Applied Management Perspectives
BI-ANNUAL JOURNAL SCHOOL OF MANAGEMENT PRESIDENCY UNIVERSITY, BANGALORE

THE EFFECT OF FARMERS COMMUNITIES OF PRACTICES ON THEIR SUSTAINABLE LEARNING AND ENGAGEMENT

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ABSTRACT

The objective of the paper is to find the relationship between farmers communities of practice on their learning and engagement. Agriculture sector is one of the most unorganized sectors, and at the same time most of the Indian population depends on this sector for livelihood. It is very challenging for governments to administered and steering the diffusion of agricultural innovation. Identifying the factors which can fasten their leaning and engagement through which these innovations can transfer to all farmers in a short time. The agricultural extension division is playing a key role in the process. To address the objective, data was collected from agricultural farmers from five states of southern India. A structured questionnaire was developed and used to collect data from the respondents. Specific data analytical tools were used to analyze the data, the results show a positive relationship between the study variables.

Keywords:
Agricultural Farmers, Agricultural Innovations, Communities of Practice, Learning and Engagement.

INTRODUCTION:

Agriculture is the real lifeline of any nation. In India, the agriculture sector which comprise more than 50 per cent of the total workforce and contributes around 17-18 percent to the country's GDP (Economic Survey of India, 2018). Though the farming activity seem to be homogeneous in nature lot of diversity do exist. India is growing with an extensive transformative change. Exponential growth in population, expanding urbanization, growing middle income groups, changing dietary preferences of urban people, reducing farm land and accelerated climate change are the emerging challenges for sustainable agriculture with high production. The national agriculture research system is also transforming with the exposed challenges and creating new avenues for tacking challenges. The agricultural innovation by these research institutions encompasses the development of new techniques and technologies, transfer, adoption and diffusion in to the formal agricultural system. The system includes players such as International and National institutions (policies, norms and practices), scientific community, different farming groups, NGOs, individual and group of farmers. Notably, these agricultural innovations are specific to the socio-economic, cultural and technological context.

The main challenge facing agricultural extension in the 21st century is how to develop low-cost sustainable approaches for service provision that go beyond extending messages to playing a key role in promoting farmers as the principal agents of change in their communities. These approaches need to enhance farmers' learning and innovation and improve their capacities to organize themselves for more efficient production and marketing and to demand extension services (David, 2007; Davis et al., 2009; Leeuwis van den Ban, 2004).

The challenges to the agriculture extension and farming communities are many, it can be attributed to the highly intricate and unorganized nature of the Indian agricultural sector, which can be considered the largest unorganized sector in the country. The size of land holdings significantly influences a farmer's income, with the average land holding size in India being approximately 1.15 hectares. This poses a challenge for small-scale or micro farmers, hindering their ability to engage in mass production and diversify into multiple crops. As a consequence, the overall growth of farmers is adversely affected.

Agriculture-dependent households experience an average monthly income as low as 10,218. The escalating capital requirements for farmers further compounds their financial challenges. Over the past decade (2013-2023), the cost of pesticides has surged by 44%, adding to the economic burden on farmers.

Diffusion of innovation into grassroots-level farming involves the investment of time, money, and various resources to introduce and implement new agricultural practices among small-scale farmers. Initiatives like the Krishi Vigyan Kendras (KVKs) plays an important role in this process. These centers, supported by the Indian Council of Agricultural Research (ICAR), serve as knowledge hubs at the grassroots level, providing farmers with training and demonstrations on innovative farming techniques. Time is invested in educating farmers about modern technologies and sustainable practices. For example, KVKs organize workshops and field demonstrations to introduce water-saving irrigation methods, like drip irrigation.

Farmers in states like Maharashtra, through these sessions, learn how to optimize water usage, reduce costs, and enhance crop yields over time. In this study, the researcher focuses on the communities of practice, where farmers form into groups to address specific issues in farming which intern enhances their learning and engagement in their communities.

REVIEW OF LITERATURE:

In order to spread information and give voice to underrepresented groups, community-based learning programmes often use existing networks of practice. Participatory action research, apprenticeships, and peer mentorship are just a few examples of programmes that help people learn from one another, develop their abilities, and work together to solve community problems (Lave, 2011). These projects aim to reinforce social cohesiveness and inclusive growth at the community level by combining formal and informal learning approaches.

According to Wenger (1998), "communities of practices" consist of groups of people who frequently engage in the sharing of information, ideas, and experiences pertaining to a shared interest, profession, or passion. In agricultural settings, communities of practice (CoPs) facilitate communication, knowledge sharing, and innovation among farmers, extension workers, researchers, and other interested parties. Community of Practices (CoPs) help spread innovation in farming by bringing people together through shared practices, workshops, and projects. When people in a community share what they know, it's like a treasure trove of information that everyone may benefit from (Wasko & Faraj, 2005). Knowledge transmission, both tacit and explicit, learning, and innovation cannot exist without it. Improved agricultural practices and outcomes are the result of farmers' access to, absorption of, and use of new information, which is made possible by effective knowledge sharing processes within CoPs

In order for communities of practice (CoPs) to effectively share information, social capital and trust are crucial (Putnam, 2000). Strong interpersonal ties, mutual trust, and shared norms create an atmosphere of openness and collaboration, which is characterised by high levels of social capital. When farmers have trustworthy friends they can confide in, they are more likely to impart new techniques and lessons learned collectively (Pretty & Ward, 2001).

Knowledge sharing in agricultural communities is greatly affected by the availability of information and resources (Foster & Heeks, 2013). New methods can be more easily adopted and shared by farmers who have access to trustworthy information, extension services, and technology resources. Qureshi et al. (2015) found that ICTs such mobile phones, online platforms, and radio programmes greatly help farmers gain access to vital resources and overcome information obstacles.

According to Senge (1990), knowledge exchange and creativity are fostered by CoPs that have an organisational support system and a learning culture. Facilitating the interchange of ideas and practices among farmers are organisations, organisations, and projects that place a premium on ongoing learning, experimentation, and the sharing of information. Learning and growth are driven by participatory techniques, which include farmer field schools, demonstration plots, and peer learning groups (Sumberg & Okali, 1997). Knowledge exchange inside CoPs may only be effectively facilitated by means of reliable communication channels and platforms (Klerkx & Leeuwis, 2008). Opportunities for face-to-face contacts and information sharing are provided via traditional channels including agricultural exhibitions, community meetings, and extension programmes. Furthermore, farmers are able to have access to knowledge, communicate with specialists, and share their experiences in real-time using ICT-based platforms such online forums, mobile applications, and social media (Van Mele et al., 2011). When it comes to encouraging farmers to share what they know, incentives and motivation are key (Lerner & Tirole, 2002). Farmers are more likely to take part in CoPs if they are financially rewarded, publicly acknowledged, and acknowledged for their efforts to share information. Additionally, farmers give their knowledge and experience for the collective benefit of the society due to

intrinsic incentives such compassion, reciprocity, and social recognition (Nahapiet & Ghoshal, 1998). Farmers are more likely to embrace and scale up innovations when there is effective information exchange within CoPs (Davis & Davis, 2009). The dissemination process is accelerated when farmers share their successes, mistakes, best practices, and lessons learned (Rogers, 2003). Additionally, through social influence processes and peer-to-peer learning, innovations are championed by early adopters inside CoPs, which in turn leads to greater diffusion and uptake (Burt, 2004).

According to Van Mele et al. (2011), creativity, co-creation, and adaptability are all promoted by collaborative information exchange within CoPs. In order to tackle local problems and seize local possibilities, academics, farmers, and other interested parties work together to create context-specific solutions (Klerkx & Leeuwis, 2008). Sustainable, relevant, and practical information, technology, and tactics may be co-produced by stakeholders through participatory research, farmer-led experiments, and co-design workshops (Scoones et al., 2007). According to Putnam (2000), when farmers share knowledge, it helps them feel more empowered and builds social capital. This, in turn, makes them more resilient and encourages them to work together. Knowledge sharing programmes help rural communities bond via the development of mutual respect, friendships, and networks (Krishna & Uphoff, 1999). Development results that are more inclusive and sustainable are the result of farmers who are empowered to access resources, advocate for themselves, and participate in decision-making processes (Lynch et al., 2011).

The term "Communities of Practice" (CoPs) is used by Wenger (1998) to describe online networks of people who voluntarily band together to pursue common goals in the form of mutual aid and education. The results are corroborated by studies done by Lave and Wenger (1991), who highlighted the informal character of CoPs and how they help members share information. According to Wenger (1998), the power in CoPs is decentralised, and the importance of shared knowledge and learning among members is a key factor in group dynamics. Members of CoPs actively participate in knowledge sharing initiatives, according to study by Blackmore et al. (2010), which implies that the organisation functions on the principles of cooperation and participatory decision-making. Communities of Practice play a vital role in fostering knowledge sharing, innovation, and the adoption of sustainable practices among farmers. By creating spaces for collaboration, learning, and the exchange of experiences, CoPs enable innovative farmers to enhance their agricultural practices, address challenges, and contribute to the overall development of the farming community. Recognizing the importance of CoPs and providing support for their establishment and maintenance can lead to improved outcomes in agricultural innovation and sustainable farming. Generation of new knowledge through these groups is possible only when people are constantly interacting with one another to share experience and understanding to produce new understandings of new knowledge. Barston and Tusting (2005) mentioned that participation in the groups is an essential aspect of practice-based learning. Brown and Duguid (2001) pointed that these CoPs acts a repository of explicit knowledge (formal in nature) as well as tacit knowledge (intangible and informal in nature) and holds the key to any change process. These groups encourage members to generate a common history or culture by sharing their practices, cases, methods, and repeated interactions (Wenger et al., 2002). Aleksandra Dolinska et al (2016), examines the farmers role in the innovation process through communities of practice (CoPs). In the multiple stakeholders' settings CoPs create a scope for the farmers through their interactions and learning. Sewell et al. (2014) described it as "sharing power with

farmers" which means gaining negotiating capacity. Leeuwis and Aarts (2011) identified that constructing narratives have a direct effect on innovation process within the CoPs and it gives a sense and space for change.

Learning and Engagement

Nieuwenhuis, Loek FM (2002) described a linear model, which explains that research is followed by technological development which is followed by dissemination activities and finally application in the grass root level. The learning needed in the grass root level can be characterized as adaptation to new knowledge and technology. The paper concluded that innovation processes have a hybrid nature: one being the linear, hierarchical model which is applicable for introducing external technology on the shop floor; while the second being innovation that can be seen as informal learning process, in which social networks plays an important role. Farmers are observed to be active in informal learning process, this stresses the need for analyzing informal learning. Interactive learning and innovation should be analyzed from a perspective of uncertainty. In linear approach, it is difficult to predict farmers impulse for learning. Learning skills for interactive innovation is also a part of the innovation process. Innovative farmers are quite capable in this kind of selective processes but, on the other hand, they protect themselves against an excessively chaotic context by staying in strong, known networks. Paradoxically to be continuously innovative they need new impulses from weak, unknown networks. Feder et.al (1993), reviewed both theoretical and empirical literature on adoption of agricultural innovations and the policy interventions promoting technology adoptions. The impact of factors such as credit, information availability, tenure, education, risk, and farm size on farmer adoption behavior, has been a common focus of adoption studies. Both individual adoption behaviors and aggregate diffusion patterns has been developed.

OBJECTIVE:

The objective of the study is to find the relationship between communities of practice and learning and engagement.

H1: there is a positive relationship between communities of practice and learning and engagement of farmers.

RESEARCH METHODOLOGY:

SAMPLING

Sample is a small representative segment of the target universe of the research drawn systematically to collect the needed data for any scientific study. The sampling frame was South India and the data about population was retrieved from the Ministry of Agriculture. There were 5 states of south India during 2021. The population for the present study is agricultural farmers from five states in South India.

SAMPLE SIZE AND TECHNIQUE

In research, the term "sample size" refers to the minimum number of individuals needed to draw valid conclusions. The sample size was calculated scientifically using Israel's formula (Israel, G. D., 1992). Determining sample size is very much essential to determine the research's reliability. The final sample size was 552 based at 5% error in mean estimates.

The purpose and scope of the research compelled to choose probability sampling method to solve the current problem without any bias and with accuracy. Stratified random sampling technique was rather suitable and technically sound method of sampling used in this research. It involves stratification of the population in to small homogeneous groups known as strata which are smaller consistent units (strata) and from them draws at random a sample. The advantage of this method is it divides the greater population into homogenous stratus and helps to draw a representative sample based on the proportion of the strata (Fei Shi, 2015, Milton J.S and Arnold J C, 2002). Hence from the weightage we give to

the strata we could justify the sampling technique as stratified proportionate random sampling. To have a good representation of the population and for inferential purpose proportionate sampling method was used so that this allocation considers the size of strata as well as variability. Analysis of the preliminary data was carried out using SPSS, version 20.0. In order to analyze the measurement model and evaluate the assumptions, the Analysis Moment of Structures Software (AMOS, version-20.0) was utilized for Structural Equation Modelling (SEM). The next sections elaborate on the aforementioned statistical software and methods and offer an explanation for their use.

RESULTS & DISCUSSION

Confirmatory factor analysis is the prerequisite for path analysis. Confirmatory factor analysis (CFA) has emerged as a pivotal technique in such contexts, offering a comprehensive method for comparing the hypothesized measurement model structure with the observed one (Rios & Wells, 2014). Consequently, CFA enjoys widespread adoption in the field, with approximately 50% of researchers relying on it to evaluate primary data (Crede & Harms, 2019). Confirmatory factor analysis or measurement model for community of practices, interaction with farmers is shown from the figure 1.

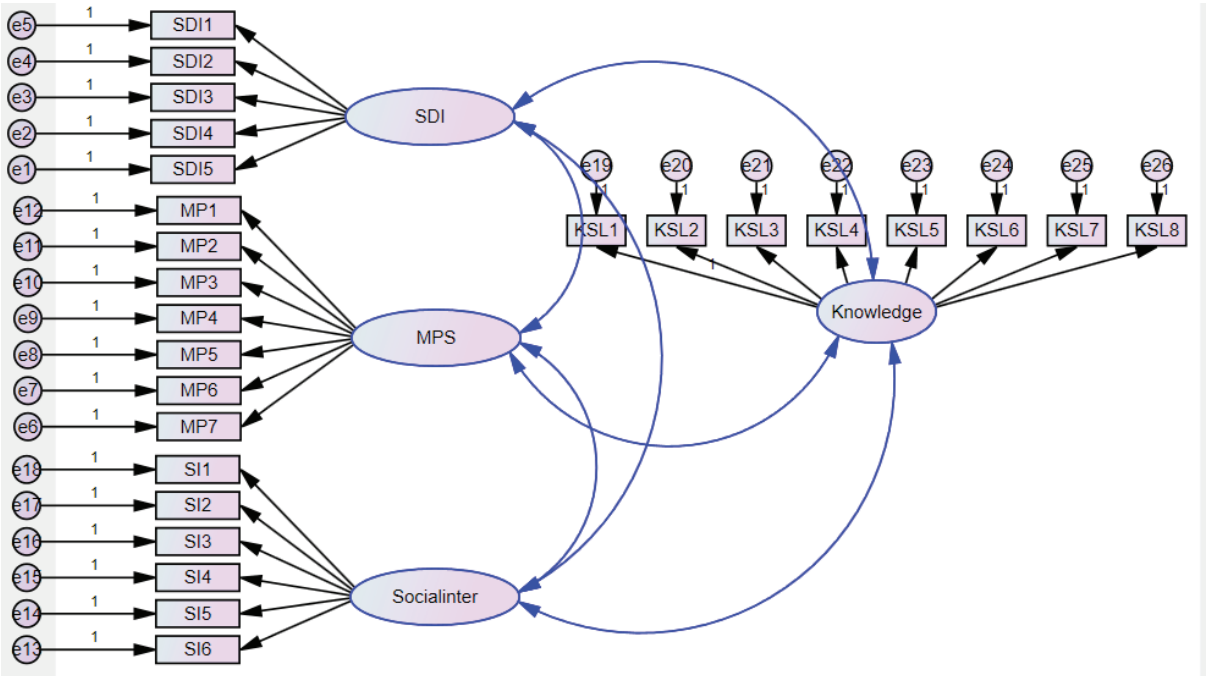

Figure-1 CFA of Communities of Practice

Chi-square value for the overall model fit was 1646.384 for 424 degrees of freedom ($p< 0.001$). Fit indices for the above model were Normed fit index (NFI) = 0.897; Comparative fit index (CFI) = 0.954; Good of Fit index (GFI) = 0.978, Root mean square error of approximation (RMSEA) = 0.064. In addition, all the indicators loaded significantly on the latent constructs. The values of the fit indices indicate a reasonable fit of the measurement model with data (Byrne, 2001). Therefore, these fit indices indicate the acceptability of the measurement model.

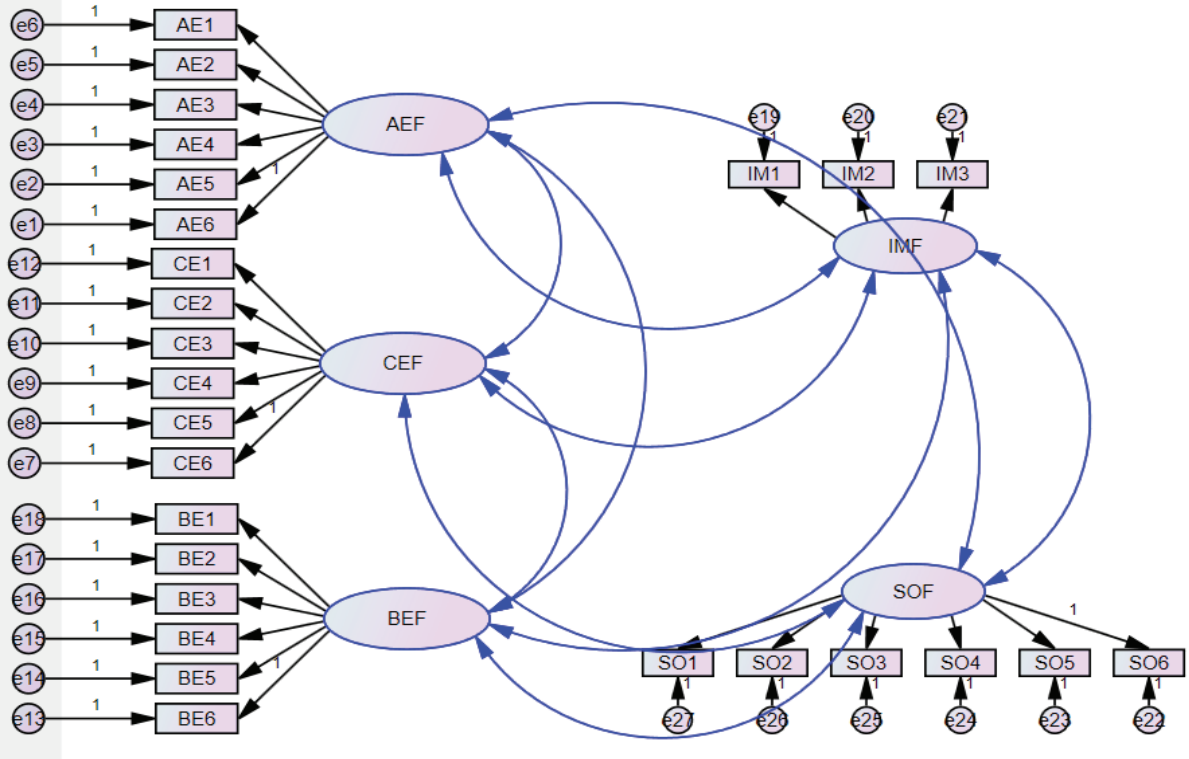

Figure-2: CFA of Learning and Engagement

Chi-square value for the overall model fit was 563.940 for 314 degrees of freedom ($p< 0.001$). Fit indices for the above model were Normed fit index (NFI) = 0.898; Comparative fit index (CFI) = 0.952; Good of Fit index (GFI) = 0.991, Root mean square error of approximation (RMSEA) = 0.039. In addition, all the indicators loaded significantly on the latent constructs. The values of the fit indices indicate a reasonable fit of the measurement model with data (Byrne, 2001). Therefore, these fit indices indicate the acceptability of the measurement model.

THE RELATIONSHIP BETWEEN CoP AND LEARNING AND ENGAGEMENT

Structural equation modeling (SEM) is used to examine the hypothesized relationships. SEM is employed because it is generally considered more suitable for mathematical modeling that involves complicated variable relationships. SEM allows analysis of both the measurement model and the structural model. It can not only address measurement errors but also allows examining the factor analysis and hypothesis testing together (Gefen et al., 2000).

In order to establish the direct and indirect of COP L&E community of practices and learning and engagement and to select the best fit model. The independent variable significantly influences the dependent variable. While partial – mediation folds if the independent variables still have significant effects. Results of the structural equation modeling indicate an adequate model fit with the data Chi-square value for the overall model fit was 4343.081 for 62 degrees of freedom ($p< 0.001$). Fit indices for the above model were Normed fit index (NFI) = 0.921; Comparative fit index (CFI) = 0.949; Good of Fit

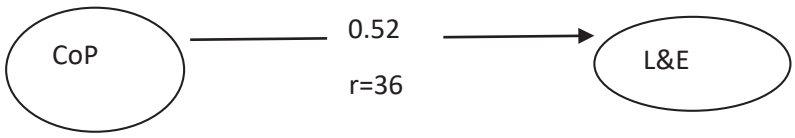

Figure-3 SEM for testing the path model of CoP and Learning and Engagement

From the above structural model, it is evident that Community of practices was positively related learning & engagement (b= .52; p<0.05) thus, H1 supported. Results of the structural equation modeling indicate an adequate model fit with the data Chi-square value for the overall model fit was 4343.081 for 62 degrees of freedom (p< 0.001). Fit indices for the above model were Normed fit index (NFI) = 0.921; Comparative fit index (CFI) = 0.949; Good of Fit index (GFI) = 0.985, Root mean square error of approximation (RMSEA) = 0.053. In addition, all the indicators loaded significantly on the latent constructs. The values of the fit indices indicate a reasonable fit of the measurement model with data (Byrne, 2001). Therefore, these fit indices indicate the acceptability of the path model.

CONCLUSIONS

It was clear from our study that the farmers had a shared identity, through their association, practice and culture. They common concerns are showed through the results remarkably. The wider group of people and organizations are influencing farmers' practices rather than only influencing their views and attitudes. This includes all the influential environment of their communities of practice within which the farmers' own network of practice operates and interacts and is of crucial importance to farming practice. We conclude that theories about communities of practice, and particularly those about networks of practice, provide a useful lens through which to view the particularities of the farming community's identity, knowledge sharing, and learning. They have proved useful in highlighting a number of features that are significant to farmers' practices and that raise implications for policy.

ACKNOWLEDGMENTS

*We acknowledge the financial support of the ICSSR for the post-doctoral research titled 'Role of Communities of Practice, Network of Practices and Farmers Networks on Farmers Innovation: A Mixed Model Approach" (F.NO. 3-51/19-20/PDF/SC), under the guidance of Prof. D. Sriramulu at Department of Business Management, Osmania University, without which this research could not have been undertaken.

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