



Need Assessment Report for livelihood content

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Need Assessment Report for livelihood content

D.Net has conducted a need assessment survey during 2003 (Annex 1) based on which D.Net has been developing livelihood content suitable for rural community. D.Net also established 4 *Pallitathya Kendra* (visit www.pallitathya.org.bd for detail) which delivers that content to the rural community. D.Net also introduced the concept of infomediary and mobile lady for content dissemination. During operational period of 18 months (October 2005 to March 2007) *Pallitathya Kendras* provided about 5000 information along with other ancillary services. This report is prepared based on the 18 months service provided from 4 *Pallitathya Kendras*.

Health related information services were top information category which people took 45.54% from 4 *Pallitathya Kendras*. People took 22.97 percent services through content base and 19.07 percent services through Helpline. We can observe that about half of the agricultural services delivered through helpline where expert provides their advice directly. Second highest category was education related information (17.4 percent). Educational services were delivered 5.87 percent from content base 5.06 percent through helpline and 3.68 percent using the Internet. Helpline and internet based information access is high in this category as students used it for SSC and HSC result and Mark sheet collection. Agricultural information is third highest information category which rural people took 16.47 percent among which 9.74 percent was from content base and 5.28 percent through helpline. Legal and human rights related information has 9.16 percent demands. Information on “non farm economic activities” also has 4.13 percent demand. Other categories have minor demand but it was useful to develop a critical mass of content. Recently infomediaries received demand for indigenous content and content on legends of our countries who inspires us and we can follow them to success in our life. Table 1 shows information need of the rural communities based on information delivered from 4 *Pallitathya Kendras*.

Table 1: Category wise Information Demand

Information category	Content based information	Helpline information	Video information	Internet browsing	Campaign	Total
Health	22.97	19.07	0.69	0	2.81	45.54
Education	5.87	5.06	0	3.68	2.79	17.4
Agriculture	9.74	5.28	0	0	1.45	16.47
Legal and human rights	1.84	3.64	0.09	0	3.59	9.16
Non farm activities	1.77	0.32	2.03	0	0	4.13
Directory	1.41	1.41	0	0	0	2.81
Awareness	0.3	0.06	1.93	0	0	2.29
Appropriate technology	1.15	0.06	0	0	0	1.21
Others	0	0.3	0	0.06	0.09	0.45
Disaster management	0.37	0	0	0	0	0.37
Rural employment	0.06	0.09	0	0	0	0.15
Total	45.48	35.3	4.74	3.74	10.74	100

**ACCESS TO INFORMATION
FOR IMPROVEMENT OF
RURAL LIVELIHOOD**

Report Prepared by

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Introduction

Access to information has been neglected as an individual issue in the paradigm of access to resources, which is essential for poverty alleviation. ICTs brought new opportunities to accelerate the efforts of poverty alleviation through integration of ICT in the access to information problems. There are many approaches around to link ICTs [especially the Internet] with poverty alleviation and livelihood improvement. Majority of the approaches suffers from the problem of mechanical combination of ICT and problems at the grass-root level. The problems of the current approaches and programs are: they focus only on the Internet ignoring the strengths of other channels of information delivery, they ignore that the access to Internet for alien content cannot help the rural livelihood concerns, and they ignore lack of overt resources by the target group. Majority of the efforts lack sustainability and viability and can not function without sustained financial and technical support. One fundamental weakness of the existing ICT models is that they perceive rural people to be only the information receivers, not suppliers.

Considering all this circumstances in mind D.Net has undertaken a need assessment research on ***Access to Information for Improving Rural Livelihood***. It is a first step towards the systems approach in addressing the access to information problem for the rural poor in a sustainable way through a viable business model. The success of the first phase is encouraging us to go for the next phases, where experiment of a business model is a key component. The study of information need identification was supported by the Research Initiatives, Bangladesh (RIB).

Project Idea: Full Cycle of Sustainable Access to Information for Rural Livelihood

The objective of the project is to ensure ICT (including Internet) based access to information for the improvement of rural livelihood and poverty alleviation. If we start from the end, the project envisages to experiment a village information centre (Pallitathya Kendra), owned by the rural poor people, with a set of services for the rural people. A number of village experts are planned to run the centre as “infomediary”, trained by the project team. The project plans to experiment a business model of the centre, which tries to combine various types of necessary services demanded by the rural people and earn money to cover both fixed cost and variable cost over a certain period. The centre is planned to be backed by a content development and update centre, which develops the content necessary for the rural livelihood activities. If we divide all tasks sequentially, the project gets shape with four phases to be implemented gradually.

Conceptual Framework

One of the fundamentals of the conceptual framework for access to information for rural livelihood understood ***information needs for the poor by the poor***. In devising approaches and tools for improvement of rural livelihood and poverty alleviation generally top-down method provides wrong signals and leads towards wastage of resources. Thus the identification of information needs is to be conducted with a *bottom-up* approach.

Broad Objective of the full cycle of the research is to ensure ICT (including Internet) based access to information for the improvement of rural livelihood and poverty alleviation.

The objective of the phase I was to understand and identify information needs and effective delivery channels for the rural livelihood. A special emphasis was given to the information needs of the rural poverty groups.

The research components of phase I was as follows:

- a. Understanding information needs of the rural community in Bangladesh
- b. Assessment of Effectiveness of Existing Institutions Supplying Information in the Rural Areas and Identification of gap
- c. Understanding Supply Perspective Of Rural Livelihood Information
- d. Development of taxonomy of Contents
- e. Development of test contents for testing the effectiveness of the channels
- f. Content Experimentation For Local Conditionality

Methodology of the research

Initially ten areas through out the country were selected using some predefined criteria. The criterion are diversity of economic activities, distance from the town centers, access to electricity, access to telephony, transport infrastructure, level of education of the population, availability of social infrastructure, availability of NGO etc. After visiting those villages five villages were finally selected for through investigation. The selected villages and their selection criterions are given in the following table:

<p>Khetuapara Agriculture: potato, tobacco, rice 21 kilometers from the Nilphamari Sadar No electricity but available in neighboring village Metallic and non-metallic road inside the village Good transport facilities; Bus, rickshaw, van Moderate NGO activities</p>	<p>Durlavpur Agriculture: betel leaf, pulses, jute, sugarcane 9 kilometer from the Jhenaidah Sadar Electricity available Non-metallic road inside the village Good transport facilities; Bus, rickshaw, van Moderate NGO activities</p>
<p>Modhya Holdibunia Agriculture: shrimp, rice 6 kilometer from the Mongla Port Electricity available Metallic and semi-metallic road inside the village Bad transport facilities; Ferry, motor cycle, rickshaw, van Moderate NGO activities</p>	<p>Raicha Thali Para Agriculture: Vegetable, rice 6 kilometers from the District headquarters Electricity available Metallic and Semi-metallic Bus, scooter Modest NGO activities</p>
<p>Charshamaya Agriculture: Fish (95% fisherman) 4 kilometers from the District headquarters Electricity available Rickshaw, boat, bi-cycle Moderate NGO activities</p>	

In the first round, each of the villages selected was studied separately. The field research used the well known PRA tools and techniques, of course, customized according to the requirements of this particular research. Based on the findings of the first round field research village report was prepared for each

village. In the second round, the same teams conducted a second round fieldwork in the same villages mainly to share the findings from the villages, to collect additional information and to test web based contents. Based on the findings of the filed research web based contents for selected issues have been developed and tested in the filed for suitability. For developing the contents several institutions have been visited by the content team and content development materials have been collected. In addition to identification of information needs, this round addressed the issues related to villagers' willingness to pay for the information required by them. The findings of the second round field work were analyzed and content test report has been prepared. In the third round, content validation was performed in each village for finalizing the shape of the web portal name www.pallitathya.org.

Research Findings

Village and Demographic Characteristics

Khetuapara: Khetuapara is a village located in Bangmari union under Nilphamari Sadar Upazila. The population of the village is 6070. The main occupation of the villagers is agriculture. Other occupations are lifting up sands, textile mill labour, business, day labor etc. Only 29% of the people are literate.

Durlavpur: Durlavpur is a village of Chandpur union, which is located in Harinakundu upazila under the district of Jhinaidaha. The population of the village is 1500. All are Muslim. The occupation of the villagers is agriculture, service, business etc. Main agricultural outputs are Betel-nut and betel leaf, which have been their hundred years old tradition and still almost every household have at least one "Pan Baraj": special place for cultivating betel leaf.

Madhya Holdibunia: Madhya Holdibunia is a village of Chilla union of Mongla Upazilla under Bagerhat district. The population of the village is 1780. Majority of habitants of this village are Hindu. The principle occupation of the villagers is shrimp cultivation. Maximum ponds of this village are salty and used only for taking bath. The village is congested habitation. The rate of literacy is high in the village (70%).

Reicha Tholipara: Reicha Tholipara is a village of Bandarban Sadar upazilla under the Bandarban district. The population of the village is 590.

Charsamaya: Charsamaya is a village of Charsamaya union of Bhola Sadar Thana under Bhola district. The population of the village is 1100.

Major Economic Activities of the villagers

Major economic activities that have been identified in the researched field are-

- **Agriculture:** Agriculture is the major activity in all villages. However, farming pattern varies from village to village.

- **Fisheries:** Pond fisheries provide livelihood to many rural land owners. Many rural people cultivate fish in ponds on contract basis by sharing the production.
- **Livestock:** In the villages under investigation, goat rearing, cattle farming for milk and meat are in rise. Women are increasingly active in goat rearing in the areas.
- **Forestry:** Social forestry programs are popular in the villages. The majority of villagers are owners of thousands of trees planted by the rural road side.
- **Non-farm activities:** For many of the poor, who have little or no access to land, their primary asset is their hands.
 - **Day-laborer:** Most of the poor villagers are mainly day-laborers. They do physical labor in agriculture field. The day laborers are involved in non-farm activities, where possible.
 - **Farm input trading:** As the mechanization of agriculture increased, to solve the problem of scale, in villages autonomously an indigenous input market emerged, where a farmer can hire a mechanical plough, spray machine for pesticide control, crop harvesting machines etc.
- **Business:** Basically middle class and upper class people are engaged in various trades, generally trade of the agricultural outputs and inputs. Grocery shops are now common in villages.
- **Service:** Middle class people do service in different offices, schools and factories.

Rural Power Structure

The institutional players are much more diverse, and there are many more. Earlier, formal structures were limited to a school, a UP and a tea stall. The teacher doubled as UP secretary and a NGO worker might have visited the village regularly. Today, growth and improved linkages to the outside world have generated a richer and more dynamic institutional life. The villages now host small business enterprises and traders as well as traditional shops and tea stalls. Education is delivered by *madrassah*, government school, NGO-run school, and private or community schools. A similar range of providers serves health needs. Agricultural extension is most often provided via advice from the private-sector supplier, followed by the NGO and much less frequently the block supervisor. From a situation where there was an inter-face between government administration as an occasional visitor and informal institutions, there is now a complex set of institutional forms and relationships.

Infrastructure and Communication Network

Physical infrastructure is expanding, most of the villages enjoy rural electricity in their whole territory or partially. Most of the villages (except Hodibunia and Charshamaya) have all types of roads, metallic, non-metallic. Electricity is available within the village or it is available nearby. Many villages have mobile telephone network and have access to telephony.

Understanding Information Needs of the Rural Community

The conventional wisdom is that the rural masses do not know what they need. The information need is determined from an urban perspective, which often does not reflect the reality. In the research conducted the local community constituted a part of the research team and played a major role in

identification of information needs. It is important to understand the perception of the target people about their information needs and scope for availing the existing alternatives to access the information. The basic objective of the project is, therefore, to ascertain the need for information and examine the suitability of different channels for dissemination of information among the rural community.

The major five categories of information requirements are - agriculture, health, legal rights, education and market information. Besides these five categories the participatory process helped to identify two more categories of information that the villagers seek: employment related information and information for awareness rising.

Agriculture

- Information on different training on agriculture production process which include training type, place, duration, requirement to participate, cost, scope of funding, limitation of number of participants, details of training providing institution etc.
- Selection of crop based on soil type including types of soil, soil testing facilities available, advantage and necessity of soil testing, available alternatives [crop rotation], field preparation, seed sources, irrigation requirement, pest control procedure, fertilizer usage, harvesting time, yield and cost information etc.
- Information and knowledge on modern technology, seed selection and quality assurance, Seed type and dependence on seeds, Irrigation, Fertilizer usage, Crop processing, Crop preservation, Seed preservation, Treatment of soil etc.
- Information on different cropping system and cultivation process, Multiple cropping [crop/fishing combination], Commercial cultivation
- Information and general criterion on different agriculture insects and diseases, Symptom identification, Disease identification, Treatment, Choice of remedy [chemical or biological], Quality of chemicals [pesticide /herbicide], Chemical usage norms and procedures, Health precaution
- Fertilizer information, Type and usage for crop and soil, Sources, Price, Government support programme
- Irrigation, Irrigation requirement by crop, soil and season, Irrigation input market information, Price, Duration and adequacy, Government support [fuel subsidy and others]
- Flood, Flood forecast information, Flood control [community initiative], Actions during flood [agriculture and health and safety], Post flood activities, Government support [seed, fuel, cash etc]
- Drought, Selection of crop for drought prone zone, Irrigation, Post drought activities
- Seed, Selection of seed, Sources, Quality assurance, Price, Sustainability [dependence on seed], Seed preservation system, Copy right issues, Varieties control and preservation, Seed production as a business, Indigenous methods of seed production and preservation, Complain against *Sufala* seed of BRAC
- Commercial agriculture, Contract farming, Support institution
- Agri-technology, Crop processing, Pest control, Cultivation, Crop processing [rice husking], Preservation, Shrimp production and disease control, Pond fisheries and diseases control

- Fisheries, Location of hatcheries, Price of fry, Quality assurance, Disease control, Productivity improvement, Pond preparation and maintenance, Feeding, Open water fish farming, Fish marketing, Shrimp cultivation in fresh water, Virus control of shrimp
- Livestock and Poultry, Commercial farming information, Disease control, Feeding, Price information, Semen Sources, Quality assurance
- Micro-finance, Alternative sources of credit, Terms and conditions, Micro-finance regulation
- Salinity of soil, Remedy, Water logging, Awareness, Cropping in saline lands
- Agriculture Forward Linkage, Storage facilities available, Price, Regulations to protect rights of poor farmers, Investment opportunities in development of storage facilities
- Market price information, By product, By location. Periodicity: daily, weekly monthly, seasonally, Price comparison by location for each product, Wholesale, Distance of market, Transportation cost, Storage facilities
- Information for Existing Information Providers, Linkage with major research institutions in Bangladesh

Health

- Obstetrics and general care that includes pre-natal care, post-natal care, Actions in emergency, Precaution, Nutrition for pregnant mother, Husband's responsibility during pregnancy, Information for *Dai*, Training information for *Dai*, Information about disease and its symptom etc.
- Diagnostics and prescription, Skin diseases through digital picture, Ophthalmological diagnostics [where applicable] through digital picture
- Adolescent awareness like Precaution from unsafe sex, HIV/AIDS and safety, Information about STDs and precaution, awareness about sex
- Information on Malnutrition including Reasons of malnutrition, Alternative sources of nutrition according to income [organic and inorganic], Scientific comparison of nutrition value of food
- Indigenous and herbal treatment, Introduction to herbs and shrubs and their medicinal value, Usage of herbs and shrubs, Precaution, Sources of herbs and shrubs, Commercial production of herbs and shrubs, processing and marketing of herbal medicine, licensing and patenting
- Public health service, availability and location of government health care institutions, rights and privileges of the patients, feedback system
- Health Directory, types of services, availability of facilities, charges, location, transportation, appointment, referral system, centre for rehabilitation from drug addiction
- Information on Sanitation, need for sanitation, sources of sanitary system, cost, government and NGO support available, alternative technology and cost
- Health Awareness on arsenic, heart disease, stroke, malaria, HIV/AIDS, Cancer [cervical, leuchomia, Brest, prostate gland, bone, lung], Mitigation centres, Drug addition etc.

Human Rights, Legal

- Family law, Articles and explanations, Information regarding the institutions providing legal aid, Location and conditionality of services, Availability of on-line services
- Accountability of Government officials, Job description and responsibility of various government officials at different levels, System of complain, Legal coverage, Protection from misguidance by lawyers

- Information on government relief and subsidies, Location of distribution, Quantity to be distributed per head
- Property Rights, Land record system
- Taxation, land tax payment, system of calculation of tax
- Human Rights directory, location, services, area of coverage, information regarding entitlement
- Marriage Registration System, Location, fees, legal coverage
- Awareness, Rights and obligations of citizens
- Legal Directory, location of courts, competence of courts, services, area of coverage

Education

- Admission related information, Admission information of universities, colleges, Results of admission test, Admission forms on-line, Scholarship and stipends available for higher studies
- Syllabus, By subject, by university, by year
- Preparation of exams, Suggestions, Coaching facilities
- Residence information, Availability of residential facilities, Cost, Location, Requirement, Quality and security
- Vocational education, Awareness for vocation education, Location and facilities
- Privilege, Ethnic preferences in education system, availability

Supply Side Taxonomy

As was mentioned earlier general perception is that rural community is only the information recipient. The project envisages bringing the rural community into supply perspective. The research activity attempted to identify specific areas and types of information which is possible to generate from the rural areas which are useful to various target groups. Among others initially socio-economic database of village, information about human rights practices in the community, agricultural production pattern information, rural livelihood pattern, biodiversity, rural technology, rural “gunijan” (eminent person), rural history, information map, rural employment opportunity have been identified. The taxonomy of contents to be supplied from the villages have been presented in the table below.

Information area	Description	User groups
Village database	<ul style="list-style-type: none"> ▪ demographic information of the village ▪ information on people’s wealth and resources ▪ health information ▪ birth and death rates ▪ production pattern and capacity 	<ul style="list-style-type: none"> ▪ Researchers ▪ Think tanks ▪ Planners
Indigenous knowledge	<ul style="list-style-type: none"> ▪ Indigenous knowledge on local level planning ▪ agriculture production ▪ herbal treatment 	<ul style="list-style-type: none"> ▪ Development practitioners ▪ Local government authority
Law and legal information for	<ul style="list-style-type: none"> ▪ Information on human right violation 	<ul style="list-style-type: none"> ▪ Legal right and human right

human right organizations	<ul style="list-style-type: none"> ▪ Different local practices that hamper people's life 	organizations
Rural information for journalists	<ul style="list-style-type: none"> ▪ Local and rural news ▪ Information on different innovative rural projects ▪ Rural weather, health and other incidental conditions. 	<ul style="list-style-type: none"> ▪ Journalist of different local and national newspaper
Business opportunity	<ul style="list-style-type: none"> ▪ Information on different village producers groups like handicraft group ▪ Seasonal business opportunity like jute bags in harvesting season. 	<ul style="list-style-type: none"> ▪ Local and national NGOs ▪ Local business people

Institutions and Sources of Information Functioning in Rural Bangladesh

During the research period villagers have identified several channels of information delivery for improving and maintaining rural livelihood. Although the existing channels are the only source of information in many instances, the villagers are not always satisfied and their effectiveness is questioned by the villagers. The existing channels can be categorized by sectors.

i. Agriculture

In agriculture most of the information delivery channels are farmers themselves and their knowledge heritage. From their long experience in field they become champion in adopting their indigenous knowledge and implementing that knowledge. Along with the indigenous knowledge, several government and non government agencies make significant impact on information delivery through various channels in agriculture sector. The key players of information supply in rural areas are block supervisors, Upozilla Agriculture Officer, Upozilla Fishery Officer, Upozilla Livestock Officer, Seeds and Fertilizer Shops, Workshop and Parts Shops Village Doctors or Kabiraj, different NGOs etc.

ii. Health

Like in agriculture rural people use their indigenous knowledge in treating many diseases. It is also significant that villagers depend on *Fakir, Oja* etc. for their treatment. Although villagers become more aware regarding the effectiveness of such process, they are not always able to meet the expenses of treatment by a doctor or a specialized health worker. The existing information delivery channels are Village Doctor (Polli Chikitshak, Parents and Close Relatives, Government and NGOs Health Centers, Electronic Media like Television and Radio, Cultural activities like Local Drama, Health Worker, Imam of Mosque and other Social Responsible Persons, pharmacy etc.

iii. Education

Information on education was major demand by the students as well as teachers. It is argued that village students do not get access to higher education mainly due to their lack in getting upgraded and timely information. The existing information providers are Existing Education Institutions, Thana Shikkha Kormokarta, Other Students of neighbouring schools, Outside Visitors to the Village, Media etc.

iv. Legal Issues

Major legal support providers in rural areas are Local Government (Union Parishad), Media, Imams and Kazi, Local NGOs etc.

Effectiveness of Information Delivery and Gap

Having the taxonomy of information sources and the channels of delivery by the institutions the research team got insights about their effectiveness through focus group discussion and interview of key informants. In the information need identification research several information delivery channels were interviewed. During that interview their strength and limitations were identified.

Agriculture extension department can not properly serve the need of farmers due to, *inter alia*, their impractical distribution of area coverage. Serving 1500-2000 families by one Block Supervisor is an impossible job. Soil testing is another important factor for farmers. All the Agriculture extension offices supposed to have soil testing equipments. But unfortunately this facility does not exist in those villages. It is also found that Block Supervisors have solutions of different problems that farmers often faces, but they do not or can not delivery those information effectively due to their chronic absence in the workplace. It is also found that Block Supervisors do not always get the updated information in due time from the Department of Agricultural Extension (DAE).

The fertilizer and insecticide seller provide necessary treatment to the farmers. If necessary, seller does not contact with Agriculture Extension Officer for further assistance. Unfortunately this group of seller are rarely trained. Some of them have received training from pesticide and herbicide companies.

Small and marginal farmers have little or no communication with market. The wholesalers or middlemen purchase the crops from farmers and then sell at a competitive price at market. Some middlemen have pre-settlement with storekeepers and thus small farmers loose this opportunity. The market price fluctuates often and farmers receive this information later by which they deprive from justified price. The communication system with market is not effective.

Fishery Office another important place where farmers are supposed to get training and advice when necessary. Unfortunately the participants for training are nominated by local UP Chairman and naturally the targeted population lose the opportunity. While the research team consults with fishery officers regarding the problems exist in different villages, it was found that they are able to solve almost all the problems. But farmers do not get the information due to lack of initiative from the both sides.

Villagers used to visit livestock officer's place for their livestock diseases. This government department is supposed to provide treatment and medicine at free-of cost. Unfortunately, they do not have sufficient stock of medicine and do not inform the villagers about that. With different expectation villagers come to them back to their home in empty hand. In some places doctors sell different vaccines that villagers are supposed to get free of cost. Villagers do not know anything about this. Due to this, people's trust on this government department is reducing day by day. This department does not have sufficient manpower to serve for the whole community. They are also supposed to arrange consultation meeting with villagers of every village. Due to their insufficient manpower they fail to do so.

Family Welfare Center is established by government to ensure mother and child health care. In Durlavpur of Jhenaidah we have found that no medical officer comes to this center for last one year since its establishment. Medicines and other medical instruments are not available in those medical welfare centers.

The role of Union Parishad Chairman is very much crucial in village life. Villagers often come to him with their day to day problems. Chairman is not entitled to fine 10,000 Taka through a court system, but it happens often – due to the lack of knowledge by the victims and often ignorance of the chairman themselves. Poor people can not send their complain to the court as Chairman always work in favour of influential person of the locality. People also come to the chairman during their financial crisis. But Chairman takes this opportunity to charge higher interest upon poor villagers. Villagers do not even know how they are deprived.

Content Experimentation for Local Conditionalities

Having identified the information needs and taxonomy of contents, it was important to perform a cognitive analysis for suitability of the contents from the perspective of rural users. The rural users have two levels: one, the *infomediary*, who will browse the contents to serve the demands of the rural information users; second, individuals demanding particular information. For the cognitive research the following aspects have become important:

- a. The desired level of education of the *infomediary*

- b. The desired level of *understanding* of the rural livelihood
- c. The level of maturity of the *infomediary* in reasoning
- d. The semantics of *questioning* by the villagers

For performing cognitive analysis the following procedures have been applied. A team of experts visited each of the villages with a set of web based contents for each of the areas. The expert teams comprised of: agriculture specialist, marine fisheries expert, legal expert, education specialist, pharmacist, doctor and psychologist. Each expert interacted with a randomly selected group of people from the villages. For example, a set of patients came for consultation with the doctors. The doctor interacted with the patients. The whole process of interaction was recorded in video camera and audio recording device. Afterwards, the whole interaction was transcribed and analysed for understanding the level of semantics of the villagers. On the basis of the semantic analysis, the content language was defined in Bangla. Similar process was followed for legal consultation, agricultural consultation etc.

For the infomediary, a set of potential *infomediaries* in each village was selected with various level of education and maturity of reasoning. All of the *infomediaries* had adequate knowledge of Bangla. The level of education varied from Class VIII to Class XII. A laptop computer was provided to them to browse particular content. For example, an infomediary in Khetuapara was asked to identify the type of a pest collected from the paddy field and provide information for what pesticide to be used. The infomediary tried to match the pest with the photograph of the pest included in the “pest control” page of the “Pallitathya” website. After finding the matching he went inside the description of the pest and the disease name. From the relevant table he identified the pesticide to be used, the dose of usage etc. The whole process was very intuitive, as he followed Bangla icons. Following this procedure, several questions were asked to the infomediary and the process of tracking the information was recorded. For various level of education, it was found the level of reasoning is more important than education level; the higher level of reasoning did not match with higher level of education.

The cognitive experiment provided the following important results:

1. The language and the structure of the contents were developed in the right direction [except some exception]
2. the visual interface was more easy to use by the infomediary
3. the available knowledge and skill at the village level will be adequate for running the information centre and supplying information to the villagers

However, for health information this experiment provided very useful insights, which did not match with the expected research outcome. It was found that for many health information, the interface between the patient and the infomediary is not effective for some diseases. The infomediary failed to identify the disease in some cases. While the experiment was repeated with the presence of village doctor, the synchronization between the content and infomediary was achieved.

On the basis of the cognitive experiment, the content development model was revised.

Some Critical Issues

During the cognitive studies some extra findings have been derived which were also useful. They are:

- For agricultural information services, along with the information, soil test service in the potential information centre may be helpful to the farmers and remunerative to the information centre
- For health information services, directory information is a must. Furthermore, some medical devices like nebuliser could be very useful to the patients, who need immediate relief from pain of asthma.
- For each content category, there should be a team in Dhaka or in other major cities, who are ready to provide online consultation service.
- The content development and update is a mammoth task, which is not possible and desirable to be undertaken only in D.Net. A system of information network [consisting of existing institutions] is essential for developing adequate quantity of contents, which will make viable of an information centre. However, a domain expert team should be inside D.Net to play a pro-active role in uploading contents in the Pallitathya website.
- One important thing is that information can be delivered through ICT channels to strengthen the existing channels. Like in agriculture sector, information can be put in central place like *Pallitathya Kendra*.
- For some information problem poster or meeting can be more effective than the online content.
- For most of the diseases there is no alternative to direct patient-doctor interaction. The content development effort for these cases should be concentrated for the doctors, in this case, for village doctors. This is true also for some agricultural and legal information needs. For example, each property dispute may appear unique, and may need specialised intervention.
- In legal cases awareness building can be done through ICT channels. Meanwhile existing media like newspaper, radio and television is playing enormous role in creating awareness among the people. But providing legal support can partially be done through ICT channels like online consultation, complain box etc.
- ICT can offer a lot in education sector. Students and teachers can be benefited enormously if their required resources can be supplied through online channels. Moreover information on educational institutions, vocational training institutions etc. will create huge value addition to education sector. Online admission form submission process in different universities can be another noble step to reduce education access related gaps.

Overall Lessons Learnt from the Research

- The need for the research on information needs identification was justified. The list of information requirement what was apprehended earlier has shifted after the research. New arenas of information requirement from the village level were identified.
- The information requirement varies from village to village. The types of information requirement in Nilphamari are far from the information requirement in Jhenaidah. It happens due to, *inter alia*, different awareness level among villagers. Some basic information which Nilphamari villagers do not know is familiar to the Jhenaidah villagers. They need graduated level of information.
- Information supply centre may be distributed among the other cities contrary to our earlier assumptions that all information will be supplied form Dhaka.
- Involvement of village level researchers was a new addition to the whole research. Its impact was miraculous at field level. Due to involvement of rural researchers the level of involvement of local

people in different meetings had been extraordinary and pro-active. Moreover, the level of trust rose to another dimension.

- Need for discovery information was a discovery for the research team.
- Developing contents in Bangla was a right decision.
- Information should be supplied not only to the information intermediary in the centre, but also to the existing suppliers of information in the rural areas, thus upgrade them with latest information on various aspects.
- The project identified rural people not only as the receiver of information but also as the supplier of information. Thus, it makes the rural people as part of the information society by providing inputs for building rural database

Need for Sustainable Content Research and Development

The study again proved that the synergy of web based content is enormous. Once the content is developed for delivery through the information centre, the same content can be browsed by other user group across the country. Thus, the sustainable effort for content research and development is needed. It was clear that the content development even for a particular segment like agriculture is a colossal task. Huge resources are required. Thus far, it may be wise to divide the whole content components into more detailed segments and for each segment, separate effort for content development may be undertaken.

Next Step

The next step has been elaborated through the phase I research. The next step has the following components:

1. Organise a village level set up, an information centre, for testing the business model to experiment the financial and economic viability of the centre
2. To strengthen the content research and development at D.Net
3. To set up a network of institutions for specialised content development for each information need area
4. To set up several teams for providing online support to the information centre in meeting day-to-day information need of the villagers, which are not yet available in the web portal and which is not possible to provide through portal.