0.964	N/A	N/A	N/A	N/A	N/A
ISPS	0.404	0.069	.371	5.90	< .001	[0.269, 0.539]
HC3 robust estimation						
ISPS	0.404	0.067	.371	6.04	< .001	[0.272, 0.536]

Note. B = unstandardised regression coefficient; SE = standard error; β = standardised regression coefficient; CI = confidence interval. R = .371; R^2 = .138; adjusted R^2 = .134; F(1, 218) = 34.77, p < .001. Durbin-Watson = 2.24; maximum Cook's distance = 0.067; Breusch-Pagan p = .003. HC3 estimation provides heteroscedasticity-consistent inference. N/A indicates that the corresponding intercept statistics were not available in the supplied regression table, rather than that these statistics are mathematically inapplicable.

Taken together, the correlation and regression results provide evidence of a positive association between ISPS and SSEA in the analytical sample. Because the direction and statistical significance of the relationship were consistent under conventional and HC3-adjusted inference, H1 was supported. The evidence supports the hypothesised association but does not establish that ISPS independently determines or causally increases SSEA.

Discussion

Innovative Social Problem Solving and Pre-Venture Entrepreneurial Aspiration

The principal finding indicates that students who report stronger orientations toward recognising social problems and considering innovative responses also tend to express stronger aspirations toward social entrepreneurship. This relationship provides empirical support for examining socially innovative problem-solving tendencies at the individual level, before the establishment of a social venture. Rather than treating social innovation exclusively as an organisational accomplishment or an implemented solution, the finding suggests that the orientation associated with considering socially valuable responses is relevant to students' reported entrepreneurial aspirations. The moderate strength of the relationship is important because it indicates an association without suggesting that innovative problem solving is sufficient to account for social entrepreneurial aspirations.

This interpretation contributes to the distinction between social innovation as a realised process and socially innovative tendencies as individual-level characteristics. Van Wijk et al. (2019) conceptualised social innovation through institutional processes and interactions across micro, meso, and macro levels, emphasising the development and implementation of socially innovative solutions. Bulut et al. (2013), by contrast, demonstrated the possibility of measuring social innovation tendency among university students before innovation has necessarily been implemented. The present study connects these lines of scholarship by examining whether an adapted measure of socially innovative problem-solving orientation is associated with a prospective entrepreneurial outcome. Its contribution is therefore not the discovery of individual social innovation tendencies, but the examination of their relationship with reported social entrepreneurial aspiration.

The finding also helps clarify why social innovation-related constructs should not be treated as interchangeable. Individual social entrepreneurial orientation incorporates innovativeness alongside characteristics such as social passion, risk-taking, and proactiveness

(Satar & Natasha, 2019). ISPS, as operationalised in this study, is more specifically concerned with students' orientation toward recognising unmet social needs, contemplating potentially workable responses, evaluating social value, and considering collaborative action. These distinctions suggest that social problem-solving orientation may be analytically relevant even before an individual has developed a broader entrepreneurial disposition. Nevertheless, because the study did not examine both constructs within the same model, their empirical distinctiveness cannot be established from the present results.

Relationship to Previous Empirical Research

The positive ISPS-SSEA association is broadly compatible with previous research linking innovation-related characteristics to social entrepreneurial intention, although the constructs and model specifications differ across studies. Naveed et al. (2021) found positive relationships between dimensions of individual social entrepreneurial orientation and social entrepreneurial intention among entrepreneurship students, with social entrepreneurship education moderating the relationship. Their findings support the general relevance of innovation-related orientations, but their model incorporated several entrepreneurial dispositions rather than the specific problem-solving orientation examined here. The present result therefore complements, rather than directly replicates, the earlier evidence by placing a socially specified problem-solving construct in the focal predictor position.

Other empirical studies indicate that innovation-related capabilities may occupy different roles in explaining social entrepreneurial intention. Ip (2025) found that entrepreneurial creativity positively moderated several relationships between psychological or contextual antecedents and social entrepreneurial intention among university students in Taiwan. Similarly, Lyu et al. (2024) reported that opportunity recognition competency was positively associated with social entrepreneurial intention among university students and graduates in China. These findings are not directly contradictory because entrepreneurial creativity and opportunity recognition competency differ conceptually from ISPS, while moderation and direct association address different statistical questions. Considered together, they indicate that innovation-related characteristics may be associated with social entrepreneurial aspirations in different ways depending on how the constructs are defined and the relationships are specified.

The broader evidence also cautions against assuming that all individual dispositions have direct associations with entrepreneurial intention. Luc et al. (2021), for example, reported no direct relationship between risk-taking propensity and social entrepreneurial intention among final-semester students in Vietnam, while identifying perceived feasibility as a mediating variable in their model. Although risk-taking propensity is not equivalent to innovative social problem solving, this finding illustrates that the relationships between individual characteristics and entrepreneurial intentions can depend on intervening psychological evaluations. Accordingly, the positive association identified in the present study should not be interpreted as evidence that ISPS necessarily operates independently of perceived feasibility, entrepreneurial attitudes, or other motivational processes.

Theoretical Interpretation and the Limits of the Theory of Planned Behaviour

The observed association can be interpreted cautiously through the Theory of Planned Behaviour (TPB), which identifies attitudes, subjective norms, and perceived behavioural control as relevant antecedents of behavioural intention (Ajzen, 1991). Students who habitually recognise social needs and consider practical responses may perceive social entrepreneurial activity as more meaningful or potentially achievable. A socially innovative problem-solving orientation could therefore be conceptually related to evaluations of the desirability or feasibility of social entrepreneurship. However, these propositions remain theoretical interpretations because the present study did not separately measure the TPB constructs, perceived desirability, perceived feasibility, or the proposed mechanisms connecting ISPS with SSEA.

Existing evidence reinforces the importance of maintaining this distinction. Zaremohzzabieh et al. (2019), through meta-analytic path analysis, demonstrated the relevance of TPB-related constructs while identifying alternative formulations that improved model fit relative to the original theoretical specification. Bergner et al. (2022) further organised antecedents of social entrepreneurial intention into personality, cognitive, and entrepreneurial exposure domains, finding empirical support for their complementary contributions. These studies indicate that social entrepreneurial intention is a multidetermined phenomenon whose associations with individual characteristics cannot be adequately understood through one psychological orientation alone.

Within this theoretical context, the present finding is compatible with the possibility that socially innovative problem-solving orientation is related to motivational or cognitive evaluations relevant to social entrepreneurial aspiration. Nevertheless, compatibility with TPB is not equivalent to confirmation of the theory. The study did not test TPB pathways, mediation, or incremental explanatory power beyond established antecedents. Reverse directionality also remains plausible: students who already aspire to participate in social entrepreneurship may become more attentive to social problems and report stronger innovative problem-solving tendencies. A third possibility is that both constructs reflect unmeasured characteristics, such as prosocial values, entrepreneurial self-efficacy, prior experience, or perceived social support. The available cross-sectional findings cannot discriminate among these explanations.

Understanding the Magnitude of the Association

The regression model statistically accounted for 13.8% of the observed variation in SSEA. This result indicates that ISPS is associated with a nontrivial portion of variation in aspiration within the fitted model, while most variation remains unaccounted for. The finding should not be interpreted as demonstrating that ISPS has a causal contribution of 13.8% or that the remaining variation can be attributed to particular unmeasured factors. Rather, it establishes the explanatory scope of the reported single-predictor statistical specification.

The limited explained variance is consistent with the conceptual complexity described in previous research. Social entrepreneurial intention has been associated with attitudes, social norms, perceived behavioural control, psychological characteristics, and educational exposure (Zaremohzzabieh et al., 2019; Bergner et al., 2022). These domains may overlap with, complement, or confound the association between ISPS and SSEA. The moderate relationship reported here therefore supports treating socially innovative problem-solving orientation as one potentially relevant element within a broader constellation of factors, without establishing its independent contribution beyond established antecedents.

The descriptive difference between ISPS and SSEA provides a further point for cautious interpretation. Respondents reported ISPS scores above the theoretical scale midpoint while their SSEA scores were below it. This pattern is consistent with the possibility that an orientation toward recognising and considering responses to social problems may be present without a correspondingly strong aspiration to participate in social entrepreneurship. However, the study did not directly test a developmental sequence or establish that problem-solving orientation precedes aspiration. Furthermore, the constructs were measured using different adapted item sets, so their descriptive mean difference cannot establish a psychological or developmental gap between equivalent measures.

Interpretation Within the Malaysian Higher Education Context

The Malaysian context provides an important setting for understanding the relevance and boundaries of the finding. Previous Malaysian studies have predominantly examined social entrepreneurial intention through psychological, normative, and educational antecedents. Saufi and Hong (2024) found that subjective norms were particularly prominent among the factors examined in their sample of public university students. Yellangan Koval et al. (2025) identified

self-efficacy as an important correlate of social entrepreneurial intention, alongside empathy, moral obligation, and social support. Al Issa et al. (2025) further reported that self-efficacy partially mediated the relationship between experiential learning and social entrepreneurial intention among final-year students at two Malaysian universities.

These studies demonstrate the relevance of social influences, perceived capability, and educational experience, but they do not directly resolve whether students' orientation toward socially innovative problem solving is associated with their entrepreneurial aspirations. The present study adds a specific bivariate perspective to this literature. Related Malaysian research by Mustapha et al. (2026) treated social innovation readiness as an outcome associated with entrepreneurial intention rather than examining socially innovative problem-solving orientation as the focal explanatory variable. However, that study involved a small purposively selected sample and a different construct, limiting direct comparison. The present finding therefore contributes contextual evidence on a previously less directly examined relationship without establishing a uniquely Malaysian pattern or demonstrating that the association differs from other national settings.

The respondent characteristics also help situate the observed pattern. Only a minority of participants reported completing a course specifically focused on social entrepreneurship, while exposure to general entrepreneurship education was more common. Prior community, volunteering, or social enterprise involvement was reported by nearly half of respondents. These characteristics suggest variation in the forms of educational and experiential exposure represented within the sample. Nevertheless, the study did not test whether course participation or community involvement was associated with ISPS, SSEA, or the strength of their relationship. Consequently, the comparatively low SSEA mean cannot be attributed to limited social entrepreneurship education, and no subgroup-specific interpretation is warranted.

Implications for Social Entrepreneurship Education

The findings provide a basis for considering socially innovative problem-solving orientation as a potentially relevant characteristic within entrepreneurship education. Students' reported tendencies to identify unmet needs, consider workable responses, and evaluate social value were positively associated with their expressed interest and future plans concerning social entrepreneurship. For educators, this suggests that activities connecting social problem recognition with entrepreneurial opportunities may warrant further investigation. Such activities could include community-based problem identification, collaborative social innovation projects, engagement with practising social entrepreneurs, and opportunities to evaluate the practical feasibility of socially oriented ventures.

The proposed educational relevance is consistent with studies that examine experiential approaches to social entrepreneurship education. Hockerts (2018) reported improvements in intention-related outcomes associated with experiential social entrepreneurship education, while Al Issa et al. (2025) identified a role for self-efficacy in the relationship between experiential learning and social entrepreneurial intention. These findings provide independent reasons to investigate educational experiences that connect social problem solving with entrepreneurial decision-making. However, the present study did not implement or evaluate any educational intervention. It therefore cannot establish whether strengthening ISPS would increase SSEA or whether particular teaching approaches would be more effective than others.

A practical implication of the findings is thus the identification of a plausible area for curriculum development and subsequent evaluation rather than evidence supporting a specific intervention's effectiveness. Future studies could assess whether structured social problem-solving experiences are followed by changes in social entrepreneurial aspiration and whether such changes depend on attitudes, perceived feasibility, self-efficacy, or educational exposure. Longitudinal or experimental approaches would be better suited to determining whether the proposed educational pathways operate as expected.

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Measurement Considerations and Boundaries of Interpretation

The interpretation of the findings must account for the measurement characteristics of the study. Although the Cronbach's alpha coefficients indicated satisfactory internal consistency, the ISPS and SSEA instruments were researcher-adapted and were not subjected to reported factor-analytic validation. This limitation is especially important for ISPS because the individual-level social innovation tendency instrument developed by Bulut et al. (2013) originally supported a unidimensional structure, whereas Muñoz-Valle et al. (2025) identified distinct behavioural and attitudinal dimensions in a Mexican validation study. These differences indicate that dimensionality cannot be assumed to remain unchanged across populations or instrument adaptations. The present findings therefore support an association between the operationalised composite scores, but they do not independently establish the dimensionality or discriminant validity of the proposed constructs.

The concentration of incomplete responses in items C7 and C8 also constitutes an important analytical limitation. Excluding 76 otherwise eligible respondents may have influenced the composition of the final sample if the likelihood of providing complete aspiration responses was associated with respondent characteristics or the underlying constructs. No missing-data mechanism analysis, comparison between included and excluded eligible respondents, or sensitivity analysis was available in the reported results. The potential direction and magnitude of any resulting selection bias therefore remain unknown.

Further limitations concern the cross-sectional design, non-probability recruitment, and reliance on self-reported measures collected through the same questionnaire. These characteristics prevent causal inference, restrict generalisation beyond the analysed sample, and introduce possible common method effects. In addition, the regression model did not adjust for potentially relevant demographic, educational, or experiential variables. The positive association remained statistically significant under HC3 inference, but this robustness result only addresses the consequences of heteroscedasticity for coefficient inference. It does not establish measurement validity, eliminate possible confounding, or remedy non-random sample selection.

Overall Interpretation of the Findings

The study provides evidence of a statistically significant positive association between innovative social problem solving and student social entrepreneurial aspiration among 220 higher education students in Northern Malaysia. Its principal contribution is to examine a socially specified, pre-venture problem-solving orientation in relation to students' reported entrepreneurial aspirations, complementing research that has emphasised broader entrepreneurial dispositions, psychological antecedents, and educational experiences. The findings support H1 within the reported bivariate model and remain statistically significant under heteroscedasticity-consistent inference.

The evidence nevertheless supports a bounded conclusion. ISPS is associated with SSEA in the analysed sample, but the present study cannot establish the causal direction of the relationship, identify the psychological mechanisms through which it may operate, or demonstrate the effectiveness of interventions intended to strengthen entrepreneurial aspiration. These boundaries define both the empirical contribution of the study and the principal questions requiring further investigation.

4. CONCLUSIONS AND SUGGESTION

This study demonstrates a positive and statistically significant association between innovative social problem solving and student social entrepreneurial aspiration among higher education students in Northern Malaysia. The findings indicate that students with stronger

socially innovative problem-solving orientations tend to report higher aspirations toward social entrepreneurship. Theoretically, this study contributes to social entrepreneurship research by highlighting the relevance of individual problem-solving orientations during the pre-venture stage, complementing existing perspectives that emphasise psychological, normative, and educational antecedents. Nevertheless, innovative social problem solving should be understood as one of several characteristics associated with entrepreneurial aspiration rather than as an independent or causal determinant. The findings also suggest that socially innovative tendencies may be relevant to students' consideration of social entrepreneurship as a potential future activity.

From a practical perspective, higher education institutions are encouraged to explore experiential learning activities, community-based projects, and social innovation initiatives that connect students' problem-solving orientations with social entrepreneurial opportunities. However, the effectiveness of these educational approaches requires further empirical examination. The study's limitations include its cross-sectional design, non-probability sampling, restricted geographical coverage, reliance on self-reported measures, limited evidence of construct validity, and the exclusion of incomplete responses, which may introduce selection bias. Future research should employ longitudinal or experimental designs, strengthen instrument validation, and involve more representative samples to improve the robustness and generalisability of the findings. Further investigations should also consider entrepreneurial self-efficacy, attitudes, perceived behavioural control, and experiential learning as potential explanatory factors to develop a more comprehensive understanding of the relationship between socially innovative problem solving and social entrepreneurial aspiration.

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