

Relationship between propensity to social innovation and striving for gender equality: sample study based on the example of India

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Abstract. Social innovation is the search for new and conclusive solutions to social problems aimed at improving the welfare of individuals and communities. Studies on social innovation and its implementation, especially with regard to the importance of gender equality and the impact of the gendered perspective on the implementation of such social innovations, are still scarce. Based on Gabriel Tarde's social theory, our study shows the urgency of addressing pressing social problems. The research objective is to statistically assess the implementation of social innovation in India, specifically from a gendered perspective. 400 responses were collected in August and September 2021 through a structured survey questionnaire which used simple random sampling of probability sampling method. The responses came from the northern states of India (especially Punjab, Delhi, Rajasthan, and Uttar Pradesh). The data analysis was done by means of statistical tests (using the SPSS 25 program) after validating the concepts, and was based on the results of frequency and percentage distribution of responses, one-sample *t*-test, ANOVA and correlation-regression tests. The study concludes that gender plays an important role in the implementation of social innovation in India, and gender equality must be incorporated into every facet of social innovation to reach its full potential and benefit everyone.

Keywords: social innovation, social innovation implementation, gender, gender equality, India

JEL: A14, C24, J16

Związek między tendencjami w zakresie innowacji społecznych i dążeniem do równości płci – badanie reprezentacyjne w Indiach

Streszczenie. Innowacje społeczne to poszukiwanie rozwiązań dla problemów społecznych, a ich celem jest wzrost dobrobytu zarówno jednostek, jak i społeczności. Badania na temat innowacji społecznych i ich wdrażania, zwłaszcza w odniesieniu do znaczenia równości płci dla postępu społecznego, są jednak nieliczne. Badanie omawiane w niniejszym artykule opiera się na teorii społecznej Gabriela Tarde'a i ujawnia potrzebę pilnego rozwiązania palących proble-

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mów społecznych. Jego celem jest statystyczna ocena wdrażania innowacji społecznych w Indiach, uwzględniająca perspektywę równości płci. Dane uzyskano od 400 uczestników badania ankietowego, które przeprowadzono w sierpniu i we wrześniu 2021 r. w północnych Indiach (głównie w stanach Pendżab, Radżastan i Uttar Pradesh oraz w Delhi) z zastosowaniem techniki losowania prostego z probabilistycznym doбором próby. Analizy danych dokonano za pomocą testów statystycznych (z wykorzystaniem programu SPSS 25) po walidacji koncepcji i oparto na wynikach częstości i procentowego rozkładu odpowiedzi, jednopróbkowego testu t i jednokierunkowego testu ANOVA oraz testów korelacji i regresji. Z badania wynika, że zagadnienia dotyczące płci odgrywają ważną rolę we wdrażaniu innowacji społecznych. Aby potencjał koncepcji innowacyjnych został w pełni wykorzystany i aby ich realizacja przyniosła wszystkim korzyści, każdy aspekt innowacji społecznych powinien uwzględniać równość płci.

Słowa kluczowe: innowacje społeczne, wdrażanie innowacji społecznych, płeć, równość płci, Indie

1. Introduction

The 2030 Agenda for Sustainable Development of the United Nations aspires to 'leave no one behind' in terms of development, and strives to reach 'those who are farthest behind first' (Fukuda-Parr & Smaavik Hegstad, 2018). However, despite several global policies promising to improve the Sustainable Development Goal of gender equity, women are still at risk of being left behind in many places around the world (United Nations Sustainable Development Group, 2021). Goal 5 of the SDGs (UN Sustainable Development Goals) aims to achieve gender equality and empower all women and girls (United Nations, 2021), but inadequate headway and systemic flaws like legal discrimination, unjust societal norms, decision-making on sexual and reproductive matters, and inadequate political involvement are at the core of gender inequality (Office of the United Nations High Commissioner for Human Rights, 2021). According to the Organization for Economic Co-operation and Development (OECD), even though women comprise over 50 percent of the prospective skill set and talent across the world, as a cohort they have been marginalised, and their contributions go in large part unrecognised (OECD, 2018). There is a need for transformative shifts, integrated approaches, and innovative solutions to reach parity for all.

Disrupting 'business as usual' with innovations in policy, management, finance, research, and technology is widely acknowledged as a method to expedite the attainment of the SDGs for all (United Nations, 2021). Social innovations can disrupt trends and improve knowledge, access and the availability of possibilities, ranging from mobile banking enterprises that enable women's entrepreneurship to e-learning platforms that bring education to everyone. Social innovations are a viable strategy to solve the issue of gender equity. They are society-based processes that reconfigure attitudes, network and governance systems to address social demands that legislations or market mechanisms have failed to fulfil (United

Nations, 2010). Social innovations have been classified as incremental, institutional, or disruptive, depending on their possible effects. Incremental innovations seek to change institutional market or policy structures, and disruptive innovations seek to change existing cognitive frames (Sarkki et al., 2021). Social innovation offers an exciting path for seizing the moment and achieving the goals related to gender equality – goals that previously proved difficult to achieve. At the most basic level, social innovations may help women by increasing their health, nutrition, income, and life expectancy (Malhotra et al., 2009).

Social innovations moreover have the potential to empower women by providing them with the liberty and resources they require to make choices, build confidence, and act for their own benefit (Huis et al., 2017). The idea of women empowerment is about the enhancement of women's capacity to make such choices and decisions that have been traditionally denied to them (Kabeer, 1999). The process of the empowerment involves making changes and advancing the life of women at not only an individual or societal, but also a global level. It is in this context that the idea of the implementation of social innovation is linked with the process of empowering women, i.e. by bringing in the desired changes in their lives through different forms of social innovation.

Despite their vast potential, it is also becoming increasingly evident that technology and innovation may not be enough to create long-term changes (Cirera & Maloney, 2017). There are even concerns that they might cause new, unanticipated issues like prejudice and misuse, posing significant human rights challenges for the twenty-first century, and a worry that they do not benefit everyone equally (United Nations, 2014).

Additionally, gender parity is especially difficult to achieve in emerging economies like India, where the patriarchy is still predominant, restricting women's rights and jeopardising their well-being (Javed & Chattu, 2021). Innovation and altering gender roles are both recognised to be the catalyst to change. However, the link between social innovation and women's empowerment, especially in the context of developing countries like India, is little understood. This study is important in this context, as it aims to statistically assess the implementation of social innovation in India specifically from a gendered perspective. It looks at this problem from two angles, namely: do social innovations impact women and girls, and if yes, in what way? And also: how might mindful involvement of women and girls improve social innovations?

A structured survey was administered to find out social innovation tendencies, as they play a critical role in social innovation processes. This study tries to answer the research questions by establishing a clear link between social innovation and empowerment. More specifically, it assesses the impact of social innovation on

women's empowerment by evaluating powerful innovations that changed women's lives in terms of technology use, social norm change, and economic resilience as well as by highlighting the fundamental enablers that have been critical for innovations to empower women and transform gender relations.

This study has important implications for policymakers to work towards the resilient implementation of upcoming social innovations in India. Existing studies have proved that several social innovations and new technologies have challenged social norms and brought about economic resilience for women (Malhotra et al., 2009). Our work is the first of its kind to examine how technological advancements have enhanced women's well-being, empowered them, and advanced gender equality. It also addresses one of the critical problems that needs an adaptive approach, as it taps into the power of technology while minimising real risks and negative impacts from its rapid scaling.

2. Theoretical background

To get a greater theoretical understanding of the association between social inventions and social change, one can consult Tarde et al. (1903), where social change from the bottom-up rather than the top-down approach is explained. Tarde's input towards the sociology of innovation is helpful in understanding the idea of social innovation as a social process of inevitable changes that creates tendencies at individual level. According to Tarde's theory, new social action practices are first found and produced at a local level, and then replicated and propagated by specific agents or even network of agents, who change in the process. Rather than always inventing new individual ideas, it appears that social practice might be used to creatively reconfigure the potentials of current inventions. Organisational, consumption and production practices, among other activities, become the major object of imitation. Thus, the imitation of social ideas or efforts leads to the formation of increasingly complicated and broadly acting social innovations.

Based on Tarde's theory, this study proposes that when social micro-units are given constitutive relevance in a society's dynamics, it becomes possible to depict social change as a non-deterministic reality rather than just a trend, in the sense of a shift from one state to another. Therefore, social tendencies and the sentiments of aiding mediators, especially the government, leaders and civil society, play a crucial role in hastening the innovation process to empower the underrepresented and exploited sections of a society (Saska & Baruah, 2016). The key to understanding social innovations is to look at those of them which spread through a society as a result of imitation practices and cause social change (Schröder & Krüger, 2019). Therefore, a change in the social fabric of a society and its institutions will help empower women.

2.1. Investigating social innovation

Innovations appear to be an innate sign of progress, development, creativity, and a sense of when the right time to realise ideas is. Over time, the term ‘innovation’ evolved: the expression was first used in the context of technological inventions because it dates back to the time of industrialisation. Later, it has come to refer to a larger schema of entrepreneurial pursuit based on Joseph A. Schumpeter’s theory of economic cycles (Schumpeter & Backhaus, 2003). Economic innovation is the primary focus in times of economic competition in a globalised world.

Innovation refers then to processes by which organisations adapt or change in response to emerging contextual factors in an organisation’s external environment and internal demands. Among such contextual factors there are: the economy, the political system, cultural norms, and ideological perspectives (Ife, 1995; Mulroy, 2004). All these factors provide opportunities to consider the implementation of new and unique solutions to the existing problems and situations (Jaskyte & Lee, 2006). There are numerous types of innovation, many of which serve no purpose of social change. Some business innovations seek to increase profits, while others seek to promote social good (Borzaga & Bodini, 2014).

Indication for the social factor in the development of technology can be unearthed beginning in the mid-1980s. The construction of innovation, irrespective of the type, is always socially and culturally embedded. According to Bund et al. (2015), the idea that particular social innovations are embedded in a specific society and culture is especially pronounced in the very concept of a social innovation, defined in terms of modifications that occur in the social and economic environment (because of the innovation). When the required social embedding of all innovations is emphasised, there is a risk that the distinction between traditional technological innovation, business innovation and social innovation is lost.

One of the shared perceptions of literature in this category is that innovations can be used to address societal challenges, profit groups that are struggling in a society, and improve individual well-being. As a result, the overarching assumption of this understanding is that social innovations contribute to a better quality of life. ‘A better human life’ is based on either needs or values. Personal needs include, for example, sufficient food, adequate health, and material shelter, whereas the values seen as essential components of a good human life are equality and justice.

Nonetheless, in recent decades, there has been a shift in society’s consciousness towards social responsibility and sensibility, as evidenced by buzzwords such as ‘changing demographics’, ‘standard of living’ and ‘environmental sustainability’. A purely technical understanding of innovation can be criticised considering this terminological shift (Howaldt & Schwarz, 2010).

2.2. Social innovation and gender

In recent years, numerous associations and institutions have recognised the importance of social and economic progress of women. Governments, non-profit organisations, and the private sector all over the world have embraced gender equality as a socially valuable policy goal, and a record amount of investment has been done to endorse this perspective (Chant & Sweetman, 2012).

Even though social innovation and gender equality are both recognised as important for advancing socio-economic development, there is little conversation between the two fields. In the realm of social innovation, gender is not paid adequate attention. Men and women face diverse economic, cultural, and institutional barriers as demonstrated by the available literature on social innovation. Our study, on the other hand, aims to statistically assess the implementation of social innovation in India from a gendered perspective, i.e. to check to what extent men and women benefit from the achievement and attainment of social innovation.

In this context, Ranga and Etzkowitz (2010) assert that ‘gender and innovation’ is a relatively new area of investigation in the field of innovation research. According to Lindberg et al. (2015), ‘gender and innovation’ has emerged as a viable sub-field of innovation studies in the last decade, drawing on a variety of disciplines.

Generally, in the contemporary research of this kind – on innovation from a gendered perspective – the perception of innovators as well as innovation itself have been based on conventional gender notions which were built upon patriarchal ideologies (Andersson et al., 2012). According to Ljunggren et al. (2010), most of the studies on the issue of innovation, such as technology or science-based fields, is focused on the private sector and dominated by males. The innovation research has limited studies on women-dominated organisations or industries, e.g. services and social sectors.

Innovation analysis also evaluates success using male-dominated industry norms. According to Ljunggren et al. (2010), patents taken as a measure of innovation generally exclude the female contributions to the field of innovation. The focus on male-dominated enterprises and initiatives recognises men’s accomplishments as something indispensable, whereas women’s efforts towards innovation are undermined and frequently go unnoticed (Shankar Singh, 2018). So as we can see, the field of innovation is not gender-neutral, and the dearth of gender-based assessment in such spheres results in a male-dominated field (Nählinder et al., 2010).

By the same token, due to the strong affiliation between innovation and male dominance, females are represented as uneducated and incompetent of progressing

in innovation activities (Ahl, 2004). A study performed by Foss et al. (2013) observes that women spur innovation at the same rate as men, but their ideas are executed at a lower rate. According to the authors, women are likely to obtain less support while attempting to bring their innovative ideas to a successful conclusion, which shows that there are issues with the system rather than with women's capabilities. However, Wikhamn and Knights (2013) observe that plainly engaging more females in innovation activities is inadequate, because organisations have structural as well as post-structural situations which impede the endeavours for gender (as well as other) equalities.

Gender is one of the most important dimensions of inequality. Gender issues, however, have been largely ignored in the social innovation discussion, with only some scholars deliberating on how social innovation can help men and women achieve greater equality (André, 2013; Lindberg, 2016; Lindberg et al., 2015). To fill this research gap, our study investigates the gendered identity as a source of economic marginalisation, as proven by women's exclusion from the labour market, and how social innovations can counteract this practice. Marginalisation is a positional hindrance caused by the 'social method of transforming individual, social, or environmental attributes into real or impending disadvantage aspects' (von Jacobi et al., 2017, p. 5).

The idea of marginalisation depicts the position of lower negotiating power in the labour market, likely to result in slow or no career advancement which, in turn, ultimately hampers an individual's economic growth and independence. The low levels of female integration into the labour force creates financial insecurity and increases gaps between the demand and supply of the resources, which can lead to women's social exclusion (Kasearu et al., 2016).

The need of the hour is therefore to make use of social innovation and related processes to change and improve the lives of marginalised women and to enable and empower them to reach their full potential (Piwowarski et al., 2018). The idea of women empowerment is rarely linked with social innovations, but both are critical to human progress. All the SDGs are founded on innovation and gender equality, both of which necessitate a thought and act which go beyond the existing boundaries and results in changing the status quo (Maestriperi, 2017).

The variety of innovations carried on by diverse segments and actors globally resulted in significant advantages for numerous women. In several instances, these innovations were life-changing events for them. However, it is also true that not all these innovations have been created with the intention of empowering women in mind (Saska-Crozier, 2016).

3. Research method

In order to meet the objective of the study, the concept of social innovation is adopted as a dependent variable, and gender as an independent variable. As asserted by Saska and Baruah (2016), social innovation as a process can be seen as unleashing desired changes and uplifting women in the society, and it would be a mistake to ignore the role of gender equality while implementing any form of social innovation.

This research was conducted in 2021 over the course of two months – August and September. A questionnaire survey invitation link was sent via email to respondents who were selected from universities in northern states of India, especially Punjab, Delhi, Rajasthan, and Uttar Pradesh, on a voluntary basis, through simple random sampling of the probability sampling method. The respondents were asked to declare to what degree they agreed/disagreed with the questionnaire statements. The questionnaire consisted of 24 statements, as listed below:

1. I am interested in knowing about social issues.
2. I try to improve the standard of human life.
3. I look for solutions to create political and social changes in the society.
4. I believe that the first step towards providing sustainable societal development is to make a change in people's mind.
5. I want to develop new training techniques to increase the innovative capacity of the community.
6. I would like to improve the quality of the community life by developing social services and new products.
7. I would like to use new technologies to solve problems and answer social needs.
8. I look for ways to increase social participation and cooperation in the society.
9. I create novel ideas that will generate social value and make the society more effective.
10. I believe that technological innovations are not sufficient to improve the living standard alone without social, human and organisational development.
11. I have a potential to make improvements in social arenas (education, health, environment, art, the economy, etc.).
12. I believe that social innovations have a great importance for creating long-term healthy economies.
13. I look for opportunities that will change social norms and rules.
14. I would like to be useful for the community, for which I do not expect any financial benefits.
15. I believe that problems in the society and appropriate solutions to them can change the system.

16. I continuously run for opportunities by pushing the limited sources at hand.
17. I feel responsibility to do something about social problems.
18. Making a difference in the society is more important for me than my individual success.
19. Sharing social problems with people (starting with the close environment) is a pleasure for me.
20. I take active roles in social formations such as non-profit organizations, foundations, politics, etc.
21. I prefer to make a social change creating a social value than an innovation in trade or financial value.
22. I rely on empathy and help people.
23. I believe that I am not capable of solving societal problems on my own.
24. I believe that counteracting social problems is not my job.

A total number of 428 responses were received from the survey, out of which 28 (7%) were disregarded (as some respondents did not answer the survey questions consistently). In total, 400 valid responses were selected as per Cohen (1992) and used as the final sample for this study. A homogenous construct was produced by a sample of senior university students who represented the society.

The survey provided thorough instructions to the participants to make the study's goal and scope as well as the questionnaire items clear. University students are regarded as the forerunners of original thinking and prospective social innovators; therefore, senior university students from various socio-economic, geographical, and cultural backgrounds were invited to participate (Bulut et al., 2013). The respondent could access the survey page by clicking the link, and their responses were anonymous.

This study adopted the scale developed by Bulut et al. (2013) for the survey after a thorough assessment of the literature. The aim of the survey was to gain an understanding of the perception of social innovation implementation and the resultant perspective from different genders. An attitude scale of 24 items was thus used and the survey form was divided into two sections: (1) demographic factors, and (2) Likert scale for social innovation. The 5-point Likert scale with the most common used format of 'strongly disagree, disagree, neither disagree nor agree, agree, strongly agree' was applied to assess to what extent the survey respondents agree or disagree with the questionnaire statements (Singh & Shankar Singh, 2020).

The responses to the survey questionnaire were analysed using the SPSS 25. They were additionally examined for reliability, to determine their acceptability for this study. A one-sample *t*-test, ANOVA, correlation, and regression tests were used to analyse the data (Shankar Singh, 2019; Shankar Singh et al., 2014).

4. Analysis and results

4.1. Demography frequency and percentage analysis

The demography frequency and percentage analysis takes into consideration the information regarding respondents' gender, age, educational background, income, occupation, level of experience in their respective fields and their caste background. This analysis yields the overall respondent composition of the sample.

Table 1. Demography frequency and percentage analysis of the participants for social innovation implementation

Specification	Parameter	Frequency	Percentage
Total		400	100.0
Gender	male	231	57.8
	female	169	42.3
Age	16–25	228	57.0
	26–35	91	22.8
	36–45	40	10.0
	46–55	23	5.8
	56 and over	18	4.5
Education background	secondary	5	1.3
	intermediate	42	10.5
	graduate	155	38.8
	postgraduate	118	29.5
	PhD	80	20.0
Income per month in INR ^a	10,000–20,999	69	17.3
	21,000–30,999	34	8.5
	31,000–40,999	50	12.5
	41,000–50,999	48	12.0
	above 51,000	199	49.8
Occupation	student	216	54.0
	government employee	42	10.5
	academic	57	14.2
	NGO	23	5.8
	others	62	15.5
Field experience level ^b	beginner	105	26.3
	learned	164	41.0
	experienced	74	18.5
	expert	57	14.2
Caste ^c	general	192	48.0
	OBC	125	31.3
	SC	42	10.5
	ST	41	10.3

a 1 INR=0.013 USD. b Refers to the experience of the respondents in their field/occupation. c Refers to each of the hereditary classes of the Indian society, distinguished by relative degrees of ritual purity or pollution and of social status. Here, the OBC refers to Other Backward Classes – a term used by the government of India to classify castes which are educationally or socially disadvantaged, SC refers to Scheduled Caste, whereas ST refers to Scheduled Tribe and both these groups are recognised by the Constitution of India as the most disadvantaged socio-economic groups. The 'general' category denote those people who are on average ahead of other Indian casts economically and socially.

Source: authors' work.

Table 1 displays the demographic details of the current study. Out of total 400 respondents, 57.8% were males and 42.3% females. The percentage share of males was higher than that of females because of the skewed sex ratio of the selected states for sample respondents (see Census of India website: <https://censusindia.gov.in/>). As the respondents were selected from universities, the largest group of them were aged 16–25. 38.8% of all the respondents had graduate degrees, and the monthly salary of 49.8% of them was over INR 51,000. Moreover, 41% considered themselves as learned in their respective fields. The caste categories refer to an ascribed status in the social hierarchy of the Indian society, where the general category denotes this part of the population whose members are on average at an advantaged position, socially and educationally. The highest percentage of respondents in this study sample, i.e. 48%, belonged to the general caste, as the proportion of the general caste in India's total educated population is higher than those of other castes (Shikha, 2017).

4.2. Items frequency and percentage analysis

A percentage frequency analysis yields information on the percentage of data collected for each piece of information or grouping of data points. It is an accurate way to express the relative frequency of survey responses and other data. Table 2 displays the analysis of the frequency and percentage of the 24 items of the survey questionnaire. Each of them was tested for five parameters (strongly disagree, disagree, neutral, agree and strongly agree) used to express respondents' opinion. The data analysis reveals that the highest percentage of respondents agreed or strongly agreed with the listed items (the highest observed percentage was 60%), which demonstrates that a large number of respondents who were aware of social innovations in their region agreed with the way their social implementation was being carried out. A relatively small number of respondents were neutral. Some of the respondents who were also aware of the implementation of social innovations in their region had a contradictory viewpoint and disagreed or strongly disagreed (the highest percentage observed was 42.5%) with the way it was affecting the population.

Table 2. Measurement scale items used for the analysis of responses

Item	Parameter	Frequency	Percentage
1	strongly disagree	2	0.5
	disagree	2	0.5
	neutral	22	5.5
	agree	170	42.5
	strongly agree	204	51.0

Table 2. Measurement scale items used for the analysis of responses (cont.)

Item	Parameter	Frequency	Percentage
2	strongly disagree	2	0.5
	disagree	2	0.5
	neutral	21	5.3
	agree	171	42.8
	strongly agree	204	51.0
3	strongly disagree	2	0.5
	disagree	4	1.0
	neutral	76	19.0
	agree	161	40.3
	strongly agree	157	39.3
4	strongly disagree	3	0.8
	disagree	3	0.8
	neutral	14	3.5
	agree	178	44.5
	strongly agree	202	50.5
5	strongly disagree	1	0.3
	disagree	11	2.8
	neutral	64	16.0
	agree	218	54.5
	strongly agree	106	26.5
6	strongly disagree	2	0.5
	disagree	2	0.5
	neutral	64	16.0
	agree	240	60.0
	strongly agree	92	23.0
7	strongly disagree	1	0.3
	disagree	2	0.5
	neutral	76	19.0
	agree	228	57.0
	strongly agree	93	23.3
8	strongly disagree	1	0.3
	disagree	4	1.0
	neutral	48	12.0
	agree	217	54.3
	strongly agree	130	32.5
9	strongly disagree	2	0.5
	disagree	14	3.5
	neutral	130	32.5
	agree	147	36.8
	strongly agree	107	26.8
10	strongly disagree	9	2.3
	disagree	11	2.8
	neutral	76	19.0
	agree	213	53.3
	strongly agree	91	22.8
11	strongly disagree	10	2.5
	disagree	9	2.3
	neutral	59	14.8
	agree	160	40.0
	strongly agree	162	40.5

Table 2. Measurement scale items used for the analysis of responses (cont.)

Item	Parameter	Frequency	Percentage
12	strongly disagree	2	0.5
	disagree	1	0.3
	neutral	27	6.8
	agree	239	59.8
	strongly agree	131	32.8
13	strongly disagree	3	0.8
	disagree	5	1.3
	neutral	63	15.8
	agree	219	54.8
	strongly agree	110	27.5
14	strongly disagree	11	2.8
	disagree	18	4.5
	neutral	70	17.5
	agree	178	44.5
	strongly agree	123	30.8
15	strongly disagree	2	0.5
	disagree	5	1.3
	neutral	114	28.5
	agree	214	53.5
	strongly agree	65	16.3
16	strongly disagree	2	0.5
	disagree	9	2.3
	neutral	104	26.0
	agree	207	51.7
	strongly agree	78	19.5
17	strongly disagree	1	0.3
	disagree	4	1.0
	neutral	46	11.5
	agree	210	52.5
	strongly agree	139	34.8
18	strongly disagree	13	3.3
	disagree	32	8.0
	neutral	65	16.3
	agree	213	53.3
	strongly agree	77	19.3
19	strongly disagree	3	0.8
	disagree	11	2.8
	neutral	80	20.0
	agree	236	59.0
	strongly agree	70	17.5
20	strongly disagree	10	2.5
	disagree	17	4.3
	neutral	150	37.5
	agree	134	33.5
	strongly agree	89	22.3
21	strongly disagree	8	2.0
	disagree	18	4.5
	neutral	104	26.0
	agree	188	47.0
	strongly agree	82	20.5

Table 2. Measurement scale items used for the analysis of responses (cont.)

Item	Parameter	Frequency	Percentage
22	strongly disagree	3	0.8
	disagree	9	2.3
	neutral	74	18.2
	agree	193	48.3
	strongly agree	121	30.3
23	strongly disagree	23	5.8
	disagree	135	33.8
	neutral	98	24.5
	agree	97	24.3
	strongly agree	47	11.8
24	strongly disagree	98	24.5
	disagree	170	42.5
	neutral	75	18.8
	agree	37	9.3
	strongly agree	20	5.0

Source: authors' work.

4.3. One-sample *t*-test for items

One-sample *t*-test is an inferential statistic that is used to determine whether an unknown population mean is different from a specific value. It is often used when data sets have a normal distribution and unknown variances (Azad & Shankar Singh, 2019). The normal distribution of data in this study makes it suitable to apply a *t*-test analysis based on a 5-point Likert scale (de Winter & Dodou, 2010). It allows the assumption that applies to the population of this study to be tested. The following analysis (Table 3) tested 24 items with the test value of 4 and the maximum responses as 'agree' or 'strongly agree'. Table 3 shows that except for two items, all the other items are significant with the value of 0.000. Therefore, it can be stated that these items can be tested for the next level of the analysis, i.e. for the assessment of the gendered perspective on social innovation (Hamadamin & Shankar Singh, 2019).

Table 3. One-sample *t*-test analysis of the responses

Item	Test value = 4		
	<i>t</i>	<i>df</i>	Sig. (2-tailed)
1	12.874	399	0.000
2	13.017	399	0.000
3	4.184	399	0.000
4	12.872	399	0.000
5	1.139	399	0.255
6	1.336	399	0.182
7	0.733	399	0.464

Table 3. One-sample t-test analysis of the responses (cont.)

Item	Test value = 4		
	<i>t</i>	<i>df</i>	Sig. (2-tailed)
8	5.139	399	0.000
9	-3.271	399	0.001
10	-1.997	399	0.046
11	2.982	399	0.003
12	7.653	399	0.000
13	1.894	399	0.059
14	-0.838	399	0.402
15	-4.518	399	0.000
16	-3.295	399	0.001
17	5.892	399	0.000
18	-4.749	399	0.000
19	-2.781	399	0.006
20	-6.599	399	0.000
21	-4.628	399	0.000
22	1.246	399	0.213
23	-17.218	399	0.000
24	-31.735	399	0.000

Source: authors' work.

4.4. One-way ANOVA test

The One-way ANOVA is a parametric test ('analysis of variance') that compares the means of two or more independent variables to see if there is a statistical proof of significant diversification in the corresponding sample of the population (Surarchith & Shankar Singh, 2013). Table 4 presents the analysis of variance in opinions based on the gender of respondents. It is noticeable from the analysis that amongst 24 items, only five have a significant value higher than 0.5 (Sahin & Shankar Singh, 2017). Therefore, only these 5 items have differences in opinions based on respondents' gender. The one-way ANOVA test is applied to measure the variance in opinion based on gender which is the main theme of the study (Shankar Singh & Mishra, 2014). The *t*-test and ANOVA are used for two different purposes, i.e. the *t*-test is testing the acceptance of the items and ANOVA is testing the variance of opinion based on gender (Shankar Singh & Mishra, 2015).

Table 4. One-way ANOVA analysis of the responses

Item	Parameter	Sum of squares	<i>df</i>	Mean square	<i>F</i>	Sig.
1	between groups	4.378	1	4.378	10.033	0.002
	within groups	173.662	398	0.436		
	total	178.040	399	.		
2	between groups	0.671	1	0.671	1.522	0.218
	within groups	175.506	398	0.441		
	total	176.177	399	.		

Table 4. One-way ANOVA analysis of the responses (cont.)

Item	Parameter	Sum of squares	df	Mean square	F	Sig.
3	between groups	7.091	1	7.091	11.349	0.001
	within groups	248.686	398	0.625		
	total	255.777	399	.		
4	between groups	1.044	1	1.044	2.319	0.129
	within groups	179.134	398	0.450		
	total	180.178	399	.		
5	between groups	5.992	1	5.992	11.026	0.001
	within groups	216.286	398	0.543		
	total	222.278	399	.		
6	between groups	1.897	1	1.897	4.210	0.041
	within groups	179.293	398	0.450		
	total	181.190	399	.		
7	between groups	15.765	1	15.765	36.911	0.000
	within groups	169.985	398	0.427		
	total	185.750	399	.		
8	between groups	5.419	1	5.419	11.660	0.001
	within groups	184.978	398	0.465		
	total	190.397	399	.		
9	between groups	19.762	1	19.762	27.782	0.000
	within groups	283.115	398	0.711		
	total	302.877	399	.		
10	between groups	0.597	1	0.597	0.824	0.365
	within groups	288.513	398	0.725		
	total	289.110	399	.		
11	between groups	12.011	1	12.011	14.599	0.000
	within groups	327.427	398	0.823		
	total	339.437	399	.		
12	between groups	4.331	1	4.331	11.294	0.001
	within groups	152.629	398	0.383		
	total	156.960	399	.		
13	between groups	0.799	1	0.799	1.464	0.227
	within groups	217.241	398	0.546		
	total	218.040	399	.		
14	between groups	6.020	1	6.020	6.705	0.010
	within groups	357.340	398	0.898		
	total	363.360	399	.		
15	between groups	11.525	1	11.525	23.532	0.000
	within groups	194.913	398	0.490		
	total	206.438	399	.		
16	between groups	13.932	1	13.932	25.693	0.000
	within groups	215.818	398	0.542		
	total	229.750	399	.		
17	between groups	6.739	1	6.739	14.384	0.000
	within groups	186.451	398	0.468		
	total	193.190	399	.		
18	between groups	10.858	1	10.858	12.158	0.001
	within groups	355.440	398	0.893		
	total	366.298	399	.		
19	between groups	5.269	1	5.269	9.914	0.002
	within groups	211.528	398	0.531		
	total	216.798	399	.		

Table 4. One-way ANOVA analysis of the responses (cont.)

Item	Parameter	Sum of squares	df	Mean square	F	Sig.
20	between groups	16.548	1	16.548	19.292	0.000
	within groups	341.390	398	0.858		
	total	357.938	399	.		
21	between groups	12.093	1	12.093	15.985	0.000
	within groups	301.097	398	0.757		
	total	313.190	399	.		
22	between groups	7.168	1	7.168	11.420	0.001
	within groups	249.832	398	0.628		
	total	257.000	399	.		
23	between groups	2.073	1	2.073	1.619	0.204
	within groups	509.677	398	1.281		
	total	511.750	399	.		
24	between groups	4.913	1	4.913	4.203	0.041
	within groups	465.284	398	1.169		
	total	470.197	399	.		

Source: authors' work.

4.5. Correlation-regression analysis

A correlation coefficient measures the degree of association (analysed in Table 5) which shows linear association and is a type of statistical technique for calculating associations between independent variables (gender, age, education background, income, occupation, field experience and caste) and a dependent variable, namely the social innovation (Shankar Singh & Mishra, 2015). Therefore, it evaluates the strength of the relationship between the variables of this study to forecast their future relationship. It is evident from Table 5 that out of seven independent variables, two of them have significance values (i.e. gender with 0.000 and field experience with 0.006). The other independent variables (age, education background, income, occupation and caste) are not significant. Out of the two significant independent variables, the impact and effect of gender is higher than that of field experience. The *p*-value is smaller than the alpha level (0.05), and therefore it can be stated that it is gender that reliably predicts the social innovation in the context of this study (Surarchith & Shankar Singh, 2013). The value of *R* is 0.261, which shows that there is a 26.1%-relationship between these two variables, and the level of significance is 0.00, which is acceptable as per the study objectives. The effect of independent variable (gender) on the dependent variable is 0.253 (Table 5), which means that there is a 25.3-percent effect.

Table 5. Regression analysis of the dependent and independent variables

Dependent variable	Independent variable	<i>B</i>	<i>Beta (R)</i>	Sig.
Social innovation	gender	0.253	0.261	0.000 ^a
	age	0.008	0.018	0.718
	education background	0.001	0.001	0.979
	income	0.014	0.044	0.376
	occupation	0.011	0.036	0.474
	field experience level	0.066	0.136	0.006 ^a
	caste	0.035	0.072	0.150

a Significant at the 0.05 level.

Source: authors' work.

5. Discussion

The performed data analysis revealed individual tendencies regarding the implementation of social innovation in India. The findings of this study demonstrate that most of the items have high significance (the *p*-value for them amounts to 0.000), which in turn shows that responses are exceedingly significant, and the respondents' opinions are close to each other. One-way ANOVA was also performed with seven demographic variables (gender, age, educational background, income, occupation, level of experience in respondents' respective fields, caste backgrounds) to analyse the variance of opinions. The results indicate that amongst 24 items, the implementation of social innovation for gender equality in India differs from other demographic variables.

If we agree with Tarde et al. (1903) that any invention is socially entrenched in a dense network of imitation, then social innovations are first and foremost ensemble performances that necessitate interaction among many individuals (Piwowarski et al., 2019). Above all, they require the wisdom of the masses. People involved in social innovations who break away from the established norms and ideologies have the capacity to establish an unbreakable association between the growth and prosperity (Howaldt et al., 2015). The relationships between the self-referential social sectors of the economy, business, and society have been at the heart of a social theory-based concept of social innovation, as identified structures of integration and management are added to, augmented, and reorganised through facets such as self-organisation, multisectoral collaboration, systems, and different forms of production of knowledge (Niezen, 2014). Such integration processes involve and facilitate far-reaching innovative approaches that induce and expedite the required blending.

An essential rethinking of the association between the strategy, the innovative dominance of the community (Marg et al., 2013), the public participation, and the various plans and actions for change is one of the main responsibilities in this respect. A crucial thing here is to enable people to share the responsibility for the

empowerment in the future by facilitating the implementation of social innovation at various levels in the society.

6. Limitations and recommendations for future studies

One of the primary limitations of this study is that the conducted survey captures data at a single point in time. As a result, it is difficult to measure any changes, and even if it is possible, it is difficult to see whether these changes are of a permanent or temporary nature. Therefore, a recommendation for the future would be that a similar study with two or more surveys at different points in time should be conducted, to examine trends in the implementation of the social innovation.

The survey questions used in this study were standardised with generic questions in order to make them understandable for a wide range of people. This could, however, be seen as a limitation, as the questionnaire may lack some depth due to the generic character of the questions. The survey findings may moreover be not as reliable as those gained via other techniques of data gathering (that enable a researcher to thoroughly investigate the issue under study). Therefore, it is recommended that in the framework of any future research into this subject, an in-depth interview along with a survey should be conducted, as it is likely to provide researchers with a further explanation into the responses of the participants and help the former learn more about how respondents appear to comprehend them.

Another limitation of this study is that it has been conducted from the perspective of a developing country like India. As a result, there is no guarantee that the same result would be obtained from a different collection of respondents investigated somewhere else in the world and at a different point in time. Therefore, researchers may focus on conducting a comparative study that can include two or more countries from different cultural backgrounds, in order to enhance the universality of the research.

7. Conclusions

This study was conducted to statistically assess the implementation of social innovation for the gender equality in India. To this end, a structured survey was administered to find out people's social innovation tendencies, as they play a critical role in social innovation processes. The results indicate that the degree of the implementation of social innovation in India for gender equality differs from other demographic variables. Since infrastructure is relatively underdeveloped in India, social innovations frequently take a different route. A viable solution to this problem might be to involve local self-help groups or non-governmental organisations in the process of implementing social innovations. The results also show that the degree of

association between the social innovation (dependent variable) and gender (independent variable) is comparatively high as compared to other demographic variables. The findings also demonstrate that social innovation is vital for the neoliberal reform of the state, and that gender plays an important role in its implementation in India. It can be said that gender equality is expressed as a means to an end through the paradigm of social innovation.

The findings of this study will help shape the emerging field of gender and social innovation, whose important objective is to empower women. Additionally, this research has important implications for policymakers who work towards the resilient implementation of the upcoming social innovations in India. The notion of gender equality is not just a regional or national issue; it is related to granting fundamental human rights to women, crucial to becoming a peaceful and balanced society. The research addresses the need for gender inclusivity in several dimensions of a society, which is enshrined as Goal 5 of the SDGs ('gender equality'), and which makes the study important for international audiences as well. Our work holds significance for the global agenda to resolve gender disparity and address the issue of inclusivity.

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