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Article

Social Enterprise Intention of Non-STEM University Students: Experimental Evidence

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ABSTRACT

The concept of social enterprise is an imperative facet of modern entrepreneurship that emphasizes the potential for businesses to generate profits while promoting societal well-being. However, this dual objective presents a significant challenge for entrepreneurs as it demands a strong commitment to social responsibility. Our study aimed to investigate the emerging trend of anti-social decisions made by young people in response to complex socio-economic constraints. The inquiry involved a series of classroom experiment conducted on 240 undergraduates in a hypothetical environment. The experiments presented the participants with opportunities to make prosocial or anti-social decisions regarding their occupational choices under four different socio-economic conditions and also in a structured coordination game. The results suggest that prospective employees may be more likely to make choices that benefit themselves, rather than others, when faced with difficult social and economic situations. However, those who opt to be self-employed expressed the highest prosocial motivation, indicating a strong desire to contribute to society. It is important to take these findings into account when creating educational policies and adjusting economic policies, such as tax policies. We need to encourage and educate young people in Sri Lanka to develop and express their desire to create positive social change, by promoting pro-social values and behaviors.

Introduction

There has been a long-standing debate surrounding the concept of "social" and "sociality" in the context of social enterprise discourse. This discourse views entrepreneurship as a means of benefiting society rather than solely maximizing profits (Tan et al, 2005; Steyeart and Hjorth, 2006; Farias et al., 2022). Social enterprise is considered an altruistic form of capitalism that places value on human activities beyond just financial gain (Tan et al., 2005; Roberts and Woods, 2005). It operates based on both social and economic forces and generates both social and economic outcomes (Hjorth, 2013). While the terms social and economic are intertwined, they also limit each other. In the history of Europe, we can see a growing "economization of social" that is dominated by the extensive social security system and the Scandinavian welfare state model. This model is financed by higher taxes, transparency, and mutuality. Therefore, social is a crucial part of economics in social enterprise discourse, but it is still largely unclear how this came to be. The existing literature on this topic is also inconsistent in how and why it occurs.

We need to analyze the inclination of undergraduates towards social entrepreneurship and how it links to their financial aspirations. Many universities encourage their students to become socially responsible entrepreneurs; hence, it is crucial to investigate how entrepreneurial intentions can generate both financial and social returns (Germak and Robinson, 2014), especially in developing economies like Sri Lanka. However, the ongoing economic crisis in Sri Lanka has put financial pressure on communities, which could lead young people to resort to anti-social ventures to improve their financial status. This could result in the opposite outcome of what we expect, which is more pro-social behaviour from youth. We aim to understand how young people respond to financial constraints and whether they are more inclined to choose anti-social occupations over social entrepreneurship. Thus, this research investigates how socio-economic hardships influence university students' interest in social entrepreneurship, particularly if financial pressures lead them towards prioritizing personal gain over social good.

Literature Review

Social Entrepreneurship (SE) is both a concept and a practice that requires a thorough understanding, as it encompasses various definitions and sources. SE is focused on creating a positive social impact by addressing a specific societal issue. According to Germak and Robinson (2014), it involves entrepreneurs from traditional business or public/non-profit sectors establishing sustainable enterprises that aim to generate both financial and social returns. This is often referred to as the "double bottom-line," and the literature further explores SE in terms of environmental returns. The field of SE has attracted significant interest from researchers, and the existing body of literature on SE is shaped by two main perspectives or schools of thought.

The first school of thought, known as the 'earned income strategies' approach, was developed by North Americans to address social problems that were not being adequately addressed by market forces. This approach emphasizes the creation of sustainable business models that can generate income while also addressing social issues. Some notable scholars who

have contributed to this school of thought include Dees (2001), Boschee and McClurg (2003), Weerawardena, et al. (2010), and Medine and Minto-Coy (2023). The second school of thought on SE focuses on social transformative initiatives conveyed by the non-profit sector. This approach views SE as a means of effecting change and emphasizes the role of individuals in the creation of new organizations to address social problems. Some prominent scholars who have contributed to this school of thought include Fowler (2000), Alvord et al. (2004), and Medine and Minto-Coy (2023).

In both of these schools of thought, individuals in third-sector organizations combine resources innovatively to offer better services. Studies on youth entrepreneurship explore the characteristics of young entrepreneurs, such as how demographic profiles, education, or ethnicity positively influence young people to become self-employed. Some notable researchers in this area include Athayde (2009), Kourilsky and Walstad (1998), and Lin et al. (2023). Despite the attention given to youth entrepreneurship in the literature, less is known about how young people demonstrate SE intention in crisis settings. This is an important area of inquiry, as young people may have unique insights and approaches that can help address social problems in times of crisis.

To understand the motivations that drive young people to engage in SE, it is essential to delve into the intersection of their social and economic objectives. This involves examining how they seek to address social issues while also considering the economic sustainability and impact of their ventures. Hockerts et al. (2010) proposes two methods for addressing social and economic objectives: either a retreat towards the philanthropic core or a partial abandonment of social objectives in favor of a business-oriented approach. However, this paper argues that social and economic goals are interconnected in a crisis setting. The "social" in SE is an integral part of economics, premised on the interaction and embeddedness of social and economic factors. The purpose of this paper is to examine the intention of SE through the lens of the embedded relation between social and economic factors from the perspective of potential SE. Furthermore, the desire for social change is seen as an outcome of the efforts of multiple SE actors—not just social entrepreneurs and enterprises, but also their beneficiaries (Dey and Steyaert, 2018). Therefore, pro-social behavior forms the foundation of SE research, and it requires examine the prosocial behaviour of young generations both conceptually and empirically. The study of SE intention is built upon understanding pro-social behavior, which involves examining the ways in which younger generations engage in positive and beneficial behaviors.

Pro-sociality is a term that refers to the willingness and intention of individuals to benefit others or society as a whole. This concept encompasses a wide range of behaviors that are considered good citizenship and extra-role behaviors. These behaviors can include volunteering, donating to charity, and helping others without expecting anything in return. According to research conducted by Brief and Motowidlo in 1986, as well as more recent studies by Baruch et al. (2004) and Bolino and Grant (2016), individuals who exhibit pro-social behavior tend to demonstrate a strong desire to achieve success in their careers. However, this does not mean that they are willing to sacrifice the well-being of others for their own success. On the contrary, they are often motivated to

help others, as they understand that their success is not mutually exclusive to the success of those around them. Recent research by Monyei et al. (2022) has also highlighted the importance of pro-social behavior in the workplace. They found that employees who exhibit pro-social behavior are more likely to be seen as valuable team members, which can lead to greater job satisfaction and career success.

Furthermore, Boundenghan et al. in 2012 studied both pro-organizational and pro-individual behavior and found that an individual's level of affectivity and commitment to their chosen career can have a significant impact on their pro-social behavior. In other words, individuals who are passionate about their careers and feel a strong sense of commitment to their organization are more likely to exhibit pro-social behavior. Overall, the research suggests that pro-social behavior is not only beneficial to others and society as a whole, but it can also lead to greater career success and personal fulfillment.

Accordingly, pro-sociality has a close connection with the SE based on motivation and commitment. Banuri and Keefer (2012) conducted an experiment to investigate the difference between the pro-social behavior of employees in non-caring government and non-caring non-government organizations. Their findings revealed that the subjects associated with public sector institutions exhibited significantly more pro-social behavior than those from non-governmental organizations. This was verified by another phase of their experiment with a different subject pool (Banuri and Keefer, 2016). In addition, the outcomes from the new subject pool implied that workers with greater pro-social motivation applied higher real effort in tasks, and high pay attracts less pro-socially motivated subjects. Apart from that, Kimbrough and Vostroknutov (2016) observed that the pro-social behavior of individuals was driven by social norms rather than individual preferences. Exploring the presence of human capital that can generate financial and social returns for the economy through social entrepreneurship is crucial, particularly in developing economies (Germak and Robinson, 2014). Surprisingly, there is a dearth of research on community-based methods to evaluate the preparedness of potential social entrepreneurs or young individuals to establish and manage social enterprises in Sri Lanka.

We aim for this study to be one of the pioneering efforts to utilize laboratory experiments in order to observe the impact of individual morality, pro-social behavior, and socioeconomic status on the inclination to initiate social enterprises in Sri Lanka. The multifaceted crisis in the Sri Lankan economy today and its socio-economic pressures could necessitate the involvement of highly motivated and dedicated entrepreneurs in establishing and promoting social enterprises. In particular, Sri Lankan youth, who are yet to enter the workforce, need to possess specific attitudes, pro-sociality, and intentions to become social entrepreneurs. This becomes even more critical when promoting social enterprises in response to ongoing economic crises, as socio-economic constraints may hinder the development of pro-sociality and intentions aimed at promoting societal well-being. Therefore, it is interesting to observe how young people respond to potential financial constraints by being presented with opportunities to choose anti-social occupations for income generation. Growing labour force participation in the informal and shadow economic activities can be considered as prospects for anti-social

occupations (Chandrasiri, 2008; Samaranayake and Dayaratne-Banda, 2015; Samaranayake, 2017).

We focused on two key constraints observable in a typical job market: the 'income-expenditure gap' relative to the average compensation (also known as financial constraints), and 'qualifications/skills mismatch' relative to employees' expectations. Our approach followed the model developed by Akerlof and Kranton (2000), incorporating psychological and sociological factors of identity and their influence on economic choices. It was developed by the inclusion of psychological and sociological factors of identity and the way it determines economic choices.

$$U_j = U_j(a_j, a_{-j}, I_j) \quad \textbf{(}\text{Equation 1)}$$

When the utility depends on both a person's identity (I_j) and their actions (a_j) as well as others' actions (a_{-j}), their identity is determined by various factors.

$$I_j = I_{(j}(a_j, a_{-j}; C_{j,}\varepsilon_{j,} P) \quad \text{(Equation 2)}$$

The concept of a person's identity is based on their assigned social categories (C_j), their individual characteristics (ε_j), and the expectations denoted as "P". The "P" represents the degree to which a person's individual characteristics (ε_j) align with the ideal of their assigned social categories (C_j). These factors are expected to influence people's satisfaction and economic gains, as higher utility leads to greater satisfaction and economic benefits. Our experiment is designed based on utility models and their interactive nature, taking into account the constraints resulting from satisfactory states in occupation and intentions regarding tax evasion and participation in the shadow economy.

Research Methodology

The study conducted a rigorous and detailed examination of two anti-social behaviors, specifically tax evasion and earning from the shadow economy. The research methodology utilized a sequence of carefully designed choice experiments to provide a comprehensive understanding of the implications of these behaviors. Additionally, the study incorporated a recurring choice to optimize either individual or societal well-being, which allowed for a nuanced assessment of the impact of these behaviors on the larger society. A detailed description of the experimental designs and analytical strategies are given in the sections below. Overall, this study provides a detailed and insightful analysis of the complex relationship between these behaviors and their effects on social enterprise intention.

Experimental Design: Baseline and the Treatments

Research in social sciences is modeling the behavior of most diverse entity; the human beings. People's choices are diverse and are in different structures along with their behavior and it creates differences in economic outcomes. Further, it was recognized that the peoples' identity impacts on differences in choices and economic outcomes (Akerlof and Kranton, 2000). This study focuses how the respondent's identity; a person's sense of self architects their choices along with given determinants when considering anti-social behaviours.

Concerning the utility model developed by Akerlof and Kranton (2000), this study uses

two distinctive criteria; "*the job satisfaction*" and "*the enrollment in shadow economy*" in modeling the degree of interlink in between the prosociality and the undergraduate's motivation to engage in an occupation after the graduation. Accordingly, the utility model for "*the job satisfaction*" is developed through featuring the elements of j's identity (I_j) as follows,

(1) Assigned Social Category (C_j): The occupation j's assigned to provide the service.
(2) Own given characteristics (ε_j): The degree of educational/professional qualifications, skills/talents, experience and preference j's belongs to.
(3) Prescription (P): The difference between (C_j) and (ε_j).

Similarly, the utility model for "*the enrollment in shadow economy*" is developed through featuring the elements of j's identity (I_j) as follows,

(1) Assigned Social Category (C_j): The level of income (income category) j's assigned by the occupation he/she recently involved.
(2) Own given characteristics (ε_j): The degree of j's expenditure in different activities.
(3) Prescription (P): The difference between (C_j) and (ε_j).

Then these two utility models may converge and designs a payoff matrix with hypothesized outcomes belongs to the subject j along with his/her choices made. The designed game may launch in a laboratory in order to obtain the results out of the choice architectures designed over the base matrixes featuring the elements of j's identity (I_j) as above. Thus, the study used following baseline and treatments to be tested through four rounds in each laboratory session.

Round A [Baseline]: $C_j = \varepsilon_j$ in the both utility models
(Qualifications/skills matched + income>expenditure)

Round B [Treatment 1]: $C_j \neq \varepsilon_j$ in the first utility model
(Qualifications/skills mismatched + income>expenditure)

Round C [Treatment 2]: $C_j \neq \varepsilon_j$ in the second utility model
(Qualifications/skills matched + income<expenditure)

Round D [Treatment 3]: $C_j \neq \varepsilon_j$ in the both utility models
(Qualifications/skills mismatched + income<expenditure)

Experimental Design: Hypotheses

The experiment aims to predict the possible outcomes of a game based on two psychological dimensions - "SATISFACTION" and "ENROLLMENT". These dimensions reflect the cognitive features of an individual in the game (let's recall j^{th} individual). "SATISFACTION" refers to the level of satisfaction that two cognitive players in the game experience based on the social category assigned to them. On the other hand, "ENROLLMENT" includes two options - the cognitive decision of the subject to either enroll in the shadow economy or not. In this game, the participants make their own decisions and receive cognitive payoffs based on their

choices. The diagram below demonstrates the hypothetical strategic outcomes of the game.

Figure 1: The hypothesized outcome matrix

S (I) \ S (II)	Y	N
Y	0,0	0,1
N	1,0	**1,1**

Source: Authors' Preparation

In this experiment, respondents' satisfaction status is represented by S(I) and S(II) based on their assigned Social Category (C_j) and their own given characteristics (ε_j) respectively. The alternative activities provided in the experiment mostly have the features of a shadow economic activity. It is assumed that the respondents are aware of the repercussions and damages caused by the shadow economy before making their selections. The hypothesized outcome is represented by a binary numbering system that indicates whether the respondents enrolled (1) or did not enroll (0) in the alternative activities. If the respondent is satisfied with both satisfactory terms, then they will not be able to enroll in alternative activities. Conversely, an individual who is not satisfied with both dimensions of 'SATISFACTION' tends to enroll in alternative activities.

The proposed framework underwent rigorous validation through the use of a pre-designed game in a highly controlled laboratory experiment. Our sample size of 240 respondents was randomly selected from the undergraduate population of the Faculty of Arts and the Faculty of Management at the esteemed University of Peradeniya, Sri Lanka. The majority of psychological and behavioral studies use student samples because students are typically seen as more uniform than representative samples (Druckman and Kam, 2011; Hanel and Vione, 2016). To further confirm this homogeneity, we made sure to randomly select subjects from a group of non-STEM students who have completed mandatory courses in their curriculum, gaining essential knowledge about the Sri Lankan Economy, Employment, and Entrepreneurship. To create a cross-platform computing environment, the experiment was conducted in eight equally facilitated sessions, each with thirty respondents in the computer laboratory. The game was expertly designed with sequential sessions using "Node.js" and "Visual Studio Code," two open-source software applications. The researcher provided clear instructions and payoffs to the respondents during gameplay. The results were analyzed using both descriptive and econometric tools, expertly interpreting the findings.

Analytical Strategy: Payoff Matrix

The experiment is conducted using a payoff matrix, which determines the decision of the respondents in each session. Each session involves 30 respondents and is organized according to the method described. The payoff matrix determines the scores given in each session. This matrix is based on the response of the respondent to the final question of each round of the session. The experiment consists of four rounds, and the final question of each round asks whether the respondent can engage in alternative activities or not. The scores are given separately for three main clusters (A, B and C), where ten respondents are placed under

each cluster in a single experimental session. If a respondent decides to "ENROLL," the individual is given marks in descending order along with the number of respondents who made the same decision. A higher number of respondents who choose "ENROLL" at the end of each session may lower the points given to each respondent. On the other hand, if a respondent chooses "NOT ENROLL," the individual is given marks in ascending order along with the number of respondents who made the same decision. The higher the number of respondents who choose "NOT ENROLL" at the end of each session, the higher the points given for each respondent.

Table 1: Payoff Matrix

Out of all ten players		Your Earnings/Cost in each round (in points)			
		If you take "E"		If you take "NE"	
Enroll (E)	Not Enroll (NE)	**E (Numbers)**	**E (Your Points)**	**NE (Numbers)**	**NE (Your Points)**
0	10	0	**-**	10	**100**
1	9	1	**100**	9	**90**
2	8	2	**90**	8	**80**
3	7	3	**80**	7	**70**
4	6	4	**70**	6	**60**
5	5	5	**60**	5	**50**
6	4	6	**50**	4	**40**
7	3	7	**40**	3	**30**
8	2	8	**30**	2	**20**
9	1	9	**20**	1	**10**
10	0	10	**10**	0	**-**

Source: The authors.

This matrix intends to explain the decision-making behavior which can optimize the societal wellbeing. Once all respondents able to enroll in alternative activities that may embed higher chance to generate more shadow economic activities. Lower the "ENROLL" might lower the intensity of generating shadow economic activities. On the other hand, if all respondents prefer "NOT ENROLL" in alternative activities, then could lower the intensity of having shadow economic activities. Lower the "NOT ENROLL" might higher chance to generate more shadow economic activities. Therefore, as we compare the individual gains and social impact, the best option for an individual is to choose "ENROLL" given that lower number of competitors may go with same choice. Once we consider the social gains, the best option is "NOT ENROLL" which could provide the same score for each individual irrespective of the number of respondents/competitors who prefer the same choice.

Analytical Strategy: The Binary Logistic Model

The proposed computer application for the laboratory experiment consists of four equally important rounds and each round represent a different situation based on the given satisfactory status depending on the qualifications/experience related to the job

and the level of income embed to the job provide at the hypothetical setup. The final question of each round let respondent to choose whether they enroll in alternative activities or not. The questions prior to the final question at each round and some important data out of the respondent profile can be identified as impactful factors for the respondents' decision. Such intuition can be verified throughout the review of literature in the second chapter.

Therefore, a regression analysis can be performed as the sample collected in a randomize technique to observe the nature of impacts from the indicators mentioned across the four rounds separately. Then the regression analysis could focus a binary dependent variable which given two options for the respondents at the end of each round. As a result of the nature of the dependent component in the experimental data, this study preferred having a "Binary Logistic Model (BLM)" to regress the data (Hosmer and Lemeshow, 2000). Therefore, the following BLM define the model used in the study to analyses the collected data from 240 respondents over eight experimental sessions.

$$ln\ ln\ \frac{P}{(1-P)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots\ldots\ldots\ldots + \beta_n X_n + \varepsilon \qquad \text{(Equation 3)}$$

According to the regression provided above, the dependent component expresses the log of the odd ratio. Here the odd ratio $P/(1-P)$ represent the probability of respondents prefer to enroll in alternative activities when compared to the probability of the respondents who do not prefer to enroll. Then the β_0 represent the constant of the model where as $\beta_1 X_1 + \beta_2 X_2 \ldots . + \beta_n X_n$ represent the causal variables and their coefficients derive from the experiment. The ε represent the error component for the unobserved factors affecting the odd ratio. The following table describes all the causal variables used in the model.

The computer application for the laboratory experiment consists of four equally important rounds. Each round represents a different situation based on the given satisfactory status, depending on the job qualifications/experience and the level of income offered at the hypothetical setup. The final question of each round lets respondents choose whether to enroll in alternative activities or not. The questions before the final question at each round, along with some important data from the respondent profile, can be identified as impactful factors for the respondents' decision. Such intuition can be verified by reviewing the literature in the second chapter.

To observe the nature of impacts from the indicators mentioned across the four rounds separately, a regression analysis can be performed as the sample is collected in a randomized technique. Then, the regression analysis could focus on a binary dependent variable, which gives two options for the respondents at the end of each round. As a result of the dependent component's nature in the experimental data, this study preferred having a "Binary Logistic Model (BLM)" to regress the data. Therefore, the following BLM defines the model used in the study to analyze the collected data from 240 respondents over eight experimental sessions.

$$\frac{P}{(1-P)} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots\ldots\ldots\ldots + \beta_n X_n + \varepsilon \qquad \text{(Equation 3)}$$

According to the regression provided above, the dependent component expresses the log of the odd ratio. Here the odd ratio $P/(1-P)$ represent the probability of respondents preferring to enroll in alternative activities when compared to the probability of the respondents who do not prefer to enroll. Then β_0 represents the constant of the model whereas $\beta_1 X_1 + \beta_2 X_2 \ldots . + \beta_n X_n$ represent the causal variables and their coefficients derived from the experiment. The ε represents the error component for the unobserved factors affecting the odd ratio. The following table describes all the causal variables used in the model.

Results and Discussion

The laboratory experiment was conducted in eight sessions, with thirty respondents per session. Each session consisted of four rounds, and each round presented a different hypothetical situation that considered the assigned characteristics and given characteristics of each respondent. The experimental outcome was analyzed across four different aspects. The first step was to perform a descriptive analysis of the experimental data obtained. Then, the scores obtained by each cluster at four different rounds were analyzed using the developed payoff matrix. The third procedure used the Binary Logistic Model (BLM) to observe the impact of explanatory factors on the respondents' decision to "ENROLL" or "NOT ENROLL" in alternative activities across all four rounds. Finally, the experiment's last step used the Structural Equation Modeling with appropriate path analysis to identify the factors that describe the shadow economy out of the explanatory factors given at each round.

4.1. Descriptive Analysis of the Experimental Data

Based on the descriptive analysis, the most important findings are summarized for each round.

- *The pressure created through $C_j \neq \varepsilon_j$ reduces the respondent's satisfaction with the occupation assigned (see APPENDIX I).*

The respondents were given few options to assess the nature of impact from the $C_j \neq \varepsilon_j$ to the satisfactory status of the officially assigned job. According to the analysis, the majority of respondents were satisfied with the officially assigned jobs having very few who are not satisfied at the initial round. This round provided a situation that matches the assigned social category (C_j) and the own given characteristics (ε_j). Then the second round consisted of signals for severe underemployment based on the respondents' qualifications and experience. Therefore, the assigned social category (C_j) and the own given characteristics (ε_j) do not perfectly match. Somehow, according to results, the respondents' satisfaction was marginally reduced with very few more respondents who did not satisfy with the job assigned. Then, the third round creates the imbalance between C_j and ε_j based on the gap between the income and expenditure levels of individuals. This made a significant impact on the respondents' decision and increased the number of respondents who are in-between and not satisfy with the officially assigned job. This means the 'income-expenditure gap' is more responsive and influential than the mismatch in 'qualifications/skills' on the utility models introduced by Akerlof and Kranton (2000).

This led respondents to prefer anti-social occupations. Further, the fourth round created significant pressure on the respondents with imperfections among both the income-expenditure status and the job-related experience and the qualification. It made the majority of respondents who were in-between at the third round not to satisfy with the officially assigned job. This highlights how a person's sense of self would be modified by the interaction and embeddedness of social and economic factors (Hockerts et al., 2010), and this, in turn, can impact the decisions they make regarding their careers.

- *The burden of income-driven underemployment stimulates respondents to improve their engagement in the shadow economy (see APPENDIX II and APPENDIX III).*

The descriptive analysis used several dimensions to investigate the possibilities of respondents' engagement in the shadow economic activities. Accordingly, the respondents' preferences on taxation were used as one of the key determinants. Because the definitions given for shadow economy are given an important position itself to the taxes assigned to economic activities. If any activity functioned without paying official taxes assigned, it might recognize as a part of the shadow economy. Once the respondents were questioned on their intention to pay taxes for the officially assigned job, the most significant change across the preferences was given at the third round of the experiment. The most of respondents who prefer to pay taxes at the initial and second round was change their minds and did not prefer to pay taxes in the third round. So, this round consisted of signals for underemployment upon the imbalance between C_j and ε_j based on the gap between the income and expenditure levels of individuals as described in the utility models by Akerlof and Kranton (2000).

On the other hand, the respondents were given to express their preference for paying taxes for the alternative activities they can engage in. According to the comparison, the greatest number of respondents who were not preferred to pay taxes for alternative activities reported from the third round of the experiment. Therefore, this had proven that the burden of income driven underemployment stimulates respondents to improve their engagement in the shadow economic activities. These findings would significantly enhance the current body of knowledge concerning the expansion of labor force participation in informal and shadow economic activities. This is particularly in consideration of works by Chandrasiri (2008), Samaranayake and Dayaratne Banda (2015), and Samaranayake (2017), and the subsequent structural relationship developed by Samaranayake (2017) that elucidates potential causal links between underemployment and engagement in the shadow economy.

The Payoff Matrix Analysis

This matrix intends to explain the decision-making behavior which can optimize societal wellbeing (*Table 2*). Once all the respondents are able to enroll in alternative activities, which may embed a higher chance to generate more shadow economic activities. Lower the "ENROLL" might lower the intensity of generating shadow economic activities. On the other hand, if all respondents prefer "NOT ENROLL" in alternative activities, they could lower the intensity of shadow economic activities.

Table 2. Estimated Respondents' Preferences in Average

Round	Cluster	Preference	Value	Approx.	Score/Points
1	A-Private	ENROLL	8.875	9.0	20
		NOT ENROLL	1.125	1.0	10
	B-Public	ENROLL	9.625	9.5	15
		NOT ENROLL	0.375	0.5	05
	C-Self	**ENROLL**	**8.5**	**8.5**	**25**
		NOT ENROLL	**1.5**	**1.5**	**15**
	Total	ENROLL	9.0	9.0	20
		NOT ENROLL	1.0	1.0	10
2	A-Private	ENROLL	8.625	8.5	25
		NOT ENROLL	1.375	1.5	15
	B-Public	**ENROLL**	**8.25**	**8.0**	**30**
		NOT ENROLL	**1.75**	**2.0**	**20**
	C-Self	ENROLL	8.875	9.0	20
		NOT ENROLL	1.125	1.0	10
	Total	ENROLL	8.58	8.5	25
		NOT ENROLL	1.42	1.5	15
3	**A-Private**	**ENROLL**	**8.5**	**8.5**	**25**
		NOT ENROLL	**1.5**	**1.5**	**15**
	B-Public	ENROLL	8.75	9.0	20
		NOT ENROLL	1.25	1.0	10
	C-Self	**ENROLL**	**8.375**	**8.5**	**25**
		NOT ENROLL	**1.625**	**1.5**	**15**
	Total	ENROLL	8.54	8.5	25
		NOT ENROLL	1.46	1.5	15
4	A-Private	ENROLL	8.75	9.0	20
		NOT ENROLL	1.25	1.0	10
	B-Public	ENROLL	8.75	9.0	20
		NOT ENROLL	1.25	1.0	10
	C-Self	**ENROLL**	**8.625**	**8.5**	**25**
		NOT ENROLL	**1.375**	**1.5**	**15**
	Total	ENROLL	8.71	8.5	25
		NOT ENROLL	1.29	1.5	15

Source: The authors.

Once we consider the responses by total participants irrespective of clustered provided, the greatest number of respondents prefer "ENROLL" in the first round, which is 90 percent, and given only 20 and 10 scores for respondents who "ENROLL" and "NOT ENROLL" respectively. Then the other three rounds consist of a similar outcome, 85 percent for "ENROLL" according to the approximate value and given 25 and 15 scores accordingly. Further, the exact values estimated for the other three rounds exhibit a slight improvement in respondents' choices to prefer "ENROLL" at the final round. This explains how the respondents make their decision in favor to engage in alternative activities and later concerns to reduce the degree of enrollment in alternative activities at the second and third rounds. Once they identify the situational pressure having lower satisfaction and issues in the relative income, the decision reverse back among a few respondents and considered enroll in alternative activities back again. Somehow the changes among respondents' decisions are highly marginal

and the majority maintained their choice, "ENROLL" across each round.

Therefore, this majority concern provided very low scores for the respondents according to the matrix. Further, it revealed that the majority of respondents from the sample are motivated for private gains rather than express any interest in societal gains. This indicates a lack of prosocial motivation among the respondents, despite the emphasis in literature on the significance of having the intention to contribute to society (Boundenghan et al., 2012; Germak and Robinson, 2014; Banuri and Keefer, 2016), particularly when a profession aims to align with a prosocial mission. However, the self-employed cluster appeared to be the occupational cluster which earned the highest score at three rounds in the experiment. It revealed that the respondents who are assigned to the self-employed cluster are the group of people with the least intention to enroll in alternative activities available. This experiment lets exactly half of the respondents in the sample to get aware of shadow economic activities. Therefore, the usual expectation is to observe more individuals not to enroll in alternative activities once they recognize them as the shadow economy. Though the outcome of the comparison provided a result confront to the expected outcome. The majority of respondents who prefer to enroll in the alternative activities are from the cluster who aware of the shadow economy at all four rounds. In overall, these observations would suggest the possibility in prosocial motivation driven by individual preferences, and which looks exceeds the influence by social norms in contrasts to the experimental findings of Kimbrough and Vostroknutov (2016).

The BLM Analysis

As a result of the nature of the dependent component in the experimental data, this study preferred having a "Binary Logistic Model (BLM)" to regress the data (see Appendix IV). Therefore, the following BLM defines the model used in the study to analyze the collected data from 240 respondents over eight experimental sessions. According to the results, all four BLMs ran across four different rounds are statistically significant according to the Omnibus Test of Model Coefficients and the Hosmer & Lemeshow (HL) Test. Then the BLM regressed at the first round was recognized as the most fitted model according to the Pseudo r-squared measures. Then, the regressed models for each round provided the following equations to describe the association between the term and the response.

Round 1:

$$ln\ ln\left[\frac{Enroll}{Not\ Enroll}\right] = \beta_{4(1)}\, Ambition\,(1) + \beta_{5(2)} Occupation(2) - \beta_{9\,(1)} R_{Q6}(1) - \beta_{9(2)} R_{Q6}(2) + \varepsilon$$

$$ln\ ln\left[\frac{Enroll}{Not\ Enroll}\right] = 4.184^{***} + 1.868^{*} - 2.095^{***} - 1.655^{*}$$

Round 2:

$$ln\ ln\left[\frac{Enroll}{Not\ Enroll}\right] = \beta_{4(1)}\, Ambition\,(1) - \beta_{9\,(1)} R_{Q6}(1) - \beta_{9(2)} R_{Q6}(2) + \beta_{11(1)} Assigned\_j\,(1) + \varepsilon$$

$$ln\ ln\left[\frac{Enroll}{Not\ Enroll}\right] = 2.246^{*} - 3.086^{***} - 3.295^{***} + 1.668^{**}$$

Round 3:

$$ln\ ln\left[\frac{Enroll}{Not\ Enroll}\right] = \beta_{4(1)}\ Ambition\ (1) + \beta_7\ R\_Q4\ (2) - \beta_{9\,(1)}R_{Q6}(1) - \beta_{9(2)}R_{Q6}(2) + \beta_{10}\ Awareness + \varepsilon$$

$$ln\ ln\left[\frac{Enroll}{Not\ Enroll}\right] = 2.250^{*} + 1.502^{**} - 3.376^{***} - 2.397^{***} + 0.805^{*}$$

Round 4:

$$ln\ ln\left[\frac{Enroll}{Not\ Enroll}\right] = \beta_{4(1)}\ Ambition\ (1) + \beta_{4(3)}Ambition\ (3) - \beta_{9\,(1)}R_{Q6}(1) + \varepsilon$$

$$ln\ ln\left[\frac{Enroll}{Not\ Enroll}\right] = 3.111^{***} + 0.988^{*} - 2.328^{***}$$

According to the results given at all four rounds, there were two common significances among the responses given. Those are $Ambition\ (1)$ and $R_{Q6}(1)$ given in all four models. According to the magnitude and the sign of estimated coefficients for $Ambition\ (1)$, the respondents who assumed that their ambition is low than the average compared to the others generate a significant positive impact towards the enrollment in alternative activities when compared to the respondents who assumed that their ambition is the worst and the lowest. Based on these observations, it seems likely that people are motivated to behave in a helpful and cooperative manner based on their personal preferences. This motivation appears to be stronger than the influence of societal expectations, which differs from the results of the study conducted by Kimbrough and Vostroknutov in 2016. Also, according to the magnitude and its sign of $R_{Q6}(1)$ provided that the individuals who do prefer to enroll in alternative activities once no taxes embedded are more likely impact the final decision to enroll in alternative activities when compared to the respondents who prefer in between the decision.

In addition to that, there are some other responses such as preferred occupation, assigned job, the respondent's concern in paying taxes for the officially assigned job, and the awareness of the shadow economy and significant at different BLMs across the four rounds. Accordingly, this analysis can outline the nature of impact from the selected responses towards the decision to enroll in alternative activities and its impact and characteristics on architect the shadow economy throughout the choices made by respondents. Therefore, we are making a valuable contribution to the existing body of knowledge regarding the social entrepreneurial intentions of the youth in Sri Lanka and the role of pro-sociality and internal beliefs in decision-making within the context of socio-economic challenges. We emphasize the significance of conducting thorough investigations into the intrinsic motivations and underlying reasons for the motivational crowding out effects. This approach complements the existing research interests (Athayde, 2009; Kourilsky and Walstad, 1998; Lin et al., 2023) and allows us to understand how and why young individuals choose to pursue self-employment in social ventures.

Further, our results suggest that prospective employees representing the younger generation with potential to be social entrepreneurs, are more likely to make

choices that benefit themselves, rather than others, when faced with difficult social and economic situations. However, those who opt to be self-employed expressed the highest prosocial motivation, indicating a strong desire to contribute to society.

Implications and Conclusions

Upon conducting a descriptive analysis of the experimental data, two important outcomes were observed. The first outcome revealed that respondents' satisfaction with their assigned occupation decreased due to the pressure created by the dynamics in their job characteristics. This could be attributed to the fact that the mismatch in job characteristics were challenging and demanding, resulting in increased stress levels among the respondents. The second outcome was that respondents who were underemployed and driven by income were more likely to engage in the shadow economy. This is concerning, as it suggests that individuals who are unable to secure stable employment tend to resort to anti-social choices as a means of survival.

Both outcomes are concerning because they suggest that new employees may be more likely to make choices that benefit themselves, rather than others, when faced with difficult social and economic situations. Further, the analysis using the Binary Logistic Model shows that the respondents who believed that their ambition was lower than the average compared to others were more likely to enroll in alternative activities. It is crucial to consider these factors carefully in our educational policy, especially during times of crisis. The average citizen faces multifaceted challenges, particularly during times of crisis, and it is important to motivate and educate Sri Lankan youth to expand and express their social enterprise intentions, through naturing prosocial motives and practices. This requires strong curricula which could influence the behaviour and morality of undergraduates. Definitely, this will be a clash between rationality and morality of youth, who wish to be social entrepreneurs in future, yet we expect a win for the morality. This will not only help to reduce the engagement in anti-social economic activities such as the incidence of shadow economy but also create a more inclusive and sustainable economic system that benefits all.

The topic at hand is the available options for public policy. In this regard, an important finding has emerged from the Binary Logistic Model that can provide valuable insight into economic policy at the border. The results suggest that individuals who engage in alternative activities tend to participate in economic activities that are not officially taxed. Furthermore, the path analysis reveals that the most significant indicator of the shadow economy is a respondent's willingness to participate in alternative activities, particularly when there are no taxes to pay. These findings highlight the importance of addressing underemployment to reduce participation in the shadow economy.

It is recommended to consider income-driven underemployment carefully, as it can help reduce participation in the shadow economy. Additionally, it is suggested to introduce progressive tax policies instead of regressive ones to discourage individuals from engaging in shadow economic activities. Regressive tax schemes can create adverse incentives and widen the gap between an employee's expenses and income, ultimately leading individuals to make antisocial choices instead of prosocial ones. On the other hand, progressive taxes

target the proportion of income received by employees and discourage unnecessary participation in alternative activities. This underscores the importance of creating a comfortable environment for nascent employees by enriching their moral education and adjusting aggregate economic policies such as tax policies. If we want to promote social entrepreneurial intention among the youth, it is essential to adjust our economic policies accordingly.

After conducting a thorough analysis of the outcome matrix, the results show that the majority of respondents from the sample were motivated by private gains rather than expressing interest in societal gains. This suggests that individuals prioritize personal benefits over the well-being of the community. However, there is hope to be found in the experiment as the self-employed cluster emerged as the occupational cluster that earned the highest score in all three rounds. The findings indicate that respondents who are assigned to the self-employed cluster have the lowest intention to enroll in alternative activities available, which is a positive development for promoting social enterprise intention. The data shows that those who opt to be self-employed expressed the highest prosocial motivation. This is promising as it suggests that people who are preferred to be self-employed in the sample have a strong desire to contribute to society.

Therefore, in overall, results are concerning because they suggest that prospective employees may be more likely to make choices that benefit themselves, rather than others, when faced with difficult social and economic situations. It's important to take these findings into account when creating educational policies and adjusting economic policies, such as tax policies. We need to encourage and educate young people in Sri Lanka to develop and express their desire to create positive social change, by promoting pro-social values and behaviors.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

D. I. J. Samaranayake and A. Mithursan are the Lab experimenters, primarily involved in experiment methodologies, data collection, analysis and draft the manuscript. S. Maheswaran is the literature reviewer and co-writer, focusing on literature, and finalizing the manuscript with significant changes.

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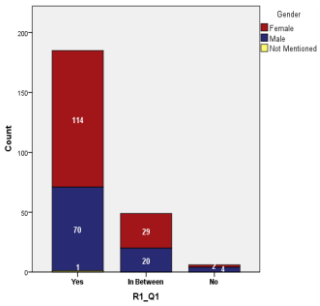
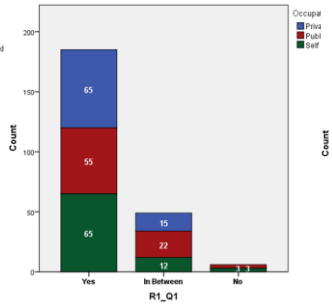
Appendixes





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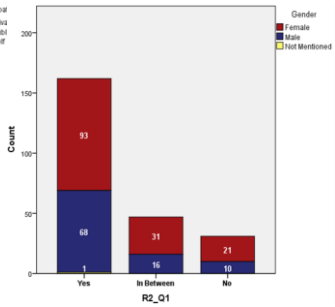

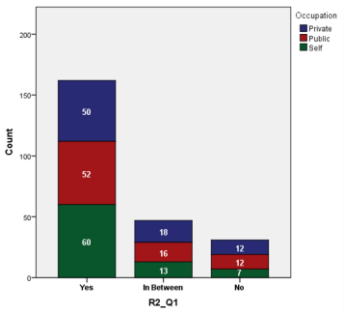

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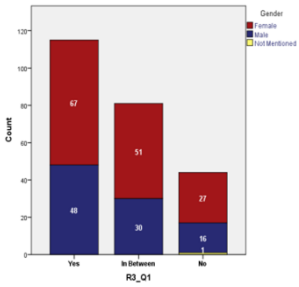

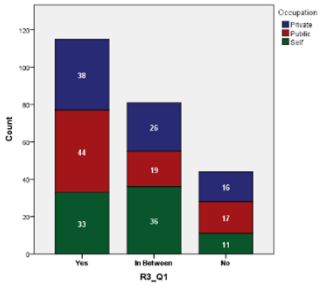

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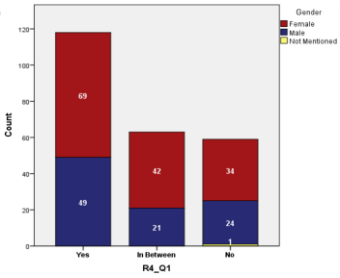
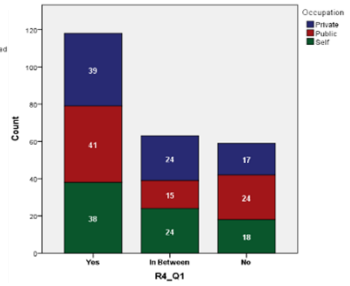
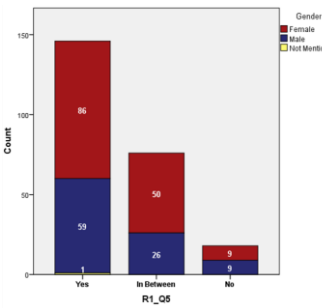
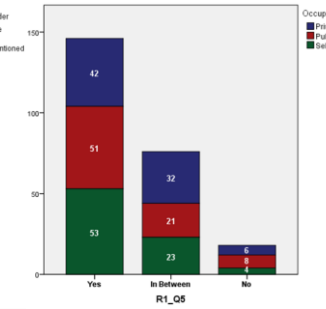




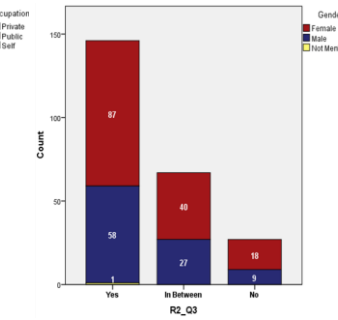
Round 4

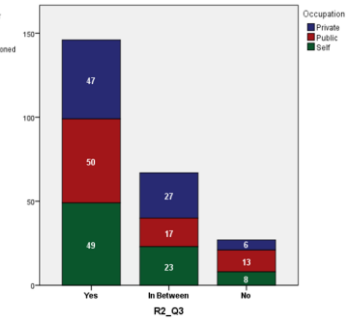
Appendix I. Satisfaction of the Respondents on the Occupations *(Source: The authors)*



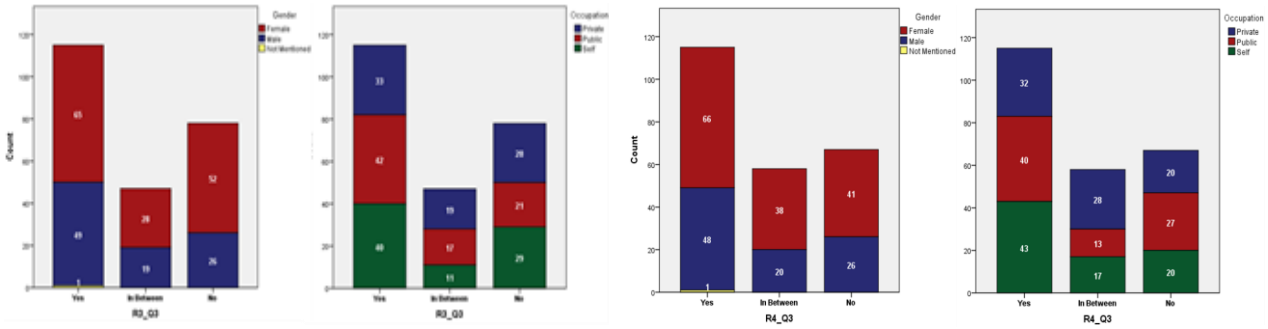


Round 1



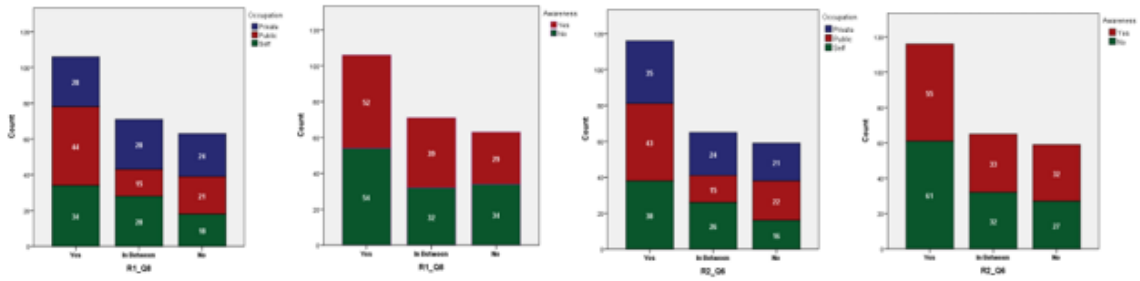


Round 2

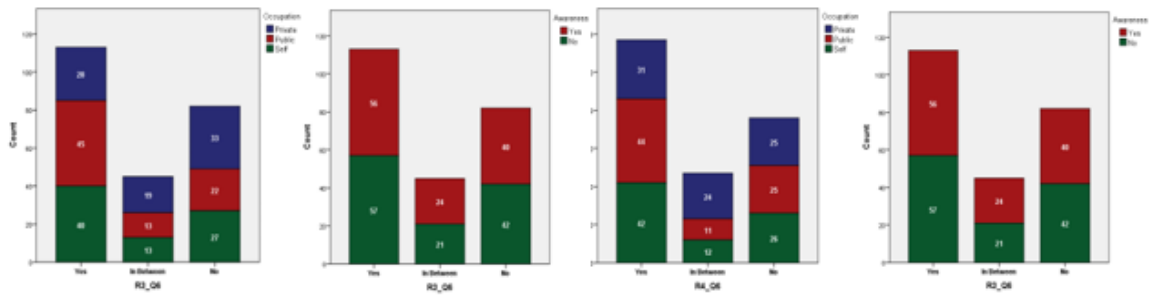


Round 3 Round 4

Appendix II. Respondents' Willingness to Pay Tax on the Official Job *(Source: The authors)*



Round 1 Round 2



Round 3 Round 4

Appendix IV. Respondents' Willingness to Pay Tax for Alt. Activities *(Source: The authors)*

The Variable	Description	Type of Data	No. of Categories	Round
Gender	Whether Male, Female or Not Mentioned	Nominal	3	Profile
Outfit	The outfit preference of the respondent	Ordinal	4	Profile
Model	The task preference of the respondents at the working place.	Nominal	4	Profile
Ambition	The ambition of the respondents in average when compared to others.	Ordinal	4	Profile
Occupation	The preferred occupation.	Nominal	3	Profile
R_Q1(R1_Q 1)	The satisfactory status of the respondent on the job.	Ordinal	3	1
R_Q2(R1_Q 3)	The satisfactory status of the respondent on the income.	Ordinal	3	1
R_Q3 (R2,3,4_Q1)	Whether the respondent prefer stay in the job or not.	Ordinal	3	2,3,4
R_Q4(R1_Q 5/R2,3,4 Q3)	Respondents' willingness to pay taxes embed to their official job.	Ordinal	3	1,2,3,4
R_Q5(R1_Q 8/R2,3,4_Q6)	Respondents' willingness to pay taxes for alternative activities.	Ordinal	3	1,2,3,4
R_Q6(R1_Q 9/R2,3,4_Q7)	Respondents' willingness to engage in alternative activities once no taxes to pay.	Ordinal	3	1,2,3,4
Awareness	Whether the respondent aware of shadow economy or not.	Nominal	2	Cluster
Assigned_j	The hypothetical job provided for the respondent.	Nominal	3	Cluster

Appendix IV. Description of the causal variables used in the BLM *(Source: The authors)*