

Krishi Vigyan Kendras and Agripreneurship: A Review on Entrepreneurial Development

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Abstract

KVKs are centres for delivering agricultural knowledge, technology, and skill development to improve farm functioning. As institutions set up to curb sustainable agrarian practices and rural business, KVKs are central to making farmers into agripreneurs. This review intends to evaluate Krishi Vigyan Kendras, which have contributed significantly as centres for promoting agripreneurship, especially their entrepreneurial development programmes. By analysing the programmes, success stories, and challenges of KVKs in promoting agri-business ventures, this review will explain how KVKs assist farm producers in moving away from subsistence farming and becoming successful agripreneurs. From the literature, it is clear that KVKs play the centre stage in the development of agripreneurship through the generation and transfer of knowledge and the development of social capital. Furthermore, the focus should be on identifying and meeting the needs peculiar to women involved in agripreneurship with consideration for improving the efficiency of the KVKs that play a role in rural development. Further research should enhance the link between ED and the current techno-social structures of KVKs towards the effective promotion of agripreneurship. This will guarantee that knowledge-based verticals like the KVKs become a storehouse of all the information the rural area needs and a spring of sustainable rural enterprise.

Keywords: Krishi Vigyan Kendras, Agripreneurship, Entrepreneurial Development, Agriculture, Entrepreneurship.

Introduction

It is essential to note that even today, agriculture forms the primary source of income and livelihood in the rural belts of India (Chaudhary & Suri, 2024). However, due to current changing market conditions, more than conventional farming practices, ecological practices and better business solutions are needed as an economic backer for the rural population (Pawar, 2023). Self-employment, which combines two words, agriculture, and entrepreneur, is considered a perfect solution to this challenge. It helps farmers and other individuals in rural areas find new sources of income, supports value addition in agriculture, and sells agricultural products through sustainable ventures. In this regard, KVKs have become indispensable to support the growth of agripreneurs (Datt, 2020).

Founded by the Indian Council of Agricultural Research (ICAR), the KVKs function as centres for delivering agricultural knowledge, technology, and skill development to improve farm functioning (Deshmukh et al., 2023; Pawar, 2023). As institutions set up to curb sustainable agrarian practices and rural business, KVKs are central to making farmers into agripreneurs. These dearly furnish training, technology, and best, including practical-live sessions to produce all-round and technically equipped people who can run startup business ventures in agribusiness. By promoting rural entrepreneurship, KVKs have a significant role in diversifying the various areas of agriculture, such as food processing, organic farming, agro-based industries, farm tourism, etc. (Bisen, 2023; Chaudhary & Suri, 2024; Chatterjeet et al., 2018).

Thus, this review intends to evaluate Krishi Vigyan Kendras, who have contributed significantly as centres for promoting agripreneurship, especially their entrepreneurial development programmes. By analysing the programmes, success stories, and challenges of KVKs in promoting agri-business ventures, this review will explain how KVKs assist farm producers in moving away from subsistence farming and becoming successful agripreneurs. Further, the review will critically assess the performance of KVK-backed entrepreneurship models and the opportunities these avail themselves of for rural livelihood, agriculture improvement, and sustainable development. Thus, the possibility of KVKs as the incubator of agripreneurial ventures that would enhance rural economies will be demonstrated in this analysis.

Literature gap

Although KVKs contribute a lot to the development of agripreneurs, studies have some gaps as to the overall impacts of KVKs on entrepreneurship development in rural areas. While a vast number of studies address the technological transfer and extension services that the KVKs provide, there is a lack of research that addresses the aspects of the effective functioning of these centres in the sustainable development of agribusiness ventures. More pointedly, there is still a dearth of studies on factors such as the longitudinal performance of the KVK-supported agripreneurs, the extent to which entrepreneurship interventions can be scaled up, and how gender and socio-economic characteristics bear upon the enterprise performance (Deshmukh et al., 2023; Pawar, 2023).

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Another vital gap also involved the need for more theoretical underpinnings of the roles played by KVKs in promoting agripreneurship. Even though the general literature has examined most of these features of the role of MSAs in the global economy, mainly from their function as centres of knowledge and technology transfer, some of the claims have been integrated into formal entrepreneurship theories. For example, Schumpeter's Theory of Innovation focuses on innovation in entrepreneurship, but more is needed about how and why KVKs facilitate agricultural innovations through entrepreneurship. Social Capital Theory also explains the role of networks, relationships, and trust in entrepreneurial success. It is shown that there is an enhancement of social capital through KVK's community programs amongst the rural agripreneurs; however, how this accrued social capital influences business success still needs to be defined (Bisen, 2023; Chaudhary & Suri, 2024; Chatterjeet al., 2018).

Specifically, the literature review needed to identify an extensive study of how KVKs combine the delivery of entrepreneurial training, market linkages, financial assistance, and policies that would support the functioning of agribusiness enterprises. Furthermore, it is necessary to examine how technological innovations provided by KVKs, including precision farming, organic farming, and agro processing, impact the overall dimension of the rural venture.

Literature Review

Agripreneurship

Krishi Vigyan Kendras (KVKs), as a part of the Indian agricultural extension system, has a significant role in transferring the knowledge and technology of agriculture to the farmers of India. Such centres are crucial in economic growth, particularly in rural areas, and research has shown their importance in facilitating agripreneurship in recent years. This has made rurally based agritech- or agripreneurship- a business that mixes agriculture with other ventures- functional in supporting the two fundamental activities that feed the nation's population (Deshmukh et al., 2023; Pawar, 2023). The purpose of this paper is to review what is known so far on how KVKs contribute to the support of agripreneurship in the country based on the analysis of entrepreneurial development programs, technology transfer processes, and the role of innovation for rural agribusiness.

KVKs and Agricultural Knowledge Transfer

Many existing studies also identify KVKs as important agricultural education and extension centres. According to Singh et al. (2016), KVKs act as the information centre for generating, transmitting, and applying new technologies in farming systems, crop production and management. These enable KVKs to fill the gap between research institutions offering scientific technology in agriculture and rural farmers through training programs, on-farm demonstrations, and field visits. Such activities include annexing people, enhancing institutional frameworks, and facilitating timely access to inputs. The above activities assist the farmers in acquiring modern farming methods and optimizing the utilization of resources, producing high-quality crops. However, existing research on KVKs primarily concentrates on the technical dimensions of transferring agricultural knowledge rather than understanding the process as a business model (Choudhary et al., 2018).

Agripreneurship Development

Agripreneurship has thus unfolded as a significant intervention in the ongoing process of rural transformation, in which KVKs have played a pivotal role. Mishra et al. (2020), examining the functioning of KVKs, found out that KVKs foster agripreneurship through training in the following sub-sectors: agro-processing, organic farming, and sustainable practices. In these programs, KVKs equip farmers with opportunities to embrace farming as a business rather than just a way of survival, hence creating the entrepreneurship thought process. However, several contradictions that define the relationship of KVKs to those agribusinesses as critical influences in their growth, especially regarding market access and finance and business networks, remain evident from the literature (Patil et al., 2019).

Technological Innovation

Based on the argument that KVKs play an essential role in disseminating technology that encourages entrepreneurial activities in rural areas. Research conducted by Balaji et al. (2017) shows the role KVKs play in introducing innovations like precision farming, drip irrigation and high-yielding varieties of crops. These technologies, therefore, are crucial in enhancing farm production and can serve as the basis for agribusiness business. However, KVKs have been instrumental in promoting technological adoption, and the issue of connecting technology to entrepreneurial outcomes has been poorly explored. In particular, there is much ambiguity about how the technologies funded by KVK result in developing new entrepreneurial ventures in agriculture.

Social networks

The role of KVKs can be continued from here to another dimension of supporting the programme of agripreneurship, where the social capital, which is imperative to any entrepreneurial activities, is built. According to Nahapiet and Ghoshal (1998), social capital theory focuses on the network and relationships that provide access to resources, information, and support. By establishing KVKs, social capital is developed since it creates an interface between farmers, agricultural business gurus, and entrepreneurs in rural areas. As Batjargal et al. (2019) point out, these social connections assist in producing and acquiring other resources, credibility, and encouragement for early-stage agripreneurs. Empirical research

on how such social capital formed through KVK networks influences continuous entrepreneurship success is still being determined.

Difficulties in the promotion of agripreneurship

The current success of KVKs positively supports sustainable agripreneurial development, but the following constraints restrict their functioning for developing agripreneurial capabilities. Some of the biggest challenges highlighted in the literature include limited or no access to credit, lack of market access, and inadequate policy support for rural agripreneurs, according to Shakeel et al. (2020)—further research by Prasad et al. Also, as much as KVKs conduct training and development, they do not have the tools to support business development issues such as writing business plans, managing finances, and determining enterprise market options. This goes a long way in suggesting a significant missing link in the existing entrepreneurial development framework with the support of KVKs.

Theoretical Underpinnings

According to Schumpeter, this theory highlights innovation as the hallmark of the entrepreneur. Analysing the KVKs' functioning is crucial to diffuse farming innovations to farmers and help them convert conventional farming into agricultural business. However, the link between the dissemination of innovation by KVKs and farmers' entrepreneurial development has not been studied well. Moreover, the theory of social capital, as defined by Putnam (2000), is also applicable in explaining how the networks formed by KVKs could be beneficial for improving the acquisition of resources by agripreneurs. However, there is scarce literature on how social capital derived from KVKs impacts the identified entrepreneurial performance indicators, including business survival and expansion.

Gender and Agripreneurship

Gender is an essential factor when considering agripreneurship, given that women who work in rural regions are denied resources and are culturally restrained from undertaking business ventures (Salah & Caesar, 2020). As much as there has been an increase in the establishment of KVKs with the vital aim of training and developing women in areas of agriculture, there has not been adequate research done to find out how well and effectively KVKs deal with gender-related issues in agripreneurship.

Thus, from the literature, it is clear that KVKs play the centre stage in the development of agripreneurship through the generation and transfer of knowledge and the development of social capital. Nevertheless, several research questions still need to be answered, specifically regarding the efficiency of the KVK-supported agripreneurs: How do these agripreneurs scale up their businesses, how do they access markets and how sustainable have they been? Further empirical research is needed to link Schumpeter's Theory of Innovation with KVKs and contribute to agripreneurship by incorporating Social Capital Theory. Furthermore, the focus should be on identifying and meeting the needs peculiar to women involved in agripreneurship with consideration for improving the efficiency of the KVKs that play a role in rural development. Further research should enhance the link between ED and the current techno-social structures of KVKs towards the effective promotion of agripreneurship. This will guarantee that knowledge-based verticals like the KVKs become a storehouse of all the information the rural area needs and a spring of sustainable rural enterprise.

Success stories

Mushroom Cultivation and Processing

In Haryana, KVKs have sensitized farmers, especially women farmers, to grow mushrooms as an alternative source of income. As a result of the technical training given to the farmers in the cultivation of button and oyster mushrooms, new mushroom farmers have ventured into small-scale production units. A few have gone the extra mile of opening sub-processors for dried mushrooms and other mushroom-derived products like pickles and powder. These farmers are now among the young and successful agripreneurs who supply raw and processed mushrooms to markets and restaurants (Singh et al., 2019).

Bee farming and Honey production and treatment

A KVK based in Gujarat has spurred many farmers into the beekeeping business through training on modern technologies in modern apiculture and bee colonies. Some of the existing enterprises started by the KVK-trained entrepreneurs produce and sell organic honey, beeswax products, and royal jelly. This has especially proven fruitful for many agripreneurs who have been able to market their honey as a health product, catering to the growing market for natural and organic foods, leading to better income generation (Swaroop et al., 2017).

Vermicomposting and Organic Fertilizer Production

In Tamil Nadu, KVKs have popularized vermicomposting methods by training the farmers to prepare the organic compost from farm waste. It has been observed that many entrepreneurs have established vermicomposting units producing both for farms and for sale to neighbours and those interested in organic produce like organic markets and garden lovers. It has

also created beneficial and valuable businesses and thus contributed to environmentally friendly and sustainable farming techniques (Badariprasad et al., 2014).

Dairy farming

KVKs in Rajasthan have helped small farmers improve goat farming by providing knowledge about selecting quality breeds, disease control, and quality feed production. The farmers have used this to establish goat production units and rearing goats. Certain have diversified into speciality milk products such as goat milk soap and cheddar, extending into markets with high unit returns (Singh et al., 2015).

Herbal Plants

KVKs have supported farmers in growing MPIs such as Aloe Vera, Tulsi, and Aromatic crops like Ashwagandha in Kerala. KVK-involve farmers have established small-scale industries to produce herbal health and beauty products such as oils, creams, and other supplements they supply in local markets and online. They all take full advantage of the growing trend of people preferring Ayurvedic products in domestic and export markets (Swaroop et al., 2017).

Horticulture-based agribusinesses

Similarly, in Maharashtra, KVKs have supported horticulture-based entrepreneurship and skill development for farmers cultivating high-value crops like mango, guava, and pomegranate. Farmers under the KVK scheme have gone into value addition, establishing fruit processing plants where products such as jams, pickles, dried fruits, and juices were processed. This has enabled farmers to seek other income sources and expand their produce in processed foods markets (Rukmani et al., 2018).

Aquaculture

In West Bengal, many KVKs have guided farmers in starting fish farming enterprises. KVKs also offer instructions on the management of ponds, species selection, and feed to be used for the fish. Farmers who took the training have set up fish farming ventures, and some have proceeded to process and market fish merchandise such as filleted and dried fish. Aquaculture has proved to be a lucrative agriculture sub-sector, especially in areas with little or no arable land for cultivation (Das, 2018).

Small Scale Poultry

In Karnataka, the KVKs have provided best practices for poultry production to small-scale farmers, and as a result, they have established lucrative poultry businesses. Others have progressed to processing eggs into products such as egg powder and protein supplements to satisfy the health-conscious market (Subramannian, 2013).

Agri-Tourism

By implementing innovations, extension activities in Maharashtra's KVK have helped farmers start up Agri tourism innovation. Producers provide services like farm holidays, farming tourism, and eco-tourism, especially involving organic farming tours and courses on the technologies used in traditional farming. This has provided income to families in rural areas and awareness to urban consumers on the sources of their foods and the sustainable methods used (Borlikar & Rao, 2015).

Floriculture

In Punjab, KVKs have imparted technical knowledge and ability on Floriculture, rose, marigold, chrysanthemum production, etc. Some of the farmers have developed nurseries that produce flowers, ornamental plants, and plants for landscaping enterprises. Some have also ventured into making and marketing value-added products such as dried flowers and other physical arrangements for events and export markets (Kumar, 2022).

The above examples demonstrate how KVKs are instrumental in facilitating a change of face for farmers into notable agripreneurs by assisting in training, technology, and market linkages.

Practical Implications

Farmer Training: The KVKs provide training for agricultural knowledge and production technologies. They should incorporate business and economic management knowledge. Holding modules on entrepreneurship, marketing strategies, financial planning, and digital literacy, KVKs will be able to prepare the farmers for managing their farms as agri-business enterprises, increasing the overall profitability and sustainability of the respective farms.

Market Linkages: The agripreneurs face a significant challenge: market access. From experience, KVKs can be hugely instrumental in developing market linkages for farmers to connect with buyers, suppliers, or distributors. To a farmer,

working alongside cooperatives, local traders, and e-commerce platforms can help find new markets for the produce, hence boasting better returns from the sales.

Credit and Financial Services: Another challenge that affects the financing of agripreneurs is that most of them need to learn how to source capital in case they fail because they need more collateral. These institutions can function as a link between financial institutions for providing better credit, micro-financing, and government aid to the farmers. Advising on the format of loans and subsidies will help the development of small business entities in agriculture.

Technology-Driven Entrepreneurship: Due to their proximity to growers, KVKs are crucial in familiarizing farmers with innovations such as precision agriculture, solar irrigation, and efficient Crop Husbandry. The detract that can be used for entrepreneurship is that it motivates farmers to use and expand on these technologies in their enterprises. These adjustments should be made to enhance the efficiency of technology transfer and farmers' business development.

Gender-Inclusive Agripreneurship: In the context of agripreneurship, the challenges that may affect women include resource constraints and social-cultural barriers. KVKs should provide women programs that can suit their needs by providing diverse services, including carrying out drill activities like training in soft skills, financial management, and related business management mentoring by successful women Agri-entrants. Efforts towards supporting women will close the gap between male and female entrepreneurs within the rural areas.

Networking Opportunities: It reveals that social capital plays a significant role in the success of agripreneurs, and as such, KVKs should encourage farmers, Agri-businessmen, and experts to network. Through weekly seminars, monthly workshops, and field days, the KVKs can help the farmers come together at convergence where they can exchange knowledge, work together on projects, and develop business linkages for better resource mobilization and mutual development.

Policy Advocacy: An intermediary role can be assumed by KVKs to bridge the gap between the government and the agripreneurs and make them aware of the government's policies and subsidies. Nominated to function as multipliers for KVKs, it is possible to influence local policy to make the environment for agripreneurship more friendly – granting more accessible access to state schemes and regulations.

Promoting Sustainable Practices: Sustainability is essential for the sustainability of agribusiness organizations. The following are the areas of concern for spreading awareness among KVKs: Ecological agriculture, organic agriculture, waste management, and other technologies. Vague calls to farmers to use sustainable practices would help them improve their marketability and bring their operations coordinated with the base that supports buying from environmentally sustainable businesses.

Suggestions to Improve Krishi Vigyan Kendras

Strengthen Market Linkages

KVKs should promote an effective linkage between the farmer and the markets by conducting buyer-seller meets, expos and tie-ups with the retail chains. Improving farmers' access to better markets at the local and international levels will increase their income level, thus cutting the use of intermediaries.

Technology Literacy

As a result, to enhance the competitive capacity of the farmers in the era of information technology, the KVKs should lay their area of operation on the digital literacy programme. Educating farmers on how to use intelligent applications in mobile phones, social sites for updated market prices, and others and how to e-market their crops can improve their knowledge and decision-making.

Agri-Entrepreneurship Incubation Centres

Incubation centres must be established to support agripreneurs and the KVKs. These centres can offer practical business strategy, planning, product creation and promotion training. Workshops, training sessions, and executive and expert coaching could help build an innovative approach to transform Agri-products into commercialise products.

Training Programs

It is indicated that KVKs can increase their training activities by developing them to meet local requirements and farmers' demands. Farmers would get more practical and relevant advice as problems such as ground conditions, water organization, and crop disease can be solved according to geographical zone systems.

Climate-Resilient Agriculture Techniques

As climate change becomes a thorn in the rear of the agriculture sector, KVKs should ensure six-compartment training of the farmers on climate-smart agriculture, such as drought-tolerant crops, efficient irrigation, and sustainable soil management. This can assist farmers in reducing the impacts of climate change and, hence, weather development.

Agri-Tech Companies

KVKs can partner with Agri-tech startups and companies to offer rural farmers modern farming technologies such as precision farming assets, drones, and IoT-enabled sensors. Such cooperations can make efforts to increase production and Organize resource utilization to minimize wastage among farmers.

Women's Participation in Agripreneurship

More unique initiatives need to be established to strengthen women in agriculture, specifically in training and assisting women in agribusiness. These include financial and market knowledge and women's entrepreneurship development education because of their unique needs and barriers.

Awareness programs

KVKs can increase the number of people reached in a particular area through local media, social media, and events. It will help more farmers, especially those in rural areas, to notice KVK's presence and participation in programs that may benefit them.

Partnership with Research Institutions

There is every need for KVKs, Agricultural Universities and Research institutions to foster continuous availability of new agricultural research and innovations to the farmers. This joint effort can enable applying the latest technologies and practices at the grassroots level.

Monthly Monitoring and Evaluation of the Impacts

A proper assessment of the programmes launched by KVK needs monitoring and evaluation. Due to the regularly conducted assessments, KVKs can determine the practical programs and those that are not and, therefore, allow the efficient use of the available resources.

Future directions

In the context of future directions, the following strategies should be included for developing Krishi Vigyan Kendra: KVKs of the future should have Technology incorporation, strong market linkages and inclusion of Agripreneurship as foundational pillars. Several farmers are yet to be connected to the internet, and app-based solutions such as smart farming and digital marketplaces can improve yield and make agriculture more sustainable. Moreover, the KVKs should focus on networking with Agri-tech companies, universities, and research institutes so that there is constant innovation at the grassroots level. Particular emphasis has also been placed on women entrepreneurs and other marginalized groups to achieve better inclusive growth in the agricultural sector. Sustained impact evaluation and sensitive, target-based training interventions will be critical in addressing new contingencies, including climate change, and varying market forces. The approach enunciated above will ensure that KVKs are relevant and sustainable in the face of the transformation of agriculture in India.

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