

## EFFECTIVENESS OF PRIVATE SECTOR EXTENSION IN INDIA AND LESSONS FOR THE NEW EXTENSION POLICY AGENDA

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### Abstract

*Mahindra Subblabb Services Limited (MSSL) has initiated one-stop farm solutions centres called Mahindra Krishi Vibhar in selected districts of India. This paper explores the performance of one such centre set up by a private entrepreneur under a franchise agreement with MSSL in Tirunelveli and Thoothukudy districts, Tamil Nadu. A primary survey revealed that participant farmers could increase their crop yields and income. The paper discusses the principles behind the success of this private extension initiative and draws lessons for the on-going public sector extension reform process in India.*

### Research findings

- *Farmers are willing to pay for the delivery of an integrated set of services giving them access to quality inputs, credit and procurement services and field-based advice on technology use.*
- *Farmers registered with the private extension service provider can substantially increase their yields and income from farming in comparison to non-participant farmers.*
- *The increase in yields and income is attributed to field-specific technical advice from the private extension provider regarding the application of the right type of inputs at the right stage of crop growth.*
- *A private extension approach of this type focuses mainly on medium- and larger-scale farmers.*
- *A private organisation has been able to develop a sustainable and profitable business selling extension services which go beyond the traditional task of providing production technology, to include market services and linkages.*
- *This apparently successful private extension approach was developed through a learning-based approach.*

### Policy implications

- *Private extension is both a useful and viable alternative to public services for medium- and large-scale farmers growing cash crops, but is likely to discriminate against the poorest.*
- *Efforts should be made to encourage private service delivery in areas where there are enough farmers with an effective demand for extension services, allowing the public sector to concentrate on poor areas and households, as well as on alternative roles such as regulating the quality of private services.*
- *Successful approaches to extension need to go beyond technology transfer to include support to farmers in accessing markets and better prices for their crops.*
- *An important lesson for reform of the public extension service is that it may need to foster an organisational culture that facilitates experimentation and learning as a way of developing locally relevant extension approaches.*

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## **Acronyms**

ATMA	Agricultural Technology Management Agency
BCMKV	Bhuvi Care Private Ltd
DAC	Department of Agriculture and Cooperation
DoA	State Department of Agriculture
MKV	<i>Mahindra Krishi Vibar</i>
MSSL	Mahindra Shubhlabh Services Ltd
PFAE	Policy Framework for Agricultural Extension
SAU	State Agricultural University
T&V	Training and Visit

# EFFECTIVENESS OF PRIVATE-SECTOR EXTENSION IN INDIA AND LESSONS FOR THE NEW EXTENSION POLICY AGENDA

## 1 INTRODUCTION

A recurrent feature of agricultural extension policy debates in recent years has been the proposition that private extension services could and should play a greater role in service provision. Driving these debates has been the recognition that public extension services in many developing countries have encountered serious operational and financial problems (Rivera et al., 2001, Alex et al., 2002). This has led some governments to seek ways of privatising services, often at the insistence of international financial institutions. There are some persuasive arguments in favour of this. These arguments suggest that:

- the private sector is a more efficient service provider;
- there is an effective demand for advisory services and hence farmers can shoulder some if not all of the cost of extension; and
- the presence of public extension services stifles the development of a private sector capability in this area.

However the effectiveness and indeed the appropriateness of private extension is far from clear. There are many questions to be answered:

- what form private extension will take;
- how it can be promoted;
- what crops and social groups it will target and thus what if any is the residual role of the state;
- what approaches will work;
- what the actual response of farmers will be to private extension; and
- what will be the outcomes in terms of enhanced agricultural productivity and other measures of rural development.

These questions also need to be viewed in the context of the large extension policy debate. Central to this is the recognition that the nature of the extension task is itself evolving and is no longer concerned just with technology transfer, but with a range of other services. Added to this is the realisation that the next generation of extension models will not be generalisable blueprints, but a diversity of approaches that build, through learning, on local capabilities and resources, and the evolving opportunities and agendas in these contexts (Sulaiman and Hall, 2004). The private provision of extension services is thus not just a question of efficiency (in either social or economic terms), but concerns the evolution of the extension task and the need for policy to understand how the process of learning and change takes place and can be promoted across a wide spectrum of players in the sector.

This paper explores some of these issues through a case study of an Indian private sector extension scheme. India, like many other countries, has seen the adoption of the Training and Visit (T&V) approach, its limited impact and the subsequent search for a model which is both operationally effective and, in an era of scarce funds, affordable. In recent years various private extension initiatives have emerged, often largely independent of any particular policy change. Yet these instances hold many insights relevant to the current policy debates outlined above. One of these recent private initiatives, the Mahindra franchise system, is discussed in this paper.

The Mahindra case study provides quantified empirical evidence of patterns of adoption of private extension services; demonstrates changes in productivity and profitability associated with participation in the scheme; and details the types of services sought by farmers and the extent of their willingness to pay for them. It also discusses the way the combination of timely knowledge, production input packages and improved access to market opportunities has underpinned the success of the scheme. However over and above these findings is the evolving story of how Mahindra and its franchisee – Bhuvi Care Private Ltd – have developed a set of extension services that farmers want and which are sustainable from a business point of view. This has not always been a story of success. In fact Mahindra opened its first private extension centre with a great fanfare only to shut it down again two years later. What has really been critical is the way the franchisee has had the vision and flexibility to experiment with a business involving a broad-based set of extension services. This experimentation has involved a *learning-by-doing* approach, adapting the scheme in order to build performance and profitability for farmers. Thus, while this case study certainly has answers to many of the specific questions raised by calls for privatisation of extension, it also gives insights into the process and institutional circumstances through which successful extension approaches emerge.

The rest of this paper is organised as follows: The second section introduces agricultural extension in India and summarises some of the recent developments, policy debates and the emerging vision of extension in the country. It also outlines the key questions emerging from these contemporary debates which are addressed by this study of a private-sector extension initiative. The third section presents the evolution of

the *Mahindra Krisbi Vibar* scheme. The results of a small quantitative survey comparing the experiences of participating and non-participating farmers are summarised in the fourth section (for ease of presentation, detailed results and an analysis of this survey are placed in Appendix 1). The policy significance of the results of the study are discussed in the fifth section in relation to the on-going process of extension reform in India and internationally.

## **2 RECENT DEVELOPMENTS AND CHALLENGES IN INDIAN EXTENSION REFORM**

### **Historical patterns**

The number and types of organisations providing extension services in India have increased during the last two decades. In terms of number of staff and organisational reach, the public sector State Department of Agriculture (DoA) continues to dominate extension provision. Other line departments, research centres and agricultural universities in the public sector play only a very limited extension role. The post-T&V innovations in extension delivery include:

- adoption of a group approach (instead of the individual contact approach);
- setting up more contact centres below block<sup>1</sup> level;
- adding more training centres;
- promotion of private extension initiatives, including contracting extension to private extension agencies;
- use of *para* extension workers as substitutes for DoA field extension workers;
- designing new programmes for women in agriculture;
- setting up multi-disciplinary State Agricultural University (SAU) teams at district level;
- decentralisation (extension planning and control under elected bodies at the district level; and
- wider use of information technology and media.

Another trend has been the formation of new organisations (with less bureaucracy, more flexibility and wider expertise) to implement special programmes related to agricultural development. The two recent central initiatives have been the creation of the Agricultural Technology Management Agency (ATMA)<sup>2</sup> which operates in 28 districts and the establishment of agri-clinics and agri-business centres<sup>3</sup> operated by private entrepreneurs.

### **Current operational challenges**

However, the DoA still faces several constraints in providing adequate extension support to farmers. Implementation of a large number of central and state sector schemes consumes a major share of the extension staff's time (Jinraj, 1999). The department poorly serves tribal areas and remote locations. It continues to see technology dissemination as its main role while other support needs of farmers remain unattended (Sulaiman and Hall, 2002). It continues to work in isolation. Partnerships with organisations having complementary skills are rare. The potential of Information and Communication Technology remains unexploited –

although much discussed. Several of the states are barely able to pay the salaries of their extension functionaries, leave alone provide funds for demonstrations, mobility and upgrading skills (DAC, 2002 b). The limited operational funding has further contributed to underutilisation of available human and physical resources. The centralised planning and implementation of extension programmes and the associated bureaucratic procedures leave very little flexibility to the block- and village-level functionaries to modify programmes based on farmers' needs, local circumstances and emerging problems and opportunities.

### **Emergence of private sector service providers**

There are a great many private agencies which, while not always formally identified as extension services, nevertheless provide advisory and other support services to farmers. These include: input agencies, farmers' organisations, producers' cooperatives, agro-processing companies, non-governmental agencies (NGOs), agri-business houses, individual consultants and consultancy firms, financial institutions, and media and internet services. However, it is anticipated that private extension provision is generally skewed towards well-endowed regions and high-value crops, although there are only a few well-documented empirical cases. Conversely it is anticipated that remote areas and poor producers (especially those growing low-value crops with little marketable surplus) are poorly served by both the private and public sectors, which rarely meet their needs. To improve their livelihoods poor households need a broader kind of support, which includes but goes beyond agricultural production (Sulaiman, 2003). Many analysts have reflected that private extension is clearly not a substitute for public extension and it is likely that there will be a need for significant public funding for extension in the years to come (Alex et al., 2002).

### **Recent policy developments and challenges on the road to reform**

The National Agricultural Policy of India and the Policy Framework for Agricultural Extension (PFAE) acknowledge the need for extension to engage with issues beyond technology dissemination (DAC, 2000, 2002a). The PFAE affirms that the 'policy environment will promote private and community driven extension to operate competitively, in roles that complement, supplement, work in partnerships and even substitute for public extension' (DAC, 2000). However, to fulfil this expanded role, extension organisations need to change considerably both in scope and mode of operation.

States face a number of dilemmas: how many past arrangements should be retained; and what innovations in extension provision are desirable, affordable (bearing in mind current financial difficulties) and politically possible, given opposition from staff unions and declining enthusiasm from donors and political patrons for a stand-alone extension department dealing only with technology dissemination? Although several

innovative extension approaches have emerged in India (mainly outside the public-sector line departments), offering rich lessons to guide extension reforms, there has not been a serious attempt to analyse and learn from these initiatives. Recent analysis of some of these emerging approaches suggests a number of broad principles (Sulaiman and Hall, 2004):

- the need to provide a wide range of services to farmers;
- the need to focus on supporting rural livelihoods rather than agricultural productivity per se;
- the importance of building farmers' organisations, particularly for developing improved market access;
- the need to build on existing structures and strengths in different locations;
- the need to establish new programmes in ways that explicitly recognise the experimental nature of the reform and change process; and
- the need to value diversity of approaches and arrangements.

Those involved in the reform process therefore will need to build skills that allow them to reflect on progress (both successes and failures) and change course accordingly. This will require approaches that are less target-driven and more concerned with learning and the development of new capacities to deal with local circumstances (Echeverria, 2003, Sulaiman and Hall, 2004).

### **Critical questions for extension policy addressed by this study**

Returning to the issue of the role and effectiveness of private-sector extension services, a number of key questions needs to be investigated empirically. Critical are the following:

- What social categories of farmers are likely to purchase private extension services and for what crops?
- Is the private sector an effective way of delivering extension services and can this be demonstrated by improvements in the productivity and profitability of farmers purchasing these services?
- What types of services do farmers get from private agencies and what is their perception of the relative importance of the different elements of these services?
- Can viable approaches to private extension emerge and will farmers participate in these schemes and pay for these services?

On the wider issue of extension reform, can the emergence and development of private-sector approaches to extension provide any lessons for public-sector services? Critical questions are:

- What is the nature of the extension task? Should it be confined to supplying inputs and production advice or should it be expanded to cover a range of other tasks related to farming and rural livelihoods?
- Should extension be the sole preserve of one organisation or should it bring together the skills, knowledge and resources of a number of agencies?
- How do extension innovations emerge? Are generalisable models likely to work or is a more

process-driven approach more appropriate?

This study of the Mahindra private extension services addresses these questions.

### **3 EVOLUTION OF THE MAHINDRA SUBHLABH SERVICES PRIVATE LIMITED**

Mahindra & Mahindra Ltd is India's leading tractor and utility vehicle manufacturer. It entered the private extension scene in 2000 through the establishment of a subsidiary, Mahindra Shubhlabh Services (MSSL) whose stated mission is to tackle deficiencies in the farm sector, including low consumption of quality inputs, lack of mechanisation, scarcity of farm finances and low awareness of scientific farm practices. MSSL's scheme involved setting up one-stop farm solutions centres known as *Mahindra Krishi Vihar* (MKV) to provide farmers with a wide range of services, including:

- selling quality farm inputs (seeds, fertilisers and pesticides);
- renting out farm equipment (tractors, harvesters and dryers);
- arranging credit (in partnership with banks);
- offering farm advice by trained field supervisors who visit fields and supervise critical farm operations; and
- buying produce (through contracts with processing units).

The model originally involved each MKV serving as a hub linked to sub-centres, known as spokes. Farmers could access the services through these spokes at village level. The inputs they purchased were delivered to their doorsteps, saving them time and money.

The first MKV was established in Vadugappatti village, Vadipatti Taluk, in Madurai District, Tamil Nadu in October 2000, catering principally to paddy growers. Services were provided at the rate of Rs1236 (about US\$25) per hectare (ha) per season. The registered paddy area increased from 286 ha in the 2000 II crop season<sup>4</sup> to 526 ha in the 2001 I season, then to 809 ha in the 2001 II season. Encouraged by the success of this new approach, more centres were established in other districts of Tamil Nadu.

In the 2001 II crop season, 800 farmers scattered throughout 40 villages in Madurai District registered 809 ha of paddy. Ten spokes were established to service them, each spoke covering three or four villages. Supervisors (mostly graduates or diploma holders in agriculture) who had received a week's technical training from MKV's agricultural expert were appointed to the spokes, each with responsibility for about 50 to 60 ha of paddy in a season. The supervisors made about 15 visits to the farmers' fields to oversee the main operations, including soil sample collection, selection of seeds, sowing, nursery, main field preparation, transplanting, basal applications and top dressing of fertiliser, weeding and harvesting. The supervisors also advised the farmers about how much of the various inputs they should apply and the best time to apply them. Backup was provided for the supervisors, in that they had to report to MKV once a

week to discuss with experts and the team leader any problems they had encountered in the field that they could not handle themselves.

In both the 2002 crop seasons rainfall in the region was lower than usual, with a consequent reduction in the area grown to paddy. Obviously, this affected the paddy area registered with MKV as well.

Meanwhile MKV in Madurai had started to realise the difficulties involved in delivering the services they had promised. For instance, the company found it was uneconomic to procure paddy from the participating farmers and sell it to the local mills that the farmers themselves had been dealing with, so it dropped this part of the service. However, the loans MKV had advanced to the farmers were supposed to be offset at the time of procurement, so the company then found it difficult to get repayments. By the second season, the company had also backtracked on delivering inputs right to the farmers' doors, again on the grounds that such an arrangement was uneconomic.

The Madurai MKV also extended its operations to maize and gherkins, where buy-back could be easily arranged. In the case of maize, the buy-back arrangement was with Godrej-Agrovet (a large agro-industrial company with interests in the animal feed industry). For gherkins the agreement was with the International Agricultural Processing Private Limited (IAP), a major exporter of gherkins, specialising in exporting high-value commodities. Towards the end of 2002 the whole MKV operation at Madurai had become economically unviable and MSSL closed the centre in mid-2003. MSSL has however continued to expand MKVs through its franchise model. At present, the company has five franchises in Tamil Nadu, one covering Tirunelveli and Thoothukudy, Salem, Villupuram, Trichy and Udumalpet. Two other franchises, at Kumbakonam and Erode, discontinued their operations after two years. Of the remaining franchises, the one operating Tirunelveli and Thoothukudy, Bhuvi Care Private Limited, has been the most successful.

### **Bhuvi Care Private Limited**

Bhuvi Care Private Limited, the main focus of this study, was set up in Tirunelveli District, Tamil Nadu, in 2002 by three agricultural engineers, who since 1993 had run a business selling and installing drip irrigation systems (Irrigation Engineering Services Private Limited). Bhuvi Care entered into an agreement with MSSL in May 2002 to act as a franchise of Mahindra and to function as an MKV. Bhuvi Care *Mahindra Krishi Vibhar* (BCMVK) began providing services for paddy farmers in Tirunelveli and Thoothukudy districts in the 2002 I season.

Table 1 details the increasing area registered to paddy under BCMKV from 2002 to 2003, with a dip in the 2003 *Kar* season on account of low rainfall. BCMKV's rates for paddy farmers were the same as those charged by MKV in Madurai, Rs1236 (\$25) per ha per season. The table also shows that in 2003 BCMKV expanded its scope to include maize farmers, initially at Rs618 (\$12) per ha. This was reduced in the 2003 *Pisbanam*

**Table 1 Progress in registering crop area with BCMKV in Tirunelveli and Thoothukudy**

Crop	Year	Season	Area (ha)	No of farmers
Paddy	2002	I	108	71
		II*	189	89
	2003	I	67	62
Maize	2003	II	142	105
		I	202	163
		II	731	433

\*There was extensive drought in the region during this season

season to Rs371 (\$7). The reduction was because the firm realised that maize does not need so much attention as paddy, so that, while a supervisor could manage only 30–40 ha of the latter, he could take responsibility for 100 ha of maize. In addition, profits can be made from commission on the sale of inputs, shelling charges and trading commission, while the reduced rates attract more farmers to the scheme. BCMKV arranges for the shelling of the maize cobs and buys the crop for Godrej Agrovet with whom MSSL has a buy-back arrangement.

BCMVK provides the same range of services envisaged by MSSL in the MKV model. For instance, the field supervisors make weekly visits to the participating farmers' paddy fields and fortnightly visits in the case of maize. Credit is arranged through the ICICI Bank and the State Bank of India. The procurement services are not required by all paddy farmers but those who have a poor repayment record have their paddy compulsorily purchased so that loan repayments are not affected. In the case of maize, the entire crop is bought by BCMKV.

### **4 EVIDENCE FROM THE FIELD**

A survey of 120 farmers from Tirunelveli and Thoothukudy districts was conducted between July and September 2003 to investigate: i) patterns of adoption, ii) perceptions of the advantages of the scheme, iii) impacts of the scheme on the yields and profitability of participating farmers and iv) prospects for the farmers' continued participation. (Details of the sample and survey methodology and the tabular, statistical and descriptive analysis of the data collected are presented in the Appendix.) The tables and other material presented in this section summarise the main findings and respond to the critical questions for extension policy put at the end of Section 2. To provide a context for discussing the findings a profile of the farming systems on the two survey sites is presented in Box 1.

*What social categories of farmers are likely to purchase private extension services and for what crops?*

As can be seen in Table 2, the scheme caters mainly for large (more than 4 ha) and medium (2–4 ha) farmers. (The minimum requirement for registration is 0.4 ha.)

The table clearly shows that participation by paddy farmers is skewed, in that 53% of the registered area comes from about 24% of farmers with more than 2 ha of land.

### Box 1 A profile of the farming systems in the two study districts

Tirunelveli and Thoothukudy are two neighbouring districts in southern Tamil Nadu in India. Food grains occupy the largest share of gross cropped area in both districts, 67.53% in Tirunelveli and 46.97% in Thoothukudy. Tirunelveli receives an average annual rainfall of 880 mm and Thoothukudy 670 mm annually. More than 50% of the rainfall occurs during the north-east monsoon period (October-January). About 73% of the gross cropped area in Tirunelveli is irrigated and paddy is grown in half of this area. The other major crops are banana, pulses (black and green gram), cotton, maize and chilly. In Thoothukudy only 23% of the gross cropped area is irrigated and the major crops are banana, pearl millet, paddy, chilly and maize.

**Table 2 Details of area registered with BCMKV**

Crop/ Category of holding (ha)	Area registered with MKV (ha)	No. of participant farmers
Paddy		
0.4–0.8	40.5 (8.65%)	28 (31.46%)
0.8–2.0	181.5 (38.78%)	40 (44.94%)
2.0–4.0	92.0 (19.66%)	13 (14.61%)
>4.0	54.0 (32.91%)	8 (8.99%)
<b>Sub-Total</b>	<b>468.0 (100%)</b>	<b>89 (100%)</b>
Maize		
0.4	1.0 (0.2%)	2 (1.23%)
0.4–0.8	142.5 (28.47%)	95 (58.28%)
0.8–2.0	187.0 (37.36%)	48 (29.45%)
2.0–4.0	125.0 (24.98%)	16 (9.82%)
>4.0	45.0 (8.99%)	2 (1.23%)
<b>Sub-Total</b>	<b>500.5 (100%)</b>	<b>163 (100%)</b>
<b>Total</b>	<b>631</b>	<b>252</b>

A similar trend, though not as marked, was observed in the case of maize farmers. About 34% of the registered area under maize belonged to about 11% of farmers owning more than 2 ha. The key characteristics of sample farmers are shown in Table 3.

As shown in Table 3, participant farmers, who either opted to join the scheme or were invited by BCMKV to register, had somewhat larger land holdings and higher incomes than non-participant farmers. The t-test results show that participant and non-participant paddy growers differ significantly in average farm size and household income.

*Is the private sector an effective way of delivering extension services and can this be demonstrated by improvements in the productivity and profitability of farmers purchasing these services?*

The yield and net returns realised by participating and non-participating farmers for paddy and maize are illustrated in Tables 4 and 5.

As can be seen from Table 4, it cost participating farmers about Rs500 more to cultivate a hectare of paddy than it did non-participating farmers. However the former had higher returns per ha, an average of Rs3603 more than the latter, mainly because of better yields. They were also able to get about Rs10 more per quintal than non-participating farmers because of the arrangements BCMKV had made with the millers to buy paddy directly from the fields.

The participating maize farmers produced 5.81 quintals per ha more than non-participating farmers, even though their cultivation costs were lower. They also obtained Rs15 per quintal more for their crop than the non-participants because BCMKV bought it all at a favourable rate and supplied it directly to Godrej Agrovet Ltd, with whom MSSSL has an agreement. In all

**Table 3 Key characteristics of sample farmers**

Characteristics	Category	Participant (n=30)	Non-participant (n=30)	Test of significance t-value
Average farm size (ha)	Paddy growers	4.76	2.17	3.047*
	Maize growers	2.02	1.51	1.039
Average income of household (Rs per annum)	Paddy growers	88,153	56,587	3.456*
	Maize growers	62,867	61,038	0.243

\* Significant at 1% level

**Table 4 Yields and returns from paddy cultivation**

Items	Participants	Non-participants
Average cost of cultivation (Rs/ha)	15,953†	15,476
Average yield (quintals/ha)	57.38*	51.05
Average selling price (Rs/quintal)	575	566
Net returns (Rs/ha)	17,023	13,420

† Includes Rs1582 paid to BCMKV, comprising Rs1236 registration fee plus Rs346 for loan administration and accounting services

\* Significant at 1% level

**Table 5 Yields and returns from maize cultivation**

Items	Participants	Non-participants
Average cost of cultivation (Rs/ha)	17,967†*	7604
Average yield (quintals/ha)	61.78	55.97
Average selling price (Rs/quintal)	570*	555
Net returns (Rs/ha)	17,243	12,276

† Includes Rs561 paid to BCMKV, comprising Rs371 registration fee plus Rs190 for loan administration and accounting services  
\*Significant at 1% level

the participants earned about Rs5000 per ha more than non-participants.

The participant farmers' yields under the scheme were higher than their previous yields (which were about the same as those obtained currently by non-participating farmers). A comparison of their previous and current yields can be seen in Table A2 (Appendix 1). Interestingly, increases were not obtained by using more inputs, see Tables A3 and A4. Tables A5 and A6 give details of the costs incurred in carrying out key farm operations by both participant and non-participant farmers.

*What types of services do farmers get from private agencies and what is their perception of the relative importance of the different elements of these services?*

As indicated earlier, BCMKV's agreement with the farmers includes provision of good quality seeds, fertilisers, plant protection chemicals, equipment for hire, credit and regular field supervision and advice by technical staff. As well as this, BCMKV purchases the farmers' produce from them directly. The participants were asked to say what factors they thought contributed to their increased yields. Their responses are set out in Tables 6 and 7.

**Table 6 Participant farmers' perceptions of reasons for increased paddy yields**

Reasons for increases	Rank	Frequency	%
Timely availability of inputs	I	27	90
Better field supervision	II	24	80
Better quality of inputs	III	18	60
Adjustment of broad technology recommendations based on field and crop conditions	IV	13	43

**Table 7 Participant farmers' perceptions of reasons for increased maize yields**

Reasons for increases	Rank	Frequency	%
Timely availability of inputs	I	26	86.67
Better quality of inputs	II	23	76.67
Better field supervision	III	21	70.00
Adjustment of broad technology recommendations based on field and crop conditions	IV	17	56.67

The participant farmers were also asked to rank the various elements of BCMKV's services. Their responses are given in tables A7 and A8 and indicate that they considered the whole range of services to be advantageous on a number of counts, contributing to increased yields and reduced cultivation costs.

*Can viable approaches to private extension emerge and will farmers participate in these schemes and pay for these services?*

It is important to find out how sustainable this arrangement is from the perspective of both the service provider and the participants. The service provider, in this case BCMKV, considers the provision of an integrated set of services paid for by the farmers potentially rewarding on business and service grounds. (The company is also interested in experimenting with this kind of service for other crops, as demanded by farmers.) At the moment 76.66% of the participating paddy farmers and 90% of maize farmers are interested in continuing with BCMKV's service (Table 8).

The reasons mentioned for continuing with the scheme are given in Table 9.

**Table 8 Level of participants' interest in continuing with BCMKV**

Crop	Continue		Discontinue	
	(Frequency)	%	(Frequency)	%
Paddy	23	77	7	23
Maize	27	90	3	10

**Table 9 Reasons for continuing with BCMKV**

Reasons	Paddy (Rank)	Maize (Rank)
Delivery of inputs to village	I	I
Immediate procurement and better prices	II	II
Right technical advice	III	III
Obtaining quality inputs	III	IV
Access to credit	V	V
Supervision provided	VI	VI

Of the six reasons given for staying with BCMKV, delivery of inputs to the village at the right time was ranked as the most important, while the least important, because it affects only those few farmers who are short of time due to other occupations, was supervision of farm operations.

## 5 DISCUSSION AND POLICY IMPLICATIONS

The above account of the BCMKV experience reveals that there is an effective demand for an integrated system of 'extension' services in Indian agriculture. However, to draw wider conclusions, analysis is needed of 1) field (farmer) level performance and 2) the processes that have facilitated the development of this scheme.

### Field-level performance

*What social categories of farmers are likely to purchase private extension services and for what crops?*

The results of the study suggest that participation in a private extension scheme of this type is skewed in favour of medium- and large-scale farmers growing crops principally for sale. The distribution of registered area is more skewed in the case of paddy than of maize. Underlying these patterns is the fact that the field staff of BCMKV take the initiative in contacting those farmers with larger holdings as an easy way of achieving the area of land needed to make their operation economic. Selection of participant farmers is also influenced by the opinions obtained by field staff from fellow villagers regarding prospective candidates' trustworthiness and ability to repay loans. Such factors clearly discourage participation in the scheme by small landholders, and farmers who have difficulty in obtaining credit and who are undoubtedly poor by a number of other measures. While incentives could be developed that might encourage private extension service providers to focus on the needs of poorer households, this would probably be difficult to operate. At present they aim to bring into their schemes as much land as they can by attracting the bigger creditworthy farmers. One therefore has to conclude that such schemes will best service the needs of this type of farmer.

Is the private sector an effective way of delivering extension services and can this be demonstrated by the improvements in the productivity and profitability of farmers purchasing these services? The results of the primary survey conducted with both participating and non-participating farmers clearly reveal the advantages of entering into the arrangement with BCMKV. The increases in productivity and farm income achieved by the participants far outweigh the registration fees.

### *Increased yields*

It is notable that the increased yields (6.33 quintals per ha of paddy and 5.81 of maize) were not the result of increased input use or the introduction of any new technology. Rather they were achieved by facilitating the adoption of key farm practices at the right time. Providing credit for quality inputs and delivering them directly to the village at the right stage of crop growth greatly facilitated the timely application of inputs. Advice on applying the right kind of inputs and pest control measures, based on field supervision, also helped farmers to take the right decisions. In addition, ensuring better prices for their crops (primarily by

cutting out intermediaries) also motivated farmers to buy and use inputs to produce higher yields. In short, achieving increased yields depends on the reliable availability of a wide range of services and it is important that they are all in place. Making quality inputs available at the right time without ensuring easy access to them, or having strategies to increase the farmers' knowledge of good crop management practices without providing backup about how to apply that knowledge to suit individual field conditions may have limited or very little impact on achieving better yields. This implies that extension agencies, especially those in the public sector, should broaden their mandate and instead of merely disseminating new technologies (and more recently market prices) should provide a broader range of support. Farmers are willing to pay for such a service and the challenge is to organise its delivery.

### *Increased income*

Participant paddy and maize farmers both earned higher incomes than non-participants. These derived largely from increased yields, better prices and, to a limited extent, a reduction in the cost of cultivation. In the case of maize, the buyback arrangement between BCMKV and a processing company ensured a reduction in the number of intermediaries. This helped the company to save costs while ensuring access to a better quality of produce, there being a reduced chance of adulteration since the product did not go through several changes of hands. In the case of paddy, procurement is optional or need-based. BCMKV facilitated direct purchase from the field by regional rice millers, resulting in better prices.

Overall the above suggests that it is worthwhile for farmers to invest in private extension services as it ensures better yields and increased income. Private sector extension has the potential to provide these kinds of services very efficiently and ways should be found to facilitate the emergence of such service delivery mechanisms in more areas.

*Can viable approaches to private extension emerge and will farmers participate in these schemes and pay for these services?*

The evidence from this case suggests that private extension services are a viable business opportunity for private entrepreneurs as they provide a type of service for which there is an effective demand; the services provide tangible benefits to participating farmers and the company can charge enough to make a profit. A question remains as to whether farmer demand for these services will be sufficient to encourage private entrepreneurs to establish such schemes independently or whether they will need external support. In this case it was necessary for a large company to take the risk of establishing such a scheme, rather than it being set up by a small, independent entrepreneur. Other examples from India suggest that the scenario of a large company setting up an extension scheme is typical (Sulaiman, 2003). Rallis, a major agri-business company, has set up Rallis

*Kisan Kendras* in a few selected places to provide services similar to those provided by MSSL. On the other hand the Ministry of Agriculture, through the Small Farmers Agri-Business Consortium, has been trying since 2000 to promote the establishment of agri-clinics and agri-business centres as small-scale enterprises. Farmers have paid for services in all these cases. Other studies have shown that large numbers of farmers in India are willing to pay for selected extension services (Sulaiman and Sadamate, 2000).

### **Process and lessons for the reform of public extension services**

The system currently in place at BCMKV has evolved through a process of experimentation and several failures. It is quite interesting to note that BCMKV succeeded in developing the system into a viable business model by making a series of modifications to the original failed model at Madurai which was proposed and directly managed by MSSL. What bearing does this experience have on the questions posed at the end of Section 2?

What is the nature of the extension task? Should it be confined to supplying inputs and production advice or should it be expanded to cover a range of other tasks related to farming and rural livelihoods?

#### *Extension-Plus*

MSSL proposed the concept of *Krisbi Vihar* to provide what they described as 'integrated yield and profit solutions'. This approach was based on the assumption that farm incomes could be enhanced substantially by reducing the cost of cultivation, improving productivity and providing better market linkages. To achieve this, MSSL set up a system to give farmers access to good quality inputs (seeds, fertilisers and pesticides), machinery on hire, credit, field supervision by trained staff and assured buy-back. The recognition of the need for a set of integrated services (which we term Extension-Plus) has been one of the most important features of this arrangement. Increasing farm incomes obviously requires strategies that include but go well beyond technology dissemination. MSSL evolved a system to put Extension-Plus into operation which included the delivery of a wide range of services, namely making quality inputs available at the right time, providing field-based advice on technology use, reducing the number of middle men and getting better prices. To remain relevant and effective, extension organisations need to embrace this broader vision.

Should extension be the sole preserve of one organisation or should it bring together the skills, knowledge and resources of a number of agencies?

#### *Partnerships*

Providing a wide range of services needs a wide range of partners. For instance, BCMKV entered into partnership with other seed, fertiliser and pesticide companies to facilitate the supply of inputs; with commercial banks for credit support to farmers; and

with traders, exporters and processors for buy-back arrangements. MSSL is currently expanding this model through franchising, itself an important partnership arrangement. In those villages where farmers are registered with BCMKV the company has designated one farmer in each village as a contact to facilitate input delivery and continuous feedback. Partnership with the contact farmers, who are paid for their services, is a BCMKV innovation to the MSSL approach. To provide a wide range of services, extension organisations need a large number of partner agencies capable of effectively supplementing and complementing their expertise. This suggests that extension – in the public or private sector – should play the role of a bridging organisation or a central node to help connect the farmer to other organisations. Whereas a private agency might wish to develop these links and partnerships and be actively involved in them as part of the service it provides, a public service might give more emphasis to facilitating their formation.

How do extension innovations emerge? Are generalisable models likely to work or is a more process driven approach more appropriate?

#### *Experimentation, reflection and learning*

BCMKV modified the original model proposed by MSSL through a process of experimentation, reflection and learning. The realisation that inputs were not delivered to the farmers' doors led to experimentation with contact farmers in each village to facilitate input delivery. MSSL failed to make any arrangement to buy paddy from the Tirunelveli farmers, so BCMKV lost heavily when it could not recover some of the loans provided to farmers. This led to the company setting up a company called Tamirabarani Seeds to procure and market quality seed paddy from selected progressive farmers registered with it. (During the December 2003–March 2004 season, BCMKV registered 30 acres to procure quality seeds of popular paddy varieties.) This eased the twin concerns of recovering the loan and procuring the produce as indicated in the contract. The Korean paddy transplanter supplied by MSSL was not appropriate for the type of paddy cultivation in Tirunelveli and those farmers who tried it were very unhappy with the results. BCMKV compensated them for this lapse and later withdrew the machine from its equipment rental portfolio. BCMKV has also developed a transparent credit delivery system whereby the farmers are provided with passbooks detailing their financial transactions. It is these types of innovations to the original model that helped BCMKV to expand its operations. When the MSSL centre in Madurai faced difficulties and challenges it failed to find new ways of moving forward, leading to its eventual closure.

These experiences suggest that institutional arrangements relevant to each area can only emerge through experimentation, reflection and learning within that context. In contrast, extension reforms in the public sector have tended to rely on blueprints or models generated for wider application across the nation, state

or regions, although the ATMA approach in India has tried to break out of this in its pilot phase. If the public sector wants to follow the example of the private sector it will have to adopt a similar culture of experimentation, reflection and learning, to develop appropriate institutional arrangements for specific contexts. This in turn will require new capacities among the staff, and new incentives for them to work in new ways.

## 6 CONCLUSIONS

The experience of a private extension initiative discussed in this paper suggests that private extension is a viable alternative to public services for medium- and large-scale farmers producing for the market. The results of a survey of farmers participating in this scheme show that private services providing access to both input and output markets combined with timely advice significantly improves the productivity and profitability of farmers. The lessons from this case also have wider significance in connection with the question of how successful approaches to extension can be developed. These lessons include: First, it is important to provide an integrated set of services and not just technology transfer. Second, partnerships with other organisations are needed in order to provide these integrated services. The third and perhaps most important principle is the way or the process by which successful extension approaches emerge, namely experimentation, reflection and learning. As this private extension scheme has demonstrated, new and effective extension arrangements can evolve only through recognition of these three major principles.

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## ENDNOTES

- 1 In India, an average block comprises about 100 villages, each with a Block Development Office which coordinates all development interventions. The State Department of Agriculture (DoA) has its office at the block level. To improve field-level contact, several states have opened a number of contact centres in each block so that farmers can contact them for information and advice on specific days of the week.
- 2 The Agricultural Technology Management Agency (ATMA) is an autonomous body created at the district level primarily to plan and implement the extension programme by integrating the extension functions of the various line departments. ATMA has been established in 28 districts of India (scattered throughout seven states) under the World Bank-supported National Agricultural Technology Project (NATP) since November 1998.
- 3 The main aim of the agri-clinic and agri-business centre scheme is to provide accountable extension services to farmers through technically trained agricultural graduates at the village level. The programme is financed through bank loans, with the central government providing 25% of the cost as a subsidy. The plan is to establish 5000 agri-clinics to provide testing facilities, diagnostic and control services and other consultancies on a fee-for-service basis.
- 4 The region has two main cropping seasons, first *Kar*, (June to September) and second *Pishanam* (October to February).

## APPENDIX 1

**Sampling**

A sample survey of 120 farmers from Tirunelveli and Thoothukudy districts, 60 of whom were participants in the BCMKV scheme and 60 non-participants, was conducted from July to September 2003. Both the participant and non-participant groups consisted of 30 paddy and 30 maize farmers. The registration details of the participant farmers were obtained from the service provider. The non-participants were from the same villages and were selected from a list provided by the village administrative officer. A proportionate stratified sampling design was used. See Table A1.

The arrangement with BCMKV resulted in the participant farmers improving their crop yields by about seven quintals per ha. See Table A2 .

Both participants and non-participants used the same varieties of paddy. However, due to the better quality of seeds supplied by BCMKV, the participants could manage with a lower seed rate. They also used less of the major nutrients (Nitrogen, Phosphorous and Potassium) and Zinc sulphate than the non-participants. However they were found to use more sulphur derived from Ammonium Sulphate. But these differences were not statistically significant

Of the three seed varieties used two were common to both participants and non-participants. A new, third variety, Mukta (marketed by Syngenta), was introduced by BCMKV. This failed in one village but BCMKV obtained a replacement variety from Syngenta. Participant farmers were found to be using a lower seed rate than non-participants and reported that this was because the seed from BCMKV was of good quality and was supplied at the right time. There was little difference in the use of the major nutrients such as N, P and K between participants and non-participants and these differences were not statistically significant.

A comparison of costs incurred for key farm operations by participants and non-participants is given in tables A5 and A6.

Participant farmers incurred lower costs than non-participants for most farm operations, with a significant reduction in the costs incurred for fertiliser use and pest and disease management. They used less fertiliser (but at the right time) and reported that BCMKV was supplying it at less than the market prices. In paddy, the general practice is to apply fertiliser in two doses but BCMKV recommended applying three or four split doses for improved efficiency.

The costs incurred by participants for all operations except land preparation were significantly lower than for non-participants. BCMKV encouraged the use of herbicides for effective weed control since maize is mostly grown on garden land with severe weed problems, traditionally controlled manually. However, over the years a combination of manual and chemical methods has come to be used. This was the case with about 60% of the participants and 40% of the non-participants. Shelling costs were lower for participants as BCMKV arranged for threshers at a cheap rate at the right time.

The participant farmers were asked to rank the importance of the various elements of BCMKV's services. Their responses are given in tables A7 and A8.

**Table A1 Sampling framework adopted for the survey**

Crop/ Category (ha)	Sample*	
	Participant farmers	Non-participant farmers
Paddy		
0.4-08	09 (30.00)	09
0.8-2.0	14 (46.67)	14
2.0-4.0	04 (13.33)	04
>4.00	03 (10.00)	03
Sub-Total	30 (100.00)	30
Maize		
<.4	01 (03.33)	01
0.4-08	17 (56.67)	17
0.8-2.0	08 (26.67)	08
2.0-4.0	03 (10.00)	03
>4.00	01 (03.33)	01
Sub-Total	30 (100.00)	30
Total	60	60

\* Based on the area registered, the farmers were categorised into five strata. The number of farmers in each stratum was proportional to the number of farmers with that size of holding in the population as a whole.

Figures in parentheses are percentages.

**Table A2 Changes in participant farmers' yield levels**

Crop	Previous yield (quintals/ ha)	Present yield (quintals/ ha)
Paddy	49.99	57.38
Maize	54.61	61.78

**Table A3 Inputs use in paddy**

Inputs/ Practices	Participants	Non-participants
Seed varieties used	ASD 16	ASD 36
	ADT 39	ASD 16
	ASD 36	ADT 39
Seed rate (kg/ha)	50.66	55.40
Fertiliser use (kg/ha)		
N (Nitrogen)	118.68	128.66
P (Phosphorous)	78.16	89.10
K (Potassium)	37.46	51.00
S (Sulphur)	1.41	0.91
Zinc sulphate	18.71	22.66
Neem Cake	15.69	16.21

**Table A4 Inputs use in maize**

Inputs	Participants	Non-participants
Seed varieties used	Cargill Hy-Shell Mukta	Cargill Hy-Shell Local
Seed rate (kg/ha)	20.16	26.93
Fertiliser use (kg/ha)		
N (Nitrogen)	135.76	138.03
P (Phosphorous)	57.08	57.57
K (Potassium)	74.13	74.33

**Table A5 Costs incurred for key paddy farming operations**

Farm operations	Participants (Rs/ha)	Non-participants (Rs/ha)
Land preparation	1431	1413
Fertiliser use	3583	4253
Weed control	1337	1537
Pest and disease management	1705	2046
Harvesting	3121	3126
Administrative costs*	1582	N/A
Total costs of cultivation†	15953	15476

\* Comprises Rs1236 registration fee plus Rs346 for loan administration and accounting services.

† Includes all input, machinery and labour costs (including family labour but not that of the farmer who owns the land)

**Table A6 Costs incurred for key maize farming operations**

Farm operations	Participants (Rs/ha)	Non-participants (Rs/ha)
Land preparation	1586	1413
Fertiliser use	2931	3548
Weed control	1196	1384
Harvesting	974	1025
Shelling	618	650
Administrative costs*	561	N/A
Total costs of cultivation	17,967	18,789

\*Comprises Rs371 registration fee plus Rs190 for loan administration and accounting services

**Table A7 Participants' views on relative importance of key services for paddy cultivation**

Services	Rank 1	Rank II	Rank III	Rank IV
Seeds	Delivery to the village (28)	Available at right time (23)	Cheaper than the market rate (19)	Better germination (15)
Fertilisers	Delivery to the village (28)	Available at right time (25)	Cheaper than the market rate (21)	
Plant protection chemicals	Delivery to the village (28)	Available at right time (25)	Cheaper than the market rate (21)	
Equipment rental	Available at right time (24)	Good service by a trained operator (23)	Cheaper than the market rate (12)	
Credit	At right time (26)	Easily accessible (25)	At market rate (22)	No other source of finance (12)
Procurement	Better price (27)	Proper weighing (26)	Procurement at the field (26)	
Field supervision	Good scientific advice (28)	Regular monitoring of all key field operations (22)	Timely reminders about key field operations (21)	Yield improvement (15)

Figures in parentheses indicate the number of respondents

**Table A8 Participants' views on relative importance of key services for maize cultivation**

Services	Rank 1	Rank II	Rank III	Rank IV	Rank V
Seeds	Cheaper than market rate (25)	Available at right time (24)	Delivery to the village (23)	Better germination (22)	New improved variety
Fertilisers	Available at right time (27)	Delivery to the village (24)	Cheaper than the market rate (23)		
Equipment rental	Cheaper than the market rate (26)	Available at right time (19)	Good service by a trained operator (16)		
Credit	At market rate (27)	Easily accessible (26)	No other source of finance (19)	At right time (18)	
Procurement	Proper weighing (27)	Better price (26)	Procurement at the field (12)		
Field supervision	Good scientific advice (28)	Regular monitoring of all key field operations (28)	Timely reminders about key field operations (19)	Yield improvement	Technical back-up of the contact farmer (18)

Figures in parentheses indicate the number of respondents

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