

# USE OF MANAGEMENT INFORMATION SYSTEM BY FARMERS FOR IMPROVE PRODUCTIVITY IN KAYAH STATE

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## ABSTRACT

*This paper shows the use of management information system by farmers for improve productivity in Kayah state in Myanmar. The objective is to give first a brief overview why MIS is important in the farming sector. Secondly the paper is aiming on the development of a FMIS that depicts all production processes and their internal interconnections of a farm accurately. Thirdly this paper mentions what is agricultural information management and why is it important? Furthermore, the MIS has to allow farmers to easily access all information which are crucial for the farm's profitability. Finally this paper aims on highlighting effective issues of management information system and what farmers and researchers have to consider during the implementation process.*

## KEYWORDS

*Farm, management information system, farmers, crop production*

## 1. INTRODUCTION

Situated in the hilly eastern part of Myanmar, Kayah State borders Thailand to the east, Shan State to the north, and Kayin State to the southwest. Kayah is a small but complex state, rich in natural resources, cultural heritage and natural beauty. But Kayah has also been in a state of conflict for more than 60 years, and over the years, the cost of the conflict has been extensive—impacting directly and indirectly, the lives and the livelihoods of most of the people in Kayah, and many thousands who have fled. Decades of conflict, broken ceasefires, and relocations have taken their toll on the people of Kayah, but at the time of writing this report in 2013, there was a sense that things are improving and that genuine change may be forthcoming.[1]

Agriculture is the fifth main sector with 8 agencies reporting activities in 30 village tracts in 6 of total 7 townships, mostly in Agricultural Extension (31 villages), followed by Livestock and poultry (11 villages). One or two organizations are implementing agriculture activities in Kayah State except Mese Township. [8]

The agriculture sector in many developing countries is facing great challenges if it is to attain the food security and development targets set in the World Food Summit Plan of Action. Science and technology underpin agricultural development, yet funding for national level research and development in many countries is inadequate. At the same time, mechanisms for the

documentation and dissemination of the technology outputs of science are weak. As a result, the outputs of research are often inadequately recorded, and are not communicated to farmers, policymakers and others who need to adapt and apply them. The traditional national mechanisms in science and technology are being supplemented, and sometimes even replaced, by regional/sub regional networks that cut across organizational structures and political boundaries, and in fact national efforts in this area need to be fostered and strengthened. These different mechanisms have diverse approaches to capturing and disseminating research outputs. In fact, agricultural knowledge and information systems are in a state of change in the way that research is funded and that the outputs are disseminated, and the type of information that farmers require is also changing. [2]

Although most people can see the benefits of using a more precise approach to manage crops with additional information, the tools provided by precision farming and other information technologies have not yet moved into mainstream agricultural management. The increased complexity of the systems inhibits easy adoption and makes calculations as to the financial benefits uncertain. These issues can be resolved by improving the decision making process through better Management Information Systems, improved data interchange standards and clear management methods.[3]

Information has received a wide range of acceptance as an essential resource of this century. It has been described as a stimulating creativity, resulting in new outcomes and processes. All human societies depend very much on information for existence that is information is life. The proper identification and use of information sources are prerequisites for objective decision making. Consequently, the possession of awareness and use of appropriate information guarantee individual and organizational functioning. The major function of information is to increase the knowledge of the user, to reduce his level of uncertainty or reduce the varieties of choices available to the users of information. For information to be effective, it must be accurate, timely and relevant.

Sources of information are tools that can possibly meet the information needs of different categories of users. They are the information carriers. There are different sources of information but what matters are 'what' sources are available and relevant to the different categories of users and what sources of information are useful for their different seeking behavior, and mainly for utilization in order to accomplish tasks/needs. Information sources are various means by which information is recorded for use by an individual and organization. Sources of information are: radio, television, extension workers, cooperative societies, friends and colleagues, newspapers and magazines, books/leaflets, phones, libraries and institutes. Also, observation of people organizations, speeches, documents, picture and art work can also be described as information sources.[4]

## **2. WHAT IS AGRICULTURAL INFORMATION MANAGEMENT AND WHY IT IMPORTANT?**

Agricultural information management (AIM) is concerned with all activities and resources necessary for acquisition, storage, updating, and making agricultural information and data of all kinds and formats—scientific research reports, growers' testimonies, market information, details of practical crop production technologies, machinery, weather forecasts, sources of credit,

production, education and training and other instructional manuals, ‘grey zone’ literature—accessible to agricultural stakeholders at all levels. AIM considers not only information resources and technologies, but also development of the human resources needed for efficient use of these technologies.[9]

Agriculture, in the medium term at least, is seen as key to reversing worsening poverty in many countries in SSA. If this strategy is to succeed, the relevance, quality and accessibility of information for all agricultural stakeholders must be assured on a wider scale than ever before. Several resources need to be in place before information can be acted upon and lead to the changes desired by the individuals, communities, organizations, states in Figure 1. These resources include:

- Data Resources: availability of relevant data.
- Economic Resources: the money, the skills, and the technology in order to access the data.
- Social Resources: the motivation, confidence and knowledge to access, assess and apply the data, and to be able to trust the source.
- Action Resources: the ability to act on the decisions made with the information. This may be hard resources example money, technology, raw materials or soft resources example skills and empowerment.

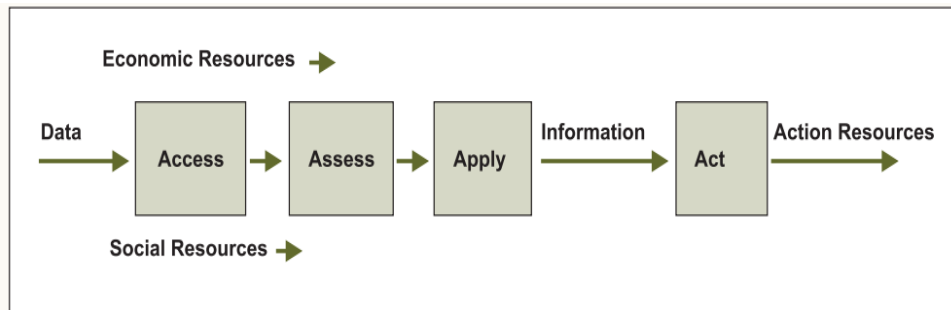


Figure 1. The information chain in development

This implies a high degree of integration between AIM services and other services, together with policy.[9]

Agriculture and notably growing paddy—is the primary source of livelihoods for the majority of households in Kayah, and 87% of the surveyed villages. However, it is important to understand the varying livelihood patterns in Kayah state and how land type, access to market and access to other income sources influences these. The largest distinction in farming practices is between highland and lowland agriculture and the extent to which households actively pursue cash crops in addition to paddy. Within farming communities there is also a practice of farmers both selling and buying labour from neighbours to complement family labour. Figure 2 shows the highland and lowland agriculture practiced, by township in Kayah State.

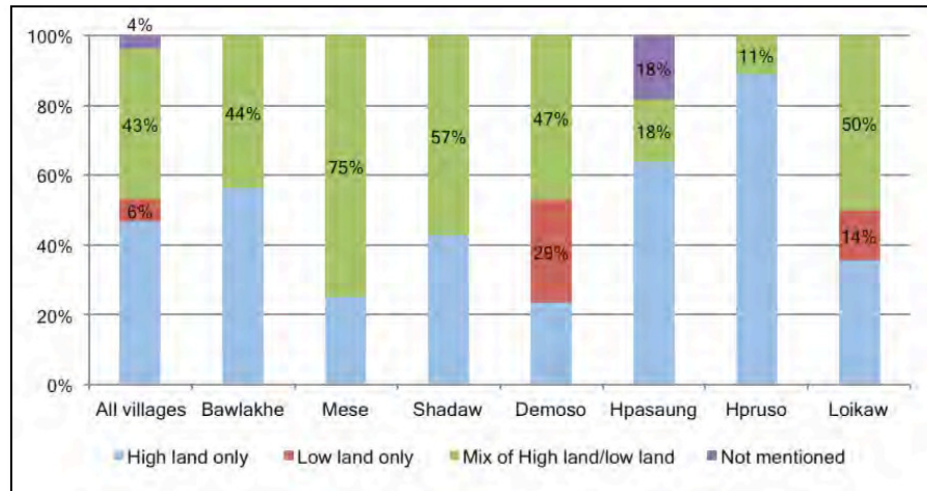


Figure 2. Highland and Lowland agriculture practiced, by township in Kayah State

### 3. METHODS AND DATA SOURCES

This paper shows the impact of this support to resource-poor and vulnerable smallholder farmers. Outcome indicators included: increased agricultural productivity and crop diversity; indications of improved food security as participants consumed a greater amount of and more diverse food; wealth creation and improved resilience to external shocks through increased savings and building assets, as well as improved feelings of self-confidence and friendship.

The data collection incorporated visual inspections (fields, animal facilities, machinery etc.), interviews with the farmer and his labourer and a thorough analysis of the farm's financial data, including balance sheets and profit and loss statements, the operating plan including spraying and fertilizing dates and crop rotation scenarios. We consequently aggregated the gathered information in a farm fact book comprising all relevant data concerning the external and internal conditions of the selected farm. Moreover, the collected data provided the basis for the development of an individual (specific/concrete) IS, which describes all relevant factors of the system like input and output prices, resources, production processes and activities, services and administration.

There are various types of information on agriculture related activities. These could include information on crop production and protection, livestock production, agro-forestry, pest and diseases control, fertilizer availability and application, agricultural credit facilities, market prices, improved seeds varieties, rainfall gauge and so on. [5]

#### 3.1. TECHNICAL/SCIENTIFIC INFORMATION

This type of information is obtained from researches and development work conducted in universities, agricultural research institutes, agricultural colleges and private agricultural research organizations.

### 3.2. COMMERCIAL INFORMATION

Information under this category gives enlightenment on the marketing of agricultural produce in order to maximize profits.

### 3.3. SOCIO/CULTURAL INFORMATION

This involves information on traditional agricultural practices, local cultures, norms/values and background information and training done in different communities as well as on the availability of labour etc.

### 3.4. LEGAL INFORMATION

This type of information educates all stakeholders in agriculture on legislated laws on production and distribution of agricultural produce.

### 3.5. GENERAL INFORMATION

These are information of general interest to farmers for example handling of flood, fire and other disasters.

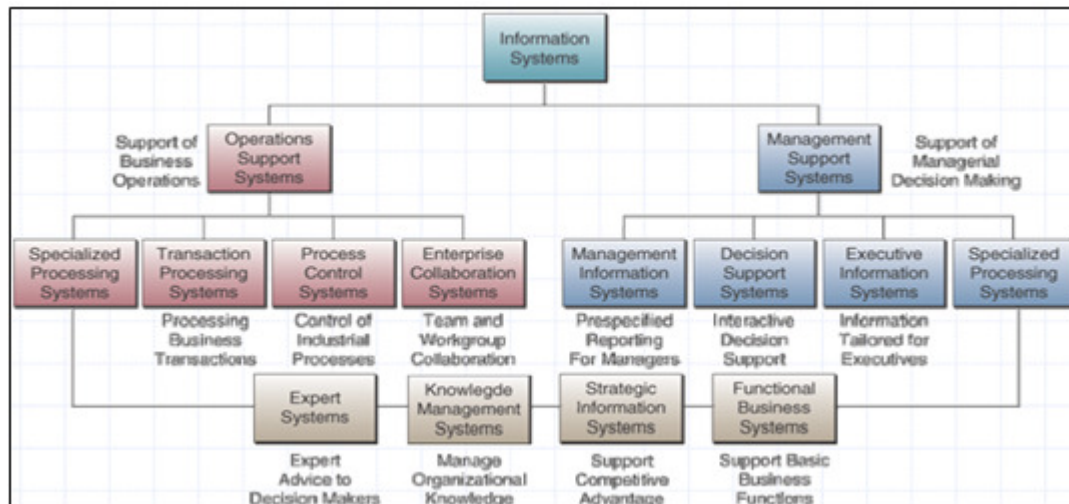


Figure 3. Types of Information System

The types of information systems shown in Figure 3. They are operations support systems (support of business operations) and management support systems (support of managerial decision making). [11]

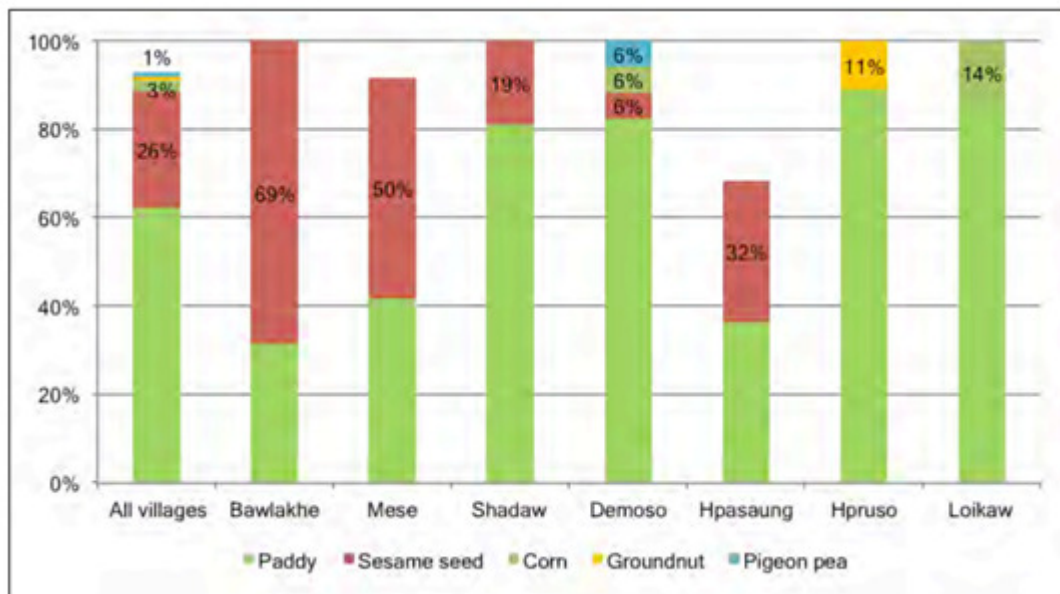


Figure 4. Primary crops grown in surveyed villages

In Figure 4 shows the primary crops grown in surveyed villages. With large areas of uninhabited forest land, communities in the mountainous areas of Kayah practice upland or shifting agriculture (Taung Yar). As illustrated in Figure 3, only 6% of surveyed villages indicated that they farm only in the lowlands, while the remaining communities (90%39 of the surveyed villages) indicated either only highland (47%) or a mix of highland and lowland (43%) farming. According to the Department of Agriculture, upland farming is the most common method of farming in Kayah state.[1]

This ‘traditional’ rain-based farming relies on seasonally cutting and burning selected areas of forest for cultivation. After a set period of years, the land under cultivation is allowed to go fallow and then another area of forest is cut, burned and cultivated. Shifting agriculture is found in all of the townships. The most common crops are paddy (in all townships) and sesame (in Hpasaung, Bawlakhe and Mese), and in some regions, maize, groundnut, pigeon pea, sorghum, chillis and cardamom (in Mese, Hpasaung) are also grown. Highland agricultural lands can also be used for other crops such as fruit trees and tea, but these have only been piloted in a few areas—notably in Hpruso and Shadaw. [1]

#### 4. METHODS AND DATA SOURCES

A management information system (MIS) is one of the most important tools in any organization for effective performance management and decision-making. An MIS aims to provide reliable, complete, accessible, and understandable information in a timely manner to the system’s users. It is an organized means of collecting, processing, storing, and communicating information relating to a bank’s critical activities for strategic planning, performance management, organization oversight, and decision-making. Relevant data sourced both from inside and outside an organization form the basis of a sound MIS for generation of output in a form suitable for decision-making. The data is processed, integrated, and stored in a centralized database, where it is constantly updated and made available to all those who have the authority to access it, in a

form that suits their purpose. Accordingly, MIS can be defined as the process of collecting, processing, storing, and transmitting relevant information to support the operations in any organization through meaningful management reports. [3]

MIS differ from regular information systems because the primary objectives of these systems are to analyze other systems dealing with the operational activities in the organization. In this way, MIS is a subset of the overall planning and control activities covering the application of humans, technologies, and procedures of the organization. Within the field of scientific management, MIS is most often tailored to the automation or support of human decision making (O'Brien, 1999). Figure 5 shows the conceptually decomposing of the different management systems in an organization.[7]

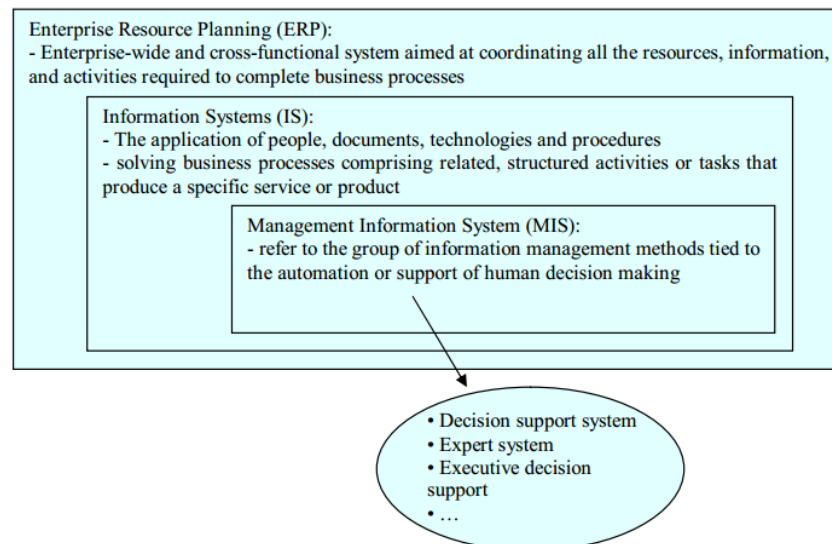


Figure 5. Concept of Management Information System

#### 4.1.MARKET INFORMATION AND FARMERS

Farmers often have limited outlets for their produce and are often bound by traditional trading relationships therefore opportunities for farmers to take advantage of spatial arbitrage possibilities are restricted. Such opportunities are further hindered by the small quantities produced by most. While there may be few spatial arbitrage opportunities for small farmers, it cannot be concluded that market information is of little value to them. The practical benefits to farmers are often much greater than the theoretical arbitrage possibilities for traders. At the simplest level, the availability of market information can enable farmers to check on the prices they receive, vis-à-vis the prevailing market prices. If farmers receive prices lower than those broadcast they may conclude that they should seek out other traders in future, negotiate more forcefully or try to improve the quality and presentation of their produce. Information on market conditions may also change farmers' marketing strategies. While, individually, farmers may be unable to take advantage of spatial arbitrage possibilities, collectively they may be able to organize transport to more distant and profitable markets. [10]

## **4.2. MARKET INFORMATION AND STORAGE**

Storage plays a central role in expanding the availability of different foods to consumers over a longer period. Storage costs, such as labour for maintenance, chemicals, depreciation of storage facilities and costs of invested capital can be considerable. However, price changes over time depend not so much on storage costs as on how much of a product is stored for subsequent release onto the market and on seasonal production levels. The question “when to produce” is thereby limited to a fixed period. However, this makes the question “when to sell” more important. Availability of information about seasonal price movements should, in time, facilitate decisions about when to sell the crop and also mean that urban consumers will not be faced with alternating gluts and shortages. [10]

## **5. CONCLUSIONS**

This research is supported farmers for improve productivity by using the management information system in Kayah state. A management information system (MIS) is one of the most important tools in farmers for effective performance management and decision-making to improve productivity. An MIS aims to provide reliable, complete, accessible, and understandable information in a timely manner to the system’s users. Information on market conditions may also change farmers’ marketing strategies. The future plan attempted to address the balance of technological opportunities combined with environmental and socioeconomic needs with the key role of information management.

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