

# **Knowledge Centers in the Pilot Learning Woradas of Improving Productivity and Market Success Project: Utilization, Relevance and Effectiveness**

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## **1. Introduction**

### **1.1 Background**

Agriculture, which is dominated by smallholder subsistent-oriented producers, is the foundation of Ethiopian economy. Enhancing agricultural knowledge-base and capacity to access and productively use knowledge is increasingly becoming crucial for achieving productive, remunerative and sustainable agriculture development. Likewise, the Government of Ethiopia's (GoE) agricultural transformation policy focusing on commercialization and export-orientation would make the delivery of extension services complex, and indeed increasingly knowledge- and information-intensive. Agricultural extension should deliver market-oriented services that can meet specific needs to sustainably increase productivity, income, and to enhance smallholder competitiveness in both domestic and export markets.

Improving Productivity and Market Success of Ethiopian Farmers (IPMS) project was initiated to support and strengthen the efforts of the GoE in facilitating market-oriented and knowledge-based agricultural development. IPMS aimed to achieve these through the implementation of four interrelated project components namely, market-oriented commodity development, agricultural knowledge management systems development, innovation capacity building, and research and promotion of evidence-based technological and institutional options and approaches. The International Livestock Research Institute (ILRI) in partnership with the Ethiopian

Ministry of Agriculture (MoA) implemented the project with funding from the Canadian International Development Agency (CIDA).

Efficient agricultural knowledge management was considered to be critical to improve the productivity and market success of smallholder farmers and pastoralists. IPMS thus implemented knowledge management system development with the aim of improving the availability and accessibility of relevant knowledge and stimulating knowledge sharing, adaptation and use. The establishment of Woreda Knowledge Centers (WKC) was among key accomplishments to strengthen knowledge management. The focus of this paper is on the relevance and usefulness of the knowledge centers (see Text box 1).

## Text box 1: Woreda Knowledge Center

*A Woreda Knowledge Center (WKC) is an information resource center or venue that facilitates access to knowledge by providing the following functions:*

- *Traditional library*
- *Digital library*
- *Resource center*
- *Online access point, and*
- *Informal meeting venue*

*In each of the above functions, a WKC provides only the basic necessities and should not be seen or expected to provide what a full service traditional or digital library normally provides. The intent is to establish a venue that brings tools, approaches, and processes that can help improve agricultural extension service delivery.*

*The pictures below show examples of a typical Woreda Knowledge Center.*

### Example of typical Woreda Knowledge Center



## **1.2 Purpose and Objectives**

IPMS technical and financial support for the establishment of WKC's was a part of the overall project endeavor to enhance public extension relevance to market-oriented agricultural development and responsiveness to and effectiveness in serving different producer categories. In particular, WKC's were expected to provide experts and others with easier access to relevant knowledge and information as well as convenient venues to stimulate knowledge sharing culture intended to enhance effectiveness and impact.

IPMS staff at headquarters and the PLW's assisted in the initial setup and organization of the centers, whilst building the capacity of Woreda offices of Agriculture (WoA) for gradual handover. IPMS equipped all ten WKC's with computers, printers, audio-visual equipment (TV sets and DVD players), training and extension materials (textual and audiovisual), and Internet connections. Trainings were conducted for experts of WoA on the use of relevant computer programs and the Internet; and IPMS in partnership with respective offices assisted in improving physical infrastructure and assigning coordinators for smooth operation and management of the Woreda knowledge centers.

This assessment was made with the purpose of documenting project experience and drawing out lessons so as to inform similar initiatives in the future. A survey was carried out to take stock of the status and usefulness of the WKC's. The investigation looked specifically into the extent of utilization as well as users' perceptions of the relevance and effectiveness of the resources and services provided at the centers. This was needed in order to gauge whether IPMS support to the centers has improved access to relevant knowledge and information for the intended target audience.

This report presents the assessment results. The next section, Section II, outlines the methods employed to collect pertinent data and analyze the data. The survey

results are presented and discussed in Section III. The summary of good practices and lessons drawn out from IPMS experience are presented in Section IV, along with concluding remarks.

## **2. Research Method**

The assessment covered all the knowledge centers in the Pilot Learning ‘*woredas*’ (PLWs) in Amhara (Bure, Fogera and Metema), Oromia (Ada’a, Miesso and Goma), Southern Nations, Nationalities and Peoples (Alaba and Dale) and Tigray (Atsbi and Alamata) Regions. The assessment did not cover IPMS-supported knowledge centers in Zonal offices or Regional bureaus of agriculture and research institutes. The survey was conducted during July – November 2010. The assessment included the extent of utilization of the centers, users’ satisfaction with resource relevance and service provision, overall effectiveness, and challenges and opportunities to improve and sustain the WKC.

Semi-structured interviews were the main form of data collection. Users/potential users of the knowledge centers, center coordinators and heads of WoA were the interview respondents. In total, interviews were conducted with 336 individual respondents (Table 1), 10 center coordinators and 6 heads of WoA.

Quantitative data were summarized employing frequency tables, charts and descriptive statistics on users’ satisfaction rating score. Qualitative data were systematically categorized, summarized and discussed. The data analysis was first done at PLW level and then aggregated to show status of the knowledge centers.

Table 1: Categories and number of respondents for the survey

PLW/ category	WoA	Other woreda offices	Students/ researchers	NGOs/ private	Total
Atsbi	60	0	0	0	60
Alamata	28	0	4	0	32
Metema	18	5	1	0	24
Fogera	24	7	2	0	33
Bure	15	6	12	4	37
Ada'a	21	2	0	0	23
Miesso	14	7	0	0	21
Goma*	4	0	0	0	4
Alaba	43	4	1	3	51
Dale	47	0	2	2	51
Total	274	31	22	9	336
	81.5%	9.2%	6.6%	2.7%	100%

\* Goma has been excluded from the analysis due to very low sample size.

### **3. Results and Discussions**

Smallholder farmers and pastoralists need to be assisted in accessing and using relevant information and knowledge in order to adapt and respond successfully to changing opportunities and challenges. The delivery of market-oriented extension services in such contemporary environment require innovative approaches and effective tools for knowledge management, in addition to staff with the required knowledge and skills.

Functional systems and effective management tools are crucial to facilitate multidirectional knowledge flows, which would ultimately determine productivity, profitability and sustainability of smallholder production systems. Accordingly, IPMS has facilitated the establishment of WKC among many other knowledge management tools, processes, and approaches.

The expectation is that functional WKC would improve access to and sharing of knowledge and information among extension staff and between staff, farmers, value chain actors and service providers. This Section is organized under four subheadings, dealing with:

1. The extent of utilization of the WKC,
2. Users' levels of satisfaction with adequacy and relevance of resources and service provision,
3. Perceptions of the overall effectiveness of WKC in better preparing experts to discharge duties, and,
4. Perceived challenges and opportunities to improve and sustain the centers.

### 3.1. Utilization of resources and services at the knowledge centers

#### 3.1.1 Frequency and main purposes of visits to the centers

About 89.6% of the respondents visited the WKC. The primary visitors are staff from WoA (Figure 1). The other visitors included staff of other woreda line offices, graduate students/researchers, and few NGOs staff and individuals from the private sector. Of the total respondents (274) from WoA, 81 % visited the centers, including management team (97%), SMSs or Subject Matter Specialists (90%) and support staff (80%). As expected, SMSs are the most frequent visitors.

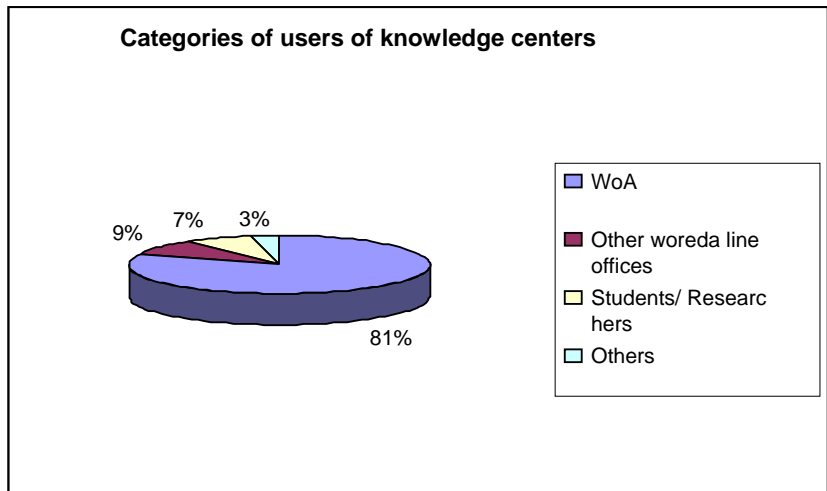


Figure 1: Categories of users

The main purposes for visiting the WKC, in order of importance, are for reading printed materials (83%), computer use, watching TV programs or educational videos and small team/ group meetings (42%). In addition, the knowledge centers were also visited for attending seminars often conducted by graduate fellows of the project and, to a lesser extent, for conducting or attending trainings.

About a half (50.3%) of the respondents made at least two visits to the centers, whereas the remaining half visited the centers either weekly or once a month (Figure 2) during 12 months prior to the survey.

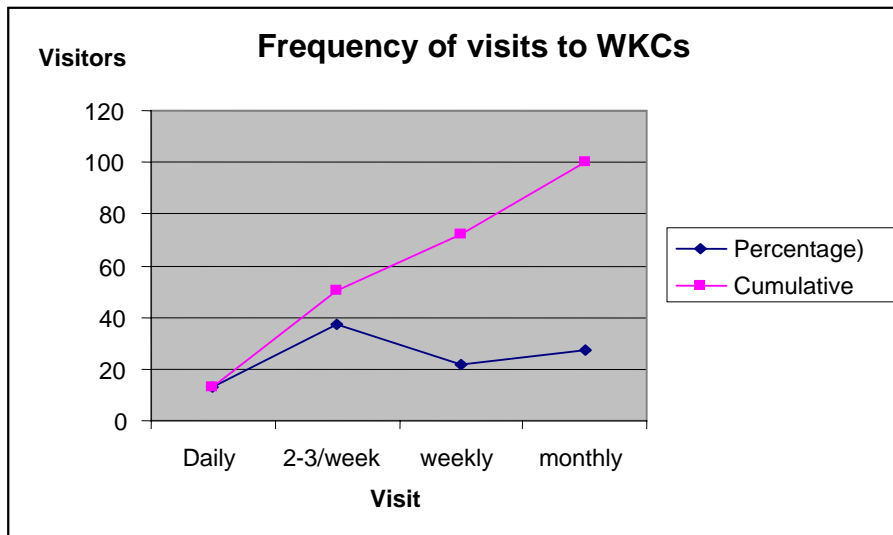


Figure 2: Frequency of visits to WKC's by users.

### ***3.1.2 The extent of resource and service use at the centers***

As earlier mentioned, all ten WKC's were equipped with audio-visual and other ICT equipment such as TV sets and DVD players, telephone lines, personal computers with accessories and printers. All centers were connected to the Internet at the time of the survey, and the recent introduction of CDMA technology has enhanced the connectivity. Enhanced connectivity would encourage wider use of the Internet beyond e-mail, for general browsing and searching specific information relevant to local contexts, needs and challenges.

Figure 3 shows summary of the survey data on the use of audio-visual and IT resources and services at WKC's. About 57%, 85% and 52% of visitors, respectively, watched TV programs and/or educational videos, used computers, and were able to access Internet at the centers.

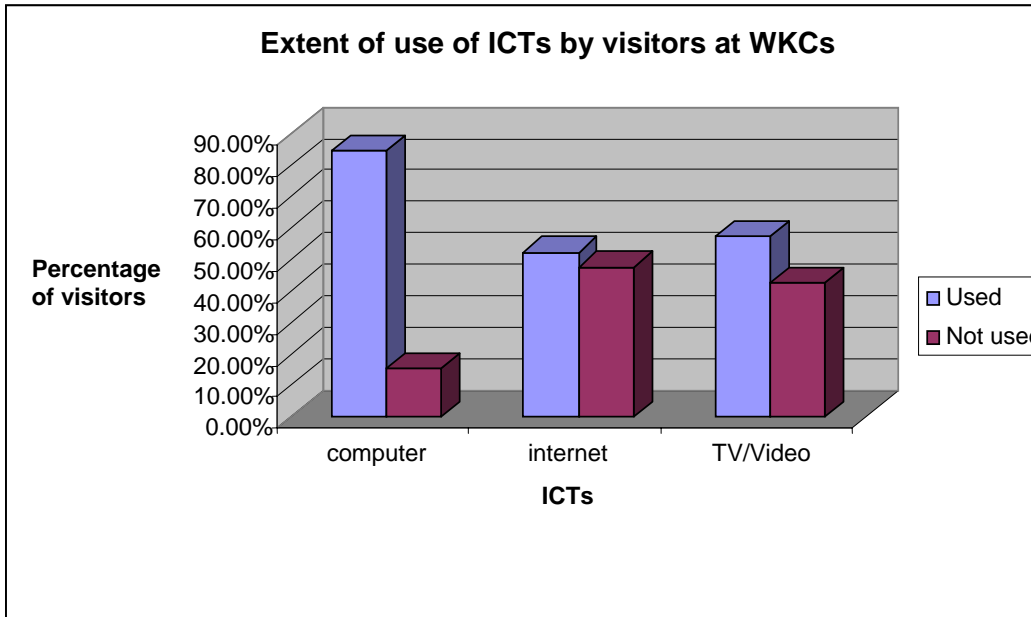


Figure 3: Audio-visual and IT use at WKC's

The survey results also show the proportion of respondents who were able to access computers is high for Ada'a, Fogera and Alamata, low for Atsbi and Metema, and moderate at the remaining WKC's. There was better access to Internet by users in some PLW's (Bure, Fogera, Alaba and Dale) and poor in others (Atsbi, Alamata and Metema). Overall, access to computers and Internet at the time of the survey was very good in Fogera, Alaba and Dale, good in Ada'a and Bure, and in the remaining PLW's access to computers and Internet was either satisfactory (Miesso and Alamata) or poor (Atsbi and Metema). The proportion of the visitors who watched TV programs or educational videos is high in some PLW's (Dale, Alamata, Metema and Fogera) and low in others (Atsbi and Ada'a).

With respect to purpose, computers at the knowledge centers were used both for performing official business and personal activities (Figure 4). Computers were used for official business, such as word processing for preparing work plans and technical reports. Visitors also used the computers at WKC's for self-learning, such as skills development in computer use, reading documents provided on CD's as well for accessing CD-Rom based off-line copies of Ethiopian Agricultural Portal (<http://www.eap.gov.et>). Where accessible, Internet at the WKC's was used by the

visitors for general browsing, reading e-mails and searching for specific information (Figure 4), in order of importance.

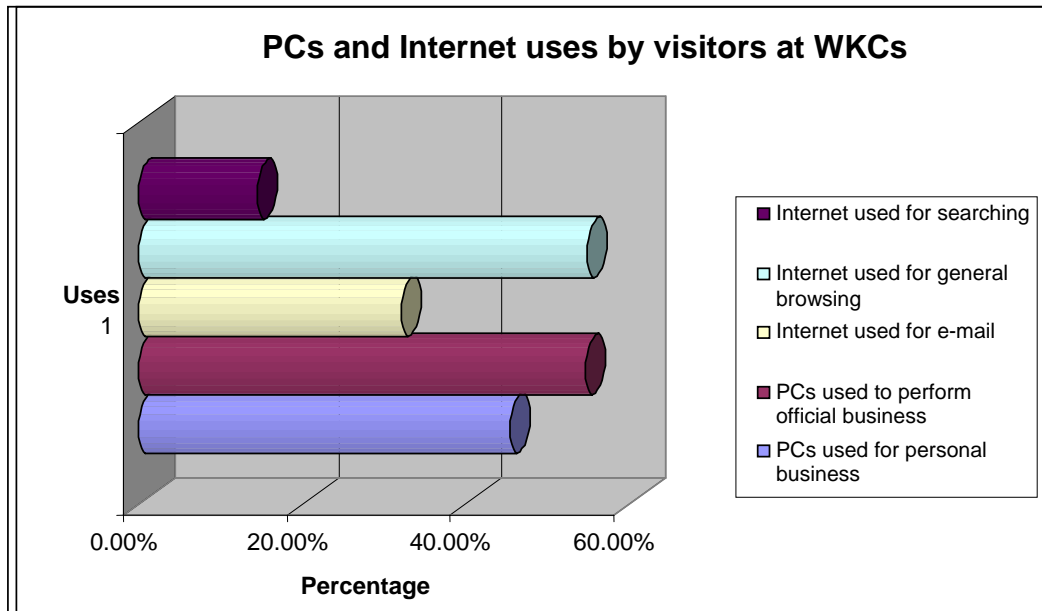


Figure 4: PC and internet use

An MA thesis research conducted earlier (Fraol, 2009)<sup>1</sup> in Alaba, Alamata, Bure and Goma reported more or less similar findings with regard to purposes and extent of audio-visual and IT use at the four WKC's.

<sup>1</sup> Fraol Lemma (2009). Role of ICT in agricultural knowledge management in Ethiopia. MA thesis, Unity University, Addis Ababa, Ethiopia

### ***3.2. Resource and Service Conditions***

The availability of relevant and up to date printed and electronic materials are important for knowledge and information dissemination and sharing and for training as aids. Printed materials available at the knowledge centers include manuals, posters, IPMS working paper series, research reports by graduate students and others, and periodicals. Training materials were developed and distributed on key topics such as participatory market-oriented extension (adapted and translated to Amharic and Afan Oromo), gender and HIV/AIDS analysis tool kits, and guidelines for improved beekeeping, onion seeds production, etc.

In addition to TVs and DVD players, the WKC's received recorded videos in VCD's/DVD's from IPMS. The project produced some of the media products/ contents and got others from partner organizations. The centers were encouraged to use the media when and where relevant to the priority commodities and cross-cutting issues. The media can serve as both independent source of knowledge and information and tools for facilitating communication and knowledge sharing.

The need for adequate access to computers will become important with increasing role of agricultural extension for knowledge and information services. Access to computers by experts at the WoA and other line Woreda offices would facilitate effective documentation and information management. The availability of computers, LCD projectors and other materials is useful for presentations and knowledge sharing. In addition to using telephone and e-mails for communication, Internet can be used to link experts and other service providers to the best sources of expertise and centers of excellence for specialized knowledge and improved inputs/technologies.

With respect to overall resource and service conditions, the respondents who used the WKC's rated their satisfaction levels on scale with values ranging from 1

(dissatisfied) to 4 (very satisfied). To summarize the results, frequencies were expressed in percentages and mean scores were estimated from satisfaction rating scores calculated for each of the PLWs. Table 2 displays summary of the assessment results across PLWs on overall resource and service provision situation at the WKC.

Table 2: Satisfaction of users with resource and service conditions

Users' satisfaction rating/mean scores	Resources at WKC		Service provision	
	Volume and diversity	Relevance	Service hours	Centers' up keeping
Very satisfied	16.6%	28.01%	15.10%	14.05%
Satisfied	53.70%	54.07%	53.4%	66.70%
Somewhat satisfied	27.70%	16.61%	27.54%	18.30%
Dissatisfied	1.95%	1.30%	3.93%	0.98%
Mean score	2.77	2.97	2.81	2.90
Std. Deviation	0.37	0.42	0.35	0.22

### ***3.2.1 Volume, diversity and relevance of resources at WKC***

The typical sources of content for the WKCs are international organizations in the country (e.g. ILRI) and beyond, regional bureaus, regional research institutes and NGOs. Besides, some knowledge centers were able to access materials, other than theses, from higher education, NGOs and the private sector. However, only half of the knowledge centers reported more than one formal linkages (subscriptions, mailing list, etc) with sources of contents.

As shown in Table 2, about 80% of the respondents were at least satisfied with the volume and diversity of resources at their respective knowledge centers. The number of respondents who were satisfied or very satisfied with relevance of the available resources is more or less the same. Earlier study (Fraol, 2009) reported that about 78% and 63% of users found that resources at the WKCs were diversified and relevant, respectively.

However, average figures often mask differences that may exist between PLWs. The mean scores plot (Figure 5) shows indeed some PLWs are in a better position than others. Further, the plot provides additional insight regarding association between volume and diversity of available resources and relevance. The availability of high volume of diverse resources seems to be important to enhance capacity of knowledge centers to cater to diverse needs.

Mean score (satisfaction rating)

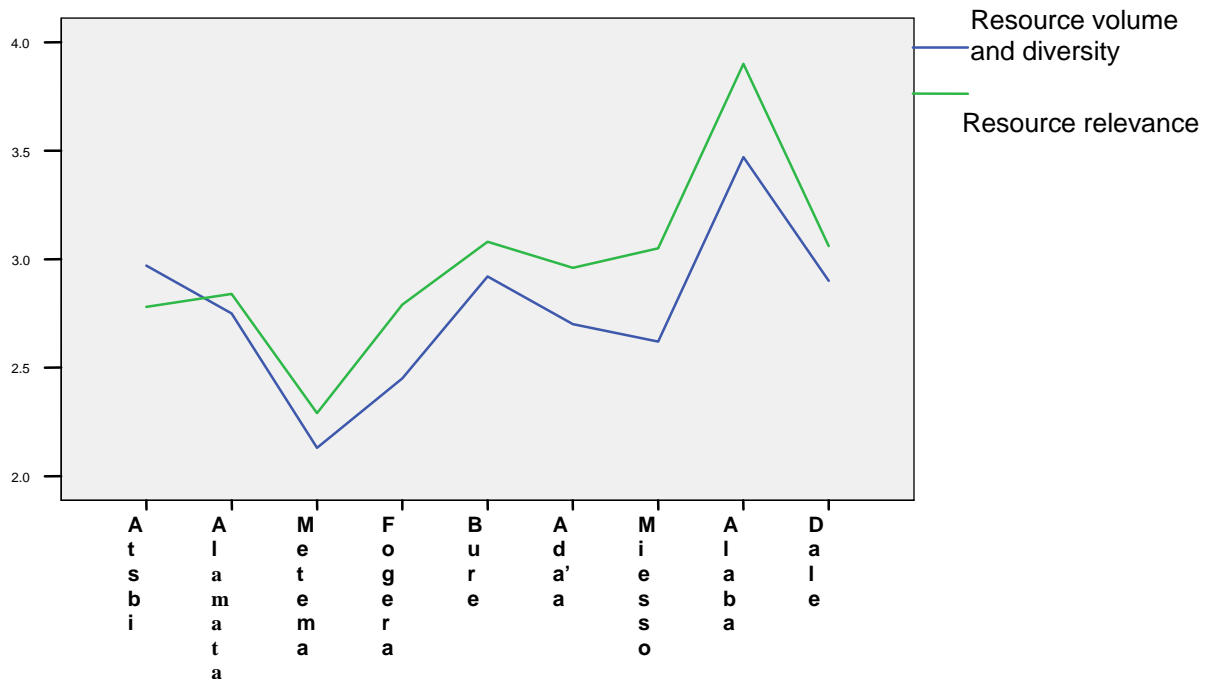


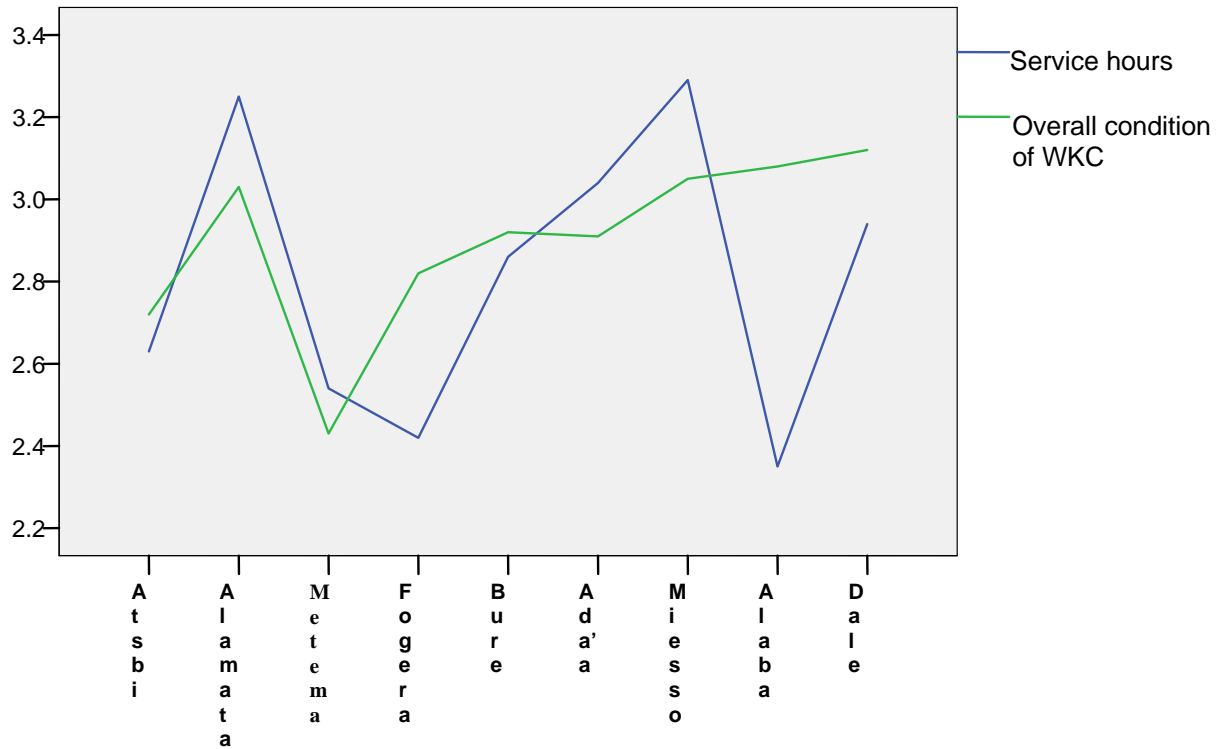
Figure 5: Users' satisfaction with availability of resources and their relevance

### 3.2.2 Service provision and up keeping of the centers

In most of the PLWs, the majority of respondents (63- 96%) preferred the service at the WKC to be provided during business hours. However, the majority of respondents from Ada'a (61%), Alaba (62%) and all of the respondents from Atsbi preferred the service to be provided after office hours. In Alamata, equal number of respondents preferred the service to be provided either during business hours (44%) or after (44%).

Accordingly, more than two-third of users of the WKC in most of the PLWs reported that they were satisfied or very satisfied with the existing service provision, that is, during office hours (Table 2). The two exceptions are Alaba and Fogera (Figure 6) where, respectively, only 37.3% and 48.5% were satisfied with service provision during business hours.

Mean Score (satisfaction rating)



Figure

Figure 6: Users' satisfaction with service hour and up keeping of WKC

Whilst in Alaba, 19 (37.3%) and 32 (62.7%) out of 51 respondents preferred to visit the center, respectively, during office hours and after office, the reason for less satisfaction with service provision during office hours in Fogera is not clear. Informal discussions with key informants indicated that some heads of WoA discourage visits to WKC by staff during office hours. This might have created the divergence between individuals' preferences and the satisfaction rating results.

### 3.3. Perceptions and Views on Effectiveness of the WKC

The survey and analysis results show that about 94% of the respondent users (experts and others) found resources and services at the WKC relevant and useful in preparing them to discharge their duties better. The information from center coordinators and heads of WoA confirms perceptions of individual respondents. On the other hand, the non-users and less frequent users identified as constraints factors such as availability of limited copies of printed materials, limited computers, intermittent Internet access at the knowledge centers, skills, and distance (for offices other than WoA).

Opened-ended questions were included in the survey instruments to elicit views of users, coordinators as well as heads of WoA about overall effectiveness of the WKC. Responses were systematically categorized and summarized after the survey, and the results are as displayed in Table 3.

Table 3: Users' views on how the WKC benefited them

How did the experts benefited from resources/ services at WKC	Number of times mentioned
Improved skills (learning by using) in computer and Internet use	158
Able to use computer for reporting	37
Able to use e-mail for communication	127
Able to access relevant reference materials	222
Able to watch videos on technical (knowledge application) training	41
Able to attend at the centers seminars and small team meetings/works	36

Access to computers and Internet and enhanced skills to use the computers, availability of printed and AV materials improved access by users to relevant knowledge and information. The centers also served as venues for knowledge sharing (Table 3). Users of the WKC reported that they had acquired 'new' technical information such as on crop/livestock diseases, animal breeding, inorganic

fertilizers use, and soil and water conservation, and learnt new/improved production, irrigation and pest management as well as improved management practices relating to market-oriented fattening and dairying. Further, the existence of functional knowledge center, according experts of WoA, increased productive use of office hours.

In general, the majority of respondents as well as the key informants (center coordinators and office heads) were of the opinion that resources and services at the WKC had enabled experts to use business or office hours more productively. As a result, some of the experts were able to develop manuals for development agents, and others provided better training and advice to help solve practical problems.

### **3.4. Challenges and opportunities to improve and sustain WKC**

Some key questions were included in the interview instrument for respondents (users) and guides for key informants (coordinators and office heads) in order to elicit views about key challenges as well as opportunities to improving and ensuring sustainable use of the WKC. The responses were systematically categorized and summarized after the survey. This section presents and discusses the survey results on perceived challenges and opportunities.

The challenges to sustain the centers, as perceived by the respondents, can be categorized in to four:

1. Resources to cover operational expenses including maintenance, utility and cost of skilled human resource for operation and management of the centers
2. Ensuring good center management practice after IPMS support through staff at PLWs ceases
3. Sustaining and creating linkages and networks with relevant sources of materials (textual and audio-visuals) and graduate programs to ensure continuous access to up-to-date materials and knowledge sharing, and
4. Inadequate resource commitment and attention by WoA to the knowledge centers and their utilization by staff (Figure 7).

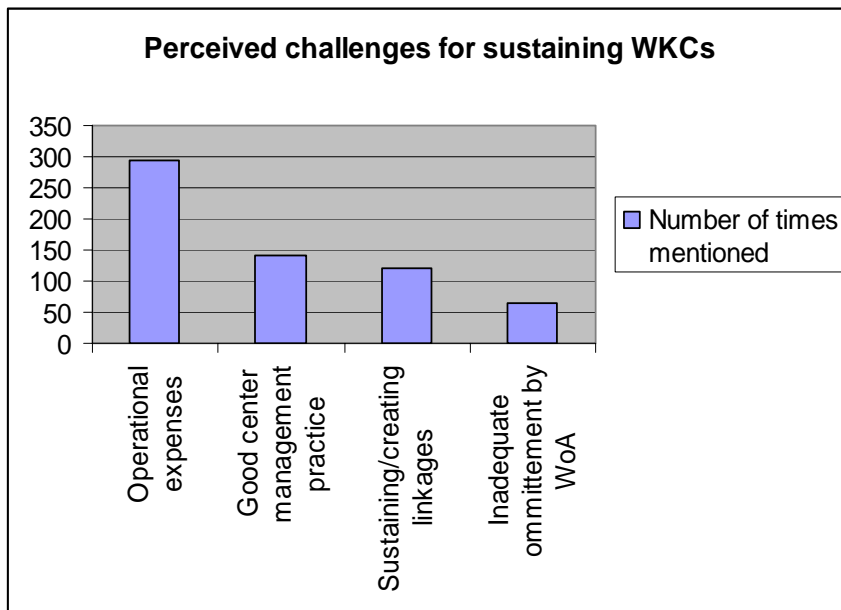


Figure 7: Perceptions on challenges to sustain WKC's

Whilst a quarter of the respondents (66) identified inadequate commitment of resource and lack of attention by WoA as possible challenges, the remaining majority were optimistic. According to the later, the intervention by IPMS has increased interest and stimulated demand among experts for continuity of the knowledge centers and services. Besides, both the respondents and key informants observed that the recognition of the value of such a service by woreda administrations as well as offices, in particular WoA, had increased over time. As a result, it was perceived that the administration would allocate the required budget and WoA would take the lead, assign permanent ICT person, and allow staff to use the centers (Figure 8). Some of the key informants indicated the existence of vacant positions for ICT personnel in the planning unit of WoA, as an opportunity that could be capitalized on.

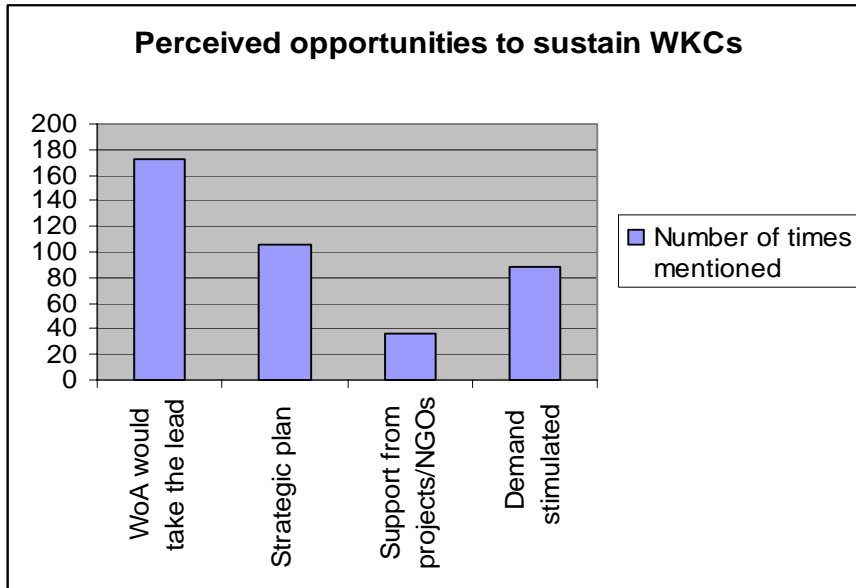


Figure 8: Perceptions on opportunities to sustain WKC's

Strategic plan (financial and business) was suggested as the second opportunity to be considered to ensure better operation and management of the centers. In this connection, some respondents suggested the possibility of contribution by users (like club membership fees) to cover part of operation expenses of WKC's.

The possibility of mobilizing support from other projects and NGOs was also underlined as an opportunity, given increasing interest in and demand for knowledge management and related services by target users and development partners alike.

#### **4 Conclusions and Recommendations**

Enhancing agricultural knowledge-base and capacity to access and productively use knowledge is increasingly becoming crucial for achieving market-oriented and sustainable agricultural development. Functional systems and effective management tools are important to facilitate multidirectional knowledge flows. Accordingly, IPMS facilitated the establishment of WKC among many other knowledge management tools, processes, and approaches. The centers were expected to provide experts and others with easier access to relevant knowledge and information as well as convenient venues to stimulate knowledge sharing culture intended to enhance effectiveness and impact.

The established knowledge centers integrated application of ICT tools. This was considered to be important to capitalize on infrastructure investment as well as to complement effort of the GoE to harness advances in ICTs for development. In Ethiopia, use of ICT tools for agriculture and rural development holds great promise for the future, once the countries basic infrastructure is adequately developed.

The survey and analysis results show that the WKCs are providing experts and others with better access to relevant knowledge and information. About 94% of the users (experts and others) found the resources and services at WKC relevant and useful in preparing them better to discharging their duties. Access to computers and Internet and enhanced skills to use the computers, availability of printed and AV materials improved access by users to relevant knowledge and information. The centers also served as venues for knowledge sharing, including hosting seminars conducted by IPMS graduate fellows.

The WKCs users were able to more productively use business or office hours, and to acquire 'new' technical information and learn new/improved management

practices. As a result, some of the experts developed manuals for development agents, and others provided better training and advice to the agents to help in solving practical farm-management problems.

The IPMS project has helped to develop recognition and appreciation of the value of knowledge, awareness of practical knowledge management tools, methods and processes, and stimulated the demand for knowledge and information and related services.

To realize full potential of the ICT tools found in Woreda knowledge centers, continuous attention needs to be given to capacity building, systematization, and diversification of the applications. Further capacity strengthening is crucial to ensure the resources and services are responsive to specific local needs, are utilized effectively, and can be sustained after project funding ceases.

Besides assigning fulltime knowledge center coordinators and allocation of the required budget for the WoA to cover operational costs, establishing users club with membership fee, and expanding the user-base, service diversification and joint ownership with relevant line offices on cost sharing basis are options that need to be explored.

Ensuring continuous access to relevant and up-to-date contents for the WKC calls for strengthening/creating formal linkages and networks with relevant sources of knowledge and information within and beyond respective regions. These encompass research institutes, higher education, development projects, market and weather information services, and the NGO community.

The suggested knowledge center user club members can be encouraged to contribute resources obtained during participation in trainings and through other means to the common pool. Further, experts of the WoA and other line offices can

develop locally relevant (textual and audiovisual) contents with some additional support for capacity development.

To sustain and enhance good operation and management practices of the knowledge centers, developing and distributing good practice guides and/or operation manuals, training workshop for enhancing awareness, and establishing /strengthening 'community of practice' consisting similar knowledge centers to share experience and materials will be beneficial.

Perhaps capitalizing on the increased recognition and appreciation of the value of knowledge, and championing the concept of knowledge management in general and WKC in particular by leaders of the PLWs will greatly enhance sustainability and usage.

Finally, the establishment of WKC and related interventions to strengthen knowledge management are intended to enhance extension and other support services, that is, to ensure better (quality), timely, and cost-effective service delivery. Although at an early stage, such changes are beginning to appear in some PLWs and the future looks promising for realization of such transformations.