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MULTIFACETED CONSTRAINTS FACED BY WOMEN FARMERS IN SELECTED RURAL VILLAGES IN MALAYSIA

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ABSTRACT

Rural women farmers played critical roles in the agriculture sector with significant contributions to food production. However, they face a variety of obstacles which makes it difficult for them to practice agriculture and build sustainable livelihoods. These challenges can differ depending on multi-aspects including location, culture and economic situation. This paper will examine the multifaceted constraints faced by the women farmers from selected rural villages at Tenom, one of a district in the Sabah state of Malaysia through a mixed-method approach using focus group discussion (FGD) and quantitative analysis on secondary data source. For the purpose of this analysis, purposive sampling was used to reach out to rural women farmers as participants in the FGD sessions. Four groups of FGD were held with eight participants involved in each group. Based on the FGD session, this study identified four key themes: ((1) workload and time constraints; (2) financial and resource inclusion; (3) lack of education and training; and (4) infrastructure and market access. The findings reveal that women farmers often shoulder dual responsibilities of household care and farm work, leading to significant time limitations. Limited access to financial capital, farming inputs and support networks further restrict their agricultural efficiency. The key findings from this study will therefore provide useful recommendation for policymakers to develop remedy strategies that can deal with the identified constraints.

Keywords: case study, rural women farmers, agriculture, challenges, rural

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INTRODUCTION

The long-standing battle against poverty has placed women on the frontline, as they play a vital role in agricultural food production and in ensuring food security within their communities (Balasha et al. 2022). As farmers, women were regarded as the backbone of rural and national economic development, contributing significantly to food production and overall food security (Ugwu 2019; Karl 2009). In fact, women were considered as large contributor to the world's staple food with estimation close to 50% of the world's food production. Meanwhile in Southeast Asia, women contributed up to 90% of the labour for rice cultivation (Rasheed et al. 2020).

Despite their significant role in agricultural production, women farmers faced several challenges that limit their productivity and opportunities. Heavy workloads and time constraints arise because women often juggle farming with household chores and caregiving responsibilities, leaving them little time to adopt improved agricultural practices. According to Pierotti, Friedson-Ridenour and Olayiwola (2022), women's limited time and labour is largely shaped by societal norms that give priority to men's farm plots and expect women to farm only alongside their household duties. Besides, women farmers often faced limited access to agricultural education and training due to sociocultural norms that prioritise men's learning and decision making in farming (Balasha et al. 2022). Medendorp et al. (2022) argue that agricultural training programs are often designed without taking women's specific roles and needs into account, and they are frequently situated far from rural communities, making access challenging. On the other hand, women farmers were less likely to succeed compared to their male counterpart due to several setbacks that range from a lack of same access to seeds, credit, extension services and technology (Ugwu 2019). Women farmers faced other challenges include lack of money owning to poverty and limited economic opportunities (Murhula et al. 2020). Furthermore, women farmers also encountered significant barriers due to poor infrastructure and limited access to markets. In many rural areas, inadequate roads, transportation and storage facilities make it difficult for them to bring their produce to market in good condition (Medendorp et al. 2022).

Nonetheless, the study of the constraints faced by women farmers in Malaysia specifically rural area has remained relatively scarce. This knowledge gap makes it difficult for policymakers to design effective, gender-sensitive interventions that address their real needs. Hence, a study within such a local context was much needed to highlight the challenges encountered by rural women farmers in Malaysia, with rural Sabah serving as a case study. Beyond highlighting the constraints faced by rural women farmers, this study aims to make three key contributions. First, it showcases the lived experiences of the rural women farmers in Sabah, an underrepresented group in the Malaysian agricultural

literature. Second, this finding will systematically link the identified challenges to institutional, market and sociocultural factors. Thereby, allowing insight to be obtained for the development of context-specific policy that will be more targeted and gender-responsive interventions. Third, the findings contribute conceptually by theoretical framework that shed light on how structural and gendered constraints intersect uniquely in rural Sabah.

LITERATURE REVIEW

Women farmers in rural areas play a crucial role in sustaining agricultural production, contributing to household livelihoods and ensuring food security. In addition, women are essential members of families and communities because they provide food, water and fuel as well as care for young children, the elderly and the sick. Nevertheless, although they play a crucial role in agriculture, women still face several barriers that limit their productivity and prevent them from fully participating in agricultural growth. This study will be primarily anchored in the Gender and Development (GAD) theoretical framework, which emphasises the socially constructed roles, responsibilities and power relations that shape women's access to resources and opportunities (Brenner 2009; Jaquette 2017; Miller and Razavi 1995). Unlike earlier Women in Development (WID) approaches that focus on women's participation in economic activities, GAD highlights how institutional structures, social norms and policy environments systematically constrain women's productive potential. The GAD approach goes beyond simply trying to integrate women into development but argues that the whole mode by which development operates must be transformed to take on social and economic reallocation (Brenner 2009). In such way, GAD enable the women empowerment in all aspects of their lives as a means of strengthening the foundations of their societies. Applying this framework allows the present study to interpret the constraints faced by rural women farmers in Sabah not merely as individual limitations, but as outcomes of broader gendered institutional arrangements embedded within Malaysia's rural development landscape.

Women farmers confront different challenges across countries and agricultural contexts. Consequently, numerous studies have examined the constraints affecting women's participation and productivity in agriculture, including limited access to finance, infrastructure, information, technology, extension services, and agricultural resources, as well as time and sociocultural constraints (ILO 2018; Kagbu 2018; Obianefo 2021; Patra 2018; Pierotti, Friedson-Ridenour and Olayiwola 2022). One of such study conducted was in Nigeria found that women engaged in agriculture face multiple challenges, including insufficient funding, inadequate infrastructure and limited access to information. The fundamental impediment lies in the lack of start-up capital, compounded by restricted

access to machinery, tools, skills and labour. Moreover, women farmers are often reluctant to explore new opportunities due to family responsibilities (Kagbu 2018). Another study in India stated that women farmers encounter various obstacles when it comes to accessing resources such as land, water, credit, technology, innovative methods, extension services and education. Land ownership is primarily dominated by men, resulting in women not fully benefiting from land possession, which carries social consequences. Meanwhile, study in China by Pan and Whu (2025) claimed that women's involvement in decision-making processes is restricted due to factors like low self-confidence, inadequate expertise, perceptions of female passivity, restricted technological access, illiteracy and insufficient farm-related information. Additionally, financial difficulties, lack of property ownership and limited access to credit hinder women's ability to expand production and invest in machinery (Patra 2018); this is further supported by Ambarwati et al. (2025) in their study in Indonesia.

Women faced time and labour constraints as a result of societal norms that prioritise men's farming activities and expect women to engage family care activities rather than agricultural activities. As such, the women's household responsibilities and non-farm jobs have significantly limiting their farming efforts and capability. Men's plots are prioritised further, causing labour to be diverted primarily to men's fields, leaving less labour, and less efficient labour available for women's farms. Furthermore, women's labour access is particularly limited due to seasonal swings in labour demand, as men's agricultural productivity is prioritised (Pierotti, Friedson-Ridenour and Olayiwola 2022).

Another finding stated that cultural reasons make it harder for women to own land, get farming resources and access credit. Female farmers who are economically disadvantaged tend to experience insufficient access to advanced technology, encounter greater expenses related to labour, lack proper opportunities for employment outside farming and deal with deteriorating infrastructure. Additionally, cultural elements contribute to women's challenges in owning land, obtaining farming resources like inputs and agrochemicals and accessing credit. Moreover, women face more challenges than men in getting training and handling household chores due to institutional factors. Hence, institutional factors exacerbate women's unequal access to extension training compared to men, leading to an increased domestic workload (Obianefo 2021).

While international and regional studies demonstrate that women farmers face diverse constraints shaped by local contexts, research specific to Malaysia remains relatively limited. Existing Malaysian studies (Man et al. 2024; Yee and Man 2023) provide valuable insights into gendered challenges in agriculture, yet they tend to adopt a broad national perspective that may overlook state-level variations. This was in line with the reports by Masdek (2017) and Haimid (2016)

on the past research that has been conducted in Malaysia. However, these findings were confined on the Peninsular Malaysia. Under such circumstance, the findings cannot be generalised for all localities in Malaysia particularly those in the East Malaysia. Sabah differ markedly from Peninsular Malaysia in terms of geographical conditions, cultural composition, economic structure and development trajectories. The region is characterised by greater geographical remoteness, limited infrastructure connectivity and a higher reliance on agriculture and informal economic activities, which shape women's labour market experiences in distinct ways. In addition, Sabah's rural community-based social norms influence women's access to education, employment opportunities and decision-making autonomy differently from the more urbanised contexts of Peninsular Malaysia. These structural and sociocultural differences suggest that conclusions drawn from Peninsular-based studies may not fully capture the realities faced by women in Sabah, underscoring the need for context-specific empirical investigation. In short, Sabah represents a particularly relevant case for closer examination, given its persistent rural poverty, reliance on agriculture and distinct sociocultural setting.

In this regard, Man, Siaw and Abdulmumini (2024b) conducted a study in Ranau, Sabah, which highlighted a range of barriers confronting rural women farmers. These include restricted access to finance and agricultural inputs, insecure land rights, low levels of technology adoption, limited policy support and reduced opportunities for participation in farm-level decision-making. Importantly, the study also underscored the role of social culture in shaping women's participation, suggesting that structural and cultural constraints intersect to hinder their economic engagement. The concern over financial access has been echoed by Topimin (2024), who reiterated that lack of capital remains one of the most pressing constraints for rural women in Sabah, thereby limiting their ability to invest in productivity-enhancing resources.

Beyond financial challenges, other structural and sociocultural factors have been identified. Education and community culture, for example, play a decisive role in shaping women's opportunities and aspirations in agriculture. This finding is consistent with Rudiatin et al. (2021), who argue that women's participation is significantly mediated by social norms and educational attainment, which in turn affect their entrepreneurial and agricultural capacities. Such dynamics suggest that interventions addressing only economic factors without tackling underlying social barriers may have limited long-term impact. Complementing these perspectives, a study on rural women in Kundasang, Sabah, provides further evidence of the entrenched sociocultural perceptions of women's roles in agriculture. Despite being actively engaged in farming, women were often regarded merely as "helpers" to their husbands and remained closely associated with poverty due to high illiteracy and restricted decision-making power (Yee and Man 2024). This reinforces the argument that rural women's agricultural

participation cannot be fully understood without considering the intersection of financial, educational, cultural and structural dimensions. Women farmers therefore require government support through both policy measures and practical assistance, particularly in the form of entrepreneurial training.

The study's results above suggest that although existing studies provide useful insights, research on rural women farmers in Sabah remains rather limited, often addressing issues in isolation and underrepresenting women's own perspectives. Existing research has often concentrated on broader rural development issues or examined women's participation in agriculture in other regions of Malaysia, leaving a significant gap in understanding the unique socioeconomic and cultural contexts of Sabah. This limitation underscores the importance of the present study, as it not only contributes empirical evidence from Tenom but also highlights structural barriers that may resonate across other districts. By addressing this gap, the study provides a foundation for future comparative research in Sabah and strengthens the discourse on rural women's participation in agriculture and food production within East Malaysia.

METHODOLOGY

This study employed a mixed-method approach with quantitative analysis on the secondary data and qualitative analysis based on focus discussion group (FGD) session. The FGD session involves a purposively selected group of participants to discuss on a specific topic of interest. FGD can be helpful for gathering specific sorts of data or in situations when it is challenging to obtain information using conventional data collecting techniques (Omar 2018). The method is predicated on the idea that group processes activated during a FGD aid in identifying and clarifying shared knowledge among groups and communities, which would be challenging to ascertain through a series of individual interviews (Van Eeuwijk and Angehrn 2017). Besides, FGD is useful in revealing the differing viewpoints of the many parties participating in the change process, allowing the process to be handled more effectively (Krueger et al. 2000). Hence, the use of FGD in this study will be highly suitable in shedding light on the challenges faced by rural women farmers in greater depth.

According to Omar (2008), the process of FGD involves the identification of goal/objectives, identifying questions and people, selection of time/place/environment, conducting research, evaluation of findings/data and finally reporting the findings accordingly. In the application of FGD, the objectives must first be ascertained in ensuring that the FGD is able to effectively supply the information required. Next, it is critical for the facilitator/researcher to be able to formulate appropriate, concrete and articulate questions that allows the interpretation of them in answering the research question. The FGD in

practice would involve multiple participants who share common characteristics that were able to contribute equally to the discussion. Upon the completion of information collection from the FGD, the recorded statements were transcribed, and qualitative data was analysed based on a two-way approach as suggested by Silverman (2006) and Wong (2008). The two-step approach involved, firstly, a simple descriptive approach in observing the general outcome of the FGD, and secondly, an interpretation through problem mapping and identification of themes.

In the FGD analysis of this research, the objective was emphasised on determining the main challenges that women farmers faced. Hence, questions had been formulated in such a way to obtain in-depth information on the critical issues that women farmers were facing. The selection of FGD participants from four rural villages was carried out using a purposive sampling strategy, in consultation with the Tenom District Office. The villages were deliberately chosen based on predefined criteria, namely the high participation rate of women in the agricultural sector, which represents their primary economic activity. This criterion ensured that the participants possessed relevant lived experiences aligned with the study's research objectives. Additionally, participants were recruited based on their informed willingness to participate, which was essential to facilitate open discussion and ensure the effectiveness and credibility of the FGD sessions. In this case, FGD was conducted with sub-groups elusive to women at the selected rural villages in Tenom. The creation of such sub-group allowed the targeted participants to be more open in taking part in the discussion and having greater social dynamics. The transcription of the recorded dialogues and analysis allowed inferences to be drawn on the obstacles faced by women farmers.

Focus Group Discussion Outcome

A total of four FGD were organised in four selected rural villages, namely, Kg Tilis (FGD 1), Kg Bakuku (FGD 2), Kg Sugiang (FGD 3) and Kg Pangi (FGD 4). The selection of the rural villages was done after consulting the District Office and the Member of Parliament (MP) office. Participants were seated in a round table seating and the discussion facilitated by one trained facilitator. Each group per session was limited to eight participants to ensure that all participants had an opportunity to share and discuss their opinions. The issues of confidentiality and anonymity were discussed, and attendees were encouraged to ask questions about them. The researchers' assurance allowed participants to express their views more openly. All four FGD sessions were held openly at the community hall.

Facilitators also took the time to describe the format of the discussion, highlighting the significance of all members participating and expressing only honest, not idealistic, opinions. They were informed that there were no correct or incorrect responses and that no one would be judged based on their opinions. The authors believe that this initial setting-the-stage exercise is essential in ensuring the smooth operation of the FGD because it facilitates free-flowing debate without inhibitions. Participants were encouraged to speak up for the audiotaping to be clear. When participants' comments or replies were confusing or lacking in detail, facilitators explored further. Participants who spoke up less frequently were encouraged to speak up to guarantee an even level of engagement within each discussion group. Non-verbal communication (e.g., shrugging, nodding) that would otherwise go unrecorded was noticed by the scribe.

FINDINGS

Quantitative Analysis

Based on the first methodological approach which is the quantitative analysis of secondary data, the following section presents findings derived from datasets obtained from the Department of Statistics Malaysia to describe the demographic characteristics of the Tenom district. This demographic profiling serves as a contextual foundation for the subsequent qualitative analysis namely the focus group discussions, by situating individual experiences within the broader population trends.

Table 1: Sociodemographic profiles in Tenom

Total population	50,230
Citizens	48,026
Non-citizens	2,204
Male	25,806 (51.4%)
Female	24,424 (48.6%)
Households	10,672
Average household size	4.7

Source: Department of Statistics Malaysia (2022)

The population of Tenom district stands at 50,230, with 48,026 citizens (95.6%) and 2,204 non-citizens (4.4%). The gender distribution is relatively balanced with 51.4% male and 48.6% female, suggesting a near-equal division in potential agricultural labour supply. The district's 10,672 households average 4.7 members, a size that often reflects extended family arrangements common in rural Sabah.

From a gender perspective, such household structures can reinforce traditional divisions of labour, with women juggling both unpaid domestic responsibilities and agricultural roles. This "double burden" is well-documented in rural development literature, where women's time constraints limit participation in income-generating activities (Doss 2018). In Tenom, the nearly even gender split in population implies that half of the agricultural workforce is female, yet historical patterns (Aminah and Narimah 1998) suggest their roles are more concentrated in lower-paying, labour-intensive farm tasks rather than in decision-making or mechanised work. Compared to some other rural districts, Tenom offers reasonable accessibility for fieldwork while still representing a rural, agricultural context, thus balancing logistical feasibility and research relevance. Previous local government reports have identified Tenom as facing issues such as declining productivity, limited mechanisation and market volatility. This makes it a relevant location for research on agricultural production challenges.

In the subsequent section, the quantitative analysis is further extended to examine specific aspects affecting women's participation in agriculture, namely: (1) infrastructure and market access constraints; (2) education and training capacity; and (3) financial and resource inclusion. These analyses provide measurable insights into structural and socioeconomic factors, which will later be complemented by qualitative findings from the FGD sessions to offer a more nuanced understanding of the challenges faced by women farmers in the Tenom district.

RESULTS AND ANALYSIS

Infrastructure and Market Access Constraints

The quantitative data provide initial insights into the accessibility of roads, transportation networks and local markets in the Tenom district. Analysis of household and agricultural statistics highlights patterns in farm proximity to key infrastructure, frequency of market participation and logistical challenges faced by women farmers. These findings establish the baseline conditions under which women operate and set the context for understanding the practical barriers they faced.

Table 2 shows the quantitative analysis based on the data obtained on the infrastructure and market access constraints in the Tenom district. Analysis of household and agricultural statistics highlights the farm access to key infrastructure such as water and electricity supply and garbage collection facilities faced by women farmers.

Table 2: Infrastructure and market access constraints

Basic amenities (2019)	
Type of water supply (%)	
Piped water in the house	54.3
Public water standpipe	0.9
Others	44.8
Accessibility to electric supply (%)	
Accessible to electricity	100.0
No electricity	0.0
Garbage collection facility (%)	
Living quarters	9.1
Close proximity area (within 100 m)	20.4
None	70.6

Source: Department of Statistics Malaysia (2022)

Infrastructure indicators from Tenom's dataset reveal universal electricity access (100%), but more uneven distribution of other essential services: only 54.3% of households have piped water in the home and 44.8% rely on alternative sources such as community standpipes or wells. Furthermore, waste management services are limited, with 70.6% of households having no garbage collection facility at all. While electrification removes a major barrier for post-harvest processing and household comfort, limited water and sanitation infrastructure imposes additional physical labour, primarily on women, who bear the responsibility for water collection and waste disposal (Man et al. 2024). These domestic demands not only reduce the time available for farming but also affect health outcomes, as unsafe water and poor sanitation can contribute to illness and reduced productivity.

Poor water and waste infrastructure is often linked with remoteness from main transport routes, meaning such households may also face longer travel times to reach markets. This aligns with Khazanah Research Institute's (2024) findings in Sabah, where inadequate infrastructure correlates strongly with reduced market participation for perishable goods—a disadvantage that disproportionately affects women, who often produce fresh vegetables, fruits and small livestock for direct sale.

Education and Training Capacity

Table 3 examines education, training capacity and healthcare access among women farmers in the district, revealing gaps in knowledge, skills and capacity-building opportunities. In addition, access to basic healthcare facilities, such as government hospitals or clinics, is assessed to understand broader social support structures that influence women's well-being and productivity. By quantifying education access and proximity to healthcare services, the findings identify structural limitations that may hinder women's agricultural efficiency but also their overall empowerment.

Table 3: Education, training capacity and healthcare facilities access

Education and healthcare	Total number
Government school	
Number of schools	52
Primary school	46
Secondary school	6
Number of teachers	1,139
Primary school	798
Secondary school	341
Number of students	10,731
Primary school	6,191
Secondary school	4,540
Students:teacher ratio	1:10
Primary school	1:8
Secondary school	1:14
Number of government hospital	
Hospital	1
Number of government clinics	
Health clinic	2
Rural clinic	7
Community clinic	–

Source: Department of Statistics Malaysia (2022)

Tenom has 52 government schools (46 primary and 6 secondary) serving 10,731 primary and 4,540 secondary students, with 1,139 teachers across both levels. The resulting student-teacher ratios (13.4:1 in primary, 13.3:1 in secondary) are better than Malaysia's rural average, which suggests potentially smaller class sizes and greater individual attention.

However, these figures alone do not capture gender parity in education or the relevance of curricula to agricultural livelihoods. Prior research in Sabah indicates that although schooling is accessible, the content seldom addresses skills relevant to local economies, such as modern agricultural practices or entrepreneurship (Maimunah 1992). This gap limits the potential for young women—who might otherwise remain in farming—to access training that could improve productivity and profitability. Additionally, low adult literacy and limited participation in formal extension programs mean that knowledge transfer is not always reaching women already engaged in farming (Man et al. 2024).

Financial and Resource Inclusion

The quantitative analysis was conducted on the financial and resource inclusion indicators. The household income information, GINI coefficient and poverty index was examined to highlight inequalities in resource allocation and access to financial tools. This serves in providing a foundation for understanding the economic constraints that shape women's engagement in farming activities.

Table 4: Financial and resource inclusion

Household income	
Monthly household gross income	
Median	RM3,525
Mean	RM4,734
Mean monthly households consumption expenditure	2,606
Gini coefficient and incidence of poverty	
Gini coefficient	0.347
Incidence of poverty	17.2

(*continued on next page*)

Table 4 (*continued*)

Household income			
Poverty			
Year	**2018**	**2019**	**2020**
Grand total	1,834	1,796	1,916
Extreme poor (*miskin tegar*)	1,020	839	848
Male	869	723	736
Female	151	116	112
Poor (*miskin*)	814	957	1,068
Male	657	787	881
Female	157	170	187

Source: Department of Statistics Malaysia (2022)

The median household income in Tenom is RM3,525 with a mean of RM4,734, reflecting moderate inequality (Gini coefficient: 0.347). The poverty incidence is 17.2%, with extreme poverty affecting between 839 and 1,020 individuals annually from 2018 to 2020. Notably, while recorded poverty numbers are higher among men, such statistics may mask the reality for women, as poverty is measured at the household level (World Bank, Food and Agriculture Organization and International Fund for Agricultural Development 2010).

Female-headed households in rural Sabah often lack formal land titles, reducing their eligibility for agricultural credit and subsidies (Khazanah Research Institute 2024). Without access to finance, women face difficulties in purchasing inputs, adopting mechanised tools or participating in contract farming schemes. Doss (2018) argues that these disparities in access to productive resources are the primary drivers of gender productivity gaps in agriculture, rather than any inherent difference in farming ability. In Tenom, bridging this gap could therefore have a measurable impact on overall agricultural output and household food security.

Focus Group Themes

Following the quantitative overview established through the quantitative analysis, this section focusses on reporting of findings from the FGD. The qualitative component allows for a closer examination of everyday experiences and constraints faced by women involved in agricultural activities in the Tenom district—insights that are not readily observable from secondary data

alone. Analysis of the FGD narratives revealed several recurring issues raised by participants, namely workload and time constraints, limited financial and resource inclusion, gaps in education and training, and challenges related to infrastructure and market access. As such, the finding of this study can be summarised into four major themes as presented in Table 5.

Table 5: Summary of focus group themes

Theme	Detail
Workload and time constraints	Multiple responsibilities Limitations and biases that impact their physical strength
Financial and resources inclusion	Financial literacy Lack of land ownership rights Restricted access to credit
Lack of education and training	Conventional farming practices Limited access to agricultural training
Infrastructure and market access	High cost of transportation Poor road connectivity Inadequate market information

Workload and Time Constraints

Based on the FGD, women farmers in Tenom, Sabah, find themselves at the crossroads of two hard roles: farmer and housewife. The weight of household responsibilities, which are frequently combined with agricultural tasks, provides a unique set of obstacles that have a substantial impact on their daily life and general well-being. Some of the women farmers concerns extracted from the interviews are as follows:

> FGD 1: In the morning, I take care of the children; in the afternoon, I go to the farm, and at night, I do household chores. That's all we do, because that's how we can manage to plant a little and earn a small profit.

> FGD 3: It's difficult for me to engage in large-scale farming due to the lack of time, especially with young children. I primarily assist my husband in managing our farm.

Physical strength is undoubtedly crucial for farming activities, particularly those involving laborious tasks, heavy lifting and demanding work. Women farmers in Tenom, just like in many other rural areas, often face specific physical challenges due to traditional gender roles (Jain et al. 2022). Again, the weight of household responsibilities can lead to tiredness and a lack of stamina when undertaking physically taxing farm tasks.

Financial and Resources Inclusion

Access to land is a fundamental challenge faced by many women farmers. Women are often disadvantaged by traditional land ownership rules, resulting in unequal access to land and property rights. According to women farmers, most of them depending solely on their husband's land which restrict their access to resources such as credit: "If we had land, it might be a bit easier to apply for any assistance from the Department of Agriculture. Right now, we're only working on my husband's land, there is no land" (FGD 1). Furthermore, according to respondents, due to limited financial literacy it hinders them from navigating the loan application process effectively: "It's difficult to apply for a loan because there's no land title, and furthermore, it's challenging to do the paperwork...I'm not skilled in financial matters" (FGD 2).

Lack of Education and Training

One of the challenges that women farmers face is the lack of agricultural skills. Most women farmers indicated that they need skills support to improve their production levels. According to the respondent, to date, there is no training organised near their village. The absence of organised training near the respondent's village could be attributed to various factors such as higher costs for trainers and participants to travel to and from the training venue and lack the necessary financial resources to organise and conduct training programs.

Lack of training among rural women farmers might have significant implications for their livelihoods. Without exposure to new techniques, farmers may continue using traditional methods that could be less productive. Some of the rural women farmers concerns extracted from the interviews:

> FGD 1: There's no training available here; everything is in the city. We also want to learn modern farming techniques, but we can't participate because it's too far away.
>
> FGD 2: Nowadays, we continue to plant as usual, following traditional methods, because there's no opportunity for learning. Our income remains limited as it is.

Infrastructure and Market Access

Infrastructure and market access are key components for rural development, particularly in the agricultural sector. These factors have a considerable impact on agricultural production efficiency, market access and the overall economic growth of rural areas. However, rural areas often face significant challenges

when it comes to accessing markets for their agricultural products. Kg Pangi for instance, only accessible by train, a 45-minute commute from town in the Pangi Area. The limited road networks have affected not only the marketing of agricultural products, but also the delivery of farm inputs and other services. In other rural areas such as Kg Bakuku and Kg Tilis, women farmers also have trouble in assessing market due to inadequate road and transportation infrastructure and transportation costs due to long distance. These challenges can limit their ability to sell their agricultural products, generate income and improve their economic well-being. Some of women farmers concerns extracted from the interviews:

> FGD 1: Selling agricultural produce here is challenging...it's far from town. Sometimes it takes hours. Moreover, the road conditions are bad.

> FCD 4: It's difficult to sell because the train only comes twice a day. I want to go to the market early in the morning because the market opens early, but there are no trains available.

Additionally, the high cost of transportation because of road conditions makes it difficult for them to obtain necessary inputs such as seeds, fertilizer and equipment, as well as move their produce to markets for sale. This can result in higher costs and lower earnings.

DISCUSSION

The integration of Tenom's statistical dataset with the FGD narratives provide a multi-layered perspective on the constraints faced by women farmers. The four themes identified in the FGD—workload and time constraints, lack of financial and resource inclusion, lack of education and training, and limited infrastructure and market access—are reflected clearly in the quantitative data. This mixed-methods synthesis strengthens the internal validity of the study by showing consistent patterns between lived experience and measurable indicators.

Quantitative indicators from Tenom reveal that only 54.3% of households have piped water inside the home, while 44.8% rely on alternative sources, such as public standpipes or wells. In addition, 70.6% of households have no garbage collection service. The average household size is 4.7 members, indicating potentially high domestic care demands. These infrastructural deficits require additional time for basic household management tasks, such as fetching water, managing waste and caring for multiple dependents, which

are activities disproportionately undertaken by women. Even though Tenom enjoys universal electricity coverage (100%), the absence of adequate water and sanitation services significantly shapes the daily time budgets of rural women.

From the FGD, participants confirmed that water collection often consumes several hours a week, especially in households without in-home piped water. This aligns with Man et al. (2024) and Aminah and Narimah (1998), who found that time poverty caused by unpaid household labour constrains women's participation in farming, training and market trips. The statistical figures support these qualitative accounts by illustrating the scale of service gaps in Tenom. Without targeted interventions to reduce domestic workloads—such as improving piped water access or expanding waste management coverage—women's ability to allocate more time to productive agricultural activities will remain constrained.

The Tenom figures show that the median household income is RM3,525 and the mean is RM4,734, reflecting a moderate income spread. The poverty incidence is 17.2% and the Gini coefficient stands at 0.347, indicating notable inequality. Such figures highlight the limited financial capacity for many households to invest in productivity-enhancing agricultural inputs. In lower-income brackets, purchasing fertilisers, improved seed varieties or hiring labour can be prohibitively expensive. This is compounded by the fact that women in rural Sabah often do not have formal land titles, making them ineligible for certain loans and subsidies (Khazanah Research Institute 2024).

FGD participants reported challenges in accessing affordable credit and farm machinery, citing the need for collateral as a primary barrier. These experiences mirror Doss's (2018) findings that gendered productivity gaps are largely driven by inequities in access to productive resources rather than by differences in farming ability. In Tenom, the data reinforces this point: a significant proportion of households operate under financial constraints, making it difficult to adopt new technologies or engage in high-value agricultural ventures. This qualitative insight aligns closely with the statistical analysis, which identifies financial and resource inclusion as a critical barrier for women farmers. The discussions revealed that lack of collateral, limited knowledge of available financial schemes and social norms restricting women's economic autonomy exacerbate these challenges. Addressing this issue requires not only the expansion of financial services but also targeted awareness campaigns and capacity-building initiatives that empower women to access and utilise available resources effectively. Without policies that directly address gendered financial barriers—such as collateral-free microcredit or group-based machinery ownership schemes—income inequality will continue to undermine women's agricultural potential.

Participants emphasised that insufficient education and training opportunities hinder their ability to adopt modern farming techniques, improve productivity and engage in income diversification. This theme directly aligns with the quantitative finding on education and training capacity, showing that limited formal training and literacy gaps restrict women's participation in agricultural programs. Educational statistics from Tenom indicate that the district has 52 government schools (46 primary, 6 secondary), with 1,139 teachers catering to 10,731 primary and 4,540 secondary students. The student–teacher ratios are 13.4:1 in primary and 13.3:1 in secondary, which are favourable compared to national rural averages. These figures suggest a reasonably strong foundation for basic education provision. However, the data does not capture the content or vocational relevance of the curricula, particularly in terms of agricultural skills development.

FGD participants also highlighted that the demands of farming, household responsibilities and childcare have created significant workload and time pressures. Many women reported working long hours without adequate rest, which limits their capacity to engage in additional training or income-generating activities. This theme, while not directly captured in the statistical analysis, complements the quantitative findings by providing a contextual explanation for limited adoption of education and training programs. The recognition of time constraints underscores the need for policies and programs that consider women's dual roles in agriculture and domestic care, including flexible training schedules or support services to reduce domestic burdens.

The FGD revealed that while school enrolment is not a major issue, the lack of livelihood-specific training limits women's ability to transition from subsistence to market-oriented farming. Maimunah (1992) and Man et al. (2024) both note that without targeted agricultural extension services—especially those adapted to women's schedules and responsibilities—female farmers struggle to adopt new practices or improve yields. The Tenom data, when paired with these qualitative accounts, underscores a key gap: the education system is structurally capable of delivering quality instruction, but its alignment with local economic realities remains weak. Bridging this gap could involve integrating agricultural entrepreneurship and sustainable farming modules into rural school programs.

FGD participants also reported challenges in accessing markets and infrastructure, including poor road conditions, inadequate storage facilities and high transportation costs. These barriers correspond closely with the statistical finding of infrastructure and market access constraints, demonstrating that limited physical connectivity and market linkages directly affect productivity, income, and the ability to scale agricultural activities. Qualitative insights enrich this understanding by highlighting how these constraints interact with women's workload and resource limitations, further restricting their

economic participation. Addressing these issues will require investment in rural infrastructure, improved market linkages, and transportation support to facilitate more efficient access to markets.

Tenom's infrastructure profile shows universal electricity coverage (100%), yet piped water reaches only 54.3% of households, and 44.8% depend on alternative sources. The absence of comprehensive water access often corresponds with geographic remoteness, which also implies weaker road connectivity and limited transport services. These conditions create logistical bottlenecks for moving goods from farms to markets, especially for perishable items like vegetables and fruits that women farmers frequently cultivate.

FGD participants described the high cost and time burden of transporting goods to central markets, with some resorting to selling locally at lower prices to avoid losses from spoilage. This aligns with Khazanah Research Institute's (2024) findings that rural Sabah's infrastructure gaps directly reduce market participation and profitability for smallholders. Yan et al. (2022) argue that these constraints are not gender-neutral; women's limited mobility and reduced control over transport resources amplify the effects of poor infrastructure. The data substantiates these claims by showing how service coverage deficits, even in the presence of electrification, can hinder women's integration into competitive value chains.

CONCLUSION

In conclusion, this study employs a mixed-methods approach, integrating quantitative analysis of statistical data with qualitative insights from FGD. The quantitative analysis provides a demographic profile of rural women farmers in Tenom while highlighting critical challenges with key indicators analysis, comprised of (1) infrastructure and market access constraints, (2) limitations in education, training capacity and healthcare facilities, and (3) barriers to financial and resource inclusion. The qualitative findings from the FGD further illuminate these issues, offering nuanced perspectives and contextual understanding. Notably, the insights from the FGD sessions were largely consistent with the statistical analysis, reinforcing the reliability of the findings and demonstrating how both methods complement each other. Together, this approach offers a comprehensive understanding of the structural and experiential realities of rural women farmers, providing robust evidence to inform targeted policy interventions and sustainable development strategies.

The FGD presented a clear picture of the actual concerns and challenges encountered by rural women farmers in Tenom, Sabah. To the best of our knowledge, this is the one of the first studies that provides insights of the crucial challenges faced by rural women farmers in Tenom using mix-method approach. In the context of women farmers in Tenom, several challenges persist, such as workload and time constraints, lack of financial and resources inclusion, lack of education and training, and limited infrastructure and market access. Addressing the issues confronting rural women farmers in Tenom necessitates a combination of strategies and approaches.

The FGD provide a nuanced understanding of the challenges faced by rural women farmers in Tenom and their implications for agricultural participation and productivity. Four interrelated themes were consistently highlighted across the discussions: workload and time constraints, limited financial and resource inclusion, lack of agricultural education and training, and inadequate infrastructure and market access. These themes not only illustrate the everyday struggles of women in balancing domestic responsibilities with farming but also reveal the ways in which these constraints directly restrict their ability to contribute more fully to agricultural production. The dual burden of household care and farm work, coupled with physical fatigue, results in reduced time and energy for expanding cultivation or adopting more labour-intensive agricultural practices.

The findings also show that resource constraints, particularly in terms of land ownership and financial inclusion, have direct consequences for women's capacity to invest in agriculture. Without formal land titles, women are excluded from applying for government assistance or credit facilities, effectively limiting their access to improved seeds, fertilizers and farm technologies. This exclusion not only perpetuates their reliance on subsistence-level farming but also reinforces gender-based disparities in agricultural productivity. Similarly, limited financial literacy reduces their ability to navigate loan processes, further curtailing opportunities to scale up their farming activities.

Education and training gaps emerged as another structural barrier with clear implications for agricultural advancement. The absence of locally available agricultural extension services means that rural women continue to rely on traditional farming methods, often associated with lower yields and limited market competitiveness. Without exposure to modern practices and innovations, these women are unable to enhance productivity or diversify into higher-value crops. In turn, this diminishes their potential role in strengthening the agricultural sector and sustaining food security within the district.

Infrastructure and market access deficits add another layer of restriction. Poor road networks, high transportation costs and inadequate market information reduce the profitability of agricultural production, particularly for perishable crops. Women farmers in remote villages such as Kg Pangi are especially disadvantaged, as limited mobility and dependence on infrequent transport services delay market access and erode potential earnings. These challenges constrain their ability to integrate into more profitable value chains, reinforcing the marginalisation of women in agricultural markets.

The contribution of this finding is, therefore, fourfold. Firstly, the finding assisted in establishing community-based support structures to assist women farmers with childcare, household duties and other tasks, allowing them to devote more time to farming. Second, it promotes agricultural extension services that provide continuous education and support to women farmers. Thirdly, this current study suggests gender-sensitive policies that boost women's access to resources, education and agricultural possibilities. Finally, it is suggested that local collecting centres or cooperatives be established so women farmers can aggregate their produce, lower transportation costs and boosting market access. The findings of this study would be valuable for future research to have a better knowledge of the primary difficulties affecting rural women farmers in Malaysia. In addition, this research can be used by policymakers to create solution initiatives and alter policies to address these crucial issues.

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