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Abdullah R. Sirad

Department of Business and Innovation, Mindanao State University—Iligan Institute of Technology, Iligan, Philippines

Shiny Rose S. Narit

Department of Business and Innovation, Mindanao State University—Iligan Institute of Technology, Iligan, Philippines

Charlyn M. Capulong

Department of Economics, Mindanao State University—Iligan Institute of Technology, Iligan, Philippines

Safa D. Manala-O

Department of Business and Innovation, Mindanao State University—Iligan Institute of Technology, Iligan, Philippines

Rosario L. Reserva

Mindanao State University—Iligan Institute of Technology, Iligan, Philippines

Lawrence Jay M. Cañete

Mindanao State University—Iligan Institute of Technology, Iligan, Philippines

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Abdullah R. Sirad, Shiny Rose S. Narit, Charlyn M. Capulong, Safa D. Manala-O, Rosario L. Reserva, and Lawrence Jay M. Cañete

Abstract

The success of community development projects relies on community engagement and shared responsibilities across all community structures. This study investigates the differences in perceived skills development (PSD) and participation levels between male and female participants in Sustainable Development Goal (SDG)-driven extension projects, while also exploring how perceived participation and gender influence PSD. A total of 126 respondents from various extension projects were selected through convenience sampling. This study used descriptive statistics, a *t* test, and multiple linear regressions with cross-sectional data. Findings indicate that women participate more frequently in key SDGs, highlighting their significant role in community development. While perceptions of skills enhancement are generally positive, men report slightly higher levels of PSD. This study concludes that inclusive engagement strategies and targeted support are crucial for maximizing the impact of SDG-driven community projects, with state university extension projects effectively fostering essential skills and community engagement to achieve broader sustainable development objectives.

Keywords: *community participation, community projects, skills development, state university, Sustainable Development Goals*

Desarrollo de habilidades basado en la percepción de género y la participación de socios comunitarios en proyectos universitarios basados en los ODS

Abdullah R. Sirad, Shiny Rose S. Narit, Charlyn M. Capulong, Safa D. Manala-O, Rosario L. Reserva y Lawrence Jay M. Cañete

Resumen

El éxito de los proyectos de desarrollo comunitario depende de la participación comunitaria y de las responsabilidades compartidas entre todas las estructuras comunitarias. Este estudio investiga las diferencias en la percepción del desarrollo de habilidades y los niveles de participación entre participantes masculinos y femeninos en proyectos de extensión comunitaria alineados con los Objetivos de Desarrollo Sostenible (ODS) y a la vez explora cómo la percepción de la participación y el género influyen en la percepción del desarrollo de habilidades. Se seleccionó un total de 126 participantes de diversos proyectos de extensión mediante un muestreo por conveniencia. El estudio utilizó estadística descriptiva, una prueba *t* y múltiples regresiones lineales con datos transversales. Los hallazgos indican que las mujeres participan con mayor frecuencia en ODS clave, destacando su rol vital en el desarrollo comunitario. Si bien las percepciones sobre la mejora de habilidades son generalmente positivas, los hombres reportan niveles ligeramente más altos de percepción del desarrollo de sus habilidades. El estudio concluye que las estrategias de participación inclusiva con un apoyo focalizado son cruciales para maximizar el impacto de los proyectos comunitarios basados en los ODS, y que los proyectos de extensión comunitaria de las universidades estatales pueden fomentar de manera eficaz habilidades esenciales y la participación comunitaria para lograr objetivos de desarrollo sostenible de una manera más amplia.

Palabras clave: *Participación comunitaria, proyectos comunitarios, desarrollo de habilidades, Universidad Estatal, Objetivos de Desarrollo Sostenible (ODS)*

Introduction

Research consistently highlights the critical role of both men and women in community development. The success of community development projects relies on collective effort and shared responsibilities across all community structures. Achieving goals such as poverty and hunger eradication necessitates the involvement of both men and women (Ndunge, 2020). However, questions often arise regarding participation in development: “Whose participation?”, “What kind of participation?”, and “How should participation take place?”. Various approaches have been employed to address these questions. It has been found that in the latter stages of projects, more women become community partners, with men supporting women in their work (Pichat, 2022). The greater involvement of men at the initial stages is linked to their traditional roles in planning and decision-making. Consequently, men’s participation in the later stages often involves roles in monitoring and vetting committees rather than in the direct implementation of livelihood activities (Awudza et al., 2004). This underscores the community’s awareness of the benefits of equal participation in these projects, which is connected to achieving the UN SDGs (United Nations, 2025).

The Sustainable Development Goals (SDGs) aim to advance progress by eliminating discrimination against both men and women worldwide. Historically, gender-focused initiatives have engaged men in various roles: as “the authorities” whose permission is needed for women to learn new skills, as “the partners” whose support is crucial for women’s success, and as “the oppressors” whose abuses and privileges must end for women to be free (CARE, 2009). During the first International Men’s Day marked by the Gender Equality Agency, voices from both women and men highlighted that achieving gender equality is a shared responsibility (Pichat, 2022). The influence of men on women’s choices significantly impacts women’s mobility outside the home, their ability to pursue work opportunities, and their influence on household decisions, including money management and children’s education (CARE, 2009). The SDGs are vital for the sustainability of communities and overall sustainable development. Education on the SDGs is crucial for inspiring people to persist in activities that align with these goals (Ohta et al., 2022).

Community participation refers to the active engagement of a specific group with everyday needs residing in a particular geographical area in development projects (Aga et al., 2017). This participatory approach enables community partners to identify and address their needs themselves, rather than relying solely on management (Aguiling, 2021). A primary dilemma in the literature arises from a methodological bias shaped by feminist ideologies. While previous studies, such as those by Mbogori (2014) and Kamuiru (2014), highlighted low community participation in development projects, most have focused on general community participation or women’s participation. Consequently, the phenomenon of men’s involvement and equal participation has been under-investigated. Although research indicates that low levels of community participation are a significant causal factor in the failure of development projects (Ndunge, 2020), communities must promote active participation of both women and men. This approach ensures equal community involvement and leads to improved outcomes in development projects.

Universities worldwide are being encouraged to enhance their community service through reciprocal engagements, collaborating to create knowledge and develop products and services together. Consequently, universities are becoming essential partners in the sustainable development of nations, regions, cities, and local communities (Mores et al., 2019). Universities serve as hubs of knowledge, creativity, and intellectual development, shaping future leaders and significantly contributing to societal progress and economic growth (Mutia et al., 2023). In the Philippines, the Commission on Higher Education mandates that colleges and universities offer educational and civic services to their communities. State universities are instrumental in promoting community development through projects aligned with the SDGs. As centers of innovation and expertise, universities are equipped to implement initiatives that advance sustainable development locally, merging academic research with practical community solutions to generate impactful and lasting results (Sohail, 2021).

The Mindanao State University—Iligan Institute of Technology (MSU-IIT) and Mindanao State University—Naawan, Philippines (MSU-Naawan), are a key focus of this study due to their strong commitment to SDG-driven community projects. MSU-IIT actively engages men and women in initiatives aimed at addressing local and regional development challenges. The university's SDG-driven WE CARE Program—which stands for Wellness and Sanitation, Education and Literacy, Capability Building, Alternative Livelihood, Rehabilitation of the Environment, and Entrepreneurial Development—has achieved several milestones and introduced innovative community activities, projects, and programs that advance the partnered communities (MSU-IIT Webteam, 2025).

Despite the recognized importance of men's and women's participation in community development projects, there is a notable gap in the literature regarding the specific effects of such involvement on skills development among the university's community partners. This study addresses this gap by providing empirical evidence on the differences in perceived skills development (PSD) and participation levels between men and women participants in SDG-driven extension projects, while also exploring how perceived participation and gender influence PSD, which has also not been explored in previous studies. The findings will contribute to a deeper understanding of how to effectively integrate women into sustainable development efforts, thereby promoting community development and gender equality.

Literature Review

Overview of the SDGs and the Unique Role of Higher Education Institutions

The 17 SDGs form a cohesive and integrated package of global aspirations that the world is committed to achieving by 2030 (United Nations, 2025). The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and in the future. These goals recognize that ending poverty and other deprivations must go hand in hand with strategies to improve health and education, reduce inequality, spur economic growth, tackle climate change, and preserve our oceans and forests.

The SDGs, also known as the Global Goals, represent a universal call to action to end poverty and gender discrimination, protect the planet, and ensure that all people enjoy peace and prosperity for years to come. These 17 goals focus on various areas such as climate change, gender inequality, innovation, sustainable consumption, peace, and justice. They are interconnected, meaning that success in one area often requires addressing issues commonly associated with another. The SDGs operate in the spirit of partnership and pragmatism, emphasizing the importance of making the right choices now to improve life sustainably for future generations. The SDGs provide clear guidelines and targets for all countries to adopt in accordance with their priorities and global environmental challenges. This inclusive agenda tackles the root causes of poverty and unites us to make a positive change for both people and the planet (United Nations, 2025).

Institutions of higher learning are pivotal in fostering a society geared toward a sustainable future by incorporating the goals of the 2030 Agenda (Pereira & Moura, 2018). Recognizing this, the 2030 Agenda formally included universities for the first time, encouraging them to help achieve these goals, with national and international governments offering recognition, contributions, and incentives to support this effort (Borsatto et al., 2023). The study by Murillo-Vargas et al. (2020) noted a significant increase in publications related to sustainability, higher education, and universities since 1998, underscoring the critical role of higher education in sustainable development, as highlighted by the 2030 Agenda. Furthermore, the work of Batista de Deus (2018) emphasizes that advancing education for sustainability within higher education is crucial for a sustainable future, positioning youth at the forefront of sustainability issues.

Importance of Community Projects in Achieving SDGs

Public participation and collective action by local stakeholders, such as community groups, individuals, private businesses, and local authorities, have long been recognized as key factors in achieving the SDGs

(Moallemi et al., 2020). The SDGs have been universally adopted by various levels of government, research institutions, and industry entities as a joint framework to assess sustainability and resilience concepts. Several cities have implemented this framework in their policymaking and everyday practices (Assarkhaniki et al., 2023). Community projects play a critical role in this context, not only by amplifying the voices of marginalized groups but also by enabling people to recognize and generate their own knowledge. This process is underpinned by dialogue, deliberation, and critical reflection, which build agency and potential for transformation.

Many community foundations are embracing the 2030 Agenda and are key promoters of ensuring meaningful participation from various stakeholders. They engage these stakeholders in the design, implementation, and monitoring of national strategies and policies aimed at achieving the SDGs, such as the study by Këruti (2020) on the role of community foundations in achieving SDGs. In the study conducted by Hall (2016), the target for community participation emphasizes the crucial role of community involvement in ensuring the long-term sustainability of water, sanitation, and hygiene (WASH) initiatives, which is in line with SDG 6. The study further emphasized the inclusion of community members, including those who are illiterate, in the design of visual communication tools. Additionally, it highlighted the involvement of local women in both the construction of infrastructure projects and roles as health and sanitation promoters. Community projects contribute significantly to the framework of SDGs by addressing specific goals and mobilizing community involvement. Given their close connection with community partners and their capabilities in raising awareness and mobilizing communities, the role of community projects in achieving the SDGs should be recognized and promoted by different actors. This is particularly important for designing effective strategies and policies.

Community projects are essential for successfully implementing the SDGs. By facilitating local engagement and fostering a sense of ownership among community members, these projects ensure that the SDGs are not only understood but also actively pursued at the grassroots level. This approach helps build sustainable and resilient communities that are well equipped to meet the challenges outlined in the SDG framework (Assarkhaniki et al., 2023; Moallemi et al., 2020; Pichat, 2022).

Role of Both Men and Women in Community Development Projects

In rural areas worldwide, many women live in farming households and communities typically dominated by men. Consequently, women often have limited influence over household income allocation. However, increasing opportunities for women to participate in agricultural development groups, such as farmers' groups, cooperatives, savings associations, and women's groups, as well as enhancing their educational attainment, has been shown to improve their bargaining power significantly (Osanya et al., 2020). Goal 5 of the SDGs is dedicated to achieving gender equality, a cornerstone of the success of the entire SDG agenda (Afzal & Batoon, 2021). Enhancing women's empowerment is most effective at the grassroots level and must begin early. The Grameen Foundation recommends developing programs that educate men on gender equality and shared responsibilities. Such initiatives should involve female partners and address cultural norms, intra-household barriers, communication, equitable family roles, finances, and the importance of women's decision-making (Aleson et al., 2021).

The study by Awudza et al. (2004) found that men and women participate at different levels in community development projects. Men dominate the initial planning stages, while women become more involved during the implementation stages. Although men initially dominate, women gradually take over as time progresses, indicating that men are prepared to support women in these projects.

Community development projects aimed at achieving the UN SDGs foster gender equality through women's empowerment and the elimination of all forms of violence against women and girls (UN Women, 2018). However, gender equality programming has begun transitioning to focus on engaging men as stakeholders, co-beneficiaries, allies, and advocates for gender equity (Aleson et al., 2021). Positive outcomes have been observed in sectors such as nutrition and maternal and newborn care as a result of male engagement, and growing evidence supports the widespread use of male engagement practices in other sectors (Nutrition International, 2019).

The active participation of both men and women is crucial for the success of community development projects. Achieving gender equality not only fulfills Goal 5 of the SDGs but also enhances the overall effectiveness and sustainability of these projects. By recognizing and addressing the different roles and contributions of men and women, community development initiatives can better achieve their objectives and create more equitable and resilient communities.

Impact of Gender on Participation of Women in Community Development Projects

Participation in community development projects is often characterized as an active, dynamic, and genuine process that unfolds over time, the purpose of which is to develop and strengthen the capabilities of rural people to intervene more directly in development initiatives (Ndunge, 2020). However, the level of participation is shaped by the sociocultural and political environment in which it takes place. Several authors have identified factors affecting community participation. In the study by Ndunge (2020), the problem of low community participation is mainly associated with the impact of gender, where men distance themselves from development projects. Advocates of participatory development argue that persistent gender inequality between men and women remains an obstacle to achieving the goals of development.

In the study by Mohammed (2023), several factors were identified that affect community participation in development projects, including age, marital status, educational attainment, and income. One significant finding of this study was that there was no significant difference in participation between men and women. Gender equality is a crucial pillar in the SDGs' central proposal (Lima & Guedes, 2024). Economically, women and girls face significant challenges in obtaining employment, and when they do secure work, their conditions are often inferior to those of men. Despite the presence of women at all educational levels, this does not translate into better wages, as women continue to earn less than men (Fan & Sturman, 2019; Kochhar, 2023; Vieira do Nascimento et al., 2021).

Impact of Gender on Skills Changes

Several studies have compared skills development and changes between men and women across various sectors. According to Zenger and Folkman (2019), women excel at taking advantage of opportunities, acting with resilience, practicing self-development, driving for results, and displaying high integrity and honesty. Women were rated better than men in key leadership capabilities and skills. These results suggest that women may be more competent than they perceive, while men often overestimate their competence. This finding is further supported by Kochhar (2020), who states that the growing presence of women in higher-skill occupations has contributed to more rapid wage growth for them in recent decades compared to men, helping to narrow the gender wage gap.

However, the study by Rios-Avila and Saavedra-Caballero (2019) revealed that, in the labor market, women are more likely to work with a greater mismatch than men. Conversely, women tend to receive higher wages than men when they work in a better-matched job. The Programme for the International Assessment of Adult Competencies (PIAAC) survey (Christl & Köppl-Turyna, 2019) showed that women tend to perform less skill-intensive tasks and consequently earn less than men. This suggests that, in terms of cognitive skills, women use these skills less than men because they have relatively lower cognitive test scores in occupations with high cognitive skill requirements. However, when it comes to noncognitive skills, women, on average, possess better noncognitive skills than men. This is why women may specialize in tasks that require higher noncognitive skill use and lower cognitive skill use compared to tasks performed by men.

Methods

This study employed a quantitative research design and utilized a non-probabilistic sampling method because the extension leaders could not provide a comprehensive list of community partners for each project. A total of 126 respondents from various extension projects participated in this study through

convenience sampling. Due to the limitations of convenience sampling, the results of this study apply only to the respondents and cannot be generalized to the broader population. The survey questionnaire administered to the respondents was structured into sections aimed at describing and evaluating their demographic characteristics, the level of PSD, and the level of PLP in the implemented SDG-driven projects. The full questionnaire of PSD and PLP can be found in Appendices C and D. Statements in the Likert-scale questions for PSD were adapted and modified from Uchang et al. (2022). Statements used to assess the PLP were taken and modified from Dokubo et al. (2021) and Rubio et al. (2016).

Data Collection

Pilot testing was conducted to ensure the clarity and appropriateness of the questionnaire for the target respondents. This step aimed to guarantee that the collected responses accurately reflected the intended outcomes. Validation and reliability tests addressed the identified flaws that caused respondent confusion, and the entire questionnaire was translated from English to Cebuano.

During the final data collection phase, the researchers coordinated with and obtained approval from the faculty, who also served as extension project leaders, at two state universities in Region X, Philippines, namely, MSU-IIT and MSU-Naawan. Additionally, the researchers sought approval from the community focal person in the area where the project was implemented. After securing these approvals, the researchers explained the study objectives to the target respondents and provided informed consent forms, allowing them to decide whether to participate in the survey.

Data Analysis

This study utilized descriptive statistics to analyze the respondents' demographic characteristics, Likert-scale responses, and the number of SDGs addressed in the extension projects participated in by the respondents. Additionally, a *t* test was conducted to compare the PSD and participation levels in SDG-driven extension projects between male and female respondents. Multiple linear regression with cross-sectional data was used to examine the effect of independent variables, including perceived participation in SDG projects and sex, on the dependent variable of PSD. Diagnostic tests, such as the variance inflation factor (VIF) for multicollinearity, the Breusch-Pagan test for homoscedasticity, the Ramsey RESET test for omitted variables, and the Shapiro-Wilk test for normality, were performed to ensure model reliability. Due to the non-normality detected by the Shapiro-Wilk test, a robust regression was employed in the final model.

Regarding the qualitative interpretation employed in this study, the Likert-scale responses were analyzed using the approach outlined by Zakharenko (2023), Vagias (2006), and Siegle (2015). This interpretation method assigns specific intervals to the 5-point Likert scale as shown in Table 1, with the following labels: “1.00–1.80 (*strongly disagree*),” “1.81–2.60 (*disagree*),” “2.61–3.40 (*undecided*),” “3.41–4.20 (*agree*),” and “4.21–5.00 (*strongly agree*).”

Table 1.

Qualitative Interpretation of the 5-Point Likert Scale

Intervals	Description	Qualitative interpretation
1.00–1.80	<i>Strongly disagree</i>	Very low
1.81–2.60	<i>Disagree</i>	Low
2.61–3.40	<i>Neutral</i>	Satisfactory
3.41–4.20	<i>Agree</i>	High
4.21–5.00	<i>Strongly agree</i>	Very high

Results

Demographic Profiles of the Community Partners

There were a total of 126 respondents who participated in state university community initiatives. As presented in Table 2, 35.71% are men community partners, while 64.29% are women. The mean age of the respondents is 33 years. According to the Percent Distribution of Employed Persons by Sex and Age Group: January 2020 by Mapa (2024) of the Philippine Statistics Authority (PSA), the 25–34-year-old age-group comprised the most significant proportion of employed individuals, accounting for 27.3%. In terms of civil status, the majority of respondents are single (57.14%), followed by married (34.13%), widowed (5.56%), and separated (3.17%). This distribution suggests that the majority of respondents are unmarried, with a significant proportion being married.

Table 2.

Demographic Profile of Respondents

Respondents' characteristics	<i>N</i> = 126
Sex (%)	
Male (man)	35.71
Female (woman)	64.29
Age	
Mean	33
Min	18
Max	74
Civil status (%)	
Single	57.14
Married	34.13
Widowed	5.56
Separated	3.17
Monthly household income	
Mean	Php 9,714.29
Min	Php 1,000.00
Max	Php 27,000.00
Household size	
Mean	5
Min	1
Max	10

Note. *N* is the total number of respondents.

Table 2 also presents the average monthly household income of the community partners is Php 9,714.29, and the average household size is five. It is worth noting that these households can be classified as poor based on the poverty threshold of Php 13,797 for a family of five, as released by Mapa of the PSA in 2023. The poverty threshold represents the average amount of money required for a household to meet its basic needs.

Number of SDG-Driven Community Projects Reported by the State University

Table 3.

Summary of SDGs Addressed by Community Partners

SDG no.	SDGs	Frequency (male)	Frequency (female)	Total frequency out of 10 projects
1	No poverty	0	47	5
2	Zero hunger	19	41	4
3	Good health and well-being	0	7	1
4	Gender equality	38	31	4
5	Quality education	38	56	7
6	Clean water and sanitation	0	0	0
7	Affordable and clean energy	0	0	0
8	Decent work and economic growth	0	50	6
9	Industry, innovation, and infrastructure	0	25	2
10	Reduced inequalities	26	35	5
11	Sustainable cities and communities	0	15	2
12	Responsible consumption and production	19	37	3
13	Climate action	0	12	1
14	Life below water	0	12	1
15	Life on land	0	12	1
16	Peace, justice, and strong institutions	7	3	1
17	Partnerships for the goals	7	19	4

Note. SDG = Sustainable Development Goals

Table 3 summarizes the number of SDG-driven community projects within a state university, highlighting women's participation in these initiatives. SDG 5 received the highest number of projects, followed by SDG 8 and then SDG 1. These findings suggest that the state university is actively engaged in initiatives that support quality education, economic development, and job creation for women and address poverty within the community.

Perceived Level of Participation of Community Partners

Table 4.

Perceived Level of Participation of Community Partners in the Implementation of the State University's

SDG-Driven Community Projects

PLP in implementation	Male community partners		Female community partners	
	<i>Mean</i>	<i>Interpretation</i>	<i>Mean</i>	<i>Interpretation</i>
PLP1	3.71	High	4.04	High
PLP2	3.84	High	3.86	High
PLP3	3.91	High	3.83	High
PLP4	3.82	High	3.94	High
PLP5	4.02	High	4.01	High
PLP6	3.96	High	4.05	High
Overall PLP	3.88	High	3.95	High

Note. PLP = perceived level of participation; SDG = Sustainable Development Goals

Table 4 presents the perceived level of participation (PLP) of community partners in the implementation of the state university's SDG-driven community projects. The overall mean for women is 3.95, while it is 3.88 for men, indicating a high level of participation in the implementation of the state university's SDG-driven community projects. This finding is consistent with the vast majority of studies that show the significant contribution of women to community projects. Such projects play a key role in uplifting the living conditions and even the status of women in rural communities. Empowerment and autonomy of women are essential for attaining gender equality, a sought-after goal (Revenga & Shetty, 2012). According to the World Bank Group, data from the Directorate General of Community and Village Empowerment show that almost 30% of the proposed programs in villages came from women's initiatives, indicating their significant contribution to development.

Perceived Level of Skills Development of Community Partners

Table 5.

Perceived Level of Skills Development of Community Partners on the Implemented Extension Projects

PSD statements	Male community partners		Female community partners	
	<i>Mean</i>	<i>Interpretation</i>	<i>Mean</i>	<i>Interpretation</i>
PSD1	4.00	High	3.89	High
PSD2	4.00	High	4.00	High
PSD3	4.02	High	3.84	High
PSD4	4.13	High	3.80	High
PSD5	3.96	High	3.62	High
PSD6	3.93	High	3.64	High
PSD7	3.89	High	3.77	High
PSD8	4.02	High	3.79	High
Overall PSD	3.99	High	3.79	High

Note. PSD = perceived skills development

Table 5 presents the PSD of respondents as a result of the implementation of the state university's SDG-driven community projects. The overall mean of 3.79 for women indicates that their skills development, resulting from the implementation of the state university's SDG-driven community projects, is high, albeit lower than that of men. The result suggests that, on average, women tend to have a lower confidence level in their skills proficiency than men. According to Zenger and Folkman (2019), data indicate that when women self-assess, they tend to rate themselves less generously. Women were rated better than men in key leadership capabilities and skills. These results suggest that women may be more competent than they perceive, while men often overestimate their competence.

Difference in the PLP in SDG-Driven Projects and Skills Development by Sex

Table 6 presents the *t*-test results for levels of participation and skills development for men and women. The results show that only the level of skills development is significantly different, with men possessing higher levels than women. No significant difference was found in the level of participation.

Table 6.*Difference in the Perceived Level of Participation and Skills Development by Sex*

Variables	Male community partners	Female community partners	Difference in means	p value	Remarks
Level of participation (implementation)	3.88	3.95	-0.076	.382	<i>Not significant</i>
Level of skills development	3.99	3.79	0.199	.036	<i>Significant</i>

Although unexpected, some literature provides context for this finding, which can be attributed to two plausible reasons. A previous study suggests that men tend to have stronger cognitive skills, especially in terms of numbers and problem-solving (Tverdstup & Paas, 2019). Previous reports have noted that women may lag in terms of skills development due to the patriarchal nature of their communities, where they may feel that specific skills are more suitable for men or that they are not given sufficient access or space to practice newly acquired skills in comparison to men, consequently leading to stunted skills development (West et al., 2019). Another reason could be the gender confidence gap in skills perceived to be male-typed. It has been reported that women tend to rate specific abilities much lower than equally performing men, and, in the case of this study, they are skills pertaining to leadership and managerial roles, presumably because they do not perceive them as natural tasks for women (Exley & Kessler, 2022). Either or both of the two reasons may have contributed to the significant difference in the level of skills development.

Effect of Community Partners' Level of Participation in SDG-Driven Projects and Sex on Their PSD

Table 7.

Robust Regression Results on the Effect of Community Partners' Participation and Sex on Their Perceived Skills Development

Variables	Coefficient	Interpretation
Level of participation in implemented project	0.537*** (0.107)	Significant and has a positive effect on perceived skills development
Sex (female = 1, male = 0)	-0.241*** (0.083)	Significant, perceived skills development of women is lower compared to men
Constant	1.911*** (0.432)	Significant
Prob > F	0.000***	Regression model is significant in explaining the variation in the level of perceived skills development
R-squared	0.278	27.8% of the variation in perceived skills development is explained by the model

Note. Robust standard errors in parentheses

*Note. *** $p < .01$*

Prior to presenting the final regression results, a series of diagnostic tests were performed to ensure the robustness of the model. The detailed diagnostic tests can be found in Appendices A and B. The final regression output on the PSD is reported in Table 7. The results indicate that the level of participation in the implemented project is positive and highly significant ($\beta = 0.537$, $p < .01$). These findings demonstrate the importance of active engagement in extension initiatives, as participants who are more deeply involved are better able to internalize, retain, and apply the knowledge and skills gained from the intervention or programs.

However, the coefficient for sex reveals a negative and statistically significant ($\beta = -0.241, p < .01$), suggesting that women report lower perceived skills development compared to men, even when participation is taken into account. This outcome is consistent with the results of Hargittai and Shafer (2006); gender effects are significant concerning self-perceived skill levels. Women tend to rate themselves as less skilled than men. Data from Zenger and Folkman (2019) further support these findings, showing that when women self-assess, they typically rate themselves less generously. Similarly, Rios-Avila and Saavedra-Caballero (2019) found that women are more likely to engage in occupations that demand lower levels of skills development. Interestingly, despite this self-assessment trend, women are often rated higher than men in key leadership capabilities and skills. These results suggest that women may be more competent than they perceive, while men frequently overestimate their competence.

Conversely, women generally exhibit superior noncognitive skills compared to men. These skills include emotional intelligence, interpersonal abilities, and perseverance. Women often excel in tasks that leverage noncognitive skills, which require high levels of these abilities but less reliance on cognitive skills. This specialization helps explain why women may focus on roles that prioritize noncognitive skills over cognitive skills compared to their male counterparts.

In relation to participation, the study by Haas et al. (2015) suggests that females generally exhibit higher levels of life skills and competencies at the start of the program and show more remarkable improvement over the year compared to their male counterparts. Females who participated in development programs significantly outperformed males in five life skill areas—decision-making, critical thinking, communication, goal setting, and problem-solving—both at the beginning of the program and in terms of their progress throughout the year. These results indicate that females who participated tend to achieve higher skills development in these areas.

Limitations

This study has considerable limitations when examining its findings. First, this study employs non-probabilistic convenience sampling due to the unavailability of a complete list of community partners, making the results applicable only to the 126 respondents from the selected extension projects. Second, this study relied on self-reported data gathered through Likert-scale responses, which may not provide objective measures of skills and participation. The gender-related biases in self-assessment might have influenced the results. Third, the cross-sectional design may mean that this study captures a snapshot in time, which makes it impossible to analyze causality or developmental trends. Finally, the non-normality in the data, as a result of the Shapiro-Wilk test, may have impacted the statistical power of the findings; hence, a robust regression method was employed to reduce the impact of this non-normality.

Conclusion

The findings from this study reveal significant insights into the differences in PSD and participation levels between men and women participants. The data reveal that increased participation significantly enhances skills development across the board. However, a notable disparity exists between genders, with women showing lower perceived levels of skills development compared to men. This discrepancy in skills utilization is evident in cognitive skills, where women score lower on cognitive tests in high-skill occupations. Cognitive skills, which encompass abilities such as reasoning, problem-solving, and complex information processing, are less frequently utilized by women in these roles.

SDG-driven extension projects also showed the perceived participation and gender influence on PSD. This study indicates that women perceive their participation as high in the implementation of SDG-based community projects. Additionally, while men report slightly higher levels of PSD, the overall positive perception of skills enhancement across both genders underscores the effectiveness of the university's extension projects in building critical competencies. These findings emphasize the importance of inclusive engagement strategies and targeted support to enhance further women's contributions and skills development in community projects, thereby supporting broader SDGs.

Recommendations

To provide broader perspectives on the study of gender-based perception, level of skills development, and the participation of men and women among the university's community partners, the future direction of this study includes community partners from the other six campuses of the entire MSU System located in strategic areas across the Mindanao region. Considering multicultural factors among community partners in Mindanao, an analysis of the perceived level of skills development and the participation of men and women should be conducted to determine if it will yield a consistent pattern of results among community partners of each campus of the MSU System. Factors affecting the perceived level of skills development are likewise recommended as part of the future direction of this study.

Positionality Statement

The researchers involved in this study are all faculty members at MSU-IIT. Our research is funded internally by MSU-IIT and focuses on various community projects driven by SDGs at both MSU-IIT and MSU-Naawan. As insiders, we collaborated closely with faculty who were also involved in extension projects at these universities, gaining a deep understanding of the local context.

We recognize that our affiliation with the institution we are studying can influence how we interpret data, perceive the projects, and present our findings. To mitigate this bias, we held regular team reflections, documented our assumptions, and consulted multiple sources of information from both universities and their community partners. These measures help ensure that our insider perspective does not overshadow the voices of project participants and stakeholders.

We have no financial conflicts of interest apart from the internal grant from MSU-IIT, and there are no personal relationships that could sway this research. We present this statement in the spirit of openness and accountability. We aim to share our findings with honesty and humility, rooted in our institutional knowledge, while striving for objectivity and inclusivity throughout the research process.

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Appendices

Diagnostic Tests for the Regression Analysis

Appendix A. Multicollinearity Test Using VIF

	Level of perceived skills development	Level of participation on implementation of projects	Sex of participants
Variable	VIF	1/VIF	Variable
Level of participation	1.01	0.99	Level of participation
Sex	1.01	0.99	Sex
Mean VIF	1.01		Mean VIF

Note. VIF = variance inflation factor

Based on the results, the model does not suffer from serious multicollinearity because the VIF is less than 10.

Appendix B. Other Diagnostic Tests for Regression Analysis

Other tests	Null hypothesis (Ho)	Prob > chi2	Interpretation
Breusch-Pagan test	Constant variance	0.1571	Accept Ho; the model has constant variance
Ramsey RESET test	Model has no omitted variables	0.1475	Accept Ho; the model has no omitted variables
Shapiro-Wilk test	The data are normally distributed	0.0409	Reject Ho; the data are not normally distributed

Robust regression was employed for the final model to address issues of data non-normality.

Appendix C. Questionnaire for PLP

Statements for the level of participation in the implementation	5	4	3	2	1
PLP1. My participation in the project contributes to the expeditious completion of projects due to the availability of more hands.					
PLP2. My involvement in the project helps in avoiding disruptions during the implementation of community projects.					
PLP3. I instill a sense of ownership, which motivates me to contribute my best to project implementation.					
PLP4. My involvement in the project ensures that high standards are met in the implementation of projects.					
PLP5. My participation in the project promotes unity, which is essential for the successful completion of the project.					
PLP6. My involvement in the project ensures that every segment of the community is identified during the implementation stage of the project.					

Note. PLP = perceived level of participation

Appendix D. Questionnaire for PSD

Statements for the PSD	5	4	3	2	1
PSD1. I have obtained the skills in providing transfer of knowledge to other people.					
PSD2. I have acquired skills in interacting with the members of the organization.					
PSD3. I have skills in dealing with problems, issues, and concerns of the community.					
PSD4. I have skills in the implementation of activities beneficial to the community.					
PSD5. I am skilled in providing technical assistance to the community.					
PSD6. I became more capable of generating revenues and disbursing funds.					
PSD7. I learned how to conduct more orderly meetings and arrive at more comprehensive decisions and agreements during meetings.					
PSD8. I became more competent in implementing programs and projects beneficial to my constituents.					

Note. PSD = perceived skills development

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

Ethics Statement

Ethics approval was obtained from MSU-IIT regarding the ethical aspects of this study. In addition, the participants provided their informed consent to participate in this study.

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About the Authors

Abdullah R. Sirad, DM, is the chairperson of the Department of Business and Innovation at MSU-IIT. His research focuses on leadership, organizational development, HR management, and community engagement.

Shiny Rose S. Narit, MBM, is a faculty member of the Department of Business and Innovation at MSU-IIT. Her research focuses on community development, academic entrepreneurship, marketing, and management.

Charlyn M. Capulong, MS, is a faculty member of the Department of Economics at MSU-IIT. Her research interests are in developmental economics, focusing on poverty and education.

Safa D. Manala-O, PhD, is a faculty member of the Department of Business and Innovation at MSU-IIT. She has published research on consumer behavior, sustainability, and entrepreneurship.

Rosario L. Reserva earned Doctor of Philosophy in physics, major in biophysics, and is the director of MSU-IIT WE CARE Office under the Office of the Vice Chancellor for Public Affairs.

Lawrence Jay M. Cañete holds a bachelor's degree in business administration, major in marketing management, from MSU-IIT.

Correspondence concerning this article should be addressed to Abdullah R. Sirad through email at abdullah.sirad@g.msuiit.edu.ph.