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RESEARCH ARTICLE

CHALLENGES OF RURAL SMALL AND MARGINAL FARMERS IN DEVELOPING COUNTRIES: A CASE STUDY OF RURAL SMALL AND MARGINAL FARMERS IN KARNATAKA.

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Abstract

This paper explores the multifaceted challenges faced by rural small and marginal farmers in developing countries, specifically focusing on the state of Karnataka in India. Using a Mixed method study approach, a Questionnaire and focused group discussion were used to collect data from 120, small and medium farmers, the study delves into the access market, awareness of Agriculture schemes and Agricultural credit, and challenges faced by S& M.F. in I.C.T. adoption in Karnataka. Through a combination of qualitative interviews, surveys, and secondary data analysis, the paper identifies key challenges, including Quality Seeds Availability, Proper Irrigation system, Agriculture Labor Problems, Power problems, Lack of Mechanization, Lack of Information on Pesticides and Crop Diseases, Lack of Support from Local Government, Credit facilities. Climate changes (Natural Hazards), Transportation, Market Linkage, and Storage Facilities The findings underscore the urgent need for tailored policies and interventions to address the unique circumstances of rural small and marginal farmers, enhance their resilience, and promote sustainable agricultural development in the region.

Introduction:-

Agriculture plays a vital role in the overall growth of Karnataka's economy despite a fall in its share in the state's domestic product. In Karnataka, horticulture crops occupy about 15.21 lakh hectares with an annual production of approximately 96.60 lakh tonnes. Karnataka is highly progressive in vegetable production and enjoys this advantage because of favorable climatic conditions without any extremes in temperature. It is also well known for floriculture production and is a central silk-producing state in the country. The fisheries sector is now emerging as one of the state's most essential allied agriculture activities. Agriculture remains the primary activity and main source of livelihood for the rural population in the state. It is characterized by broad crop diversification and remains highly dependent on the vagaries of the southwest monsoon. During 2010-11, food grain production in the state increased at an enormous rate of more than 14% over the previous year, and this increase was mainly led by an increase in yield as the area increase during the year was only 2.9 percent. Agriculture contributed 15.94 percent (at constant prices) to the state's GSDP in 2011-12. There has been a decline in GSDP generated from the agricultural sector. Consequently, the SDP per worker in the industry has been declining faster in the recent past compared to the last decade. Karnataka is India's eighth most significant state in geographical area, covering 1.92 lakh sq km and accounting for 6.3 percent of the country's geographical area. The state is delineated into 30 districts and 176 taluks

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spread over 27,481 villages. In Karnataka, agriculture is the primary occupation for most of the rural population. As per the population census 2011, agriculture supports 13.74 million workers, of which 23.61 percent are cultivators and 25.67 percent are agricultural workers. 123,100 km^2 of land is cultivated in Karnataka, constituting 64.6% of the state's total geographical area. The Karnataka state ranks fifth in India in total area under horticulture. It stands fifth in the production of vegetable crops and third in fruit crop production. It is also the largest producer of spices, aromatic and medicinal crops, and tropical fruits. It is the second-largest milk-producing state after Gujarat. Karnataka is also the country's largest producer of grapes, accounting for 12 percent of total fruits, 8 percent of whole vegetables, and 70 percent of coffee. It is the third-largest producer of sugar and ranks fourth in sugarcane production. In floriculture, Karnataka occupies the second position in India. Karnataka is the country's central silk-producing state. It has a coastline of 320 km and yields an annual marine production of 425 000 MT with 276 varieties of fish. Karnataka leads in the export of silk in India with an approximate share of 25 percent of the total Indian export market. This study addresses the challenges faced by S& M.F. in accessing the Market and awareness of Agriculture schemes and Agricultural credit by small and Marginal Farmers and other difficulties faced by S& M.F. in I.C.T. adaption in Karnataka. The challenges faced by small, rural, and marginal farmers in developing countries have been widely documented in the scientific literature. This review synthesizes key findings from existing research to highlight the multifaceted nature of these challenges and their implications for agricultural development and rural livelihoods. Access to formal credit remains a persistent challenge for small, rural, and marginal farmers (Banerjee & Duflo, 2019). Limited collateral, high-interest rates, and bureaucratic barriers often limit their ability to invest in agricultural inputs and technological innovation (Basu et al., 2018). This exacerbates income inequality and perpetuates the vicious cycle of poverty in rural areas (Rahman & Luo, 2020). Land fragmentation is a common problem among smallholder farmers, leading to suboptimal land use and reduced productivity (Deininger & Byerlee, 2011). Additionally, insecure land tenure puts farmers at risk of land acquisition and eviction, weakening their long-term investment incentives (Besley & Ghatak, 2010). Poor rural infrastructure, including roads, irrigation systems, and market connections, hinders farmers' access to input and output markets (Fan et al., 2014). Limited transportation options and post-harvest losses due to inadequate storage facilities further reduce farmers' profits and competitiveness (Dercon & Gollin, 2014). Smallholder farmers are vulnerable to the adverse impacts of climate change, including erratic weather, drought, and floods (Seo & Mendelsohn, 2008). These environmental stressors disrupt agricultural production, exacerbate food insecurity, and weaken farmer resilience (Dillon et al., 2015). Weak governance structures, ineffective extension services, and political bias often marginalize smallholder farmers in agricultural development initiatives (Hazell & Poulton, 2010).). Limited access to agricultural information, technology, and market information further limits farmers' ability to innovate and adapt to changing market dynamics (Feder et al., 2015). Addressing the challenges faced by small, rural, and marginal farmers in developing countries requires a comprehensive approach that integrates policy interventions, institutional reforms, and targeted investments in rural infrastructure and agricultural extension services. By addressing these systemic constraints, policymakers can promote inclusive and sustainable agricultural development that empowers smallholder farmers and improves food security in communities—rural fields.

Table 1:- Categorization of Operational Land Holdings per Agricultural Census.

Sl No	Category	Size class	Karnataka
1	Marginal	Below 1.00hectare	38,48,834
2	Small	1.00-2.00hectare	21,38,208
3	Semi-Medium	2.00-4.00hectare	12,66,829
4	Medium	4.00-10.00 hectare	5,10,745
5	Large	10.00 hectare and more	67,573

Source:- Karnataka State Agricultural Census 2015-16

The operational holdings are also classified into three social groups: Scheduled caste, scheduled tribes, and others. India Rural Development Report 2012-13, prepared by the IDFC rural development network, small farms are more efficient, especially in cultivating labor-intensive crops or tending livestock. Still, land holdings must be more significant to generate sufficient household incomes. To improve the condition of Small and Marginal farmers in the country and double the income of farmers by 2022, the Government introduced production –a centric approach to

farmers and income-centric initiatives focusing on better and new technological solutions. These include the implementation of various schemes like Pradhan Mantri Krishi Sinchai Yojana (PMKSY), Paramparagat Krishi Vikas Yojana(PKVY), Soil Health Card, Neem Coated Urea, Rainfed Area development under National mission for sustainable Agriculture(NMSA), Pradhan Mantri Fasal Bima Yojana(PMFBY) National Agriculture Market scheme(e-NAM), National Food Security Mission (NFSM), national mission on oilseeds and oil palm (NMOOP), Mission for Integrated Development of Horticulture(MIDH), Rashtriya Krishi Vikas Yojana(RKVY), National Mission on Agriculture Extension & Technology(NMAET), etc.. In addition, farmers are provided information through Focused Publicity Campaigns, Kisan Call centers (K.C.C.s), Agri Clinics and Agri- Business centers (ACABC) of entrepreneurs, Agri fairs and Exhibitions, and the KisanSMA portal, etc. The challenges faced by rural small and marginal farmers in developing countries, particularly in India, underscore the critical role of agricultural credit in facilitating farm growth and rural development (Banerjee, 2018; Subramanian & Shivananjappa, 2017; Meena & Jheeba, 2015; Berhanu & Fufa, 2008). Formal credit access is fundamental for conducting agricultural development programs and improving farm financial management (Banerjee, 2018). However, despite efforts to enhance institutional agricultural finance, challenges persist in obtaining credit and ensuring timely repayment, contributing to a vicious cycle of poverty for smallholder farmers (Subramanian & Shivananjappa, 2017; Meena & Jheeba, 2015). Studies have investigated the efficiency of credit systems and repayment rates among small-scale farmers, highlighting factors such as group lending, agro-ecology, landholding size, livestock ownership, and engagement with agricultural extension services as significant determinants of loan repayment (Berhanu & Fufa, 2008). Additionally, research in India emphasizes the role of institutional farm credit in increasing farm income and household expenditures, underscoring the importance of formal credit in rural development (Kumar et al., 2017). Despite government efforts to facilitate farmers' access to credit, challenges persist in obtaining agricultural loans due to various institutional and procedural hurdles (Aarthi et al., 2019). The Reserve Bank of India (R.B.I.) has implemented strategies to increase rural credit facilities, including the promotion of Regional Rural Banks (RRBs) and the Self Help Group (S.H.G.)-Bank Linkage model, aiming to provide sustainable livelihoods for rural communities (Akoijam, 2012). The relationship between formal agricultural credit and G.D.P. has also been examined, revealing a positive association between institutional credit and agricultural growth in India (Narayanan, 2016). Furthermore, innovative approaches such as the Farmers Club scheme and initiatives like the Kisan Credit Card and Interest Subsidy Scheme have been introduced to improve credit flow and supplement efficiency—results for rural credit provision (Thejeswini et al., 2014). Recent studies highlight the increasing flow of institutional credit to agriculture in recent decades, in which commercial banks have become the primary source of agricultural credit (Singhal & Gupta, 2020). However, different patterns of agricultural credit growth have been observed, requiring continued efforts to address persistent challenges and ensure equitable access to credit for small farmers. And marginal (Singhal & Gupta, 2020). while agricultural credit plays a vital role in improving agricultural productivity, reducing poverty, and promoting rural development, Difficulties still exist in accessing credit and ensuring timely repayment for smallholder farmers in developing countries. Addressing these challenges requires comprehensive policies and initiatives that improve access to credit, increase financial literacy, and strengthen institutional support mechanisms for agriculture—small and marginal people. Smallholder farmers' difficulties in accessing agricultural markets have been widely studied in the scientific literature. This review synthesizes key findings from existing research to illuminate the multifaceted nature of these challenges and their implications for agricultural development and rural livelihoods. Smallholder farmers often face barriers to market access due to geographical distance, poor transportation infrastructure, and lack of market information (World Bank, 2014). Distance to the Market increases transaction costs and reduces farmers' ability to sell their products at competitive prices (Dorward et al., 2009). Lack of information between smallholder farmers and market actors hinders effective market participation (Birner et al., 2018). Farmers often need more timely and accurate information on prices, demand trends, and market requirements, leading to suboptimal production and marketing decisions (Fafchamps & Hill, 2005).In many developing countries, market institutions such as wholesale and cooperatives must be better designed or functional, limiting smallholders' access to formal markets (Minot, 2010). Weak contract enforcement mechanisms and unfair trading practices further disadvantage smallholder farmers in agricultural markets (Bellemare & Bloem, 2018). Meeting quality and standards requirements for agricultural produce poses a significant challenge for smallholder farmers (Dolan & Humphrey, 2004). Limited access to inputs, knowledge, and resources necessary for quality production often leads to the rejection of produce by buyers and lower market prices (Minten et al., 2019). Smallholder farmers are particularly vulnerable to price volatility and market fluctuations, which can erode their incomes and livelihoods (Minten et al., 2013). Lack of market diversification and risk management strategies exposes farmers to market risks beyond their control (D'Souza & Jolliffe, 2015). Gender inequalities persist in agricultural markets, with women farmers facing additional challenges in accessing markets, obtaining credit, and participating in value chains (Quisumbing et al., 2015). Cultural norms, limited mobility, and discriminatory

practices undermine women's market participation and bargaining power (Doss, 2001). The difficulties small farmers face in accessing agricultural credit have been widely documented in the scientific literature. This review synthesizes key findings from existing research to highlight the multifaceted nature of these challenges and their implications for agricultural development and rural livelihoods. Smallholder farmers often need help accessing formal credit due to a lack of collateral, high transaction costs, and strict lending criteria (Barrett et al., 2008). Financial institutions may view smallholder farmers as high-risk borrowers, leading to limited credit sources for agricultural activities (Binswanger-Mkhize et al., 2018). Many smallholder farmers need more financial knowledge and may need to familiarize themselves with available credit products and terms (Carter et al., 2015). This hinders their ability to navigate the financial system effectively and make informed borrowing decisions (Deininger et al., 2013). Agricultural production is often seasonal, leading to fluctuating income streams for smallholder farmers (Boucher et al., 2016). This makes it difficult for farmers to meet debt repayment obligations, especially during difficult times or when there are no diversified sources of income (Foltz et al., 2018). Smallholder agriculture is inherently risky, with farmers facing many risks, such as bad weather, pests, and market fluctuations (Dercon, 2002). Financial institutions may hesitate to extend credit to smallholders due to perceived risks, further exacerbating farmers' vulnerability (Binswanger-Mkhize et al., 2018). Smallholder farmers often face additional barriers to credit access, including legal and cultural restrictions, limited land ownership, and lack of collateral (Quisumbing et al., 2013). Gender biases in financial institutions may further marginalize women farmers in credit markets (Doss, 2006). Weak policy frameworks and institutional support can hinder small households' access to credit (Minten et al., 2018). The limited reach of formal financial institutions in rural areas, inadequate agricultural extension services, and regulatory constraints may hinder the provision of credit to smallholder farmers (Reardon et al., 2019). In the absence of formal credit options, smallholder farmers often use informal sources of finance. credit, such as pawnbrokers and input suppliers (Karlan et al., 2014). However, the use of informal credit can expose farmers to loan abuse and worsen debt (Fischer et al., 2014). The difficulties small farmers face in accessing agricultural credit have been widely documented in the scientific literature. This review synthesizes key findings from existing research to highlight the multifaceted nature of these challenges and their implications for agricultural development and rural livelihoods. Smallholder farmers often need help accessing formal credit due to a lack of collateral, high transaction costs, and strict lending criteria (Barrett et al., 2008). Financial institutions may view smallholder farmers as high-risk borrowers, leading to limited credit sources for agricultural activities (Binswanger-Mkhize et al., 2018). Many smallholder farmers need more financial knowledge and may need to familiarize themselves with available credit products and their terms (Carter et al., 2015). This hinders their ability to navigate the financial system effectively and make informed borrowing decisions (Deininger et al., 2013). Agricultural production is often seasonal, leading to fluctuating income streams for smallholder farmers (Boucher et al., 2016). 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The limited reach of formal financial institutions in rural areas, inadequate agricultural extension services, and regulatory constraints may hinder the provision of credit to smallholder farmers (Reardon et al., 2019). In the absence of formal credit options, smallholder farmers often use informal sources of finance. credit, such as pawnbrokers and input suppliers (Karlan et al., 2014). However, the use of informal credit can expose farmers to loan abuse and worsen debt (Fischer et al., 2014). Over time, the permeation of I.C.T.s into agricultural extension practices has provided a platform for extension workers and farmers to communicate from afar and enhance the provision of information and new technologies. With greater access to such information, farmers can improve their production, incomes, and living standards (Agwu &Nwokorie, 2019). The application of I.C.T. in agriculture is increasingly becoming steady in developing countries, which could facilitate self-reliance for national growth. Agriculture is vital in most African countries' social and economic development and is the main contributor to economic growth and stability (Munyua & Adera, 2009; Bhalekar et al., 2015). Information and Communication Technology (I.C.T.) plays a substantial role in developing agricultural growth through various devices to attain economic sustainability and self-reliance. Adaption of I.C.T. is far from universal to the determinant of farmers and the agricultural sector. Illiteracy, market information, weather updates, cost and lack of awareness are the major I.C.T. adoption constraints. In addition to this, most of the Indian Small and Marginal Farmers have No perceived economic benefits, inability to use I.C.T., most of the I.C.T. applications are unfriendly to small farmers, the cost of technology is very high, fear of

technology, not enough time to spend on using I.C.T., lack of training, personal impediments (illiteracy), high initial cost, farm size is too small. With negative attitude, ICT Adaption is very less(V.C.P., E.G., A.M., N.T.Y., M.M., & H.M. (2008).)

Material and Methods:-

A mixed methods approach was employed to investigate the challenges faced by rural small and marginal farmers in Karnataka, focusing on Bengaluru Rural, Ramanagara, Tumkuru, and Chikkaballapura districts. The study utilized qualitative and quantitative data collection methods through a case study and survey design. Structured questionnaires and focus group discussions were used to gather data from the target population. A purposive sampling method was employed to select the study areas, while convenience sampling was utilized to choose small and marginal farmers based on their availability and willingness to participate. The study targeted approximately 120 small and marginal farmers across the selected districts, with specific allocations for each District: Bengaluru Rural (20), Ramanagara (30), Tumkuru (30), and Chikkaballapura (40). A total of 130 questionnaires were distributed, with 120 returned, resulting in a response rate of 92%; quantitative data collected through questionnaires were analyzed using the Statistical Package for the Social Sciences (SPSS) version 20.0. Qualitative data obtained from focus group discussions were analyzed using NVivo software. To ensure the reliability of data collection instruments, a pilot study was conducted with ten rural smallholders in the Bengaluru Rural district. This pilot study involved administering a total-item questionnaire and conducting focus group discussions. Feedback from pilot study participants was used to improve data collection tools. District records were obtained from the Government of Karnataka to provide context for each study area. These records include information on total population, geographic location, net seeded area, net irrigated area, and other relevant demographic and agricultural statistics. Descriptive statistics were used to analyze respondents' demographic characteristics, including gender, education level, marital status, and marital status. size, source of income, farm size, membership association, and knowledge of agricultural policies and programs.

Table 2:- Section of Sample size (n=120).

Study Area	Sections	Sample size
Karnataka	Bangalore Rural	20
	Chikkaballapura	40
	Tumkuru	30
	Ramanagara	30
Total Sample Size		**120**

Source: Field (2023)

Table 3:- Ramanagara District Profile.

Number of Villages	Total population	Male Population	Female Population	Geographical Area	Net Sown Area	Net Irrigated Area	Total Livestock	Total Poultry
823	1082636	548008	534628	355912ha	41302ha	36322ha	565857	1284545

Source: District profile of Government of Karnataka

Rmanagara is well known for its sericulture and is nicknamed Silk Town and Silk City; this District has a geographical area of 355912ha. The Net area sown is 153661ha (43.2%). Kanakapura taluk is the biggest taluk with 159426ha (44.8%) geographical area, followed by Magadi with 79969ha (22.5%) and Ramanagara with 62930 ha (17.7%). The District's smallest taluk is Channapatna, with a great graphical area of 53587 ha. The net cropped percentage area is highest in Magadi taluk (51.0%), followed by Ramanagara (49.9%) and Channapatna (47.7%). Kanakapura has the lowest percentage of net sown area.

Table 4:- Bangalore Rural District Profile.

Number of Villages	Total population	Male Population	Female Population	Geographical Area	Net Sown Area	Net Irrigated Area	Total Livestock	Total Poultry
1052	990896	509172	481724	229519ha	100226ha	24995ha	411006	4110696

Source: District profile of Government of Karnataka

Bangalore Rural District has a geographical area of 229519ha. The Net area sown is 100226ha (43.2%). Kanakapura taluk is the biggest taluk with 159426ha (44.8%) geographical area, followed by Magadi with 79969ha (22.5%) and Ramanagara with 62930 ha (17.7%). The smallest taluk in the District is Channapatna with a geographical area of 53587 ha. The net cropped percentage area is highest in Magadi taluk (51.0%), followed by Ramanagara (49.9%) and Channapattana (47.7%). Kanakapura has the lowest percentage of net sown area.

Table 5:- Chikkaballpura District Profile.

Number of Villages	Total population	Male Population	Female Population	Geographical Area	Net Sown Area	Net Irrigated Area	Total Livestock	Total Poultry
1515	1254377	636337	618667	404502 ha	23868 ha	10908	425086	1648000

Source: District profile of Government of Karnataka

Out of the District's total 4.04lakh ha geographical area, Bagepalli taluk has 0.90lakh ha. Chikkaballapura taluk has 0.56, lakh ha. Chintamanitaluk has 0.87 lakh ha. Gowribidanur taluk 0.87lakh ha., Gudibande taluk has 0.21 lakh ha. And Shidlaghatta taluk has 0.63 lakh ha. Chikkaballapura district hass2.04 lakhs of wh, ich 1.41 lakh are marginal farmers, 0.46la0.46 lakh small farmers, 0.20 are semi-medium farmers, 0.07 lahks are medium farmers and 0,.007 lakh are big farmers. The above data shows that marginal farmers dominate the Chikkaballapura district.

Table 6:- Tumakuru District Profile.

Number of Villages	Total population	Male Population	Female Population	Geographical Area	Net Sown Area	Net Irrigated Area	Total Livestock	Total Poultry
2715	2678980	135054	1328386	1064755ha	520202ha	254627ha	2160101	505091

Source: District profile of Government of Karnataka

The total population of Tumakuru District is 2678980, comprising 1350594 males and 1328386 females. As per the 2011 population census 20, 79,902 rural population, around 78% are engaged in Agriculture.

Table 7:- Gender of respondents.

Frequency	Frequency	%
Male	89	74.1666667
Female	31	25.83

Source: Author's own

The data in Table 6 shows a gender gap among rural and marginal small farmers in Karnataka, with a higher proportion of male respondents (74.17%) than female respondents (25.83%). This suggests that men are more actively involved or more accessible when participating in research related to agricultural challenges. Addressing this gender gap is critical to promoting gender equality and inclusive agricultural development. Further research could explore the underlying factors contributing to this imbalance and design strategies to encourage greater participation of women farmers. Efforts must be made to ensure that agricultural policies and interventions respond equitably to the needs of both men and women farmers.

Table 8:- Educational Status.

Categories	Frequency	%
Not Educated	29	24.17
Matriculation	40	33.33
Graduate	33	27.50
Post Graduate	18	15

Source: Author's own

This table provides an overview of the educational status of small rural and marginal farmers in Karnataka. Most respondents had attained at least some level of education, with the highest proportion (33.33%) having completed an advanced degree. Next are those with education (27.50%) and those without (24.17%). Additionally, a notable proportion (15%) have completed postgraduate qualifications. This indicates the diverse education of farmers, which may influence their perspectives and approaches to agricultural challenges and practices. The diversity in educational levels highlights the importance of appropriate interventions and support mechanisms to meet the needs of farmers at different academic levels for sustainable rural development.

Table 9:- Marital Status.

Categories	Frequency	%
Married	84	70.00
Single	28	23.33
Divorced	8	6.67

Source: Author's own

This table shows the marital status distribution among Karnataka's small and marginal rural farmers. Most respondents (70.00%) were married, which shows that married people comprise the largest proportion of the sample. A significant but smaller proportion (23.33%) were single, while a minority (6.67%) were divorced. Understanding farmers' marital status is essential for designing targeted interventions and support services, as marital status can influence household dynamics, decision-making, and resource access. These data highlight the importance of considering household structure and marital status diversity in agricultural development programs to ensure inclusiveness and effectiveness in meeting needs. Of farmers.

Table 10:- Number of Family Members.

Categories	Frequency	%
3-5members	48	40.00
06-10 members	58	48.33
More than 10	14	11.67

Source: Author's own

Table 10 overviews the number of family members involved in agriculture among small and marginal rural farmers in Karnataka. The majority of agricultural households (48.33%) have from 6 to 10 family members participating in agricultural activities, showing that the level of family participation in agricultural activities is significant. In addition, 40.00% of households have from 3 to 5 people working in agriculture. A smaller proportion (11.67%) are households with more than 10 people participating in agricultural production. These data highlight the importance of family farming practices in rural areas and the need to consider the dynamics of housework to address agricultural challenges and Implement relevant intervention measures.

Table 11:- Sources of Income.

Categories	Frequency	%
Farm Income	85	70.83
Non-Farm Income	35	29.17

Source: Author's own

Table 11 shows the sources of income of small and marginal farmers in Karnataka. The majority of respondents (70.83%) depend on income from agriculture as their primary source of income, indicating the significant dependence of these farmers on agricultural activities for their livelihoods. Their economics. In contrast, 29.17% of respondents had income from non-agricultural sources, which indicates a specific diversification of income sources within an agricultural population. These data highlight the importance of agriculture as a pillar of Karnataka's rural livelihoods and the need for initiatives that support income diversification to build capacity. The resilience of small and marginal farmers to agricultural risks and market fluctuations.

Table 12:- Farm Size (hectares).

Categories	Frequency	%
Less than 1	42	35
1-2 hectares	78	65

Source: Author's own

Table 12 provides an overview of the farm size distribution among small and marginal farmers in the study area of Karnataka. Most farmers (65%) own land between 1 and 2 hectares, indicating that a significant portion of the agricultural population works on relatively small to medium-sized plots. In addition, 35% of farmers own less than 1 hectare of land. These data highlight the prevalence of small-scale farming among farmers and small marginal farmers in Karnataka, emphasizing the need for targeted support and interventions tailored to the challenges faced explicitly by farmers with limited land funds. Efforts to improve productivity, access to resources, and market linkages must consider the diversity of farm sizes in the agricultural landscape to promote sustainable livelihoods and rural development.

Table 13:- Challenges Faced by S& M Farmers.

Challenges	Frequency	%
Quality Seeds Availability	9	7.50
Proper Irrigation system	12	10.00
Agriculture Labor Problems	12	10.00
Power problems	7	5.83
Lack of Mechanization	12	10.00
Lack of Information on Pesticides and Crop Diseases	15	12.50
Lack of Support from Local Government	11	9.17
Credit facilities	9	7.50
Climate changes(Natural Hazards)	6	5.00
Transportation	8	6.67
Market Linkage	8	6.67
Storage Facilities	11	9.17

Source: Author's own

Table 13 presents the challenges small and marginal (S&M) farmers face in the study area of Karnataka. The most commonly reported challenges include a lack of information on pesticides and crop diseases (12.50%), appropriate irrigation systems (10.00%), lack of mechanization (10.00 %), and agricultural labor issues (10.00%). Other notable challenges include a lack of local government support (9.17%), insufficient credit facilities (7.50%), and transportation problems (6.67%). Additionally, concerns about the availability of quality seeds (7.50%), electricity problems (5.83%), and natural disasters due to climate change (5.00%), linked to markets (6.67%) and storage facilities (9.17%) were also mentioned. Reported by respondents. These data highlight the multifaceted nature of the challenges faced by small and marginal farmers in the study area, and the need for comprehensive strategies and interventions. To address these issues and improve the resilience and sustainability of agricultural livelihoods.

Table 14:- Challenges in Accessing the Agricultural Market.

Challenges	Frequency	%
Challenges in obtaining a license	16	13.33
High market charges	14	11.67
Poor market infrastructure	18	15.00
Long and inefficient supply chain and inadequate remuneration to farmers	12	10.00
Lack of transportation	18	15.00
No standard price fixation	42	35.00

Source: Author's own

Table 14 presents the challenges faced by small-scale, rural, and marginal farmers in accessing agricultural markets in the study area of Karnataka. The most common challenge, reported by 35.00% of respondents, is the lack of pricing standards, which shows the lack of a transparent pricing mechanism in the agricultural Market. Next are issues related to poor market infrastructure (15.00%) and lack of transportation facilities (15.00%), contributing to difficulties accessing markets and conducting transactions effectively. Other significant challenges include difficulty in obtaining licenses (13.33%), high market fees (11.67%), and long and inefficient supply chains leading to inadequate remuneration for farmers (10.00%). These findings highlight small and marginal farmers' complex obstacles in accessing markets. Agricultural markets emphasize the need for targeted interventions to address issues such as price transparency, infrastructure development, transport accessibility, and market regulation to create fair market access conditions and improved economic efficiency of agricultural activities.

Table 15:- Awareness of Agricultural Schemes and Policies.

Agricultural schemes	Frequency	%
National Food Security Mission	2	1.67
Pradhana Manthri Krishi Sinchayee Yojana(PMKSY)	11	9.17
Soil health Card	12	10.00
Paramparagat Krishi Vikas Yojana(PKVY)	6	5.00
Pradhan Mantri Fasal Bhima Yojana	15	12.50
National Mission on Oilseed and Oil Palm	3	2.50
Rashtriya Krishi Vikasa Yojana	6	5.00
Krishi Bhagya	13	10.83
Compensation to Farmers, Suicide Families, and Snake Bites Victims	8	6.67
Krishi Prashasthi	2	1.67
Supply of Seeds	4	3.33
Farm Mechanization & Agro Processing	6	5.00
KrishiYanthradhare(establishment of custom hire and service centers)	16	13.33
Krishi Navodyama – Agri start-ups	2	1.67
Organic Farming	8	6.67
Krishi Abhiyan	4	3.33
Agricultural Extension and Training	2	1.67

Source: Author's own

Results and Discussions:-

The study surveyed 120 small and marginal farmers, with 74.17% male and 25.83% female, indicating that the sample was predominantly male. Respondents had diverse educational backgrounds, with 24.17% having no formal education, 33.33% having completed a bachelor's degree, 27.50% being graduates, and 15% having postgraduate degrees. Marital status was diverse, with 70% married, 23.33% single, and 6.67% divorced. Family size ranges from 3 to more than 10 members, and 70.83% of them depend on income from agriculture as their primary source of livelihood. Land planning shows that 35% own less than 1 hectare, and 65% own between 1 and 2 hectares. While 45% were members of agricultural associations, 55% were not. The most common challenges reported included a need for more information on pesticides and crop diseases, proper irrigation systems, and agriculture labor problems. Accessing agricultural markets faced hurdles such as no standard price fixation, poor market infrastructure, and transportation issues. Awareness levels of agricultural schemes varied, with some well-known schemes like Pradhan Mantri Fasal Bhima Yojana and others less so. These findings underscore various challenges and disparities faced by small and marginal farmers. The predominance of male respondents highlights gender disparities in agriculture, necessitating gender-sensitive interventions for inclusive resource access. The diversity of educational pathways highlights the need for tailored extension services to meet different literacy levels, essential for improving agricultural productivity and rural livelihoods. Addressing farm production and marketing challenges, including weak market infrastructure and price volatility, requires targeted interventions to strengthen market linkages and establish a transparent pricing mechanism. Raising awareness about agricultural programs is essential to ensure that farmers can benefit from government initiatives and support programs, thereby contributing to agricultural development. Sustainable agriculture, poverty reduction, and food security. Collaboration among stakeholders is required to design and implement context-specific interventions addressing smallholder farmers' unique needs and constraints, promoting sustainable development systems. Sustainable and comprehensive agricultural system. The study's results shed light on various aspects of small and marginal farmers' demographics, challenges, and awareness levels, offering valuable insights into the complexities of agricultural livelihoods. The predominance of male respondents highlights the prevailing gender disparity within the farming sector, underscoring the urgent need for gender-sensitive interventions to promote inclusivity and equitable access to resources. Tailored extension services and capacity-building initiatives are imperative to address the diverse educational backgrounds among respondents, ensuring that farmers with varying literacy and knowledge receive appropriate support to enhance their agricultural practices and productivity. Moreover, respondents' heavy reliance on farm income underscores the critical importance of addressing agricultural production and marketing challenges to improve rural livelihoods. The challenges reported by small and marginal farmers in accessing agricultural markets, including poor market infrastructure and price volatility, underscore the necessity for targeted interventions to strengthen market linkages, enhance infrastructure, and establish transparent pricing mechanisms. Additionally, the disparities in awareness levels regarding agricultural schemes highlight the need for effective communication and outreach

strategies to ensure that smallholder farmers can avail themselves of government initiatives and support programs. The identified challenges and improving awareness among small and marginal farmers are vital for promoting sustainable agricultural development, alleviating rural poverty, and enhancing food security and livelihood resilience. Collaborative efforts between governments, N.G.O.s, FPO.s, and other social enterprises are essential to design and implement context-specific interventions that address unique needs and constraints. Of smallholder farmers, facilitating their integration into traditional agricultural markets and ensuring their overall welfare. This study provides valuable information on small and marginal farmers' demographics, challenges, and awareness levels in accessing agricultural markets and benefiting from government programs and policies. These findings highlight the need for targeted interventions to address gender disparities, improve educational opportunities, improve market access, and raise farmer awareness of existing support programs. Addressing the identified challenges requires a multifaceted approach involving cooperation between government agencies, non-governmental organizations, agricultural extension services, and other stakeholders. By implementing gender-sensitive interventions, appropriate extension services, and market-oriented strategies, policymakers and development practitioners can help small and marginal farmers improve their livelihoods, increase agricultural productivity, and contribute to sustainable rural development.

Authors Contribution

Conceptualization and designing of the research work (N.L.G.); Execution of field/lab experiments and data collection (N.L.G., S.A.); Analysis of data and interpretation (S.A.); Preparation of manuscript (N.L.G., S.A.).

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