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Technology application driven farmers' income enhancement: Evidences for spatial, sectoral and social inclusiveness

CHANDRE GOWDA M J[1]*, VENKATASUBRAMANIAN V[1], RAJESH KUMAR RANA[2], RANDHIR SINGH[3], RANJAY K SINGH[4] and U S GAUTAM[4]

ICAR-Agricultural Technology Application Research Institute, Bengaluru, Karnataka 560 024, India

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ABSTRACT

Indian farmers have played decisive role in ensuring national food security, however issues about their economic security have been a matter of concern. The study conducted during 2022 with 3648 farmers in 29 districts of Karnataka, exhibited the possibilities for income enhancement through technology-supported productivity-driven, diversification and agri-entrepreneurship promoted by the Krishi Vigyan Kendras (KVKs). The composition of income, estimated through Simpson's Index of Diversity, testify the inclusiveness in sources of household income. Income enhancement across agro-climatic zones corroborated for the spatial inclusiveness. Evidences across different landholding categories demonstrated the social inclusiveness. Horticultural sector contributed highest to absolute enhancement in farmers' income, but farm and non-farm enterprises, fisheries and livestock had higher rate of growth. Technology uptake was the catalyser for income enhancement across the sectors. The results provide an empirical framework for stage I impact, driven by productivity enhancement, leading to diversification and entrepreneurship development.

Keywords: Farm income diversification, Social inclusiveness, Supplementary enterprises, Technology application

The issue of farm income has been a nagging policy matter world over. In particular, the disparity between income of farmers and non-farmer or the farmers' income from on-farm and non-farm has attracted global attention. Studies in Europe (Rocchi *et al*. 2020, Finger and Benni 2021, Marino *et al.* 2021, Marino *et al.* 2023), United States (Mishra *et al.* 2002, El-Osta *et al.* 2007), Sub Saharan Africa (De La *et al.* 2023) and OECD reports (de Frahan *et al.* 2017) have delved on trends and challenges related to income of farm households. Technology adoption enables farmers to move-up the income ladder by adopting high value farming (Fan and Rue 2020). However, the advantages that technology and knowledge could provide to bridge the gaps in income are less demonstrated. Several reports (Chand 2017, Gururaj *et al.* 2017, Sendhil *et al.* 2017, Roy and Bhattacharya 2020) have delved on the challenges, possibilities and strategies in doubling farmers' income in India. In line with the ambitious initiative of the Union Government of India, the KVKs under Indian Council of Agricultural Research (ICAR) formulated and implemented series of technology-centric multipronged activities at farmers' fields and homesteads since 2016 (Birthal *et al.* 2022, Chandre Gowda *et al.* 2023). The database of successful farmers was subjected to critical analysis to understand the composition and changes in income of farmers supported by KVKs. Assessment of outcome of these activities was not only of academic significance, but also has current and futuristic national interests.

Karnataka is India's 6th largest state accounting for 6.3% of the geographical area with 12.06 Mha gross cropped area; and 11.23 Mha of net area sown (DES 2022). It is mostly dependent on the south-west monsoon received during June to September, with only 26.5% of the sown area under irrigation. Food crops accounted for 77.20% of the gross cropped area. Karnataka is known for plantation crops and has rich resources under livestock. On the social front, number of small and marginal farmers in the state grew from 5.99 million during 2010–11 to 6.98 million during 2015–16 at a compound annual growth rate (CAGR) of 4.37 *vis-à-vis* this CAGR of 1.55% at national level (GOI 2015, GOI 2022). Karnataka has set a vision to make it a $1 trillion economy by 2032 (Pai and Holla 2022, DES 2023). Under these circumstances, the present study is an attempt to explore the possibilities for enhancing

[1]ICAR-Agricultural Technology Application Research Institute, Bengaluru, Karnataka; [2]ICAR-Agricultural Technology Application Research Institute, Ludhiana; [3]ICAR-Indian Institute of Wheat and Barley Research, Karnal; [4]Indian Council of Agricultural Research, New Delhi. *Corresponding author email: maravalalu@yahoo.com

farmers' income through technological interventions across agro-climatic situations and landholding categories.

MATERIALS AND METHODS

This study is based on the farmers who were benefited from the technological interventions of KVKs during 2017–21. The final sample size was 3648 farmers from 29 rural districts of Karnataka. The number of respondent farmers in 25 districts where one KVK is functioning in each district ranged from 108 (Kolar district) to 114 (Ballari district). In four larger districts, where two KVKs are functioning, the number of farmer's respondents were 219 in Vijayapura district, 220 in Kalaburgi district and 221 each in Belagavi and Tumakuru districts. Farmers whose details on following components available with the KVKs for base year (2017) and evaluation year (2021) were considered for sampling.

- Details of crops cultivated, crop-wise area (hectare), production (metric tonnes), gross income (₹) and net income (₹) for each crop cultivated by the household
- Details of livestock reared with number of animals, production (per annum), gross income (₹) and net income (₹) for the complete herd/household
- Details of farm and non-farm enterprises practiced, gross income (₹) and net income (₹) per annum from each enterprise.

The data and information available in the database of benefited farmers maintained in KVKs was supplemented by primary data from individual farm households for the missing components. For calculating the cost of production, the imputed costs (owned seeds, manure and family labour) were added to pay out costs, as per the methodology prescribed in the Situation Assessment Survey (NSO 2021). Similarly, gross income was calculated for the total quantity produced, which also included the portion retained for home consumption and social purposes. Data were subjected to curation by converting to uniform units (numbers, kilograms and quintals to metric tonnes, per hectare to total area cultivated under each crop, livestock details per day or per month or per animal to full herd per annum etc.). The data on annual net income during 2017 was compared with the income levels during 2021, estimated at current prices. The income was assessed for the entire farm and also by considering income from farm and non-farm enterprises operated by the farm family. Hence, income has been reported as ₹/household.

The conceptual framework of impact pathway adopted in achieving higher income to farmer's households is presented in Fig. 1. This is based on the frameworks discussed in the 'Strategic guidance for ex-post impact assessment of agricultural research and development (Walker *et al.* 2008)'. At the planning stage, the implementing agency (KVK) carried out participatory agro-ecosystem analysis in each village wherein the resources were mapped, technology gaps were identified based on which technological interventions were customized to each household. Initial activities on technology assessment and demonstration (Supplementary Table 1) contributed to increased productivity as the first level of output. Producing more from lesser land area encouraged farmers to reduce the area under less profitable food crops for growing new crops (diversification) and/or expanding the scale of operation (intensification). The additional revenue generated from diversification and intensification encouraged the farmers to venture into farm and non-farm enterprises. Enhanced income and its inclusiveness in spatial and social dimensions have been considered as the stage I impact reflecting on the early economic benefits.

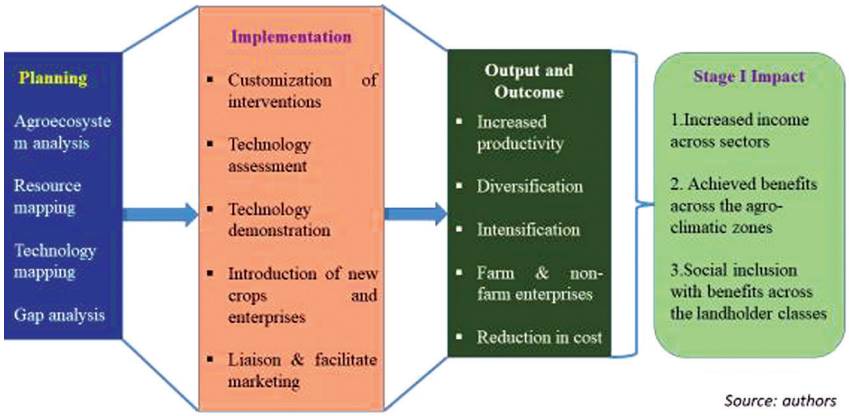

Fig. 1 Conceptual framework for technology driven income enhancement.

The extent of income source diversification was calculated using Simpson's Index of Diversity (SID) (Tiwari *et al.* 2023), which is adapted and measured as:

$$SID = 1-\sum_{t=1}^{n}\left[\left(\frac{AI}{THI}\right)^2+\left(\frac{HI}{THI}\right)^2+\left(\frac{LI}{THI}\right)^2+\left(\frac{FI}{THI}\right)^2+\left(\frac{SEI}{THI}\right)^2\right]$$

where SID, Simpson index of diversity; AI, Agricultural income; HI, Horticultural income; LI, Livestock income; FI, Fisheries income; SEI, Supplementary enterprises income and THI, Total household income. The value of SID ranges from 0–1. The index's value towards zero indicates revenue from single source, while its value towards one indicates diversified source of income from all five components.

Agro-climatically, the state of Karnataka is divided in to 10 zones taking into consideration the rainfall, soil types, texture, depth and physio-chemical properties, elevation, topography, major crops and vegetation (Ramachandra *et al.* 2004). For the present analysis, three transition zones are clubbed into one group. 5 dry zones were put under two groups, based on the percentage of net area irrigated to net area sown (DES 2022) during the year 2019–20. Districts located in dry zones having higher percentage of net area irrigated (>39.20%) to net area cultivated were grouped as 'Dry Irrigated' and the other districts were grouped under 'Dry Rainfed'. The classified zones and its districts are presented in Table 1.

Table 1 Agro-climatic zone and net area irrigated based classification of districts in Karnataka

Zone	District
Coastal zone	Udupi, Dakshina Kannada
Dry irrigated	Mandya (70.51), Bagalkot (59.91), Davanagere (56.58), Yadgir (49.90), Mysore (46.25), Raichur (45.35), Koppal (43.30), Chamarajanagar (42.38), Vijayapura (41.75), Ballari (39.63)
Dry rainfed	Kalaburgi (10.67), Kolar (21.45), Chikkaballapura (21.61), Ramanagara (23.24), Bengaluru Rural (23.81), Gadag (23.94), Haveri (34.66), Chitradurga (35.91), Tumakuru (38.53)
Hill zone	Kodagu, Chikkamagaluru, Uttara Kannada
Transitional zone	Shivamogga, Hassan, Belagavi, Dharwad, Bidar

*Figures in parenthesis indicate percentage of net area irrigated to net area sown.

RESULTS AND DISCUSSION

The stage I impact of the interventions that reflect the early benefits on income levels of farm households has been subjected to detailed analysis using the income sources diversity index values. District level analysis of diversity in sources of farmers' income is done by grouping study districts into three categories (Table 2). First, the 7 districts, which had higher SID than the overall mean for all the 29 districts (0.644) during 2021 as well as higher SID compared to 2017 of the respective district. SID values of successful farmers in these seven districts ranged from 0.644–0.689 during 2021 as compared to 0.419–0.647 during 2017. Successful farmers in most of these districts practiced diversification as evident from income from all the five sectors. Overall increase in income over 2017 was the highest for this group (157.85%), which ranged from 130.30–192.10%. Increase in income could be attributed largely to the diversification to high value horticultural crops, livestock, fisheries and supplementary enterprises.

Second group has 13 districts whose farmers' SID during 2021 was lower than the mean SID but was higher than SID value during 2017 of the respective district. The overall increase in income over 2017 was moderately high (152.20%) which was achieved through a combination of diversification and productivity enhancement measures. Doubling of income from food crops was difficult, but three districts in this group could achieve that through productivity enhancement measures. All the districts in this group doubled the income from livestock and supplementary enterprises as well.

Third group of nine districts had SID lower than the mean SID, and also compared to 2017 of the respective district, an indication of decrease in diversification. Half the districts did not have fisheries component and the least SID district did not have any income from supplementary enterprises as well. As the level of diversification of sources of income was less, increase in income over 2017 was least in this group (141.80%). This increase in income could be attributed to technologies that increased productivity and reduction in cost of cultivation. Due to limited diversification in this group of districts, farmers achieved higher income with the support of technological interventions for productivity enhancement and cost reduction provided by KVKs.

Spatial inclusiveness: The social inclusiveness has been captured from the extent of benefits realized across the land holding categories, including the landless households. Farmers in 'dry irrigated' zone reported highest increase in income (161.47%) (Table 3). The average land holding in dry zone with irrigation was more (3.31 ha/household) compared to other zones which contributed to highest net income (₹7.93 lakh/household). Irrigation in dry agro-climatic zones has enabled the successful farmers to diversify their crops and activities as evident from highest SID (0.677) (Fig. 2), resulting in highest increase in net income. Income increase in transitional zone was next highest (149.69%), as the zone has better rainfall and favourable climate to cultivate food crops, horticulture crops, livestock, fisheries and supplementary enterprises (Supplementary Table 2). The zone also recorded the highest benefit:cost ratio (3.35) during 2021. Favourable rainfall and moderate weather conditions coupled with irrigation facilities in the 'transitional' zone enabled farmers to cultivate multiple crops throughout the year (Bhavya *et al.* 2020), and undertake various supplementary enterprises to augment the household income. The index of diversity (0.643) is high in the zone due to multiple agriculture and horticulture crops as well as adoption of livestock, fisheries and other enterprises.

Hill zone farmers achieved highest additional benefit-cost ratio that increased from 2.33 during 2017 to 3.22 during 2021. Farmers in this zone also had an advantage of relatively higher landholdings (2.35 ha/household). However, increase in income (114.37%) was the least due to higher benchmark income levels (₹3.62 lakh/household). Least increase in income could also be related to the least diversity index of 0.355 (Fig. 2) in hill zone.

The 'coastal' zone farmers earned a net income of ₹577727/household. Horticulture and aquaculture dominated the livelihood options in coastal tropical zones and hence the SID values marginally declined from 2017–2021 (Fig. 2). The diversity index for sources of income (0.547) in coastal zone was less than dry zones, although it was better than hill zone. Smaller holdings (average 1.40 ha/household) might have forced them to practice multi-tier cropping of few high value crops in coastal zone. Enhanced productivity and profitability of the existing cropping systems with quality management through proper harvest, post-harvest, processing, and value addition of high value crops like plantation and spices crops have supplemented smallholders' livelihood in this zone.

Sectoral inclusiveness: The contribution of different sectors towards farmers' income during 2017–2021, both gross as well as net income is presented in Table 4.

Table 2 District-wise level of diversification (SID) during 2017 and 2021 and increase in income (%)

District	Simpson's index for diversification of household income		Net income (₹/household)		Increase in net income over 2017 (%)
	2017	2021	2017	2021	
Group I High SID group (SID greater than 2017, and above overall mean 0.644 for the year 2021)					
Dharwad	0.551	0.644	301026	709615	135.73
Yadgir	0.419	0.649	236152	689772	192.09
Mandya	0.578	0.653	202817	499072	146.07
Raichur	0.639	0.663	484859	1372584	183.09
Koppal	0.425	0.664	174628	459300	163.02
Haveri	0.573	0.684	126916	292302	130.31
Mysore	0.647	0.689	189799	483365	154.67
Group I average			245171	643716	157.85
Group II Moderate SID group (SID greater than 2017, but below overall mean, 0.644 for the year 2021)					
Dakshina Kannada	0.253	0.316	118998	310163	160.64
Hassan	0.314	0.394	182812	431309	135.93
Shivamogga	0.336	0.436	316436	670432	111.87
Kodagu	0.352	0.464	253642	547615	115.90
Tumakuru	0.554	0.566	229305	541181	136.01
Kolar	0.540	0.568	276233	706619	155.80
Belagavi	0.450	0.572	183357	517295	182.12
Kalaburagi	0.317	0.581	139249	423774	204.33
Uttara Kannada	0.579	0.580	202207	506474	150.47
Vijayapura	0.587	0.610	302409	763852	152.59
Bidar	0.448	0.618	188850	540356	186.13
Ballari	0.515	0.638	215104	536435	149.38
Bagalkote	0.601	0.641	530074	1258353	137.39
Group II average			241437	596451	152.20
Group III Low SID group (SID less than 2017 as well as below overall mean for the year 2021)					
Chikkamagaluru	0.133	0.124	633641	1280781	102.13
Chitradurga	0.354	0.345	557735	1176254	110.90
Chamarajanagara	0.418	0.413	252822	539523	113.40
Gadag	0.599	0.417	70873.6	218896	208.85
Bengaluru Rural	0.447	0.421	101932	239607	135.06
Ramanagara	0.582	0.578	217815	521733	139.53
Udupi	0.611	0.594	359073	847702	136.08
Chikkaballapura	0.636	0.612	181518	421645	132.29
Davanagere	0.676	0.617	424137	1263865	197.98
Group III average			311061	723334	141.80
Overall	0.608	0.644	257512	636099	147.02

Horticulture sector contributed more than 50%, both in gross income (52.42%, 52.32%) as well as net income (56.73%, 57.28%) during 2017 and 2021, respectively. Agricultural crops, comprising of food crops, cotton and sugarcane contributed to 23.28 and 24.17% towards gross and net income, respectively during 2021. Area under horticulture increased in almost every crop (except plantation crops like coconut, coffee), which ranged from 1.27% in sapota to 263.72% in okra (Supplementary Table 3). The percentage share in the net income was higher than that in gross income in these sectors due to technology-uptake leading to reduced cost and increased resource use efficiency.

There was quantum difference in the share of net income in horticulture sector compared to agricultural crops. Diversification towards the horticultural commodities is seen not only in value terms, but also in increasing share

Table 3 Farmers' household income in different agro-climatic zones of Karnataka

ACZ	Farmers (No.)	Average holding (ha)	Net income (₹/household)		Per cent increase	B:C ratio	B:C ratio	Addition in the B:C Ratio
			2017	2021		2017	2021	
Coastal	223	1.40	238497	577727	142.24	2.45	2.91	0.46
Dry Irrigated	1106	3.31	303397	793304	161.47	2.35	2.88	0.53
Dry rainfed	1321	2.46	211769	514987	143.18	2.61	3.00	0.39
Hill	332	2.35	362348	776777	114.37	2.33	3.22	0.89
Transitional	666	2.32	226149	564672	149.69	2.54	3.35	0.81
Overall	3648	2.62	257512	636099	147.02	2.45	3.02	0.56

ACZ, Agro-climatic zone; B:C, Benefit: Cost ratio.

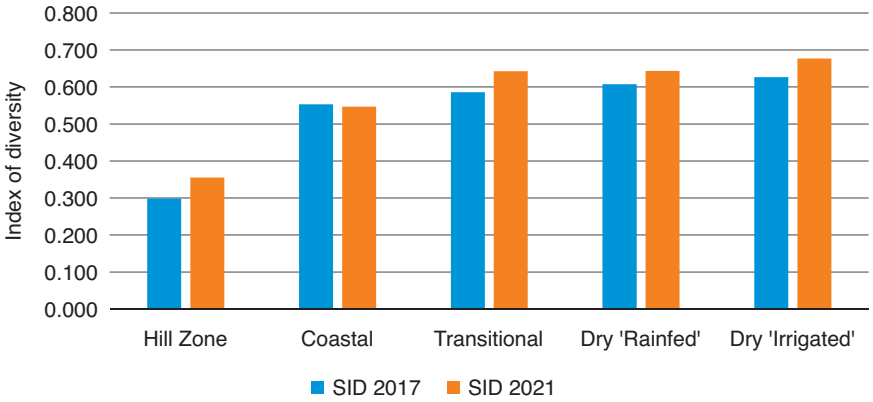

Fig. 2 Simpson's index of diversity for gross income of households in different agro-climatic zones.

of horticulture crops in the total cultivated area (DES 2022). The secondary data (GOK 2021) confirmed that area under horticulture increased from 20.76 lakh ha (2016–17) to 26.21 lakh ha (2020–21) in Karnataka. Unlike cereal crops, horticulture farms can be much smaller, allowing marginal farmers to boost their earnings from their small landholdings. Farmers often plant two or three horticulture crops, for example mixed cropping of vegetable crops and intercropping of vegetable crops with perennial fruit/ plantation crops simultaneously to maximise yield from each piece of land.

Share of income from agricultural crops in household gross income declined by about 10% during 2017 (32.59%)–2021 (23.28%). Secondary data indicated that between 2005 and 2021, sorghum, ragi and paddy lost nearly 0.777 Mha, 0.158 Mha and 0.044 Mha, respectively. On the other hand, during 2005–2020, arecanut area has grown by nearly 200%, from 0.187–0.551Mha. Pigeonpea is the only conventional food crop that has seen an increase in area under cultivation, from 0.6–1.631 Mha (DES 2022).

The share in net income of livestock, fisheries and supplementary enterprises was less compared to their respective shares in gross income, indicating higher cost incurred by households compared to 2017. Despite high cost, percentage increase in income from livestock sector over 2017 was significant (209.75%). Fisheries share in total income of households, although minimal, increased at 300.06%. In the case of farm and non-farm enterprises, the rate of increase in income (330.38%) over 2017 was the

Table 4 Sectoral contribution to gross and net income (₹/household)

	Year	Gross income (₹/household)	Per cent share in gross income	Net income (₹/household)	Per cent share in net income	Per cent increase in net income over 2017
Agriculture	2017	141747	32.59	78925	30.65	94.78
	2021	221569	23.28	153727	24.17	
Horticulture	2017	227963	52.42	144549	56.13	152.07
	2021	497938	52.32	364361	57.28	
Livestock	2017	39378	9.05	23133	8.98	209.75
	2021	133230	14.00	71654	11.26	
Fisheries	2017	4144	0.95	1921	0.75	300.16
	2021	12716	1.34	7687	1.21	
Supplementary enterprises	2017	21676	4.98	8985	3.49	330.38
	2021	86175	9.06	38670	6.08	
Total	2017	434909	100	257512	100	147.02
	2021	951627	100	636099	100	

highest. Nursery enterprises, bee keeping, processing and value addition has attracted the attention of young farmers and women. Plant nurseries have the potential to generate income every day as the production cycle of most of the vegetable and some fruits seedlings is less than a month. Plant nurseries have been able to generate higher net income compared to other enterprises. With the farmers preferring to ready-to-plant seedlings than raising seedlings themselves, the demand for good quality planting material has gone up (Singh *et al.* 2022) thereby offering sustainable income to nursery entrepreneurs. Scientific bee keeping could add to farmers' income by increasing crop production through better pollination. Sustainability of this industry is therefore vital to the country's economic wellbeing. Food processing sector is another agri-business area known for its high growth potential. Food processing industry is in the nascent stage as the country is processing less than 10% of its agricultural output. Food processing sector added ₹22.4 lakh million in 2019–20 contributing 1.69% of the total Gross Value added (GVA) in the country (MoFPI 2020).

Social inclusiveness: The social inclusiveness has been captured in terms of the extent of income benefits that have percolated to the socially disadvantaged rural landless and marginal farm households. Successful marginal farmers (<1 ha) had high level of diversification (SID 0.702) with income from all five components, indicating the importance given to all sectors (Table 5). Besides horticulture, successful marginal holders had more income from livestock and supplementary enterprises than from agriculture. Their income from fisheries component (₹27202/household), was next only to very large holders (₹48104/household). Small farmers (<2 ha) too had higher diversification in sources of income (SID 0.659) with steep increase in income from livestock component over the benchmark year (296.39%). Past findings that the smallholders have efficiency advantages are reiterated in this study. The social inclusiveness of income enhancement due to KVK interventions was evident as the landless category also could increase their income substantially, mainly from livestock and supplementary enterprises. A few of them cultivated horticulture crops on leased land during benchmark year, but switched over to livestock production with the technological support of KVK. Cage fish rearing in coastal areas has been a boon for landless (Jeeva *et al.* 2022) and similarly, each agro-climatic situation offers opportunities for different categories of landholders to earn additional income with technical support and guidance.

The results provide insights to the progressive path of impact that emanated from increased productivity, leading to crop diversification, farm diversification, intensification and entrepreneurship development. The starting point was to increase productivity and profitability in the existing cropping systems, by facilitating technology uptake by farmers (Fig. 3). The enhanced productivity was the in the range of 30–40% for most of the agricultural crops and very high in some of the fruit crops like grapes (80.23%), papaya (86.76%), and mango (48.04%). Among the vegetables, the increase in productivity was also high for onion (47.88%) (Supplementary Table 3). Technology-enabled productivity augmentation infused confidence among farmers and thus allowed them to decrease/discontinue area under agricultural crops (33.58% farmers) and horticultural crops (4.30% farmers) towards growing high value horticulture crops (34.79% farmers) that generated more cash returns. The number of okra growers increased by 154.55%, bittergourd farmers by 140.00%, papaya growers by 138.46%, cabbage growers by 122.22% and marigold farmers by 102.63%. Diversification is the magic word for scaling up any business and same was applicable for farmers also. In situations that had limitations for diversification, like traditionally high rainfall areas or extreme dry districts, farmers income adopted a combination of approaches. These included intensification of existing animal livestock operations, which was evident among 38.68% farmers and introduction of new animal husbandry components by about 13.87% farmers. Transforming farmers as agri-business entrepreneurs through farm and non-farm enterprises has been a new beginning as 14.86% farmers scaled up their enterprise activities and 8.66% farmers took up new enterprises. This reflected on the higher level of empowerment that provided stability through multiple sources of income to farm households. Thus, increasing farmers' income was achieved not with "one-size fits all" approaches, but by promoting location and context specific multi-basket alternatives, in a progressive manner.

Table 5 Sector-wise income for households under different land categories

Landholding categories	SID 2021	Sources of income (₹/household)									
		Agriculture		Horticulture		Livestock		Fisheries		Enterprises	
		2017	2021	2017	2021	2017	2021	2017	2021	2017	2021
Landless (n=20)	0.525	0	0	2105	0	61836	136442	0	0	106674	500349
Marginal (n=790)	0.702	39805	65580	94528	208221	28177	78835	12937	27202	12190	68733
Small (n=1479)	0.659	84021	129119	152435	344911	37230	147579	1977	5289	16375	60854
Medium (n=865)	0.576	153419	243676	284550	607719	42257	118987	1049	5431	10971	49361
Large (n=358)	0.631	331319	517085	497584	1035173	50983	160726	2692	16276	63563	231455
Very large (136)	0.629	802031	1236050	780962	1790038	75618	309381	912	48104	77664	247618
Overall	0.644	141786	221629	228025	498074	39389	133266	4145	12719	21608	85932

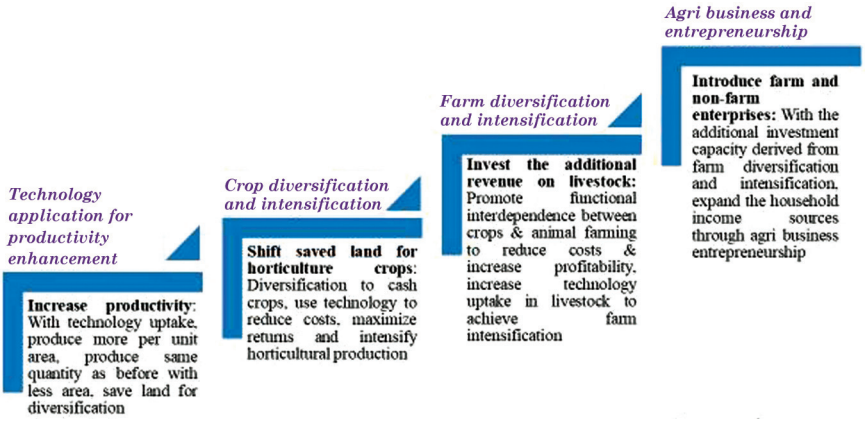

Fig. 3 Framework for technology application, diversification and entrepreneurship driven income enhancement.

To ensure social inclusiveness (Table 5), KVKs were mindful of the difficulties likely to limit technology uptake by smallholders and accordingly chose techno-social approach to promote household-specific interventions. For instance, seeds of high yielding varieties were produced and shared among farmers through participatory production practices. Local youth were technically empowered to establish plant nurseries in partnership mode to produce and supply quality horticultural plants at low costs. Group approach was promoted to harness the power of social capital, in promoting processing and value addition, bee-keeping, mushroom production, and marketing. Resource management committees were formed and facilitated to harvest, store and recycle rainwater in rainfed situations. These were some of the examples.

Conclusion and policy implications

This study concluded with role and contribution of technologies in enhancing the farmers' income demonstrated by the KVKs through successful farmers. It could be inferred that the technology interventions empowered farmers to achieve higher productivity across all types of crops and livestock enterprises. The positive results enthused and emboldened many farmers to scale up the activities and also towards diversifying into newer horticultural crops and livestock that fetched additional income. Over a period of time, some farmers were further facilitated to venture into farm and non-farm enterprises that provided a sound footing for sustaining the income in the long-run. Thus, the model of technology driven higher farm household income could be the harbinger for Karnataka to strengthen their vision of enhancing the state economy. The vision document envisages for differentiated plans based on climate, real-time crop conditions and market linkages and empowers farmers to pursue differentiated strategy driven by technology, which KVKs have successfully attempted in selected villages. The first of the nine agenda points to achieve the vision is to "boost agriculture sector through technology, branding, marketing and exports", and the insights gained from this study may help in achieving the goal through diversification, intensification and supplementary rural entrepreneurship.

Ethical statement

The respondents of study were consulted through proper rapport building and their consent was taken. Sufficient information about the project was provided to them before we started data collection. Respondents expressed their opinion to remain anonymous and accordingly their information was analyzed and presented

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