Personality Traits, Sustainability Orientation, and their impact on Social Entrepreneurial Intentions among Engineering Graduates: A Test of Big Five Personality Approach

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Abstract

The study intends to explore the relationship that exists between the big five personality traits—agreeableness, conscientiousness, extraversion, neuroticism, openness, and sustainability orientation—and the intention of engineering students to engage in social entrepreneurship. The data were analyzed using SMART PLS software. A five-point Likert scale questionnaire was distributed to 259 samples both in-person and online. Structural equation modeling was used to examine the impact of the big five personality traits and sustainability orientation on the intention to engage in social entrepreneurship.The reliability was assessed using Cronbach Alpha and composite reliability (CR), the multicollinearity was assessed using the variance inflation factor (VIF), and the discriminant validity was assessed using the Fornell and Larcker criterion and the HTMT ratio. The study identified that social entrepreneurship intention is positively and significantly impacted by the proxies of the big five personality traits, including openness, agreeableness, extraversion, and sustainability orientation. One of the main factors influencing students' intention to start their own business is still their big five personality traits. Big Five personality trait education initiatives by universities to foster entrepreneurial intention among graduate engineering students. In a similar vein, a focus on sustainability encourages social entrepreneurship

Keywords*:Social entrepreneurial intention, Personality traits, sustainability orientation*

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Introduction

The impact of personality traits on social entrepreneurship has become a topic of increasing discussion in the realms of business and economics literature (Pandey, D.L.et al., 2023).Entrepreneurship for the betterment of society aspires to bring inventive solutions to societal issues and to generate social value with the objective to positively impact the quality of life for individuals (Tan, L.P.et al., 2021).A market-driven approach for confronting sociological, political, fundamental, technical, ecological, and financial concerns is social entrepreneurship (Aliouche 2018).They adhere the principles that place a higher value on individuals than on revenue (Chaves &Monzon, 2018; Guzman et al., 2019) and are recognized as the catalyst behind social transformation which provides distinctive, sustainable solutions to problems while preserving profits (Mair& Mart, 2006). For developing nations like India, social entrepreneurship holds the key for accomplishing the Sustainable Development Goals (SDGs) (Chia and Wei, 2016).

Entrepreneurial Intention (EI) is a measure of entrepreneurial endeavor and a useful tool for recognizing and anticipating it (Krueger et al., 2000). The term "Social Entrepreneurial Intention" refers to a the individual's ambition and self-assurance while starting a social enterprise (Luc, 2020). Ahmed et al. (2020) suggest that social entrepreneurs have distinguishing traits that make the process simpler to understand their business practices. These traits include the ability to accomplish their societal purpose, a persistent desire to find solutions for social problems, and the pursuit of opportunities to address these issues.Perceptions of feasibility and desirability are among the "enabling factors" that impact social entrepreneurial intentions (Mair& Mart, 2006). Additional significant indicators of social entrepreneurial intention include prior experience (Hockerts, 2017), Self-assurance as an entrepreneur, socially worth, social wealth (Ernst, 2011), and social assessment (Baierl et al., 2014) (Bacq& Alt, 2018) Individual initiative (Nsereko et al, 2018), pro-social motivation (Tiwari et al, 2020), social identity (Ko, E. J., & Kim, K., 2020), moral obligation and self-efficacy (Peng, Xiaobao et al, 2019), emotional intelligence (Tiwari et al, 2017), and personal background (Cohen et al, 2019) are all factors that influence social entrepreneurial intention.

In Accordance with the past literature suggests that there are three fundamental approaches to entrepreneurship research functional, personality, and behavior. The first approach addresses an entrepreneur's relationship with their environment, the second emphasizes the unique characteristics of entrepreneurs, and the third conceptualizes the actions of entrepreneurs (Cope, 2005). This study is positioned from the personality approach. Individual behavior can be predicted by personality traits, which help to explain how individuals engage differently in comparable circumstances (Llewellyn and Wilson, 2003).According to Mair and Noboa (2006), a combination of situational and individual factors determine social entrepreneurial intention (SEI). Individual characteristics as a single component predict social entrepreneurs' entrepreneurial activity to engage in transformative changes and have unique personality traits that align with their ideals and entrepreneurial activities (Hossain et al., 2021).

Personality traits are one of the major elements influencing an entrepreneur's success (Salamzadeh et al., 2014).According to personality models, an individual's views and perspectives are considered generally and their aspirations for their business focuses specifically (Frank, Lueger, and Korunka 2007) are significantly influenced by their personality traits.Some of the specific psychological traits that social entrepreneurs embrace are risk-taking, motivation, locus of controversies, inventiveness, and assertiveness (Tracey & Phillips 2007); (Brandstatter 1997). A renowned personality structure known as the Big Five approach (Costa and McCrea 1992) provides a taxonomy of personality based on five core traits that allow most personality traits to be generalized: neuroticism, consciousness, agreeableness, extraversion, and openness.

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Recognizing how sustainability orientation impacts social entrepreneurial intention, which has significance in motivating a social enterprise to provide a chance to reevaluate the enterprise's goal of bringing about the desired change through the application of sustainable innovative strategy and a reevaluation of value-creating; Brown & Wyatt, 2012).Social enterprises face the challenge of balancing two seemingly conflicting objectives - achieving their social mission and building a financially sustainable business (Picciotti, 2017). According to Hota et al. (2020), social enterprises must thus have a strong understanding of "sustainability" in order to achieve monetary longevity and future societal benefits. Sustainability orientation refers to a level of sustainability that prioritizes an enterprise's social responsibility and environmental performance (Sung and Park, 2018).According to Pandey et al. (2023), entrepreneurs possessing a strong orientation towards sustainability are more capable of establishing a connection between their way of thinking and social entrepreneurship.Frontages of social enterprise include developing long-term business strategies (George et al., 2016), Promoting eco-friendly innovations (Zahra et al., 2014), producing sustainable social impact (Nguyen et al., 2015), and using social enterprise to create and distribute value (Sulphey&Alkahtani, 2017).

Personality traits and their influence on social entrepreneurship have been extensively studied in developed economies. Yet, this field is still relatively novel in developing economies. The increasing popularity of social entrepreneurship in recent years has contributed to the growth of this discourse (Pathak et al., 2018). Unfortunately, the absence of clear legal frameworks and conceptual clarity in the national setting hinders social entrepreneurship as an economic subsector. Despite these legal and societal restrictions, more and more entrepreneurs are penetrating the market every year (Giri, 2020). These entrepreneurs aim to use their businesses to bring about positive societal change, set an example for future generations, and promote equality (Pandey, 2019).

Hence the study bringsforththe concept of personality traits and their impact on social entrepreneurship in this context, this study deployed an conceptual figure (1) encompassing factorsproxied by personality traits and the sustainability orientation of the Social Entrepreneurial Intention.This study provides three significant contributions. First, it adds personality traits and sustainability orientation as pertinent variables to the research on social entrepreneurial intents (Bacq& Alt, 2018; Hsu & Wang, 2019; Ip et al., 2018). This study shows that these characteristics have vastly different effects on people's inclinations to start social businesses in comparison with commercial business ventures. Second, academics, investors, and policymakers can more effectively target and inspire potential social entrepreneurs by demonstrating a sustainability orientation, which is critical for the importance of creating positive environmental, social, and economic sustainability (Maseno&Wanyoike, 2022), (Sunio et al., 2020).Thirdly, as suggested in the study conducted by Hossain, M. U., et al 2021) and the literature is inconclusive of how examination graduatescontribute to their motivation to engage in social entrepreneurship it is important to consider samples for future research from engineering students to undertake a study on their potential role in Social Entrepreneurial Intention.

Literature Review

Social Entrepreneurial Intention and Personality Traits

Social entrepreneurship plays a vital role in developing nations where there is a significant economic segregation and social exclusion (Chell, 2007). Entrepreneurial intentions and behaviors have mostly been explained by Theories based on intentions like the theory of To gain insight into how entrepreneurial motives and practices form, the aforementioned concepts have also been applied in the realm of social entrepreneurship (Hockerts, 2017).The relationship between behavior, intention, and actions becomes apparent in light of the Theory of Planned Behavior (TPB) (Azjen, 1991). According to Azjen (1991), motives

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are deemed to be the most important variable impacting the degree of effort an individual is willing to put forth when attempting the behavior they want to exhibit.According to Krueger and Brazeal (1994), entrepreneurial intention is an individual's determination to launch an enterprise shortly. Entrepreneurship is seen to be well predicted by entrepreneurial purpose (Krueger, Reilly, and Carsrud 2000). As defined by Preethi and Priyadarshini (2018), social entrepreneurial intention is the desire of an individual to establish a social enterprise with the goal of using creative thinking to bring about social transformation. It highlights an individual's predictive characteristics to describe various individual behaviors in the same circumstances (Llewellyn and Wilson 2003). In accordance with the previous research indicates that empathetic intelligence, Prior expertise, behavior, social assistance, innovation, ethical responsibility, individual standards, self-esteem, and a sense of management of behavior are the most important predictors of social entrepreneurial intention (Hockerts 2015; Yang et al. 2015).

An individual's "personality" is the peculiar amalgam of factors that shape their opinions, sensations, practices, and decisions.Irengun and Arkboga (2015) asserted that it is an interpersonal process that recognizes a person's habitual behavior. The entrepreneur's propensity to undertake risks is driven by their personality traits (Rauch and Frese,2007). According to Cools and Broeck (2008), for instance, for an enterprise to succeed, its employees have to perform better than non-entrepreneurs on measures like internal sense of control, desire for accomplishments, proactive disposition, competence to endure apprehension and self-esteem. Some of the unique psychological attributes that social entrepreneurs embrace include risk-taking, motivation, locus of control, inventiveness, and assertiveness (Tracey & Phillips 2007; Brandstatter 1997). Despite the fact that arrays of personality traits have been discussed in the past literature, a dearth of accurate assessment scales for each has been created (Varsha Shukla, 2021). The Five-Factor Model (FFM) of personality has been extensively studied and tested (Ariani, 2013). The International English Big-Five Mini-Markers were developed by Thompson in 2008 and showed that the FFM structure is culturally invariant. The FFM consists of five dimensions: agreeableness, conscientiousness, extraversion, openness, and neuroticism. As the Big Five personality depicts the fundamental structure of the human character, the Big is the most often used approach to characterize personality (Chell 2007).

Agreeableness and Social Entrepreneurial Intention

An individual's level of collaboration, passiveness, humility, reliability, compassion, generosity, and sociability is measured by their degree of agreeableness (Costa & McCrae, 1992a; Antoncic et al., 2015). Highly agreeable individuals are typically trusting, kind, forgiving, and altruistic (Tran et al., 2016). To build strong relationships with stakeholders, entrepreneurs must be dependable and able to work collaboratively (Shane & Cable, 2002). Individuals with this trait are more inclined to be involved in volunteering as they are preoccupied with the needs of others (Sahinidis et al., 2020). Agreeableness is particularly important in the context of social entrepreneurship, where compassionate individuals prioritize social ideals over economic ones and work to address societal problems through cooperation and the development of social values and corroborates between agreeableness and Social entrepreneurship intention (Nga&Shamuganathan, 2010); Pandey, D.L.et al., 2023; Yusif&Kamil (2015), Hsu & Wang (2018), Ip et al. (2018), Hussian et al. (2021), Luc (2020), and Kumcu&Cetinel (2022).In contradicts,Milanovic et al ., 2021 found a negative relationship among agreeableness and social entrepreneurial intention.

Extraversion and Social Entrepreneurial Intention

The degree to which an individual exhibits traits such as hospitality, determination, vitality, networking, outgoingness, adventure, dominance, warmth, vibrancy, and sociability is referred to as

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extraversion.Extraversion is a measure of how comfortable a person is in building relationships with others (Sahin, et al., 2019). Entrepreneurs who possess an extroverted personality can effortlessly establish and maintain positive relationships with stakeholders, investors, and vendors (Sahin, et al., 2019). Social entrepreneurs have to interact with individuals as they market their businesses for staff individuals, financiers, and patrons. The organization must possess a certain degree of extroversion so as to accomplish it (Luc, P. T. 2022).Individuals need to build networks that connect them with other individuals for the purpose to comprehend social needs and share their ideas with society (Hossain, M. U., et al., 2021); Zhao et al. (2010); Luc 2020; Kumcu and Cetinel (2022).Furthermore, studies has demonstrated that extraversion and business intentions have a positive association, while Yusuf &Kamil (2015) affirms that there is no significant relationship between extraversion and social entrepreneurial intention.

Openness to experience and Social Entrepreneurial Intention

The range of compulsion and curiosity that arises with unfamiliarity is referred to as the openness dimension, M. U. Hossain et al. (2021). An individual who is open-minded is one who is willing to experiment with novel approaches and takes pride in diverse points from different perspectives (Ariani, 2013). According to Liang et al. (2013), those who have elevated openness to experience scores are probably imaginative and creative individuals. The attributes are essential for any individual offering to initiate an independent social enterprise (Rothmann and Coetzer, 2003). They generally tolerate change and innovation well, are willing to embrace opportunity and risk, and have a high threshold for ambiguity (Ahmed, Khattak, and Anwar, 2020). To start a new businesses, social entrepreneurs ought to be inventive, imaginative, and unconventional (M. U. Hossain et al. ,2021);Nga and Shamuganathan (2010); Pandey, D.L.et al., 2023; Udayanganie et al. (2019); Yusuf &Kamil, 2015; Hsu & Wang, 2018; Liu et al., 2020; Luc 2020; Kumcu&cetinel (2022) affirms significant influence of openness on several dimensions of Social Entrepreneurial Intention. Incontrast, the studies conducted by Milanovic et al., 2021; Ip et al., 2018 found an inverse relationship between openness and social entrepreneurial intention.

The relationship is tested through formulation of Hypothess;

H_1 : Social entrepreneurial intention is influenced by the personality traits of agreeableness, extraversion, and openness to new experiencesamong engineering graduates

Conscientiousness and Social Entrepreneurial Intention

Conscientiousness refers to an individual's self-control, hard work, tenacity, and work discipline, according to Baum and Locke (2004) and Ariani (2013). Highly conscientious peopleare considered responsible, efficient, dependable, organized, and self-disciplined, Baum and Locke (2004). An essential component in determining an entrepreneur's existence is their level of conscientiousness.It is considered to be the attributes that frequently forces an entrepreneur apart from a manager (Preethi&Priyadarshini, 2018). Social entrepreneurs undertake difficult projects intending to improve people's lives while ensuring financial success. To achieve this, social entrepreneurs need to be goal-oriented, driven, effective, efficient, disciplined, and responsible. The studies conducted by Luc, 2020; Hsu & Wang, 2018; Yusuf &Kamal,(2015) found aadverse relationship between conscientiousness and social entrepreneurial intentions. Whereas the studiesby Hessian et al., 2021; Khmu&Cetinl (2022) contradictsa significant relationship between conscientiousness and social entrepreneurial intentions

ISBN: 978-93-83302-64-2

Neuroticism and Social Entrepreneurial Intention

Neuroticism is a measure of an individual's emotional stability (Yong, 2007). Individuals with severe neuroses frequently display recklessness, diminished self-worth, fluctuating emotions, and depression considering they are oblivious of their feelings.On the contrary, emotionally stable individuals can remain calm under pressure with high levels of comfort, confidence, and self-esteem (Tran et al., 2016).Starting and running a new business is often a challenging task that requires diversity and complexity. Entrepreneurs must be able to carry the mental and physical burden of challenges, failure risks, and lack of confidence. It is evident from the aforementioned traits that entrepreneurs possess high emotional stability (Luc, P. T. 2022). The results of research by Luc (2020), Kumcu&cetinel (2022), and Yusuf &Kamil (2015) revealed an adverse relationship between neuroticism and social entrepreneurial intention, whereas research by Milanovic et al., 2021, and Ip et al., 2018 found an upward relationship between neuroticism and social entrepreneurial intention.

The relationship is tested through formulation of Hypothess;

H_2 : Social entrepreneurial intention is negatively impacted by the personality traits of conscientiousness and neuroticism among engineering graduates

Sustainability Orientation and Social Entrepreneurial Intention

Sustainability has been viewed to be an important variable in demonstrating the existence of social enterprises (Al-Qudah et al., 2022). Individuals who prioritize sustainability can more effectively integrate their entrepreneurial and social entrepreneurial attitudes and endeavors (Gordon Eckardt& Petra Dickel, 2021). A focus on sustainability influences business objectives, as socially responsible actions are believed to align better with a sustainability-oriented perspective. Sustainability-orientated individuals are often better positioned to identify business prospects that arise from ecological and societal problems. This is because of such greater awareness and past knowledge (Wagner &Kuempel, 2010).Businesses that place a high priority on sustainability have shifted away from the conventional emphasis on cost reduction and completing tasks on time to include consideration of the economy, environment, and society at huge (Markard et al., 2012). This approach to business attracts young minds and inspires them to become social entrepreneurs who prioritize sustainable orientation and standards (Marano et al., 2017; Zheng et al., 2015). Young individuals who adhere to sustainability (Choongo et al., 2016) are more inclined to participate in social congregation rather than social benevolent to address deprived areas of the economy and reinstate societal equilibrium (Batsleer et al., 2014). Potential goal conflicts that may occur when integrating environmental, social, and economic objectives could be the reason for the distinction between students studying business and those studying non-business (Dickel, 2018). According to Lumpkin (2011), social enterprises are characterized by two identities: a utilitarian identity motivated by financial objectives and a normative identity motivated by social perspectives and individual orientation. A shared objective could be pursued by both identities in their pursuit of business objectives and sustainability-oriented thinking. Thus, a strong sustainability orientation with commercial goals strengthens the effect of entrepreneurial attitudes on social entrepreneurial intentions. The findings are in line with those of other studies conducted by Jain et al. (2019), Shahidi, N. (2020), and Petra Dickel & Gordon Eckardt (2020), where sustainability orientation is positively significant on social entrepreneurial intention.

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The relationship is tested through formulation of Hypothess;

H_3 : Social entrepreneurial intention is positively influenced by sustainability orientation among engineering graduates.

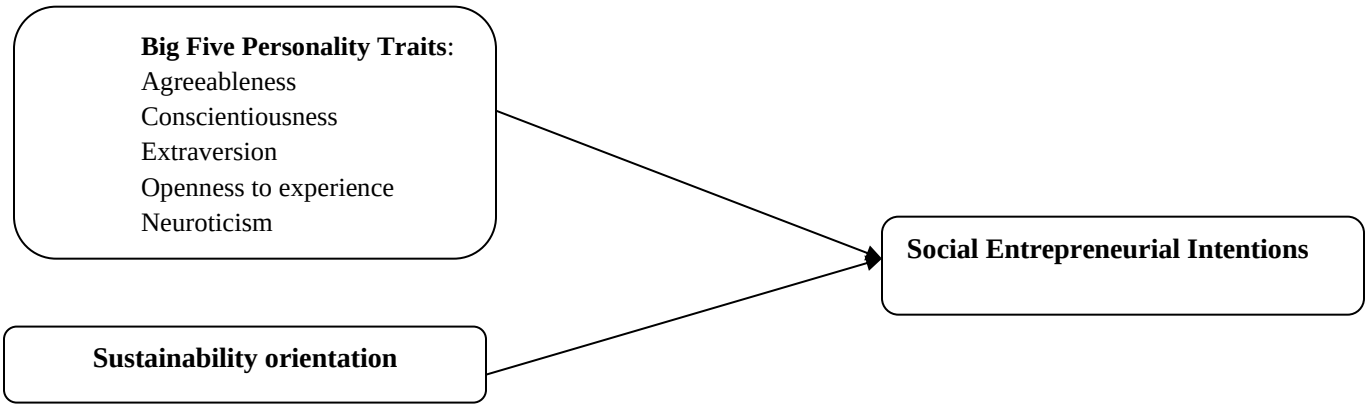

Figure 1- Conceptual Framework

Research Methodology

Participants

The intended respondents for this study were engineering graduates in the city of Coimbatore. Coimbatore is a Tier II city in Tamil Nadu and is known for being one of the most industrialized cities, often referred to as the Manchester of South India. The research methodology used for this study was quantitative and aimed to assess the influence of personality factors and sustainability orientation on the social entrepreneurial intentions of engineering graduates.

Data Collection & Sample Selection

A structured questionnaire was proposed with the two sections. The obligatory demographic data are included in the first section. The second section solicits queries regarding personality traits, sustainability orientation, and social entrepreneurial intention using a 5-point Likert scale (with 1 indicating strongly disagree and 5 indicating strongly agree). Primary data was collected by distributing questionnaire both offline and online using Google Forms to 259 engineering graduates who expressed their interest in entrepreneurial intention by purposive sampling.The data was collected from august 2023 to September 2023. The data analyzed using SPSS and SMART-PLS 4.

Measurement of Constructs

Using structural equation modeling (SEM) in the Smart PLS software, construct reliability and validity were investigated and confirmed. To assess the internal consistency reliability, Cronbach's alpha and composite reliability were computed. The average variance extracted (AVE) was determined for the purpose of verifying convergent validity. To assess discriminant validity, the Fornell-Larcker criterion, HTMT ratio were estimated. To determine the multicollinearity in the data, the variation inflation factor (VIF) was calculated. Bootstrapping was employed to assist with the hypothesis-testing process.

Each attitudinal disposition is scaled on a five-point Likert scale ranging from 1 'strongly disagree' to 5 'strongly agree'. The big five personality traits were evaluated using the "Big Five Inventory - GSOEP" (Hahn et al., 2012) three items per trait make up the entire set of 15 items that make up the GSOEP

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measure. The scale measured the graduates personality traits on five dimensions agreeableness, conscientiousness, openness, extraversion, and neuroticism. Social Entrepreneurial Intention was measured using 5 items adopted from Yang et al. (2015). Sustainability orientation scales were adopted from Kuckertz and Wagner (2010)

Results and Findings

Demographics profile of the respondents

Table 1

Demographic Profile

Demographic characteristic		**Frequency(N=259)**	**(%)**
Age(in years)	Below 20	38	15
	20-22	79	31
	22-25	142	54
Gender	Male	143	55
	Female	116	45
Educational Qualification	Graduate	152	59
	Post Graduate	107	41

Source: Computed Data

Measurement Model

The outer model in PLS-SEM, also known as the measurement model, explains how concept and indicator variables are linked, and is used to evaluate construct reliability, convergent validity, and discriminant validity (Pandey et al., 2023).

Reliability and convergent validity

Data presented in Table 2 reveal that all Cronbach's alpha and composite reliability values meet the minimum value of 0.7 suggested by Fornell and Larcker (1981) for all the variables. The Cronbach's alpha values for Social Entrepreneurial Intention, openness, conscientiousness, extraversion, agreeableness, neuroticism, and sustainability orientation (0.770, 0.729, 0.733, 0.704, 0.771, 0.798, and 0.862 respectively) confirm the constructs' reliability. The value of AVE (larger than 0.5) suggested by and the factor loading (larger than 0.5) confirms the convergent validity suggested by Hair (2014) corroborated the conclusion that the factor loadings of the Table 2 items were more than 0.5, demonstrating that the items effectively communicated the fundamental concept.

ISBN: 978-93-83302-64-2

Table2

Reliability and Convergent Validity

Variables	Items	Loadings	Cornbach's Alpha	C.R (rho_a)	C.R (rho_c)	AVE
Social Entrepreneurial Intention	SEI 1	0.731	0.770	0.774	0.845	0.522
	SEI 2	0.726				
	SEI 3	0.779				
	SEI 4	0.660				
	SEI 5	0.711				
Openness (O)	O1	0.783	0.729	0.733	0.846	0.647
	O2	0.838				
	O3	0.792				
Conscientiousness (C)	C1	0.824	0.733	0.740	0.810	0.599
	C2	0.914				
	C3	0.531				
Extraversion (E)	E1	0.729	0.704	0.715	0.835	0.629
	E2	0.800				
	E3	0.846				
Agreeableness (A)	A1	0.815	0.771	0.778	0.867	0.685
	A2	0.844				
	A3	0.824				
Neuroticism (N)	N1	0.643	0.729	0.838	0.846	0.651
	N2	0.821				
	N3	0.930				
Sustainability Orientation (SO)	SO1	0.814	0.868	0.866	0.901	0.645
	SO2	0.813				
	SO3	0.837				
	SO4	0.819				
	SO5	0.730				

Source: Computed Data (A-Agreeableness, C- Conscientiousness, E-Extraversion,N-Nerotiscim, O-Openess, SEI- Social Entrepreneurial Intention, SO- Sustainability Orientation

Discriminant Validity

To examine the discriminant validity of this study, the heterotrait-monotrait (HTMT) ratio correlation criteria is used. In **Table 4**, it is implied that all constructs have acceptable discriminant validity when the values are below the cutoff of 0.85. (Kline, 2011).

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Table-3

Fornell-Larcker criterion

	A	C	E	N	O	SEI	SO
A	0.827						
C	0.139	0.774					
E	0.143	0.047	0.793				
N	-0.057	0.176	-0.052	0.807			
O	0.067	0.058	0.503	0.107	0.805		
SEI	0.458	0.145	0.511	0.033	0.444	0.722	
SO	0.330	0.143	0.311	0.003	0.283	0.679	0.803

Source:ComputedData (A-Agreeableness, C- Conscientiousness, E-Extraversion,N-Nerotiscim, O-Openess, SEI- Social Entrepreneurial Intention, SO- Sustainability Orientation)

Table 3 shows the correlational values of all variables with the value in the diagonal as the square roots of AVE (the numbers highlighted are the square roots of AVE of agreeableness, conscientiousness, extraversion, neuroticism, openness, SEI, and sustainability orientation, respectively **(0.827, 0.774, 0.793, 0.807, 0.805, 0.722, 0.803)**.To ensure discriminant validity according to Fornell and Larcker (1981), the square root of Average Variance Extracted (AVE) must be greater than the correlation estimations of its corresponding constructs. Additionally, there is no issue of multicollinearity as all correlation values are less than 0.85. The squared correlation between any two latent constructs should not exceed the AVE of each latent construct (Hair et al. (2011).

Table – 4

Hetero Trait Mono Trait Ratios

	A	C	E	N	O	SEI	SO	Was the HTMT less than 0.85?
A								
C	0.221							Yes
E	0.184	0.081						Yes
N	0.077	0.221	0.097					Yes
O	0.102	0.086	0.695	0.114				Yes
SEI	0.594	0.173	0.689	0.079	0.586			Yes
SO	0.408	0.166	0.388	0.045	0.356	0.826		Yes

Source: Computed Data (A-Agreeableness, C- Conscientiousness, E-Extraversion,N-Nerotiscim, O-Openess, SEI- Social Entrepreneurial Intention, SO- Sustainability Orientation

ISBN: 978-93-83302-64-2

In **Table 4** the Heterotrait-Monotrait (HTMT) ratio, is a reliable method of assessing discriminant validity. The HTMT ratio is calculated by dividing the mean of average correlations for items that measure distinct constructs by the mean of average correlations for items measuring the same construct (Hair et al., 2019. All the values in HTMT ratios are below **0.85**, which is well within the recommended range by Kline (2011). Discriminant validity is therefore proven.

Table -5

Test of Multicollinearity

Variance	VIF
A→SEI	1.145
C→SEI	1.067
E→SEI	1.422
N→SEI	1.066
O→SEI	1.407
SO→SEI	1.264

Source: Computed Data

In **Table-5** VIF was used to analyze collinearity. The value of VIF should be less than 3.3 and if the value of VIF is more than 3.3, then multicollinearity exists as suggested by Diaman- topoulos and Siguaw (2006). Data presented in Table 5 show the VIF values **(1.145, 1.067, 1.422, 1.066, 1.407 and 1.264)** are each less than 3.3. Thus, multicollinearity does not exist.

Table-6

Structural Equation Model: Results

Hypothesis	Std. beta	Std. error	t-value	p-value	R2	F2	Q2
A→SEI	0.257	0.053	4.821	0.000	0.638	0.159	0.313
C→SEI	0.014	0.049	0.283	0.777		0.001	
E→SEI	0.247	0.050	4.964	0.000		0.119	
N→SEI	0.039	0.047	0.833	0.405		0.004	
O→SEI	0.165	0.053	3.097	0.002		0.053	
SO→SEI	0.468	0.068	6.903	0.000		0.480	

Source: Computed Data (A-Agreeableness, C- Conscientiousness, E-Extraversion,N-Nerotiscim, O-Openess, SEI- Social Entrepreneurial Intention, SO- Sustainability Orientation

After confirming the validity and reliability of the construct, the study proceeded to evaluate the structural model. The first step in this process was to identify and address any collinearity issues in the models. Once these issues were resolved, the importance and relevance of the structural model relationship were assessed.

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Table 6 results indicate that social entrepreneurial intention is positively impacted by **agreeableness (β = 0.257, t = 4.821), extraversion (β = 0.247, t = 4.964), openness (β = 0.165, t = 3.097), and sustainability orientation (β = 0.468, t = 6.903)**. On the other hand, the impact of **Neuroticism (β = 0.039, t = 0.833) and Conscientiousness (β = 0.014, t = 0.283)** on social entrepreneurial intention is not supported.

The value of R-square which is 0.638 indicates that 63.8% of the total variation in Social Entrepreneurial Intention is explained by agreeableness, Conscientiousness, extraversion, neuroticism, and sustainability orientation

The study calculated the effect size (f^2) to evaluate the importance of each path using Sullivan and Feinn's method (2012). The effect sizes were divided into three categories, **namely large (0.35), medium (0.15), and small (0.02),** following Cohen's guidelines (1988). The results indicate that the sustainability approach (f^2= 0.480) has a significant impact on social entrepreneurial intention. Openness (f^2 = 0.053) has a minor effect on social entrepreneurial intention, while agreeableness (f^2= 0.159) and extraversion (f^2= 0.119) have a moderate effect. Meanwhile, neuroticism (f^2 = 0.004) and conscientiousness (f^2 = 0.001) have negligible effect sizes on the R^2 of social entrepreneurial intention.

The blindfolding technique is then used to evaluate the model's predictive relevance (Q^2), indicating that the model has predictive ability. The values of Q^2 for the endogenous variables can be identified to be greater than zero (Hair et al., 2017) 0.313 for social entrepreneurial intention.

Hypotheses Testing

To test the validity of the hypotheses and determine the significance of the Path Coefficient, the model was evaluated using the bootstrapping approach with 5000 resamples.

H_1: Social Entrepreneurial Intention is positively impacted by agreeableness, extraversion, and openness Table 6 shows the value p-value is agreeableness (0.000), extraversion (0.000), openness (0.002) the p-value lesser than 0.05 confirms a positive relationship between extraversion, openness, on Social Entrepreneurial Intention. So, hypothesis 1 is accepted.

H_2:conscientiousness and neuroticism negatively impacted Social Entrepreneurial Intention. Table 6 shows the value p-value is conscientiousness (0.777), and neuroticism (0.405) the p-value greater than 0.05 confirms a negative relationship between conscientiousness and neuroticism on Social Entrepreneurial Intention. So, hypothesis 2 is accepted.

H_3: Sustainability orientation is positively impacted on Social Entrepreneurial Intention. Table 6 shows the value p-value is (0.000) the p-value lesser than 0.05 confirms a positive relationship between sustainability orientations on Social Entrepreneurial Intention. So, hypothesis 3 is accepted

Discussion

The main objective of this study was to investigate the relationship between personality traits, sustainability orientation, and the intention to engage in social entrepreneurship among engineering students in Coimbatore. Specifically, the study aimed to examine the impact of sustainability orientation, conscientiousness, extraversion, agreeableness, neuroticism, and openness on social entrepreneurial intentions. The conceptual framework of the research was used to explore the connection between social entrepreneurial ambitions and personality factors. The study analyzed the personality traits of openness, conscientiousness, extraversion, agreeableness, neuroticism, and sustainability orientation.

ISBN: 978-93-83302-64-2

In the case of **Agreeableness**, the personality trait of agreeableness bears a significant and positive correlation with SEI. This observation is consistent with the studies conducted by Pandey, D.L.et al., 2023; Yusif&Kamil (2015), Hsu & Wang (2018), Ip et al. (2018), Hussian et al. (2021), Luc (2020), and Kumcu&Cetinel (2022). In essence, these studies suggest that cooperative, sympathetic, kind, and forgiving behaviors are indicative of engineering students' inclination toward pursuing social entrepreneurship.

In the case of **extraversion**, this study identified a strong positive correlation between extraversion and social entrepreneurial intention. These findings are in line with those of Pandey, D.L.et al., 2023, Milanovic et al. (2021); Luc 2020; Kumcu&cetinel (2022); Hussian et al., 2021; Hsu & Wang, 2018; Ip et al., 2018 and suggest that social entrepreneurial intention is encouraged in engineering students who are talkative, gregarious, bold, and extrovert by nature.

Additionally, in the case of **openness** a strong and positive relation between openness and social entrepreneurial intention was found in the study. The results of this study supported by Pandey, D.L.et al., 2023; Udayanganie et al. (2019); Yusuf &Kamil, 2015; Hsu & Wang, 2018; Liu et al., 2020; Luc 2020; Kumcu&cetinel (2022) in they suggest that having positive traits such as curiosity, creativity, intellectualism, openness to new ideas, and intellectual curiosity encourages social entrepreneurial intention in engineering students.

In the case of **sustainability orientation**, the study found a significant and positive relation between social entrepreneurial intention and sustainability orientation. These findings are in line with those of other studies conducted by Jain et al. (2019), Shahidi, N. (2020), and Petra Dickel & Gordon Eckardt (2020), which encourage engineering students to explore market opportunities and consciously create goods and services for society after refining dimensions concerning economic, social, and environmental aspects.

In the case of **neuroticism**, the relationship with SEI was significant and negative which is consistent with the findings of Luc (2020); Kumcu&cetinel (2022); Yusuf &Kamil, (2015) implying negative features such as jealousy, moodiness, upset condition, and irritation hinder Social Entrepreneurial Intention among engineering students.

In the case of **Conscientiousness** also has a negative and significant relationship with Social Entrepreneurial Intention and the results are consistent with Luc, 2020; Hsu & Wang, 2018; Yusuf &Kamil, (2015). This study also indicates that being organized, efficient, practical, and systematic are the predictive behaviors that thwarted the Social Entrepreneurial Intention of engineering students

Practical implications

The outcomes of this study have important implications for developing nations like India, where researchers in the future should concentrate more on business sustainability and incorporate the Sustainable Development Goals of the United Nations as a means of gaining additional insights.

Furthermore, the study shows that a high sustainability orientation in addition to personality traits, respectively, indicate an elevated desire to find a social enterprise. Consequently, activities that heighten the appeal and lessen the perceived obstacles of venturing are likely to elicit higher levels of social entrepreneurial intention from individuals who are sustainability-oriented. Findings suggest that combining personality traits with sustainability orientation factors is the most effective way to support social entrepreneurship.

ISBN: 978-93-83302-64-2

These results may assist in identifying individuals who are more likely to have a higher intention to launch a social enterprise and can also be used to build training and support programs that are specifically tailored for aspiring social entrepreneurs.

This study aids organizations and philanthropic financiers in more accurately recognizing and focusing on the upcoming generation of educators and social entrepreneurs. In light of how decisions about employment are made early in life (Byrne, Willis, & Burke, 2012), it is also suggested that the study be expanded to include adolescents. These studies might provide beneficial guidance on how to introduce the concept of social enterprise into the educational environment and inspire young students to formulate social entrepreneurial goals.

Conclusion

Engineering Students who exhibit conscientiousness and neuroticism are less likely to pursue social entrepreneurship than those who possess traits like agreeableness, extraversion, and openness. Yet, there is a favorable correlation between social entrepreneurial intention and sustainability orientation. The study's overall findings demonstrate the significance of sustainability orientation and personality traits in influencing social entrepreneurial intention. It is feasible to create interventions and support systems that are more successful in promoting and sustaining social entrepreneurship by having a better grasp of the elements that drive people to engage in social entrepreneurship. In the end, the study emphasizes the necessity of multifaceted strategies that take into account personality traits as well as the influence of sustainability orientation in an attempt to encourage socially conscious entrepreneurs and foster socially conscious intention.

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