

## KNOWLEDGE MANAGEMENT IN AGRICULTURE: A CRITICAL ANALYSIS

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### ABSTRACT

Indian agriculture has immense scope in sustaining the livelihood of millions of farmers. Being a diverse ecological and socially background country, India is lagging behind the developed countries in agriculture sectors. To manage all the knowledge available in public, as well as private domain, it needs to integrate and make it accessible to all the stakeholders of agriculture, especially farmers. As a suggestive and curative method knowledge management can be a useful way to integrate all the knowledge. Knowledge management is basically about acquiring and storing knowledge and providing better access of right knowledge to the right person at the right time. In current changing scenario knowledge viewed as important input for agriculture which should be localised, context and content based. The present paper reviews the knowledge management process and knowledge management initiatives in organisation, agriculture and allied sectors.

**KEYWORDS:** Knowledge Management, KM Models, KM Initiative, Challenges

### INTRODUCTION

Knowledge is reflected as the fourth production aspect after labour, land and capital (AFAAS, 2011) and is predominantly precarious in the agrarian sector. Knowledge is power and it makes an individual grow mentally and emotionally. Rural people through Knowledge empowerment, has enhances their ability to make a decision in certain situation. Knowledge management has two components 'Knowledge' and 'Management'. Knowledge comprises of the attitudes, collective experiences, and established skills that empower an individual to consistently, scientifically and efficiently perform a task. 'Management' means the function that harmonizes the determinations of people to achieve goals and purposes using available possessions competently and efficiently. Knowledge management is the process through which an organization generates captures, attains, authenticates and practices knowledge to maintain and improve its inclusive functioning (Kinney, 1998). The process requires collection of information from various sources and its dissemination to many, so that it can be acquired at the right time in the right format, by any user (Mondal, 2013). The goal of KM is capturing the knowledge needed by any process and emboldens knowledge to workers, to share and communicate knowledge with other people.

The working group on agricultural extension for agriculture and allied sectors for the XII<sup>th</sup> five year plan (2012-17), of the planning commission of India specified that, agricultural extension services need to assume new challenges and reform themselves in terms of content, approach, structure and processes and their delivery and implementation for accomplishing a faster, justifiable and more inclusive growth through agriculture. National Policy Framework for Agricultural Extension (2000), indicated that, widespread use of modern information technology will be endorsed for communication amongst researchers, extension workers and farmer clientele, to transfer technologies and information. The experiences of most countries designate that, rapid development of ICT, which eases the flow of data and information,

has enormously enhanced the knowledge management practice in farming. But, for connecting information technology with agricultural extension and with farmers, training is an inevitable component (DOA&C, 2000).

Agriculture requires generous knowledge transfer to and among farmers, together with information about fruitful agricultural practices, new expertise or controls of pest and disease eruptions, and new markets. ICTs can support directly farmers' access to timely and relevant information, as well as empower the conception and sharing of knowledge of the agricultural community them self. ICT can play a critical role in profiting the resource-strapped farmers, with updated knowledge and information on agricultural technologies, preeminent practices, markets, price trends, and weather situations. A simple ICT intervention can play a significant role, in enhancing the ability of poor rural families to continue, and perhaps, enhance their contribution to national agriculture. Access to and use of current information is critical, not only beneficial for the farmers, but for the sustainable agricultural systems.

Agriculture Knowledge Management System is a platform enabling extraction, storage, retrieval, combination, transformation, visualization, investigation, dissemination and application of knowledge. The generation and application of agricultural knowledge is progressively more important, especially for small and marginal farmers, who need pertinent information, in order to develop, sustain, and diversify their farm enterprises.

### Knowledge Management Models

Knowledge management (KM) is considered to be a very difficult task in Indian agriculture and become one of the foremost agendas, in many research institutions and organizations (Alavi & Leidner, 2001; Tan & Wong, 2015). So, there is a need to understand the process, so some models were proposed by some authors are;

#### SECI Model

This model (Nonaka & Takeuchi, 1995) presumes that, knowledge consists of tacit and explicit elements. Tacit knowledge is mainly non-verbalised, intuitive and unarticulated, and explicit knowledge is mainly writing, drawings, and others. This model explained tacit knowledge can be change into tacit knowledge in others by the process of socialization and tacit knowledge can be converted into explicit knowledge by externalization process. Explicit knowledge can be transferred into tacit knowledge in others by translating theory into practice (internalization) and explicit knowledge can be transferred to explicit knowledge in others by combination process.

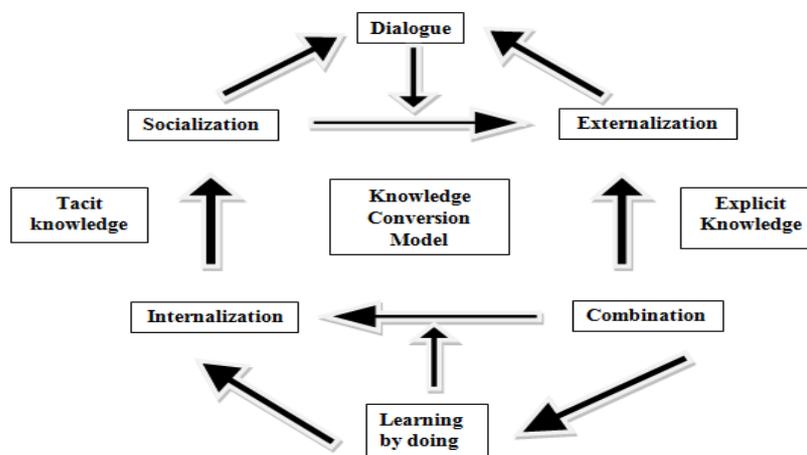
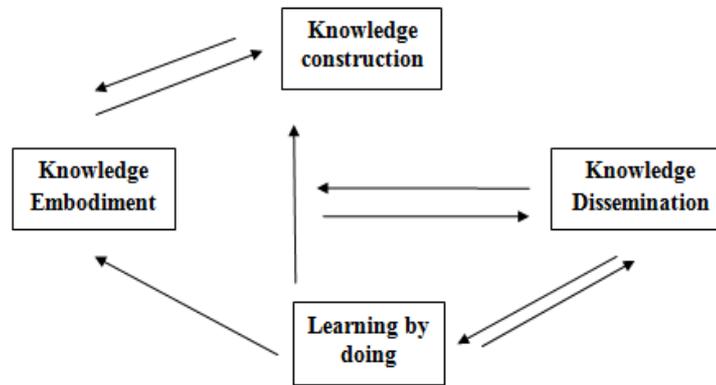


Figure 1: Nonanka and Takeuchi (SECI- Model, 1995)

**Demerest’s Knowledge Management Model**

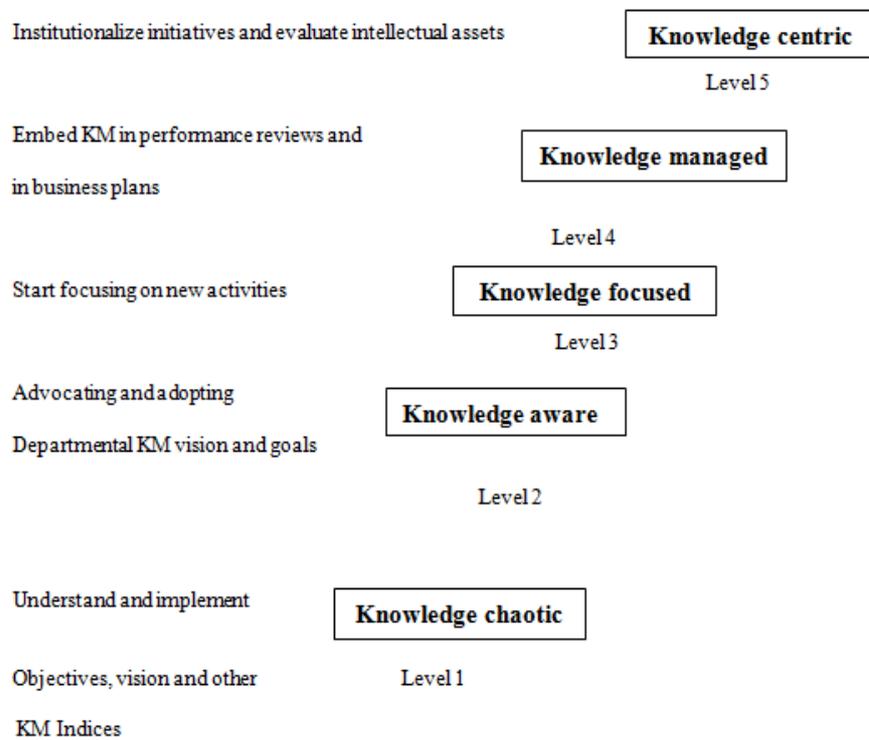
Demerest’s knowledge management model stress on the creation of knowledge, within an organization. It includes the social construction of knowledge. The model states that, constructed knowledge is personified within the organization, through a process of social interchange (McAdam and McCreedy, 1999).



**Figure 2: Demerest’s Knowledge Management Model (McAdam and McCreedy, 1999)**

**Frid’s Knowledge Management Model (2003)**

In this model, the knowledge management maturity assessment levels and knowledge management implementation has been divided into five levels, namely knowledge chaotic, knowledge aware, knowledge focused, knowledge managed, and knowledge centric.



**Figure 3**

### **Need and Challenges In Knowledge Management for Agriculture**

- As the numbers of small and marginal farmers are increasing so there is a need to speed up agricultural growth rate in country
- Agriculture has vast resources for information but at farmers level there is need of enlargement of available resources
- Relevant available information should be easily accessible to all the stakeholders of agriculture
- For speedy dissemination of technologies and information a stronger research-extension–user system linkage should be developed
- There is a need to ensure clients about availability of right knowledge/ information at right time at right place
- Farmers should get information which should be cost-effective
- Generally in agriculture women are left out as receiver of knowledge as the most of the work in agriculture done by them only, so ensure gender equity in technology transfer process
- Need to empower small and marginal farmers in the country
- Present focus on demand driven agriculture rather than supply driven approach
- Readily availability of expert in public and private sectors
- There is a need to avoid duplication of knowledge

### **KNOWLEDGE MANAGEMENT INITIATIVES IN AGRICULTURE**

#### **Directorate of Knowledge Management in Agriculture (DKMA)**

The Directorate of Knowledge Management in Agriculture is devoted to promote ICT driven technology and information dissemination system for quick, effectual and cost-effective delivery of messages to all the stakeholders in agriculture.

#### **The Main Areas of Knowledge Management in Agriculture are regarded as Following.**

- Dissemination and sharing of agricultural knowledge through value added information
- Products in print, electronic and web approach.
- Expansion of e-resources on agricultural knowledge and information for global coverage.
- Strengthening e-connectivity among ICAR institutes State Agricultural Universities and KVKs.
- Capacity building for agricultural knowledge management

#### **Knowledge Management in Agriculture: A Case of Rice Knowledge Management Portal**

This project was started in the year 2009. It was sponsored by National Agricultural Innovation Project (NAIP) of the Indian Council of Agricultural Research (ICAR).The project was to develop and maintain Rice Knowledge Management Portal (RKMP) to strengthen research, extension, farmers, private subsystems, partnerships and networks

through better flow of rice knowledge and information contributing to the overall rice development in the country. The portal was built by the Indian Institute of Rice Research (IIRR), Hyderabad. It serves as an information highway for rice sector in sharing rice knowledge through latest ICT tools. It is the most comprehensive and one stop knowledge management platform for authentic, validated, relevant and contextual information on rice.

### **Overall Objective**

To develop and maintain Rice Knowledge Management Portal to strengthen research, extension, farmers, and private subsystems, partnerships and networks, for the better flow of rice knowledge and information contributing to the overall rice development in the country.

### **Specific Objectives**

- To develop structure and content of RKMP comprising Research Information Systems, Extension Information System, Market Information System, Farming Information System, General Information System and E-learning Platform related to rice.
- To pilot these information systems for uploading, sharing and harnessing rice knowledge amongst rice stakeholders
- To build the capacity of the stakeholders in using the RKMP for effectively transforming rice knowledge and information as a viable factor of production

### **AGROPEDIA**

Agropedia was started on 12<sup>th</sup> January 2009. It was funded by World Bank, through the National Agricultural Innovation Project of the Indian Council of Agricultural Research (ICAR). It had seven consortium partners viz. IIT Kanpur, ICRISAT- Hyderabad, NAARM- Hyderabad, IIT Bombay, GBPUAT- Pantnagar, UAS- Raichur and IIITM-Kerala.

### **The Objectives of this Portal are**

- To develop an agricultural repository and to build a digital ecosystem in agricultural domain, for proper knowledge circulation.
- To deploy extension services for agricultural development.
- To prepare a bridge between explicit knowledge holders

### **Tamil Nadu Agricultural University (TNAU) Agri-tech portal**

TNAU Agritech portal was established on 27<sup>th</sup> October, 2009 and sponsored by Rashtriya Krishi Vikas Yojana. This project duration was three years. It is meant for farmers, extensionists, scientists and other stakeholders, in agriculture and allied sectors (animal husbandry, sericulture and fisheries).

This portal was built by TNAU. The objective of the portal is to give, need based farm advices, rather than general or blanket and to solve the problems faced by the farmers, and to serve as an information provider to various categories of farmers. It offers a diverse range of information from crop-related or weather information, to daily market prices, schemes

and programmes for farmers, daily news, events, publications supported by multimedia, expert systems, and much more. It is in Tamil and English languages. It has features like Multi Video Conferencing, Dynamic Market Information (DMI)-SMS, Domestic & Export Market Intelligence Cell, Automatic Weather Network, Expert System (Off-line), Instant Agro Advisory System etc.

### Strategies for Knowledge Management

- Actively manage knowledge available in public as well as private domain
- Involvement of knowledge generator at policy level
- Developing important capabilities of stakeholders
- Availability of accessible information to stakeholders
- Adequate ICT infrastructure for setting and maintaining knowledge management systems
- Capacity building of stakeholders
- Providing relevant information
- Building other support structure for disseminating information
- Developing local leadership

### CONCLUSIONS

In the changing scenario, knowledge is considered to be a powerful element in the development of society. In agriculture availability of information is not a problem but their proper utilisation and management in the prime task for the major stakeholder. In that way, knowledge management is playing a crucial role to making the agrarian society much more knowledge vivacious and knowledge intensive. knowledge management not only considers the creation and acquisition, storage of knowledge but it also considers the perspectives of social and human development like internal knowledge management, dissemination, and building knowledge capacity. Farmers should be the focal point while formulating all the initiative which directly linked to farmers. In process of better access to information basic infrastructure should be strengthened and capacity building of stakeholder should be emphasized.

### REFERENCES

1. Kinney, T. (1998). Knowledge management, intellectual capital and adult learning, **10** (2): 2-5.
2. AFAAS. (2011). Concept and learning framework for the African Forum for Agricultural Advisory Services (AFAAS). AFAAS, Kampala, Uganda and FARA, Accra, Ghana.
3. Mondal, S. 2013. Text book of agricultural extension with global innovations. Kalyani Publishers, New Delhi. pp-106.
4. NPFF (2007). National Policy for Farmers-2007. Department of Agriculture and Co-operation, Ministry of Agriculture, Government of India, New Delhi.
5. DoA&C (2000). Policy Framework for Agricultural Extension (draft). Extension division, Department of

- Agriculture and Co-operation, Ministry of Agriculture, Government of Indian, New Delhi.
6. Alavi, M., & Leidner, D. E. (2001). Review: Knowledge management and knowledge.
  7. Tan, L. P., & Wong, K. Y. (2015). Linkage between knowledge management and manufacturing performance: a structural equation modeling approach. *Journal of knowledge management*, 19(4), 814-835.
  8. Nonaka, I. and Takeuchi, K. (1995) *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*, Oxford University Press, Oxford
  9. McAdam and McCreedy, (1999) A critical review of Knowledge Management models. *The Learning Organization*, 6 (3), pp. 91-101.
  10. Frid, R (2003) *A Common KM Framework For The Government Of Canada: Frid Framework For Enterprise Knowledge Management*, Canadian Institute of Knowledge Management, Ontario.<http://www.icar.org.in>

