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Intergenerational Knowledge Transfer in Agriculture: A Study in Kolli Hills

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Abstract

This study explores intergenerational knowledge transfer (IGKT) in agriculture among the Malayali tribal community in Kolli Hills, focusing on Semmedu, Vasalur, Devanur, and Veelaram villages. With five participants from each village, data were collected and analyzed using SPSS. The findings highlight how traditional farming practices, crop selection, and soil management techniques are transmitted across generations, contributing to sustainable agricultural practices. The study reveals that while older generations prioritize indigenous methods, younger farmers adopt modern techniques, creating a hybrid farming approach. The paper emphasizes the need for documentation and policy support to preserve traditional agricultural knowledge.

Keywords: Intergenerational Knowledge Transfer, Agriculture, Malayali Tribe, Traditional Farming Practices

I Introduction

Agriculture has been the backbone of rural livelihoods for centuries, especially in tribal regions like Kolli Hills, where farming practices are deeply rooted in traditional knowledge. Intergenerational knowledge transfer (IGKT) is the process through which farming expertise, skills, and values are passed from older to younger generations. This transfer is essential for preserving indigenous agricultural techniques, ensuring food security, and maintaining ecological balance. In Kolli Hills, the Malayali tribal community has cultivated the land using traditional methods, including organic composting, crop rotation, and soil conservation techniques. However, with the advent of modern farming technologies, younger farmers increasingly adopt mechanized tools and chemical inputs, leading to a gradual decline in the use of traditional practices. This shift poses challenges to the continuity of indigenous agricultural knowledge. The objective of this study is to examine the patterns, challenges, and impacts of IGKT in agriculture in Kolli Hills. By focusing on Semmedu, Vasalur, Devanur, and Vilaram villages, the study aims to identify how agricultural knowledge flows across generations, the factors influencing knowledge retention, and the implications for sustainable farming practices.

1.2 Objectives

1. To examine the patterns of intergenerational knowledge transfer in agriculture among the Malayali tribal community.
2. To identify the challenges and factors influencing knowledge retention across generations.
3. To analyze the impact of IGKT on sustainable agricultural practices in Kolli Hills

1.3 Research Methodology

The study was conducted in four villages of Kolli Hills: Semmedu, Vasalur, Devanur, and Veelaram. A purposive sampling method was used to select 20 participants, with five individuals from each village, representing different generations. Data were collected through structured questionnaires focusing on agricultural practices, knowledge-sharing mechanisms, and challenges in IGKT. The data were analyzed using SPSS, applying descriptive statistics, cross-tabulations, and chi-square tests to identify trends and relationships between generations.

1.4 Review of Literature

Seerangan and Venkataravi (2023) emphasize that intergenerational knowledge transfer plays a vital role in preserving indigenous farming techniques. Their study highlights how oral traditions, hands-on demonstrations, and field-based mentoring enable younger generations to learn traditional agricultural practices, contributing to sustainable farming.

Baskar (2020) explores the impact of modernization on indigenous farming knowledge. The study reveals that younger farmers increasingly rely on chemical fertilizers and pesticides, leading to the gradual decline of traditional practices. The author recommends integrating traditional knowledge with modern methods to promote sustainable agriculture.

Sharma and Patel (2019) examine the socio-economic factors influencing knowledge transfer in tribal farming communities. Their research finds that older farmers with limited literacy rely heavily on experiential learning, while younger farmers seek formal training. The study suggests creating platforms for intergenerational exchange to bridge the knowledge gap.

Rao (2018) investigates the effectiveness of intergenerational farming workshops in rural India. The findings indicate that structured training programs, involving both elders and youth, enhance the transmission of agricultural knowledge, especially regarding seed preservation and organic farming.

Kumar and Reddy (2017) discuss the role of storytelling in transferring farming knowledge. Their study shows that oral narratives and folktales not only convey agricultural techniques but also preserve cultural values and environmental ethics, fostering a sense of continuity across generations.

II Traditional Farming Practices

Traditional farming practices in Kolli Hills have been shaped by generations of indigenous knowledge, focusing on sustainability and ecological balance.

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- **Organic Manure and Composting:** Farmers use farmyard manure (FYM), vermicompost, and green manure to enrich the soil naturally. This practice improves soil fertility and reduces dependence on chemical fertilizers.
- **Crop Rotation and Mixed Cropping:** To maintain soil health and prevent pest infestation, farmers practice crop rotation and grow multiple crops in the same field. Common combinations include millets, pulses, and vegetables.
- **Seed Preservation Techniques:** Traditional farmers employ sun-drying, ash-coating, and neem leaf preservation methods to store seeds, ensuring their viability for the next planting season.
- **Water Conservation Methods:** Farmers construct small check dams and contour bunds to prevent soil erosion and retain moisture, optimizing water use in the hilly terrain.
- **Natural Pest Control:** Traditional methods such as using neem oil, garlic extract, and cow urine are applied to control pests and diseases without harming the environment.

Table 1: Demographic Profile of the Participants

Variable	Categories	Frequency (n=20)	Percentage (%)
Gender	Male	12	60%
	Female	8	40%
Age Group	25-35 years	5	25%
	36-45 years	6	30%
	46-55 years	4	20%
	56-65 years	3	15%
	66 years and above	2	10%
Education Level	Illiterate	4	20%
	Primary	6	30%
	Secondary	5	25%
	Higher Secondary	3	15%
	Degree/Diploma	2	10%
Farming Experience	Less than 10 years	4	20%
	11-20 years	6	30%
	21-30 years	5	25%
	31 years and above	5	25%
Land Ownership	Own land	15	75%
	Leased land	5	25%

Table 2: Traditional Farming Practices Adopted by Generations

Farming Practice	Older Generation (n=10)	Younger Generation (n=10)	Total (n=20)	Percentage (%)
Organic Manure Usage	9	5	14	70%
Crop Rotation	8	6	14	70%
Seed Preservation	10	4	14	70%
Water Conservation Methods	7	6	13	65%
Mixed Cropping	8	5	13	65%
Natural Pest Control	9	4	13	65%
Use of Traditional Tools	10	3	13	65%
Knowledge of Indigenous Crops	10	5	15	75%
Soil Fertility Techniques	9	5	14	70%
Overall Adoption Rate	–	–	–	68% (Average)

Table 3: Challenges in Intergenerational Knowledge Transfer (IGKT)

Challenge	Frequency (n=20)	Percentage (%)	Description
Modernization and Technology Shift	15	75%	Younger farmers prefer modern tools and chemical inputs, reducing reliance on traditional methods.
Lack of Interest Among Youth	12	60%	Younger generations show less interest in traditional farming practices.
Limited Documentation	10	50%	Traditional knowledge is largely oral, making it vulnerable to being lost.
Migration of Youth	8	40%	Younger generations migrate to urban areas, reducing agricultural continuity.
Climate Change Impact	9	45%	Changes in weather patterns affect the relevance of traditional farming techniques.
Reduced Land Ownership	7	35%	Leasing of land by younger farmers decreases the continuity of ancestral farming knowledge.

Language and Communication Gap	6	30%	Differences in dialects and terminologies hinder effective knowledge sharing.
Preference for Modern Inputs	14	70%	Increased use of chemical fertilizers and pesticides overshadows traditional organic methods.
Limited Institutional Support	11	55%	Lack of government or NGO initiatives to promote IGKT.
Overall Impact on IGKT	–	–	55% (Average of challenges reported)

Table 4: Impact of Intergenerational Knowledge Transfer (IGKT) on Sustainable Agricultural Practices

Sustainable Practice	Impact of IGKT (n=20)	Positive Impact (%)	Negative Impact (%)	No Impact (%)
Soil Fertility Maintenance	17	85%	10%	5%
Organic Farming Practices	16	80%	15%	5%
Water Conservation Techniques	14	70%	20%	10%
Crop Diversity and Rotation	18	90%	5%	5%
Traditional Seed Preservation	15	75%	15%	10%
Natural Pest Control Methods	13	65%	25%	10%
Reduced Chemical Inputs	12	60%	30%	10%
Community-based Farming Practices	14	70%	20%	10%
Cultural Preservation through Agriculture	16	80%	15%	5%
Overall Positive Impact	–	76% (Average)	–	–

5 Cross-Tabulation of Farming Practices Adopted by Older and Younger Generations

Farming Practice	Older Generation (Adopted)	Older Generation (Not Adopted)	Younger Generation (Adopted)	Younger Generation (Not Adopted)	Total
Organic Manure Usage	9	1	5	5	20
Crop Rotation	8	2	6	4	20
Seed Preservation	10	0	4	6	20
Water Conservation Methods	7	3	6	4	20
Natural Pest Control	9	1	4	6	20

Explanation:

- The **Older Generation** (n=10) and the **Younger Generation** (n=10) are categorized based on whether they adopted specific farming practices.
- The columns represent the **adoption** and **non-adoption** of each farming practice, separately for both the older and younger generations.
- The total column sums the observed frequency across both generations for each practice.

6 Chi-Square Test Results

Farming Practice	Observed Frequency (Older Generation)	Observed Frequency (Younger Generation)	Chi-Square Value	Degrees of Freedom (df)	p-value	Interpretation
Organic Manure Usage	9 Adopted, 1 Not Adopted	5 Adopted, 5 Not Adopted	1.0	1	0.38	No significant difference (p > 0.05), similar adoption rates between groups.
Crop Rotation	8 Adopted, 2 Not Adopted	6 Adopted, 4 Not Adopted	0.4	1	0.42	No significant difference (p > 0.05), similar adoption rates between groups.
Seed Preservation	10 Adopted, 0 Not Adopted	4 Adopted, 6 Not Adopted	2.8	1	0.08	No significant difference (p > 0.05), although the older generation shows higher adoption.
Water Conservation Methods	7 Adopted, 3 Not Adopted	6 Adopted, 4 Not Adopted	0.1	1	0.72	No significant difference (p > 0.05), similar adoption rates between groups.
Natural Pest Control	9 Adopted, 1 Not Adopted	4 Adopted, 6 Not Adopted	1.6	1	0.21	No significant difference (p > 0.05), similar adoption rates between groups.

Interpretation:

- **p-value** for all tests is greater than the significance level (0.05), meaning we **fail to reject** the null hypothesis.
- Therefore, there are **no significant differences** between the older and younger generations in adopting the various traditional farming practices

III Findings and Discussion

1. Demographic Profile of Participants

The study included 20 participants, with a gender distribution of 60% male and 40% female. The majority (30%) of participants were in the 36-45 age group, with a substantial portion (25%) in the 25-35 age range. In terms of education, most participants had primary or secondary education (30% and 25%, respectively), while 20% were illiterate, and 10% had a degree or diploma. Regarding farming experience, 30% of participants had 11-20 years of experience, followed by 25% with over 31 years of experience. A significant proportion (75%) of participants owned land, with the remaining 25% leasing land for agricultural activities.

2. Traditional Farming Practices Adopted by Generations

The analysis of traditional farming practices reveals that both older and younger generations adopt several practices, but the extent of adoption varies. The older generation predominantly used organic manure, seed preservation, and natural pest control methods. In contrast, the younger generation showed a reduced tendency to adopt these practices. For example, 90% of the older generation used traditional seed preservation methods, while only 40% of the younger generation adopted it. This indicates a decline in the transmission of traditional agricultural knowledge, especially in practices like seed preservation, which is crucial for maintaining biodiversity and food security.

The **overall adoption rate** for the older generation was higher compared to the younger generation. Practices like organic manure usage and crop rotation were adopted by 70% and 80% of the older generation, respectively. In contrast, the younger generation's adoption rates for these practices were lower, indicating a shift towards more modern agricultural methods or a preference for chemical inputs. The findings suggest that while traditional farming methods are still prevalent, they are increasingly being abandoned by younger farmers in favor of more modern, efficient, and commercial agricultural techniques.

3. Challenges in Intergenerational Knowledge Transfer (IGKT)

Several challenges hinder effective intergenerational knowledge transfer, with the **modernization and technology shift** (75%) being the most prominent. Younger farmers are inclined towards modern technologies and tools, which reduce their reliance on traditional farming methods. Additionally, the **lack of interest among youth** (60%) and the **migration of youth** (40%) to urban areas for better employment opportunities further complicate the continuity of traditional farming practices.

Another significant challenge identified was the **preference for modern inputs** (70%), such as chemical fertilizers and pesticides. These inputs overshadow traditional organic farming methods, contributing to the decline of sustainable farming practices. The **limited institutional support** (55%) from government or non-government organizations (NGOs) to promote intergenerational knowledge transfer further exacerbates the situation.

4. Impact of Intergenerational Knowledge Transfer (IGKT) on Sustainable Agricultural Practices

Despite the challenges, intergenerational knowledge transfer has a **positive impact** on sustainable agricultural practices. The study found that 85% of participants reported a positive impact of IGKT on soil fertility maintenance. Other areas significantly influenced by IGKT include organic farming practices (80%), crop diversity and rotation (90%), and cultural preservation through agriculture (80%).

However, there were some challenges, such as the **reduced use of chemical inputs** (60%), where the younger generation's preference for modern farming practices led to higher chemical use. Despite this, the overall impact of IGKT on sustainable agriculture practices was positive, with 76% of respondents indicating that traditional knowledge had positively influenced their agricultural practices.

5. Chi-Square Analysis

Chi-square tests revealed that there were **no significant differences** between the older and younger generations' adoption of various traditional farming practices. The p-values for all practices were above the 0.05 significance level, suggesting that both generations have similar patterns of adoption, albeit at different rates. This indicates that while there is a decline in the adoption of traditional farming methods among younger farmers, the gap is not statistically significant enough to draw a definitive conclusion.

IV Conclusion

The study on **Intergenerational Knowledge Transfer (IGKT)** in the agricultural practices of Kolli Hills highlights the crucial role that traditional knowledge plays in sustaining agricultural systems. Despite significant challenges such as the shift towards modern farming technologies, migration of youth, and decreased interest in traditional practices among younger generations, the study emphasizes the ongoing value of intergenerational learning in maintaining sustainable agricultural practices. The findings show that while the older generation predominantly continues to use traditional farming methods such as organic manure usage, seed preservation, and natural pest control, the younger generation has shifted towards more modern farming techniques. However, the adoption of traditional practices, especially in soil fertility management and crop rotation, still has a **positive impact** on sustainable agriculture, contributing to biodiversity conservation and resilience to climate change. Key challenges, such as modernization, lack of interest among the youth, and limited institutional support, have led to a **decline in the continuity of traditional agricultural knowledge**. Nonetheless, the positive influence of IGKT on sustainable practices, such as water conservation, organic farming, and crop diversity, underscores its importance in fostering long-term agricultural sustainability.

The chi-square tests and cross-tabulations highlighted that there is no significant statistical difference between the adoption of traditional practices across generations, although younger farmers tend to adopt these practices at a lower rate. This suggests that while there is still a level of knowledge transfer, it is increasingly under threat, and efforts must be made to bridge the knowledge gap between generations.

Reference

- Adebayo, S. A., Joyce, O. T., & Babatunde, R. O. (2022). Knowledge of Intergenerational Farm Transfer Among Cocoa Farmers in Southwest Nigeria. *Journal of Agribusiness and Rural Development*, *66*(4), 331-340.

- Borda, Á. J., Sárvári, B., & Balogh, J. M. (2023). Generation change in agriculture: A systematic review of the literature. *Economies*, *11*(5), 129.
- Conway, S. F., McDONAGH, J. O. H. N., Farrell, M., & Kinsella, A. (2019). Human dynamics and the intergenerational farm transfer process in later life: A roadmap for future generational renewal in agriculture policy. *International Journal of Agricultural Management*, *8*(1), 22-30.
- Carolan, M. (2018). Lands changing hands: Experiences of succession and farm (knowledge) acquisition among first-generation, multigenerational, and aspiring farmers. *Land Use Policy*, *79*, 179-189.
- Chiswell, H. M. (2018). From generation to generation: changing dimensions of intergenerational farm transfer. *Sociologia Ruralis*, *58*(1), 104-125.
- Elgar, G. (2013). Transmission of traditional agricultural knowledge: Intergenerational or international? Examining youth's involvement in agriculture.
- Holder, I. D. F., & Ravi, R. V. Experiential Learning & Coping Strategies among Kolli Hills Tribes: A Comparative Study.
- Holder, I. D. F., & Ravi, R. V. Inter-generational Economic Empowerment through Action-Oriented Learning: A Pathway to Sustainable Development.
- Kaijage, J. M. (2021). Climate change and the nature of intergenerational transfer of knowledge in the contemporary world: The case of Masasi district in Tanzania. *Eastern Africa Social Science Research Review*, *37*(2), 149-176.
- Luhrs, D. E. (2017). *Intergenerational Family-Farm Transfer: Family Members' Experiences and Rural Social Issues* (Doctoral dissertation, Monash University).
- Seerangan, C., & Ravi, R. V. INTER-GENERATIONAL LEARNING FOR TRIBAL WELL-BEING: A SUSTAINABLE APPROACH.
- Seerangan, C., & Ravi, R. V. Learning and Knowledge Transfer beyond Generations: A Study in KolliHills.
- Osano, P. M., & Adam, R. I. (2014). 9. An intergenerational perspective towards increasing young people's contribution to agriculture in sub-Saharan Africa. In *Intergenerational learning and transformative leadership for sustainable futures* (pp. 159-166). Wageningen Academic.
- Seerangan, C., & Ravi, R. V. A Study on Inter-Generational Knowledge Transfer and Its Impact on Sustainable Well-Being.
- Szymkowiak, M., & Rhodes-Reese, M. (2022). A livelihoods assessment of new entrants within the US fisheries agriculture continuum. *Journal of Rural Studies*, *95*, 15-25.

- Seerangan, C., & Ravi, R. V. A Study on Inter-Generational Knowledge Transfer and Its Impact on Sustainable Well-Being.
- SEERANGAN, C. (2024). A STUDY ON COMMUNITY-BASED APPROACHES TO INTERGENERATIONAL LEARNING IN AGRONOMICS. *RESEARCH EXPLORER*.
- Seerangan, C., & Ravi, R. V. Traditional Ecological Knowledge (TEK) and its Role in Promoting Sustainable Well-being among Scheduled Tribal Communities in the Kolli Hills of Tamil Nadu.
- Tetteh, I., & Boehlje, M. (2019). An intergenerational farm transfer: when to start handing over the reins?. *International Food and Agribusiness Management Review*, *22*(3), 429-434.
- Van Niekerk, J. A., Mahlobogoane, M., & Tirivanhu, P. (2015). The transfer of intergenerational family knowledge for sustainable commercial farming in Mpumalanga Province of South Africa: Lessons for extension. *South African Journal of Agricultural Extension*, *43*(1), 66-77.
- Widiyanti, E., Karsidi, R., Wijaya, M., & Utari, P. (2023). How intergenerational farmers negotiate their identity in the era of Agriculture 4.0: A multiple-case study in Indonesia. *Open Agriculture*, *8*(1), 20220219.

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