Integrated Information System for Micro Level Planning in Agriculture: A Stakeholder Perspective

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ABSTRACT

A study was conducted in Kerala to find out the prospective framework of an 'integrated information system for micro level planning in agriculture'. This involved delineation of the information items required by the major stakeholders in micro level planning. Extension Personnel and People's Representatives were found to disagree each other on the information requirement at various stages viz. planning, implementation, monitoring, evaluation and follow-up. The types of information reported by majority of stakeholders belonged to administrative procedures and policy. While the implications of government policies and programmes and criteria of project monitoring were the most sought after information, cultivation aspects of crops, technology and market were found to follow, in the order of importance. The findings of the study can provide valid inputs for formulating the requirement specifications of an integrated information system that can be exclusively used for micro level planning in agriculture.

Keywords: *Information requirement; Micro level planning;*

Almost every deliberation on development of rural communities reiterates the need to decentralize the process of planning to bring about effective participation of stakeholders and redistribution of benefits at the micro level (*Blair, 2003; Crook and Severrisson, 2003*). However, micro level planning is fairly complex and information intensive which involves an itinerary of decision making processes. Kerala has showcased an efficient paradigm of micro level planning which has evolved over a period of time. The processes include a series of actions from formulation of projects to monitoring and evaluation that have been made mandatory. As *Bell (1979)* observes, the dependence upon information to create innovation and change places a high premium on the ability to access and use information to create advances in society. Without the right information, incorrect decisions can be made and scarce resources used unwisely. Micro level planning in agriculture like any other planning process is information intensive (*Govt. of Kerala, 2009*). As stated earlier, the different stages of micro level planning *viz.*, planning, implementation, monitoring, evaluation and follow up require different kinds of data and information as evident from the exhaustive project formats and reports prescribed for decentralized planning by local bodies in Kerala. This implies that robust micro level planning requires multitude of information that should facilitate the process. The study was undertaken with the specific objectives of enlisting the information items required for different stages of micro level planning in agriculture. This, as anticipated, would form the first step towards formulating an integrated information system. The study also attempted to find out the importance of each item thus identified in the process of micro level planning. Another objective was to find out the differences in the perception of Extension Personnel and People's Representatives on information requirement for micro level planning.

METHODOLOGY

The study, which was conducted in Kerala State adopted multi stage random sampling method for

selection of respondents and the local self government institutions. From each of the six unique agro climatic zones in the state, (Northern, Southern, Central, High altitude, Problem area and Onattukara region) one district was selected. Two blocks were selected at random from each district. Four Grama Panchayats were selected from each block randomly. Sample of respondents consisted of (i) Officers of the Department of Agriculture working with the Grama Panchayats, Block Panchayats and District Panchayats at the rate of one from each local body selected (66 officers) (ii) People's representatives who are Chairmen of the working groups on agriculture at Grama Panchayats, Block Panchayats and District Panchayats at the rate of one from each local body (66 people's representatives) making a sample of 132 respondents.

RESULTS AND DISCUSSION

Integrated Information System in agriculture: Exploring the information requirement and finding out the typology of information is important in initiating an 'integrated information system' for agricultural planning. In view of this, an attempt was made to find out the type of information required by important stakeholders of micro level planning at various stages. This has been made through an exhaustive listing of possible information requirement elicited from various project reports belonging to different development micro sectors and conducting focus group discussions with experts.

The information components which could be used for micro level planning have been categorized into 14 sub headings. This include information items on land, water, soil, climate, demographic characteristics, socio-economic characteristics, crops, technology, infrastructure, mechanization, institutional details, market, government policies, government programmes, project monitoring and existing perspective plans on agriculture.

From the Table 1 we can see that there are 233 information items in total, which can be used in different stages of micro level planning process.

Overall information requirement of stakeholders in micro level planning: The relative importance of different types of information required in micro level planning is shown in Fig 1. Responses on the importance of an item were recorded on a five point continuum. The scores for ranking the information types were calculated by summing up the products of the frequency of responses on each item and the value assigned to the response. All the 16 components were ranked on the basis of aggregate scores.

Table 1. Typology of information required for micro level planning in agriculture

Major components	No.
Land	8
Land utilization pattern	14
Land use	23
Mining	6
Water	14
Soil	7
Climatological factors	8
Demographic data	11
Socio-economic characteristics	20
Crops	32
Technology	14
Details of infrastructure	19
Mechanization	6
Institutions	21
Market	7
Government policies	10
Govt. schemes for agril.development	5
Project monitoring	4
Existing perspective plans	4
Total	233

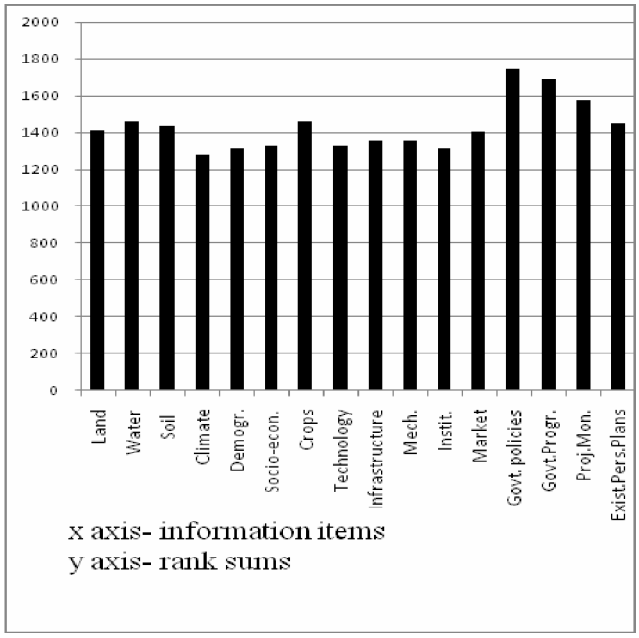

Fig.1. Relative importance of information items required in micro level planning in agriculture

The pattern of information requirement of Extension Personnel and People's Representatives as depicted in

the graph shows that information on government policies is the most needed item in micro level planning. The second most important information required is government programmes for agricultural development which is followed by data on project monitoring. This is followed by information on crops, information on water, information on existing perspective plans, soil, land and market information respectively in the order of importance ascribed to the items by respondents.

Information requirement of Extension Personnel and People's Representatives in micro level planning is separately shown in Fig 2.

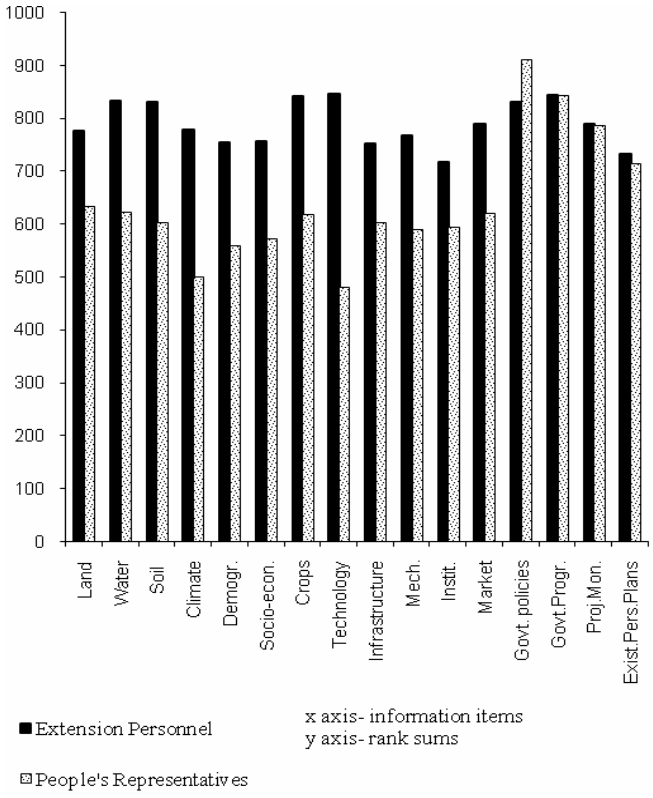

Fig. 2. Information requirement of Extension Personnel and People's Representatives in micro level planning

The graph depicts the item wise distribution of scores on information requirement by Extension Personnel and People's Representatives in micro level planning. The scores of Extension Personnel are found to be higher than that of People's Representatives for all the items except 'government policies'.

While the Extension Personnel identified information on technology, government programmes for agricultural development, crops as the three most important items that are required in micro level planning, information on water resources, soil properties etc. were listed afterwards. Information on government policies, dynamic information over market and climate are followed by information on land and socio-economic characteristics. This distribution clearly indicates the functional requirement of these major stakeholders involved in the current process of micro level planning. Technological information is the most sought after item by the agricultural officers as they are mostly involved in disseminating technology and providing information to farmers on crop production techniques and crop protection practices. Extension personnel have to keep themselves abreast of new technologies as the demand for consultancy on practical aspects of new technologies is increasing among farmers. These components will naturally be too low for People's Representatives as they are not involved in these activities. Similarly information on government programmes is also important for Extension Personnel as they are mandatorily engaged in implementing schemes and projects. They require updated information on the administrative aspects of development programmes implemented by the local bodies as well as department. Information on crops on field and natural resources like land and water are also found to be important, as the spatial information is essential for micro level planning.

However, information on market, one of the most important inputs has been ascribed lesser importance by the extension personnel, which reflects the nature of job performed by the officers and the need to enhance the thrust on market led extension functions. Marketing which is one of the most important components of the production process is only sparsely attended to by both the stakeholders. Even now, market information is not regarded as a vital component of agricultural development by the department and the local bodies. Information on the socio economic profile of the farming community also should have been very important information in the process of planning. However, it is clear that the current micro level planning process does not seriously consider the profile characteristics of the target population while designing development interventions.

The nature of intervention of People's Representatives is also evident from the results. They are mostly interested in information on government policies, which is crucial input in defining and establishing the public interface of elected representatives, who are also political activists.

Comparison of the Information requirement of Extension Personnel and People's Representatives: The study has attempted a detailed compilation of information requirement for various stages of micro level planning viz. planning, implementation, monitoring, evaluation and 'follow up'. This was done to find out whether there is any significant difference between the Extension Personnel and People's Representatives with regard to their information requirement in different stages. Though it is logically possible that the type of information would differ at different stages of planning, the difference could be substantiated statistically as well. This inference has profound implication as far as the design of an Integrated Information System in micro level planning is concerned.

The statistical measure of integrator reliability by *Cohen's Kappa* was employed to find out whether the stakeholders differed in their requirement for information in micro level planning. *Cohen's Kappa* statistic ranges generally from 0 to 1.0 (although negative numbers are possible) where large numbers mean better reliability, values near or less than zero suggest that agreement is attributable to chance alone (Table 2).

Table 2. Difference between Extension Personnel and People's Representatives in information requirement

Stages of micro level planning	Cohen's Kappa Values
Planning	0.105
Implementation	-0.023
Monitoring	0.03
Evaluation	0.069
Follow-up	0.147

The computed *Cohen's Kappa* value for planning phase is 0.105 which is near to zero. This showed that there is no agreement between Extension Personnel and People's Representatives on information requirement at the time of planning. Similarly the Kappa values for implementation and monitoring are -0.023 and 0.03 respectively. These values also reflected the disagreement of stakeholders on information requirement. During evaluation stage and follow-up, the kappa values are 0.069 and 0.147 respectively, which implies non-agreement of Extension Personnel and People's Representatives on information requirement at evaluation and follow-up stages as well.

CONCLUSION

The study attempted to develop a framework of an integrated information system for which 16 major components and 233 sub components/ information items were identified. The overall information requirement of stakeholders for micro level planning showed 'information on government policies' as the most needed and valuable information input for micro level planning. The scores on information requirement of Extension Personnel were found to be higher than that of People's Representatives for most of the information items identified. While Extension Personnel identified technology, followed by government programmes for agricultural development as the second and third most important items, People's Representatives were more concerned about information of government policies. The inter-rater agreement, *kappa* values showed that Extension Personnel and People's Representatives differ significantly with respect to their information requirement at various stages of micro level planning *viz.* planning, implementation, monitoring, evaluation and follow-up. This was due to the differential roles performed by Extension Personnel and People's Representatives in micro level planning. The study gives insights on the prospects of making an integrated information system in agriculture, without leaving vital aspects and the relative importance ascribed to each component by major stakeholders.

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