

Does the Scheme Free Bus Policy for Women in Public Transportation Contribute to The Achievement of The Sustainable Development Goals?

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ABSTRACT

This paper analyses the benefit and impact of the scheme "Free bus travel for women in public transportation on women to achieve various relevant Sustainable Development Goals (SDGs) such as Goal 1.4 (access to basic services), Goal 4.3 (equal access to tertiary education), Goal 5.2 (elimination of violence against women in the public and private sphere), Goal 8.5 (decent work) & Goal 11.2 (safe public transportation) and to find out the challenges women faced in benefiting the scheme. The study adopted a mixed method approach of using a quantitative survey among 150 women commuters selected randomly in the Sivagangai District, and 30 among the 150 women were engaged in qualitative interviews. SPSS version 22 analyzed the quantitative data using frequency counts and percentages, including descriptive statistics such as means and standard deviations. Thematic analysis was applied in analyzing the qualitative data. The scheme was shown to have a good effect on women by assisting them in meeting their practical needs and strategically empowering them by providing access to social and economic possibilities. However, for the program to be implemented successfully, its inherent constraints must be addressed, such as overcrowding, a limited number of buses, lack of time management, and male's negative attitude towards women. The government must increase the access and availability of transport buses for women on all the routes, including remote places, and enhance women's mobility for socio-economics participation to help achieve the relevant SDGs.



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1. Introduction

The United Nations (UN) created 17 Sustainable Development Goals and 169 targets for social, economic, and environmental development to achieve them by 2030. India, a signatory to this global agenda, committed to meeting these goals by the year 2030. Tamil Nadu, one of India's states, is doing better than other states at reaching the SDGs, according to the SDG India Index, by putting various programs and plans in place. In such an attempt, Tamil Nadu introduced a program in June 2021 named "Free bus travel for women in public transportation" to alleviate the cost of travel and enhance women's participation in the workforce. Free bus travel programs are being introduced in several countries for a variety of reasons, including to improve the quality of life for elderly and low-income people (Sukor et al., 2021) and to reduce traffic congestion, energy consumption, and air pollution in industrialized nations (Guerreiro, 2013). However, India was the first nation to provide free bus travel for women in Delhi in 2019, and Punjab followed in 2021 ("Free bus travel," 2021). Tamil Nadu is the third state to implement this policy for women in June 2021. The ultimate goal of this scheme is to promote women's mobility and participation in the workforce, which will result in an improved quality of life. By improving their access to jobs and education, this scheme is expected to empower women in the state, which is the ultimate goal of SDG 5 "Achieve gender equality and empower all women and girls."

Empowering women and promoting gender equality is crucial to accelerating sustainable development. SDG 5.a. calls for reforms to give women equal rights to economic resources and access to ownership and control over land and other forms of property, financial services, inheritance, and natural resources following national laws. Similarly, SDG 1.4 emphasizes equal rights and access to economic resources, essential services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology, and financial services, including microfinance. For women to have access to economic resources, ownership, and control over land, they must have income by participating in the workforce for which they need mobility. Despite implementing numerous policies and programs for women's economic empowerment, there is still a persistent gap in access to paid employment and the labor market because of the structural and cultural barriers that prevent them from fully participating in the labor force. The barriers include discrimination in the workforce based on the job type and sector, restrictions on women's freedom and mobility, constraints on inheritance and poverty rights, lack of access to financial services, and inadequate legal protection from violence (Lemmon & Vogelstein, 2017).

India has one of the lowest labor force participation rates for women worldwide (India Labour Market Update, 2017). Women only make up 15.5% of the workforce in metropolitan India, according to a 2017 labor force survey (Singhai & Singhai, 2021). The World Bank Policy Research Working Paper examined patterns and trends in women's labor force participation in India and found that between 2004–2005 and 2011–2012, it fell by 19.6 million women (or 11.4 percent), with about 53 percent of this decline occurring in rural India among people aged 15 to 24. It is also noted that several elements have significantly contributed to the fall, such as household composition, socio-economic condition, and educational attainment. To stop this decline, they suggested enhancing women's and girls' employment opportunities, educational status, and skills (Andres et al., 2017). To accomplish SDG 8.5, for full and productive employment, decent work for all women and men, including young people and people with disabilities, and equal pay for work of equal value, there is still a long way to go, which it is necessary to overcome the structural and cultural barriers.

One of the major cultural barriers to women's employment is the restrictions on women's freedom and mobility. The employment of women requires permission from the guardian. Especially married women cannot work outside the home without the consent of their husbands or male legal guardian, and this is due to the strong cultural restrictions on

women's mobility. It is not acceptable for women to work outside the home. It is also due to the concerns about women's safety in public places and transportation where there is a high prevalence of harassment of women and girls (Lemmon & Vogelstein, 2017; Sudarshan & Bhattacharya, 2009). Various studies also have found similar concerns that the limited mobility of women due to fears for their safety (sexual assault) and the stigma associated with women working outside the home is one of the critical factors that contribute to the decline in the workforce (Siddique, 2022; Chakraborty & Lohawala, 2021). However, SDG 5.2 strongly emphasizes eliminating all forms of violence against women and children, including trafficking, sexual exploitation, and other forms of exploitation. SDG 11.7 also places a strong emphasis on people with disabilities, older adults, and women and children having access to green public spaces that are safe, inclusive, and accessible.

Another major barrier women face in economic advancement is education. Women are less likely to pursue higher education, which reduces their employment chances, makes them work in less productive positions and pay less, or makes them more likely to engage in unpaid labor. Although there has been tremendous success in closing the gender gap in education at the primary level, it still exists at the secondary and tertiary levels, which is crucial for transitioning to employment. These educational disparities limit women's economic potential and slow overall economic progress (Lemmon & Vogelstein, 2017), as education directly affects the labor force participation rate (Bhalla & Kaur, 2011). SDG. 4.3 states that by 2030, all women and men must have equitable access to high-quality, affordable technical, vocational, and tertiary education.

Women's access to employment and education is highly correlated with spatial mobility, i.e., public transportation. Women's travel patterns differ from those of males, and persistent inequalities mark these variations. The issue of safety, in particular for women, is a key component of gender and mobility and is closely related to fair access to and use of public space and chances for decent and productive employment (Banerjee, 2019). Women need more access to private and public transportation; however, they must travel for work and household purposes. They take a more significant number of trips for reproductive and care responsibilities, which makes it expensive.

Similarly, for the girls to have access to higher education, they must travel long distances as the higher education institutions are located in cities far from where they live. They must be able to travel at a safe and affordable cost. Extended travel and multiple travels strain women's finances since they have to spend more on transportation than they can afford on necessities like food, healthcare, and education (Anand & Tiwari, 2006).

Their limited mobility due to safety and security concerns on the one hand, and the limited accessibility and affordability of transportation due to the high cost of transportation on the other, severely limit their potential to have better livelihood possibilities outside of their houses (Allen, 2018; Alberts et al., 2016). A 2020 Institute for Transportation and Development Policy (ITDP) study found that women rely more heavily on public transportation than males do since they have less access to own vehicles. Women also mentioned price and safety as their top concerns when riding buses (Shah et al., 2017). It is not only necessary but also desirable that there are affordable, safe, and dependable travel options available, which is emphasized in SDG 11.2, which aims to improve road safety for all, notably by expanding public transportation while paying particular attention to the needs of those in vulnerable groups, such as women, children, people with disabilities, and older people. It also aims to provide access to safe, affordable, accessible, and sustainable transport systems.

The COVID-19 pandemic made matters worse by causing numerous people to lose their jobs and their source of income. Due to COVID-19 epidemic losses and continued price increases on necessities, many working women in the informal sector, such as domestic

workers, construction workers, agricultural workers, and daily wage laborers, struggle to make ends meet. The worst affected are poor women forced to work and make a living to survive, such as those destitute, separated, widowed, disabled, or migrated (Chakraborty, 2020; Mamgain, 2021). Additionally, it has been noted that transportation costs are a significant financial strain on families due to rising petrol and diesel prices, which many women find difficult to bear, leading to low economic participation (Coelho et al., 2022). In this background, the Tamilnadu Government has announced a scheme called the “Zero-ticket Bus Travel Scheme for Women” (ZTBT), in which women can travel free of cost in state-owned public transport corporation buses. This scheme was announced in response to the declining female work participation rates amid the COVID-19 pandemic vulnerabilities of women in the informal economy due to job and livelihood losses. To reduce the travel burden of women and increase female labor force participation, this scheme was announced that waives any charge for travel by women passengers in the state up to a distance of 30 km. They can travel without paying any fare on government-run normal-fare buses in cities and towns in the state. When traveling in these buses, women are given zero tickets (fare-less tickets). The program also intends to create a safe environment for travel by increasing the proportion of women who travel on buses that provide safety for women (Shivakumar, 2021). In this context, the study tried to investigate the benefits and impact of this scheme on women's lives and find the impact on the relevant SDGs.

2. Methods

2.1. Research Design

This paper aims to investigate the benefits and impact of the free bus travel scheme on women's lives and its contribution to achieving the SDGs. The study employed a mixed-method design with a quantitative survey and qualitative interviews.

2.2. Participants

The study was conducted among women passengers who travel by public transport corporation buses in the Sivagangai District of Tamil Nadu. The bus routes captured were from Karaikudi to Tiruppathur, Karaikudi to Devakottai, and within Karaikudi (to nearby villages) for a survey. One hundred fifty women, including girls, were chosen randomly for the survey, and 30 among the 150 women were chosen randomly for the in-depth interview.

2.3. Data Collection Tool

A mixed method approach was applied by administering a questionnaire to collect quantitative data from 150 respondents and a Semi-Structured interview to collect qualitative data simultaneously among the 30 women willing to spend time for the interview session chosen from the 150 participants. The questionnaire is divided into three sections. The first section covers a range of socio-economic information regarding their age, educational background, employment position, working sector, ability status, marital status, and various community and religious affiliations. The second and third sections included a series of Likert-style questions (on a 5-point scale, one represents strongly disagree, two disagree, three represents neutral, four represents agree, and five represents strongly agree) that contains ten questions on the personal benefits of the program and seven questions on the women passengers' perception of the program's overall impact respectively. The personal benefit scale includes items on economic benefits they gained and the perceptions of one's independence,

mobility, and quality of life. General impact includes their perception of access to economic opportunities, educational opportunities, and other social and legal services.

The research instrument was developed based on a literature survey and expert opinion. To ensure internal validity and reliability pre-testing was carried out among 30 women passengers after which the questions were revised. Internal consistency of the questionnaire was measured using Cronbach's alpha for the benefits scale and impact scale, which were 0.921 and 0.899, respectively, showing strong reliability. A qualitative Interview was conducted among 30 women to explore the benefits of using the free bus scheme and the challenges they face and to find out their views on the scheme's impact on their lives. Each interview lasts for 30 minutes.

2.4. Data Analysis

2.4.1. Quantitative Data Analysis

Statistical Package for Social Sciences (SPSS) version 22 was used to analyze the data. Data cleaning by way of identifying missing values and checking for consistency among variables was carried out by running frequencies and cross-tabulations. Descriptive statistics were used to describe their benefits and perception of the program's overall impact and presented as frequency counts, percentages, and mean values. The highest mean score was considered the scheme's most essential benefit and impact.

2.4.2. Qualitative Data Analysis

Qualitative analysis was performed using thematic analysis with a four-stage content analysis such as code creation plan, codes formulation, themes creation, and finally, the consolidation of themes.

2.5. Profile of the Respondents

Although this program allows women of any age to travel, most of those who take advantage of it are working women and students between 18 and 60. Most women come from backward communities, then scheduled castes, following scheduled tribes. Most (54%) beneficiaries work in non-secure, informal jobs, while only 24% of beneficiaries who responded to the survey said they have formal employment in the public or private sector. Informal workers include construction workers, textile workers, agricultural workers, vendors, traders, and other informal sector respondents. An equal number of respondents go to construction and textile workers; most are flower traders. Women from rural and urban regions use this service; however, as Table 1 demonstrates, most are from urban areas.

According to their monthly income, most beneficiaries make less than Rs. 20,000, making it very difficult to pay for transportation in the face of rising fuel prices. A family's travel budget is crucial because everyone needs to commute to work to provide for the family. Very few women with disabilities also benefit from this scheme but face challenges due to the lack of infrastructure that suits them.

Table 1 Distribution of respondents by Socio-demographic characteristics (n=150)

Age of the respondents	Frequency	Percent
Less than 18	21	14.0
18 to 30	66	44.0
31 to 60	59	39.3
Above 60	4	2.7
Marital Status	Frequency	Percent
Unmarried	52	34.7
Married	73	48.7
Widowed	14	9.3
Divorced	8	5.3
Destitute	2	1.3
Any other (Pls specify)	1	.7
Community	Frequency	Percent
OC	18	12.0
BC	96	64.0
SC	26	17.3
ST	3	2.0
Others Specify	7	4.7
Residence	Frequency	Percent
Rural	62	41.3
Urban	88	58.7
Ability Status	Frequency	Percent
Abled	145	96.7
Disabled	5	3.3
Working status	Frequency	Percent
Students	33	22.00
Formal -Government	13	8.67
Formal -Private sector	23	15.33
Informal sector (Agricultural laborers)	5	3.33
Informal sector (Agriculture farmers)	11	7.33
Informal sector (Construction work)	12	8.00
Informal sector (Flower trader)	13	8.67
Informal sector (other traders/vendors)	6	4.00
Informal sector (Textile workers)	12	8.00
Informal sector (Vegetable vendor)	7	4.67
Others- Sweeper	2	1.33
Homemakers	13	8.67
Monthly Income	Frequency	Percent
No income/Not applicable	46	30.67
Less than Rs. 5000	19	12.67
Rs.5001 to Rs. 10000	43	28.67
Rs.10001 to Rs. 20000	22	14.67
Above Rs. 20000	20	13.33

3. Results and Discussion

3.1. Results

This study tried to investigate the benefits and impact of the free bus policy for women and its contribution towards the five sustainable development goals. Four themes were formulated from the qualitative analysis such as (i) Mobility of Women, (ii) Access to economic resources, (iii) Independence and Freedom, and (iv) Challenges, as shown in Table

2. Table 3 and Table 4 show the quantitative results of the respondent’s perception of the benefits and the free bus scheme’s impact on women’s lives. Finally, with the results derived, the relevant SDGs that will have direct and indirect impacts on it were identified.

Table 2 Benefits and challenges of the free bus travel scheme

Sl.no	Themes	Subthemes	Criteria	Sample Responses
1.		Affordability and Accessibility	Cost, time, and availability of bus	<p>"The travel money is saved because I don't have to pay for it."</p> <p>"Thanks to the free bus service, I can go to the hospital, the store, and the bank without relying on anyone; otherwise, I have to rely on my husband to drive me there."</p> <p>"Before this plan, whenever we went to the market, we had to budget and spend money since we needed to set aside money for the return trip. However, these days we don't worry about the cost of the trip and just buy what we need for the house."</p>
		Safe and secure mobility	Free from abuses and harassment	<p>"I finish my shift at 9 p.m. On my way home from work each night in my vehicle, I am afraid. Due to the rising cost of fuel, riding my bike also costs a lot of money. Since the implementation of this plan, I feel safe, and my money is also preserved."</p> <p>"I am not afraid because I am travelling with other female passengers."</p>
2.		Financial situation	Reduced financial burden Ability to save	<p>"Before this Scheme, I had to pay Rs. 50 every day for bus fare, which is a significant portion of my monthly salary—one-fifth. The expense of travel is reduced as a result of this plan."</p> <p>"I save Rs. 700 per month. I will next invest this money in a PPF plan."</p> <p>"I am now paying off my loans with this travel money."</p> <p>"I use my trip money to purchase meals for my little children."</p> <p>"I invest the money I save from travelling into my business."</p>
		Access to Jobs/income activity	Opportunity to get good job/activity with a decent income	<p>"In my community, people deterred me from declaring that I wanted to go to work by claiming that I would have to pay for the bus with any money I made. However, now that it is free, they have allowed me to work, and I am saving money for my marriage."</p> <p>"During the COVID-19 shutdown, I lost my job and was looking for work. I obtained a job outside of my hometown. This program helps me out by allowing me to travel for free."</p> <p>"I am trading near my home. I will now sell in the town where I may expect to see a rise in sales and money."</p>

		Access to Pursue education	to Pursue education	I completed 12 th standard and must enroll in the college which is situated in the city. I was able to attend college thanks to this program. "I used to have to pay Rs. 13000 for the school bus every year, but I can now save money thanks to the free bus travel scheme." I dropped out of school during the COVID-19 lockdown and returned when the scheme was implemented.
3.	and	Freedom of movement	Move freely	"I can move around freely after work because I can go down to several locations to get things for the house without needing to rely on anyone, especially my husband."
	Independence and Freedom	Independence	Not dependent on anyone for travel cost	"My husband abused me physically and mentally. I don't even have a single rupee in my hand. I made use of this free bus service to escape to my mother's place."
4	Challenges			I have a physical disability. I take an auto-rickshaw to travel to any place. I use this free bus service complex since buses lack ramp facilities." "A major difficulty is the little number of buses that are available at night." "I sell vegetables, so I have to bring them to the market early in the morning. However, there weren't any buses available at that time, so I had to take a private bus and pay the fare." "In the free bus scheme, even though it is free for women, they charge for the luggage, which is a huge money and therefore, we opt to go by other means." "I have a job and need to get to the office on time. But during peak hours, the buses are overcrowded, making it impossible for us to commute. Another problem is that due to the crowd, drivers don't stop the bus at the bus stop." "Drivers shout at women and criticize them for not paying their fares."

3.1.1. Mobility of Women

Affordability and accessibility

From the qualitative analysis, it is found that women's mobility becomes more accessible because of the introduction of this scheme as they can travel free of cost and it is affordable. This scheme has relieved women from the financial burden of travel, and they could spend their money for other productive and reproductive purposes. Since it is free of cost, women and girls have access to banks, public offices, shops, and markets and to pay utilities without depending on the male members of the family. The respondents also said that "This program is good and saves money because it is free," "It helps to move any time without any fear or burden of transportation cost," and "It is good for economically weak sectors of society." The free bus service scheme is a significant source of financial relief for women and girls from low-income families, especially for students who cannot rely on their family's income to pay

for their travel expenses. Some respondents said that when they use their private vehicles, they have to depend on the male family members on the one hand, and on the other, the fuel price is high, and therefore the cost of travel is also high.

Safety and Security

Participants were questioned about safe travel, and they said that because many women are traveling in the buses, they have no fear of harassment. As fewer buses were available at night, they had to wait at bus stops for an extended period, making them worry about being harassed in public places. Some respondents also said they use the free bus service to avoid driving at night in their two-wheelers since they might run into problems with robbery and abuse.

3.1.2. Access to Economic Resources

Reduced financial burden

Almost all interviewed participants stated that this scheme has helped them save money on travel expenses so they may use it for other productive activities and household needs. Additionally, they had stated that they would use the money to pay off their debts, invest in savings and credit, and use microfinance to ensure their continued economic viability.

3.1.3. access to jobs or economic activity

Given that one of the respondents indicated she lost her work during COVID-19 and was in a difficult financial situation, this scheme has helped women find better jobs with higher salaries. Even if it is far from her village, she now has a better job and is willing to travel because it is free. The formal workers and the informal workers, such as traders, benefited from increased sales and revenue as they relocated to cities, improving their financial situation. Vendors, however, have some challenges with this scheme because their luggage is charged, and they ask for an exceptional luggage fare. This program, therefore, helps women have better options for a living.

3.1.4. access to education

For safety and security, parents would rather pay more for school transport fees. Although one respondent stated that she was spending close to Rs. 13000/year on school van fees, she is now saving money thanks to the implementation of the free bus scheme. The scheme also allowed some girls to enroll in schools and universities; otherwise, parents would have interrupted their studies and married off their daughters. This scheme assists girl students in pursuing higher education while indirectly enhancing their educational experience.

3.1.5. Independence and Freedom

This scheme enables women to travel freely because they no longer rely on male family members to cover transportation costs. Although it cannot be said with certainty that they are entirely free or independent, they can move around freely to some extent. One of the victims of domestic violence managed to get away from her violent spouse and board a bus to her parents' house. She had no money, but this scheme nevertheless came in handy for her when she was in need.

3.1.6. Challenges

Even though this scheme provides affordable and accessible transportation for women, they encounter difficulties with accessibility in terms of availability and travel convenience. The respondents listed "overcrowding," and "no frequent buses available" as the major issues. Respondents reported that buses are overloaded during rush hours and are often stopped farther from the bus stop than the stop itself. Because it is challenging to board public transportation buses owing to overcrowding, people use a private bus with a price to go to work or school on time. Few respondents mentioned ineffective time management as another key issue. Because they have yet to determine the exact arrival time, they may have to wait a while. Therefore, it is advised that the government increase the number of buses running during peak hours to facilitate travel for women.

Women working in the informal sector responded that it is difficult for them to travel to marketplaces to sell their goods as traders and vendors since frequent buses are only available in their villages during peak travel hours. They take private buses while paying the fare to maintain that day's sales and income owing to being late to the market. Even though the government covers the cost for women, it charges more for their luggage, preventing them from using the free bus service.

Other participants argued that this program does not help disabled women because the buses do not have the necessary infrastructure. Males drive every bus, and they envy the women who can utilize the public transportation system for free and do not halt the bus at the stop. Few respondents said bus drivers shout at them and criticize women's mobility. The bus operators comment that "even an old woman is not remaining at home because it is free" and "even to buy a food (parotta) they get ready and come to utilize the bus," which hurts women commuters. Such negative attitudes towards women and girls must be stopped by educating the public about the importance of women's workforce participation and achievement of sustainable development.

3.1.7. Respondents' perception of the benefits of the scheme

In the quantitative analysis, respondents' perception of the benefits of the scheme revealed that most of the respondents (57%) agreed with the statement "the cost of bus travel was preventing me from travelling by bus before having free bus travel scheme," which indicates that free bus travel scheme enabled them to move freely, the majority of respondents benefited from this free bus travel scheme. Similarly to this, the majority of respondents (53%) concurred that they had now found a better location to work with higher pay/wages, indicating that this program had assisted them in locating decent work with decent pay. According to 65% of respondents, this program has also helped them ease the financial pressure of setting aside a sizable monthly travel budget and saving trip money (69%). They spend money on other things, such as the family's health and well-being and loan repayment (71%). Most respondents believed their quality of life has increased (69%), and they feel fearless in their mobility (see Table 3). The Cronbach's alpha coefficient was 0.921, indicating strong reliability; therefore, this scheme has impacted women's lives.

Table 3 Perception of personal benefits with 10 Likert scale items

Items on the socio-economic impact	1	2	3	4	5	Mean	SD
The cost of bus travel was preventing me from traveling by bus before having a free bus travel scheme	5.3	7.3	27.3	57.3	2.7	3.4467	.87881
I studied (worked) closer to home (with lower wages/salary) before the introduction of this scheme	2.7	16.7	25.3	52.7	2.7	3.3600	.88447
Having free bus travel, I now found a better institution (job/work) even if it is far from my home (with increased wage/salary)	6.0	15.3	22.0	53.3	3.3	3.3267	.97964
Having free bus travel relieved me from the financial burden of allocating a huge budget for travel every month	.7	6.0	24.0	64.7	4.7	3.6667	.69192
Having free bus travel helped me to use that money for other purposes (well-being of the family members, repayment of money lenders)	2.7	2.7	19.3	70.7	4.7	3.7200	.71532
Having free bus travel helped me to save money (a partial about per month)	1.3	6.0	16.0	68.7	8.0	3.7600	.73895
Having free bus travel increased my mobility any time without any fear	2.7	8.0	24.7	60.7	4.0	3.5533	.80715
Having free bus travel helped me decide independently on my mobility	1.3	8.0	24.7	62.7	3.3	3.5867	.74353
Having free bus travel helped me not to depend on anyone for bus fare	3.3	10.0	24.0	58.0	4.7	3.5067	.86503
Having free bus travel has improved my quality of life	2.0	10.7	22.7	60.0	4.7	3.5467	.82402

3.1.8. Respondents’ perception of the general impact of the scheme

Most beneficiaries asked about their perceptions of the scheme's overall effects agreed that it had improved access to jobs (47%), schools, and other essential services (45%). Additionally, they concurred that it helps more girls enroll in schools and universities (46%) and prevents girls from dropping out (51%). Most respondents (57%) also concur that this program benefits students, daily wage earners, small business owners, and other vulnerable women, such as the elderly and persons with disabilities (see Table 4). The Cronbach's alpha coefficient was 0.899, suggesting the robust reliability and the consequent influence this program has had on women's lives. The respondents disagreed /were neutral with the claim; it gave women access to legal and counseling assistance when needed and allowed them to flee abuse in the home and domestic violence.

Table 4 Perception on the impact in general with 7 Likert Scale items

Items	1	2	3	4	5	Mean	SD
Having free bus travel, more women are now coming to work or trading (small businesses)	1.3	10.7	33.3	47.3	7.3	3.4867	.83334
Having free bus travel, more girls are enrolling in/ coming to schools/colleges, even if it is far away from home	4.7	10.7	30.7	46.0	8.0	3.4200	.95024
Having free bus travel prevents girls from being dropped out of school	3.3	9.3	29.3	50.7	7.3	3.4933	.88800

This scheme is beneficial for students, daily wagers, small traders, and other vulnerable women, including people with disability and elderly	1.3	7.3	27.3	56.7	7.3	3.6133	.78396
Free bus travel helps women to access essential services such as health (hospitals), education (schools), Banks, and access to public offices	2.7	10.7	35.3	44.7	6.7	3.4200	.86908
Free bus travel helps women escape from domestic violence and abuses in the family	4.0	32.0	28.7	32.7	2.7	2.9800	.95868
Free bus travel helps women to access legal and counseling support when in distress	8.7	33.3	26.7	28.7	2.7	2.8333	1.02595

3.2. Discussion

Our findings indicate that free bus travel for women has social and economic benefits that can impact women’s lives through (i) Affordability and accessibility; (ii) Safety and Security; (iii) Access to Economic resources; (iv) Access to educational institutions (which are derived from both qualitative and quantitative results.

3.2.1. Affordability and Accessibility & SDG 11.2 & 7

Affordability and accessibility of public transportation are directly linked to SDG 11, under targets 2 and 7, which ensures access to safe, affordable, accessible, and sustainable transport systems for all, with particular attention to women, children, persons with disabilities, and older persons. Under this scheme, all women, including children, can travel free of charge in public buses within their districts where working women and school-going children are widely using this service. It is free, and therefore it is accessible to all women and girls. Thus, it is evident that this scheme directly impacts the achievement of SDG targets 11.2 and 11.7, which specifically call for providing affordable and accessible transportation for women. However, this scheme also indirectly impacts other SDGs, including SDG 5.2 that ensures the elimination of all forms of violence against women, and SDG 8.5, to achieve full and productive employment and decent work for all women and men. SDG 4.3 ensures equal access to higher education, and SDG 1.4 ensures equal access to essential services, including micro finances.

3.2.2. Safety and Security & SDG 5.2

According to 61% of the respondents (Table 3), this program has undoubtedly increased women's mobility. They may now travel without fear of harassment or abuse on public transportation (mean value=3.55), which helps to meet SDG target 5.2. indirectly which emphasizes eliminating all forms of violence against women in public places. Qualitative findings also show that they travel by bus without any fear, as a greater number of women are boarded, and they feel safe and secure. Because of prior encounters and incidents of sexual harassment in public spaces and on public transportation, the girls' and their parents' confidence when using public transportation is limited (Choudhary et al., 2018; Jagori, 2010), and women work close to their homes to avoid these fears (Anand & Tiwari, 2006; Jayachandran, 2021). Following this plan's implementation, more women and girls started using public transportation, eliminating their fear of being harassed.

3.2.3. Access to Economic resources & SDG 8.5

The ultimate aim of this scheme is to increase women’s mobility and thereby increase female workforce participation. Women need access to economic resources (job/ economic activity) for which they need access to safe, affordable, accessible, and sustainable transportation systems is more crucial. According to Singhai & Singhai (2021); Mehta & Sai (2021), women's mobility is strongly correlated with their asset ownership, labor force participation, and higher wages and salaries. In a patriarchal society, women's mobility is severely constrained based on the gender roles that have been assigned, particularly to preserve the honor and dignity of the family. Cultural norms and household responsibilities are the main issues limiting women's economic advancement (Chatterjee et al., 2015; Chaudhary & Verick, 2014). Due to these constrained roles, women are more likely to be unemployed, earn less money, and hold down less productive employment. They are not permitted to travel farther for work since they are expected to return home early to finish household chores. Women typically opt to work close to where they live for this reason. Women must travel outside their village or town to find employment and earn a living, which poses many difficulties, such as high travel expenses, a lack of security, and inconvenience (Shah et al., 2017). For women and girls, establishing free travel in public transportation schemes has greatly expanded their mobility and freedom of movement. According to Table 3, most respondents agreed they could choose their mobility and were not compelled to rely on their family members to pay for transportation expenses (Mean= 3.58). More than half of respondents agreed they could find better employment/work with increased salary/wages. The scheme's ultimate goal is to increase women's mobility and female workforce participation (mean=3.32). This scheme has allowed women and girls to travel a longer distance to work/study and have better employment opportunities. The respondents in the qualitative interview also concurred that more women are now traveling by free bus to work or trade, achieving SDG goal 8.5, i.e., to achieve full and productive employment and decent work for all women and men.

3.2.4. Access to education & SDG 4.3

The social restriction on girls' mobility is one factor contributing to the gender gap in higher education. Girls and boys had to travel to the neighboring cities for secondary school and university education because the local schools did not provide education beyond standard 10. In most cases, boys are allowed to pursue higher education. In contrast, girls dropped out due to a lack of safety and security in public places and ended up with low educational attainment (Dhanaraj & Mahambare, 2019). Women hold low-paying, low-productivity jobs (Duraishamy & Duraishamy, 2016). According to Table 4, the majority of the beneficiaries of this program agree that it has enabled girls to pursue their education, including higher education (mean value = 3.42), and has also prevented girls from dropping out of school (mean value= 3.49) by assisting them in enrolling in further education in surrounding cities. The qualitative findings (Table 2) also confirmed that girls who left school during the COVID-19 pandemic are now continuing their education. Therefore, it can be said that this program aids in achieving SDG 4.3, which calls for ensuring equal access to education, especially tertiary education.

3.2.5. Access to basic services, including microfinance & SDG 1.4

The fact that they are not responsible for paying for transportation means they can save money spent on transportation, which is another significant benefit of the free bus service. According to Table 3, most respondents concurred that they could save money and use it for other things, like their families' well-being and debt repayment (Mean value=3.72). In certain

circumstances, the money spent on travel now may be applied to a successful education allowing girls to find employment after completing their higher education and become economically independent. Both working women and stay-at-home mothers use this travel expense for other things, including their family's health and nutrition, debt repayment, and buying necessary household supplies, which is also observed in qualitative analysis (Table 2). Women also save money for future investments where they can become independent and gain autonomy.

Therefore, this scheme positively impacts the five SDGs directly or indirectly based on the qualitative and quantitative findings. However, it has some challenges which need to be addressed. As this scheme has completed one year, it is still too early to find the contribution of the scheme towards SDGs, but it can be considered an ongoing process/contribution towards achieving the SDGs.

4. Conclusion

The study examines the benefits, impact, and contribution of the free bus transportation program for women to accomplish several SDGs. This program assists in achieving five significant goals, including SDG 11.2&7, 5.2, 8.5, 4.3, and 1.4. Although the program directly aids in achieving SDGs 11.2 &7, it also indirectly advances other SDGs by enhancing people's mobility and ensuring their safety so they may obtain suitable employment and education, all of which help them to enhance their quality of life. However, for the program to be implemented successfully, its inherent constraints must be addressed, such as overcrowding, a limited number of buses, lack of time management, and male's negative attitude towards women. Therefore, this study recommends an increase in the number of buses to avoid crowds, especially during peak hours, to manage the time, and to exempt the luggage fare of women traders. The study has limitations due to the small sample size and the participants' perceptions of the scheme's broad benefits and impact on women's lives. As a result, additional research utilizing reliable disaggregated data on the measures of SDG indicators is required.

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