

Title of the Paper Akshaya – a Grass root level IT Project in Kerala - a Unique Experiment with Broadband

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Abstract:

Recognizing the potential of broadband services in enhancing the quality of life of citizens, the government of Kerala has taken a big leap by leveraging Broadband application for taking IT to the grass roots. An integrated project “Akshaya” has been conceived by the State for ‘bridging the digital divide’. The study is undertaken to analyse the impact of broadband deployment in two districts, based on the information gathered from the heads of the districts and the trainees of the project, through questionnaires. The Study identifies the initiatives made by the districts, defines the associated features and improvements that occurred both internally and externally. The study also brings to focus the critical success factors which created the necessary environment for successful implementation of the project.

Key words:

Digital divide, Broadband deployment, Leverage, Akshaya Project, Critical success factors

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1. Introduction

The demand for technological progress is constantly growing. Localities are planning to upgrade their current telecommunications infrastructure and are preparing to install new infrastructure for considering the future needs of their citizens when examining the most appropriate systems to install. Current generation technologies do not meet the high bandwidth requirements for emerging applications that combine voice, video and data transmission. The advent of broadband technologies has enabled new forms of communication to become a reality throughout the world and made the world realize that Broadband is an accelerator of economic development. The emerging broadband applications led by businesses, and government users, are the real drivers of economic, technological and the overall societal growth. Since physical infrastructure and geography are vastly different from locality to locality, technology that works well in one geographic area may not work as well in another. Therefore, it is up to each locality

to determine the technologies like digital subscriber line (DSL), fiber, satellite, and fixed and mobile wireless and so on, that best meet its needs, keeping in mind the most important factor that cuts across every region that broadband technologies enable many applications that provide enormous benefits to citizens.

1.2 Broadband

Broadband connectivity implies more than just high speed email, web surfing, music downloads and games. While these applications are popular with many consumers, generally speaking, they do not require a broadband connection. Nor are these applications the likely drivers of the kind of demand necessary to spearhead significant growth in broadband networks and advanced services. They represent only a very small amount of what can be achieved with true, interactive, high-speed voice, video and data communication capabilities. Beyond simply being a high-speed Internet connection, broadband connectivity enables a wide array of applications that support dramatic advances in tele-working, distance learning, education, e-government, agriculture, public safety, national security and so on. They require two-way high-speed voice, video and data transmission capability, which only the broadband can deliver.

Keeping in view the present status, broadband connectivity is defined as, “An always-on data connection that is able to support interactive services including access, and has the capability of the minimum download speed of 256 kilo bits per second (kbps) to an individual subscriber from the Point of Presence (POP) of the service provider intending to provide broadband service, where multiple such individual broadband connections are aggregated and the subscriber is able to access these interactive services including the internet through this POP. The interactive services will exclude any services for which a separate license is specifically required, for example, real time voice transmission, except to the extent that it is presently permitted under ISP license with Internet Telephony.” (BB policy-2004)

1.3 Background

Recognizing the potential of broadband services in the growth of GDP, and enhancement in the quality of life through societal applications, governments all over are framing policy initiatives to accelerate the growth of Broadband services. The Government of Kerala too is moving towards a revolution in Information Technology (IT) to bring a massive change in all spheres of life of the citizens. Envisaging better administration, speedier and more transparent through e-governance which in turn would augment the quality of life of citizens in Kerala, the government has taken a big leap by leveraging Broadband application.

In this backdrop, an integrated project called the “Akshaya” has been conceived by the Kerala State IT Mission, which is the nodal agency for the development of Information Technology, (IT) in the State of Kerala, for ‘bridging the digital divide’.

2. Review of literature

Several studies published over the last two years have detailed the economic benefits of broadband deployment. In August 2002, a study by Dataquest Inc., a unit of Gartner Inc., estimated that the implementation of “true” broadband infrastructure could result in an

incremental increase in the U.S. gross domestic product of as much as \$500 billion annually for each of the next 10 years.¹ A July 2001 study conducted in the United States estimated the benefit of broadband to the United States to be upwards of \$500 billion per year within the next 15 to 20 years if broadband were to become nationally available.² Much of this growth could be driven by new investment in network infrastructure, routers and switches, web-based applications, end-user devices and the related applications that would be able to take advantage of the new capabilities afforded by broadband. Another study by the Yankee Group predicted \$223 billion in cost savings with universally available broadband in the United States.³

A fourth study has indicated that improved efficiencies in business and government operating expenses in the United States have saved nearly \$155 billion already and have the potential to produce \$500 billion in savings by 2010.⁴ Additionally, a 2002 new Millennium Council study quantifies the benefits of nationwide broadband deployment for employment, projecting that the expansion of broadband has the potential to promote an increase of 1.2 million U.S. jobs.⁵

According to Gartner Dataquest, the deployment of “true” broadband also has the ability to accelerate growth in the goods and services sectors relating to the broadband industry. The technology consultancy conjures that ubiquitous broadband deployment could result in sales of as much as \$500 billion worth of products and services in the next 10 years.⁶ The Corporation for Education Network Initiatives in California (CENIC), projects the benefits of broadband for the State to be quite substantial. California’s “One Gigabit or Bust” broadband initiative promises to add 2 million jobs and an estimated \$376 billion growth in gross state product (GSP) by 2010. This would mean a 17 percent increase in GSP per capita, as opposed to a mere 3 percent increase without expanded broadband deployment.⁷ Potential fiscal incentives for broadband build-out such as tax credits, grants, subsidized to low-interest loans, support for research and development on broadband technologies—particularly for rural and underserved areas—can make broadband network deployment a reality.⁸

The present study aims to highlight as to how deployment of broadband technology can facilitate bridging the digital divide, besides conferring various socio-economic benefits, and thus contribute to improvement in the quality of life of citizens, with the help of a case study pertaining to implementation of broadband in a developing district, of a developing State of a developing country.

3. Need and Significance

With the emergence of decentralization policy in the country and new generation of technologies, the local governments i.e., grama pachayats and the district panchayats now have the freedom to use new technology methods and resources to interact with their citizens, constituents and other jurisdictions, and thus help improving the quality of their life.

In this backdrop, the local and district administrators of Malappuram, one of the developing districts of Kerala, took the initiative and proposed for the deployment of Broadband technology to make the district a cent percent e-literate district, by taking IT to the grass roots, to begin with. Accordingly, proposals were submitted to the state administrators who accepted the same, and with the help of Kerala IT mission, the nodal agency for development of Information

Technology (IT) in the State of Kerala, introduced a unique project in the district 'Malappuram', under the name 'Akshaya'- 'Bridging the Digital Divide' Project. The project is in its second phase of implementation in the district which is rolled out to six more districts which in turn will be taken to the remaining districts of the State, during the third phase of its implementation.

The study of the implementation of Akshaya Project and how it is contributing to bridging the digital divide, and conferring various socio-economic benefits, has its relevance now, particularly when the policy makers world over, are considering broadband as the instrument for accelerating the economic development. The study is also significant as it highlights the technological transformation the districts have undergone, besides examining various economic and social benefits the broadband deployment could confer on the citizens.

More importantly, the State of Kerala is the first one in India that has attempted to deploy broadband under the name "Akshaya project", taking IT to the grass roots through cent percent e-literacy programme, and thus is preparing the people of the entire state to be a part of the knowledge revolution, which is the result of the IT revolution. Therefore, a research study, analyzing the impact of the project, from social and economic angles, is considered very essential, to scientifically quantify the benefits, in its entirety.

The present research study is divided into two parts. The first part deals with highlighting the functioning of the unique 'Akshaya project' of the state in its totality, and the second part deals with the scientific analysis of the impact the project on the target audience i.e. the selected trainees.

4. Objectives

The 'Akshaya' project, as the second major e-government initiative of the State of Kerala is under implementation since 28th November 2002 with the objective of bringing about total e-literacy in the entire State through broad band deployment. Under this background the present research work is undertaken with the following objectives:

- a) To highlight the functioning mode of the unique Akshaya project in its totality.
- b) To make a scientific analysis of the functioning of the project by measuring the impact the broadband deployment on the citizens in relation to certain selected variables such as basic awareness about the existence of computers, knowledge of use of computers, method of selection of trainees for the Akshaya Training, source of knowledge about the project, experience in the first training class, perceptions after completion of training, reasons for undergoing training, generation of income using the Akshaya training and so on, in comparison with three independent factors like sex, marital status and age.
- c) To bring to light the uniqueness of the Akshaya project and assess the general changes broadband deployment brought to the citizens of the districts.

5. Data Sources

The study is mainly based on primary data. The trainees, private entrepreneurs and the government officials concerned with the implementation of the project mainly constitute the data source for primary data. The Akshaya project's policy proposal and the other documented information supplied by the IT mission of the Kerala State, becomes the secondary data source.

6. Methodology

Two districts i.e., Malappuram and Calicut, where the project is under implementation, are taken for analyzing the functioning of the project.

- a) To fulfill the first objective, a specially drafted questionnaire (Annex-II) was served to Sri M. Salim, the district secretary, Akshaya State Project Cell, Malappuram, who represents the Kerala Government, for implementation of the Akshaya project.
- b) Towards achieving the second objective, information was collected from 100 citizens/trainees, who have undergone training at the Akshaya centers of the selected districts at 50 trainees from each of the two districts. A questionnaire, developed for the purpose, was administered to the selected trainees and the information thus gathered was used for statistical analysis (Annex I-questionnaire for trainees).
- c) Towards furtherance of the third objective, the information gathered from the tri-party, besides the IT mission, through direct oral interviews, is analyzed and used.

7. Statistical tools

For testing the significant difference between the proportions of different variables among the two selected districts, “Z” test is used. If Z calculated value is $<$ table value, we accept the H_0 , otherwise reject it. $H_0 \Rightarrow P_1 = P_2$; $H_1 = P_1 \neq P_2$. Where P_1 represents the proportion of selected sample females and married in Malappuram and Calicut on the other hand P_2 represents the proportion of the sample males and unmarried in the same areas.

8. Results

The results of the study are divided into two parts as under:

- Highlights of the functioning of the entire Akshaya project.
- Analysis of the experiences of the trainees/beneficiary citizens pertaining to pre and post Akshaya participation period.

8.1 Functioning of the Akshaya Project

Initiation of the project:

The ‘Akshaya’, meaning ‘perpetuating prosperity’ marks the beginning of a drive to “bridge the digital divide”, in the State of Kerala. The initiation for the project unlike any other IT projects, has not come from the government as an imposition, but came as a result of the initiation taken by the three-tier Panchayats i.e., the Local/block panchayat, Village/grama panchayat, and the district panchayat, making the project a unique one among the other IT projects in the Kerala State in particular and all the other States in general.

The Grama Panchayat of Malappuram proposed a plan for spreading the e-literacy to every family. With the support of block panchayat and the district panchayat, the Malappuram local panchayat approached different agencies to undertake this project by setting aside Rs. 60 lakhs during 2001-02 plan period. When the State IT mission was finally approached, it took up this project proposal as a novel idea and extended full cooperation and the needed support for the materialization of the plan. Thus, none other than the President of India, Sri A.P.J Kalam, launched the Akshaya project in Malappuram district on 28th November 2002, on a pilot basis. The project is being implemented by the local bodies, with support and monitoring from the district and State administration.

Objectives of the Akshaya project:

Akshaya's main aim is to transform the lives of 6.4 million families in Kerala, cutting across the social, cultural and linguistic barriers, and to bring home the benefits of Information Technology to the common man by familiarizing at least one person from each family in Kerala with computers and empower him or her to access relevant e-content in the regional language.

Achievement of the objective:

Envisaging a 15 hours training for 10 days at one and a half hour duration per day to train the citizens, the Government of Kerala sought to create 6,000 modern community information centres called the 'Akshaya centres', and provide convenient access to information services within a radius of 2-km from the citizens' residence.

Implementation of the project in the State:

The government conceived a three stage implementation plan for taking the Akshaya project to the entire State.

During the first stage, the project is implemented in one district i.e., Malappuram, on a pilot basis which has benefited 5,83,264 people spread over 78 panchayats and the municipalities in the district, with at least 1,000 persons from a panchayat, who are converted into e-literates and are ready to use this knowledge to take full advantage in the use of internet.

Based on the successful implementation of the project during pilot scheme, the project is rolled out to another six districts, which constitute the second phase of the Akshaya project's implementation. Kozhikode, the second district selected for the study, is covered under the second stage of implementation of the project. By setting up 176 Akshaya centres including two centers for each for a grama panchayat, 10 for the Kozhicode corporation, seven for Koilandy municipality and five for Vadakara municipality, the district is covered under second stage of the project's implementation.

Presently, the project is completing its second stage of implementation, and is all set to take off to the third stage of its implementation by covering the remaining six districts in the State. With the completion of the second stage of implementation, the project is able to convert people from seven districts of the State, as e-literates.

Functioning of the project:

The functioning mode of the project is the Public-Private Partnership (PPP model) where in the three tier panchayats take the lead role in planning for the project and the execution part of it is taken care of, by the selected private entrepreneurs of the area. The project has set for itself a three phase implementation strategy. The first phase deals with the achievement of cent percent e-literacy in the state.

The second phase covers “e-vidya” programme. Under the e-vidya programme, all those citizens who have undergone training in the first phase besides the others, and who are ambitious in furthering their knowledge of computers are given an opportunity to take part in the 30 hour computer training programme that offers knowledge relating to the entire basic computer operation. This course offers a certificate to all those candidates who complete the e-vidya course successfully. The Government of Kerala recognizes the certificate.

The third phase would comprise an ‘internet package’ which envisages a 10 hour comprehensive training to each person in using email, chat and other internet facilities, so that they become familiar with the use of internet including browsing. After completion of this training, each trainee is given a free e-mail account.

Financial implication to the citizen:

The learner has to pay only Rs. 40 out of the total fees of Rs. 120/-. The remaining is shared by the grama panchayat, block and the district panchayats in the ratio of Rs. 60 and Rs. 10 each respectively, during the first stage of the project’s implementation. Learners belonging to SC/ST communities are exempted from paying even this nominal amount. During the second phase of Akshaya implementation, the cost of the total e-vidya course comes to Rs. 450/-, which is met totally by the trainees. The total cost of the internet package programme of the project during the third phase is estimated to be Rs. 140 per person, of which Government proposes to contribute Rs. 100, leaving the remaining Rs. 40 as the share of the trainee.

Financial implication to the government:

Government is required to make no lump sum investment towards the implementation of the project either towards infrastructure development or development of training centers, except a sum needed to providing the connectivity to the Akshaya centers, initiated by the private entrepreneurs.

Private entrepreneur–selection, training and motivation:

All the educated unemployed youth who have secured minimum 12th standard degree with basic computer knowledge and with the minimum entrepreneurial abilities like capacity to take certain amount of risk, manage the Akshaya center set up, and finally with minimum zeal to serve the citizens, are all eligible candidates to become the entrepreneurs for running the Akshaya centers. The final selection however is made on the basis of interviews and the opinion of the local bodies.

Every selected entrepreneur should be ready to make an initial investment of Rs. 3 lakhs to set an Akshaya center requiring a built up area of 4,000 sq.ft. and five computers. In order to promote the entrepreneurship development, the government also assists those entrepreneurs who are fulfilling all the other formalities but are unable to secure financial support, in getting the loans from banks by standing as their sureties.

Entrepreneurs who appear for interviews are also given an opportunity to file complaints, if any, with the Appeal Committee. The selected entrepreneurs have to file an undertaking on a Rs. 50 stamp paper at the Akshaya project office.

The selected entrepreneurs are trained in different batches in two day and three day workshops and seminars, in management skills to run the Akshaya centers. Experts from C-DIT (Center for Development of Imaging Technology) become the trainers for this training programme.

The entrepreneur is expected to recover his investment by conducting the e-literacy course and providing various utility services.

Selection of trainers/instructors:

In all, 176 Akshaya centers in Kozhicode district and 600 in Malappuram are set up. Every Akshaya center has minimum five instructors one of who is required to possess either PGDCA or MCA or B.Sc. computer science, degree. The others can be persons with computer knowledge and a minimum of Plus Two education background. All the instructors are given training by C-DIT experts who introduce them to contents of four CDs developed by C-DIT for the e-literacy campaign. These CDs meant for e-literacy learners contain self-study materials, besides some computer games and certain simple computer programmes. Three instructors are selected at one for every 500 learners and paid by the entrepreneur himself/herself at the rate of Rs.----per month.

Selection of beneficiaries or trainees:

Trainees are selected through household surveys. Entrepreneurs, local body representatives, volunteers of Kudumbasree (a poverty alleviation programme of the Local Government), and Nehru Yuva Kendra and the Literacy Mission, are undertaking the e-literacy campaign to create awareness among the public about the entire Akshaya project's motive.

Link between FRIENDS Janaseva Kendras and Akshaya centres:

Friends Janaseva Kendras are functioning as 'one stop service centers' where the citizen can access most of the government department services such as payment of utility bills, renewal of licenses, and filing of income-tax returns, and so on. These Kendras are operating at the moment as one in every district headquarters.

The Akshaya centers, which are spread to every nook and corner of the villages with full network connectivity, are linked to these FRIENDS Janaseva Kendras. As such all the government department services will be extended to the citizens through these centers, which in turn will be networked to FRIENDS, centers which are finally routed to the different departments and the State head quarters.

8.2 Assessment of the impact of the Akshaya Project

In order to assess the impact of the Akshaya project on the lives of citizens in two chosen districts, certain variables like basic awareness about the existence of computers, knowledge about the use of computers, decision to undergo training, source of knowledge about the project, experience in the first Akshaya class, preference of time for attending the classes, specific reasons for undergoing training at the Akshaya centers, perceptions on completion of the training, utilization of Akshaya training for generation of income, method of selection of family members for the training, aspirations after completion of training and so on; are selected and compared with two independent variables viz. sex and marital status.

Basic awareness about the existence of computers:

The study revealed that the degree of ignorance about the IT developments is same irrespective of sex ie., female or male and married or unmarried in both the districts. On the other hand awareness is more in a larger proportion of females in the district, which is comparatively more developed i.e. Calicut as against the other district which is less developed, where awareness among the males is high. Higher proportion of females than males are aware about the technology development in developed region as against their counterparts in developing region reflecting that if given an equal exposure, females have greater tendency to make maximum use of the opportunity. (Annex- I-Table 1)

As per the marital status, the z values revealed that (Annex-I- Table 2) equal proportion of married and unmarried people lack basic awareness about the existence of computers in both the places, while higher proportion married in Calicut and unmarried in Malappuram have knowledge about the existence of computers. This indicates that in developed areas more married and in developing areas more unmarried get exposed to the current technology trends.

Knowledge about the use of computers: The amount of knowledge about the use of computers is not the same between females and males in both the areas. While more females in Calicut and males in Malappuram are ignorant about the use of computers, an equal number of females and males are aware about the use of computers in both the places. The marital status comparison of the same variable reveals that an equal proportion of married and unmarried are ignorant about the use of computers while higher proportion of married represent 'with knowledge' category in Calicut, about the use of computers, more unmarried in Malappuram belong to the same category. (Annex-I- Table 3 & 4)

Source of information about the Akshaya project:

Z values (Annex-I- Table 5&6) indicate that for females and married people, household surveys constitute the major source of information in both the places while other sources like Kudumbasree, friends and so on, constitute an insignificant portion in supplying information.

Decision to undergo training:

Majority of married and unmarried people decided to undergo training out of willingness than out of compulsion, as is seen in table 7(Annex-I). Analysis of sex-wise decision to undergo training indicates that more proportion of female in Calicut and male in Malappuram decided to undergo training out of their own willingness. (Annex-I- Table 8)

Experience in the first Akshaya Class:

There is varied opinion among female and male in both the areas regarding the experience in the first Akshaya Class. Higher proportion of female in Calicut and male in Malappuram feel that the experience was exciting in the first class while equal proportions of female and male in both the areas express that the experience in the first class is discouraging, as it was difficult to understand. (Annex-1-Table 9)

The comparison of marital status with the variable reveals that more proportion of married in Calicut and unmarried in Malappuram express that the first class at the Akshaya center is exciting as against the equal proportions of married and unmarried people in both the places expressing that the experience was discouraging. (Annex-1-Table 10)

Preference of time for attending the class:

Akshaya classes were held both in the morning and evenings. While majority of female in Calicut and male in Malappuram opted for morning classes; an equal proportion of females and males opted for evening classes in both the places. (Annex-1-Table 11 & 12)

Method of selection of members for the training:

Even when the number of persons in a family who were willing to undergo training at the Akshaya centers is more, as the training offered is restricted to one person per family, the survey showed that on the basis of common understanding and unity of opinion, one member from each family was sent for the training. (Annex-1- Table 13)

Reason for undergoing Akshaya training:

Analysis of data in tables (Annex-1- Tables 14 and 15) indicate that all trainees of the Akshaya project i.e. female, male, married and unmarried proclaim that they joined the classes with a desire to have control over their children in the use of internet. Satisfaction of attending classes along with other children and grandchildren in the family, and learning the use of internet to chat with their family members most of whom live in Gulf countries also contributed to their willingness to attend the Akshaya training classes.

Perceptions after completion of the course:

Analysis of the perceptions of the trainees/beneficiaries of Akshaya classes indicated that they derive satisfaction from more than one angle such as a). acquiring the basic knowledge of computers which otherwise would not have been possible b) eligible to participate in the remaining two phases of Akshaya project implementation, c) learn the use of internet to have contact with their kith and kin living outside the country, d) could use this knowledge to manage a system at home and improve the existing knowledge and use it for managing the family business, and so on. (Annex-1-Table 16 &17)

Utilization of knowledge obtained through training:

Higher proportion of female in Calicut and male in Malappuram district have put the knowledge acquired through Akshaya training to further use like joining the e-vidya classes, while the rest have used it to inspire the other young members of the family to learn more about computers and its application. (Annex-1-Table 18) In contrast to this, higher proportion of unmarried people in Malappuram district and the same proportion of married in Calicut, have put their knowledge of Akshaya classes to further use, though an equal proportion of married and unmarried in both the places, have used the knowledge to inspire others to acquire more computer knowledge. (Annex-1-Table 19)

Generation of income after the training:

Analysis of the data (Annex-1-Tables 20 & 21) revealed that equal proportion of female in Calicut and male in Malappuram are trying to use the knowledge acquired at the Akshaya centres for creating a permanent source of income while majority of female and married population in Calicut and male in Malappuram are trying to make future plans for generation of income.

Aspirations after the training:

The process of judging the aspirations of the trainees after the training brought to focus that an equal proportion of females and males in both the areas express the aspiration that they want to depend more on computers. It also revealed that higher proportion of females in Calicut and males in Malappuram expressed the desire to become the total beneficiaries of the Akshaya project, as revealed by the z values. (Annex-1- Tables 22 & 23)

Suggestions to the Government as offered by the trainees:

Higher proportion of females in Calicut and males in Malappuram suggested that the existing training with 15 classes can be increased by adding more classes which will give the trainees more confidence. On the other hand, equal proportions of female and male in both the places suggested that the proposed e-vidya classes can be combined with basic e-literacy programme so that in one go the trainees can be made to become computer educated rather than mere computer literates as per the original plan of the Akshaya project. (Annex-1- Table 24)

Hardware and Software architectures of the each Akshaya centers and the overall Akshaya project:

The client Desktop @ 2.0 GHz or higher, 256 MB RAM , 1.44 MB FDD, CDROM drive, Scroll mouse , Keyboard, 40 GB HDD (ATA/SATA) or above, 15” SVGA colour monitor , Parallel, Serial and USB ports , 10/100 MBPS Ethernet Interface, 16 Bit Sound (Duplex), Headphone , Microphone and preloaded GUI OS (MS Windows or Linux); with 512 MB RAM, 40 GB HDD or above, 52X CD/DVD drive and two Ethernet Interfaces with 10/100 MBPS for Networking and GUI OS (MS Windows or Linux); Internal CD Re-Writer 52X 48X 52 X ; Printer –Color Inkjet 720 DPI/12 PPM; Switch –12/16 Port 10/100 MBPS; Web CAM OR Digital Camera; 56 kbps DATA/FAX Modem; UPS (Individual); Network –Cat 5 cabling with Information outlets, patch chords and casing & capping conduit; A4, Flatbed Scanner with USB interfaces and drivers –1200/2400 DPI; Lamination Equipment –4" variable temperature controlled; AC –Windows or Split Unit with capacity to suit the room dimensions and antistatic floor for the facility.

Discussion

The data reveals that specific efforts directed to different groups of participants keeping in view their background and development of the regions will go a long way in making the implementation of the project very effective. The background as revealed by the study includes:

- a) Wide gap in basic awareness about the computer world / IT world, is seen among males and females; married and unmarried in different regions. To bridge the ‘awareness divide, ‘area-wise public awareness campaigns’ can be arranged. For this purpose the services of educated unemployed males and females of the region can be effectively used.
- b) Household surveys constitute the major ‘source of information’ for females and married in both developed and developing regions, and for males in developing areas; while the other sources like internet, newspapers, friends etc., also play a significant role for males in developed regions.
- c) High proportion of female in Malappuram and male in Calicut expressed that they are attending the Akshaya training out of compulsion than out of willingness. A separate strategy needs to be adopted to create inspiration among these groups prior to launching of the project to enable them accept the use of the IT services offered.
- d) Since females and males together express that the experience in the first Akshaya class is discouraging as the course content was difficult, the content of the course may be modified to suite the group specific interests such as games or spiritual concepts, to kindle the interest to understand the simplicity of working with the computers.
- e) Since different groups of citizens like married, unmarried, males and females, opt for different timings for the training classes, organization of Akshaya class timings should be suitable to the specific requirement of these groups.

- f) Survey also revealed that though there were many members in the family who were willing to attend the Akshaya classes, as the number per family is restricted to one, families decided on one person for the training, out of unity of understanding. Scope for allowing more members from each family could be explored to avoid cutting out an interested member.
- g) Varied perceptions are responsible for the trainees to attend the Akshaya training, as is revealed by the study. The goal of launching the project if made clear, prior to its launching, there will be homogeneous group of trainees and the trainers.
- h) Since majority of the females, males, married and unmarried, are using the knowledge acquired through Akshaya training only to inspire others to learn more about computers, and very less proportion of these groups are putting to further uses like job creation or enhancement of knowledge and so on, there should also be a strategy included in the project at every stage of implementation to make trainees aware about the various avenues available for making use of the acquired knowledge.
- i) Another interesting feature of the Akshaya project is that some females and males in both the districts are able to generate income ranging from Rs. 1000 to Rs.2000, by using the knowledge acquired. While some are hiring out the systems to their neighbors on rent, some others are purchasing system and appointing trainers and converting a room in the house as computer center.
- j) Analysis of aspirations revealed that majority of trainees wants to become the total beneficiaries of the Akshaya project. It is left to the policy makers to adopt a flexible strategy that would unify the goal of the government and the aspirations of the citizens.
- k) Analysis of the suggestions made to the government brought to focus that all females and males in both the areas feel that e-vidya training can be consolidated with the basic training of the first phase and offer the same by increasing the number of classes of the first phase of the project.
- l) The homogeneity of the progress of all the groups collectively is very essential for achieving uniform development, which will have a bearing on the sustenance of the project, and utility of the effort, in the long run.

Benefits of the project:—The benefits of implementing the Akshaya project are experienced from two angles as, a) direct and b) incidental. The following paragraph describes these benefits in brief.

(a) Direct:

- i. Achievement of hundred percent e-literacy
- ii. Low-cost of e-governance
- iii. All age groups and all sexes have equal preferences in participating in the Akshaya programme

- iv. Since the initiation came from the Local bodies, there is active involvement of the local bodies in financing and monitoring the entire functioning of the project and thus reducing the involvement of the government to large extent.
- v. Akshaya centers are acting as common service providers and information centers.

(b) Incidental benefits:

- Promotion of Self-Employment Strategy
- Entrepreneurship Development
- Backward communities are given the opportunity of acquiring computer knowledge and participation in the knowledge revolution.
- The enthusiasm and zeal of the elderly citizens in enrolling and attending the classes, are serving as a great inspiration to all the youngsters who fail to make use of the opportunities knocking at the doors.

Uniqueness of the project

- Initiation and monitoring of functioning of the entire project by the local bodies
- Implementation with the help of Kerala IT mission
- Active role of the local educated unemployed youth who play an important role in the functioning of the project
- Contribution to Entrepreneurship Development
- Generation of self-employment for the educated unemployed youth and thus preventing the brain drain.
- Reduction of levels of frustration and suicidal tendencies among the youth on account of severe unemployment problems.
- Increase in the number of jobs and creation of a source of regular income especially for the entrepreneurs and the instructors and assured source of income for the trainees, in future.
- Sense of achievement and satisfaction of participating in the government programmes to the entrepreneurs and trainers, which otherwise would not have been possible for these category of people.
- Setting an example for “broadband deployment for bridging the digital divide”, and taking the State to achieving the cyber fluency.

- Contribution to breaking the age old social and cultural barriers in the tradition bound areas.

8.3 Critical Success Factors:

The following factors are considered as most important ones which contributed to the successful implementation of the Akshaya project in the State of Kerala.

- Active involvement of the Local Bodies and local people of the district:

Realization by the local bodies that leveraging information technology for the overall development of the district has made the entire project functional by elimination of any resistance problem from the local people. This has also contributed to the adoption of technological with ease by the people of the district.

- Involvement of local educated unemployed as partners:

At the preliminary stage of moving the district forward, the policy makers created partnerships with the talented, educated unemployed youth of the district through Tulip Pvt. Ltd., the private service provider, for the adoption of proven knowledge and technology. This has become the most important sustainability factor for the perpetual functioning of the project.

- Connectivity:

Without the broadband network, the district would not have been able to establish intranet and internet 'connectivity' with its various Akshaya e-centers, nor fully leverage information technology applications for its operations. Neither the organizational restructuring nor the Strategic Technology Plan would have been feasible.

- Organizational Review:

Decentralization of plan process has given the necessary impetus to the local body's active role in the development of the district. As a result, the local panchayat's involvement in setting up of Akshaya e-centers, selection of private entrepreneurs, monitoring of the functioning of the project etc. have made the project highly a successful venture.

- Adoption of Strategic technology plan:

Based on the geographical scenario of Malappuram district, provision of connectivity became a major hurdle. Many private and public sector enterprises including BSNL could not come forward to help the State to cross the hurdle. Finally M/S Tulip Pvt. The service provider ventured and provided the wireless broadband network connectivity.

- Speed of Plan and Implementation:

With the close involvement, supervision, and scrutiny of the local bodies, which comprised of members from three tier panchayats i.e., the local, grama and the district panchayats, the decision to bring broadband network to the district, by crossing all the hurdles such as technical, geographical, political, social, cultural and other non-technical factors, and investing in IT, was quickly followed with implementation of the project.

- Hand in hand programme of selection, training and motivation:

Once the project proposal was finalized and implemented, private entrepreneurs and the trainers were selected, trained and motivated, simultaneously, without loss of time for designing, planning and implementation of the programmes, individually. This was only possible because the same enthusiastic team of officials and non-officials were allowed to be involved in the project from the conception of the idea till the final stage of its implementation.

- Training:

A significant and sustaining commitment from the initial stage to staff training was made by the organizers of the project. The adoption of new software required for training the private entrepreneurs and the trainers, and the initial intensive training designed and delivered through workshops and seminars, developed the staff knowledge to a proficient level by promoting individual skill sets. This has also made the entrepreneurs and the trainers to embrace the sudden technological change in the district with willingness and enthusiasm.

- Government conceding the plea of local bodies and revoking the transfer orders:

When the Akshaya pilot project in Malappuram district has reached the final take off Stage, transfer orders were issued to one of the important officials, without whose presence, the project would have collapsed. The local bodies, then in unison, made a plea to the Government to revoke the transfer orders at that crucial stage which was immediately conceded. This constituted another critical success factor for the implementation of the project.

- Leadership:

Senior administrators and elected officials set the precedence for the technological change through their 'leadership by example'. They were the early technology adopters. This cultural change was one of the most important building blocks for success of the Akshaya project.

Conclusion:

The Akshaya project which is the ambitious e-literacy programme of the Kerala State, has won the Austria-based Golden NICA award for "Innovative Service Delivery in Municipalities". The critical success factors created the necessary environment for achieving the results the project intended.

'Leadership by example' policy of the State of Kerala served as motivation for the staff and the local people to embrace the technological transformation and seek ways to utilize

technology to drive home the efficiencies. The adoption of a citizen centric approach by the district planners and the involvement of local bodies in the entire functioning of the project is emulation worthy. The involvement of private entrepreneurs, besides promoting entrepreneurship development and self-employment, has contributed to the sustainability of the project's implementation.

For citizens the opening of Akshaya e-centers has brought an opportunity to become part of the current knowledge revolution, besides bringing about a great technological transformation to the district. Moving from a manual to electronic process with broadband technology as an enabler for bridging the digital divide, the State of Kerala has set an example, which is worthy of emulation.

Acknowledgements

The author submits this work at the Lotus Feet of Bhagawan Sri Sathya Sai Baba, whose unseen blessings and grace guided her in all the endeavors. The author expresses her deep sense of gratitude to Sri Sathya Sai Institute of Higher Learning, her parent Institution, for encouraging her to take up the on-going UGC sponsored Major Research Project and to the UGC for supporting the project financially. The author acknowledges the excellent support extended by the IT Mission of Kerala, and the concerned authorities of Akshaya Project in Malappuram and Calicut districts, in writing this paper. Special thanks are due from the author, to Prof. K.L.A.P Sharma, Department of Statistics, S.K University, Anantapur, for his constant guidance in Statistical Analysis pertaining to the paper.

ANNEXURE-I

Table 1 - Relation between sex and basic awareness about the existence of computers

Awareness Sex	No Knowledge			With Knowledge		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	18	10	28	13	29	42
Male	11	6	17	20	13	33
Total	29	16	45	33	42	75
Z-1 = -0.0285480395	Z-2 = 0.0285478421		Z-1 = -2.5680837631		Z-2 = 2.5680840015	

Table 2 - Relation between marital status and basic awareness about the existence of computers

Awareness Marital Status	No Knowledge			With Knowledge		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	20	13	33	8	28	36
Un Married	9	3	12	21	14	35
Total	29	16	45	29	42	71
Z-1 = -0.8920198083	Z-2 = 0.8920197487		Z-1 = -3.2376301289		Z-2 = 3.2376296520	

Table 3 - Sex and knowledge about the use of computer

Knowledge Sex	No Knowledge			With Knowledge		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	19	16	35	5	26	31
Male	27	3	30	5	11	16
Total	46	19	65	10	37	47
Z-1 = -3.1560044289	Z-2 = 3.1560039520		Z-1 = -1.2002410889		Z-2 = 1.2002410889	

Table 4 - Marital status and knowledge about the use of computers

Knowledge Marital Status	No Knowledge			With Knowledge		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	24	8	32	3	34	37
Un Married	25	12	37	3	4	7
Total	49	20	69	6	38	44
Z-1 = 0.6786069870	Z-2 = -0.6786072254		Z-1 = -2.4566965103		Z-2 = 2.4566967487	

Table 5 - Relation between sex and source of knowledge relating to Akshaya Project

Source Sex	House hold survey			Others		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	22	38	60	5	6	11
Male	23	6	29	6	14	20

Total	45	44	89	11	20	31
Z-1 = -3.7713053226	Z-2 = 3.7713055611		Z-1 = 0.8604727387		Z-2 = -0.8604725003	

Table 6 - Marital status and source of knowledge about the Akshaya Project

Source Marital Status	House hold survey			Others		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	25	31	56	8	27	35
Un Married	18	13	31	9	8	17
Total	43	44	87	17	35	52
Z-1 = -1.1991683245	Z-2 = 1.1991682053		Z-1 = -2.1693906784		Z-2 = 2.1693906784	

Table 7 - Association between marital status and the decision to undergo training

Decision Marital Status	Compelled			Willingness		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	7	1	8	23	28	51
Un Married	7	1	8	28	29	57
Total	14	2	16	51	57	108
Z-1 = 0.0	Z-2 = 0.0		Z-1 = -0.4182661474		Z-2 = 0.4182661474	

Table 8 - Sex and the decision to undergo training

Decision Sex	Compelled			Willingness		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	4	1	5	19	40	59
Male	2	1	3	27	14	41
Total	6	2	8	46	54	100
Z-1 = 0.4216370583	Z-2 = -0.4216369987		Z-1 = -3.3207077980		Z-2 = 3.3207075596	

Table 9 - Sex and experience in the first Akshaya class

Experience Sex	Exciting			Discouraging		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	6	11	17	15	16	31
Male	24	6	30	18	12	30
Total	30	17	47	33	28	61
Z-1 = -3.0648808479	Z-2 = 3.0648808479		Z-1 = -0.9099368453		Z-2 = 0.9099368453	

Table 10 - Marital status and experience in the first Akshaya Class

Experience Marital Status	Exciting			Discouraging		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total

Married	8	24	32	15	18	33
Un Married	9	6	15	18	10	28
Total	17	30	47	33	28	61
Z-1 = - 2.3278367519	Z-2 = 2.32783675519		Z-1 = -1.4707611799		Z-2 = 1.4707614183	

Table 11 - Sex and preference of time for attending classes

Preference Sex	Morning			Evening		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	10	17	27	11	18	29
Male	26	3	29	12	11	23
Total	36	20	56	23	29	52
Z-1 = -4.1062378883	Z-2 = 4.1062378883		Z-1 = -1.02706833765		Z-2 = 1.0270686150	

Table 12 - Marital status and preference of time for attending classes

Preference Marital Status	Morning			Evening		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	10	17	27	13	21	34
Un Married	21	8	29	10	8	18
Total	31	25	56	23	29	52
Z-1 = -2.6609828472	Z-2 = 2.6609828472		Z-1 = -1.1963793039		Z-2 = 1.1963793039	

Table 13 - Number of members for family and method of selection

Method Sex	Common understanding		
	Malappuram	Calicut	Total
Female	12	5	17
Male	14	18	32
Total	26	23	49
Z-1 = 1.7918467522		Z-2 = -1.7918463945	

Table 14 - Sex and reasons for going through the training

Reason Sex	Desire for basic knowledge			Control over children		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	15	24	39	6	8	14
Male	18	6	24	11	5	16
Total	33	30	63	17	13	30
Z-1 = -2.81994652275	Z-2 = 2.8199465275		Z-1 = -1.4278037548		Z-2 = 1.4278036356	

Table 15 - Marital status and reasons for going through the training

Reason Marital Status	Desire for basic knowledge			Control over children		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	17	24	41	6	8	14
Un Married	16	7	23	11	5	16

Total	33	31	64	17	13	30
Z-1 = -2.1584508419	Z-2 = 2.1584510803	Z-1 = -1.4278037548	Z-2 = 1.4278036356			

Table 16 - Sex-wise perceptions of the completed course

Perceptions Sex	Mere satisfaction			Further use		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	17	38	55	4	6	10
Male	16	10	26	13	3	16
Total	33	48	81	17	9	26
Z-1 = -2.6192145348	Z-2 = 2.6192142963		Z-1 = -2.1509232521		Z-2 = 2.1509232521	

Table 17 - Marital status and perceptions of the completed course

Perception Marital Status	Mere satisfaction			Further use		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	20	38	58	6	11	17
Un Married	13	10	23	3	6	9
Total	33	48	81	9	17	26
Z-1 = -1.8202638626	Z-2 = 1.8202639818		Z-1 = 0.0999807715		Z-2 = -0.0999807715	

Table 18 - Sex-wise utilization of knowledge after training

Utilization Sex	Further utilization			Inspiration for others		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	11	19	30	14	22	36
Male	17	5	22	8	9	17
Total	28	24	52	22	31	53
Z-1 = -2.9018828869	Z-2 = 2.9018828869		Z-1 = -0.5634300113		Z-2 = 0.5634302497	

Table 19 - Marital status and utilization of knowledge after training

Utilization Marital Status	Further utilization			Inspiration for others		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	7	15	22	17	23	40
Un Married	24	9	33	5	14	19
Total	31	24	55	22	37	59
Z-1 = -2.7286360264	Z-2 = 2.7286360264		Z-1 = 1.2011910677		Z-2 = -1.2011911869	

Table 20 - Sex wise generation of income after training

Income Sex	Source of income			Future plan		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	5	15	20	14	22	36
Male	7	5	12	17	6	23
Total	12	20	32	31	28	59

$Z-1 = -1.8856180906$	$Z-2 = 1.8856179714$	$Z-1 = -2.6275377274$	$Z-2 = 2.6275377274$
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Table 21 - Marital status and generation of income after training

Income Marital Status	Source of income			Future plan		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	2	11	13	21	22	43
Un Married	10	9	19	10	5	15
Total	12	20	32	31	27	58
Z-1 = -2.1375129223	Z-2 = 2.1375126839		Z-1 = -1.1919806004		Z-2 = 1.1919807196	

Table 22 - Sex-wise aspirations after the training

Aspirations Sex	Desire to depend on computer			Desire to become total beneficiary		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	9	11	20	15	30	45
Male	10	5	15	19	9	28
Total	19	16	35	34	39	73
Z-1 = -1.2733563185	Z-2 = 1.2733565569		Z-1 = -2.8753695488		Z-2 = 2.8753693104	

Table 23 - Marital status and aspirations after the training

Aspirations Marital Status	Desire to depend on computer			Desire to become total beneficiary		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Married	6	11	17	20	30	50
Un Married	13	5	18	14	9	23
Total	19	16	35	34	39	73
Z-1 = -2.1918709278	Z-2 = 2.1918709278		Z-1 = -1.6605499983		Z-2 = 1.6605501175	

Table 24 - Sex-wise suggestions to the government

Suggestions Sex	Increase in classes			Consolidation of training		
	Malappuram	Calicut	Total	Malappuram	Calicut	Total
Female	5	28	33	19	16	35
Male	15	10	25	11	3	14
Total	20	38	58	30	19	49
Z-1 = -3.5586225986	Z-2 = 3.5586225986		Z-1 = -1.5761936903		Z-2 = 1.5761935711	

ANNEXURE-II

Questionnaire for the trainees—Akshaya Project of Kerala

Study of the functioning of Akshaya Project of Kerala State – Tri-party analysis (Government, Entrepreneur and the end-user)

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Important Note

*This questionnaire is part of an academic study being conducted with an aid from the University Grants Commission as part of the project
Work of*

Dr. (Ms.) Ch. Radha Kumari, Reader, Department of Commerce, Sri Sathya Sai Institute of Higher Learning, Anantapur Campus, Andhra Pradesh. The information obtained by administering these questionnaires will be used SOLELY FOR ACADEMIC PURPOSES.

About the Questionnaire

The Questionnaire has two parts

Part I is aimed at ascertaining the general personal information and the information pertaining to the period before undergoing training.

Part II is designed to understand the development that has taken place in the trainee after undergoing the training at the Akshaya center.

Questionnaire for the trainees-Akshaya project of Kerala

Part I: General personal information and information pertaining to the period before undergoing training:

1. Name :
2. Place of living :
3. Age in years :
4. Nationality: Indian/Foreign
5. Sex :M / F
6. Marital Status :Married / Unmarried
7. Educational Background:
 - a. Illiterate
 - b. Just learnt to read and write
 - c. below 5th standard
 - d. Any other (please specify)
8. No. of members in the family:
 - a. Dependents:
 - b. Non-dependents:
9. No. of computer literates in the family:
 - a. Nil
 - b. one
 - c. two
 - d. more than two
10. Family occupation:
 - a. Unemployed
 - b. daily wage
 - c. Small family business
 - d. any other (please specify)
11. Income per annum per family:
 - a. below Rs. 6,000
 - b. below Rs. 10,000
 - c. above Rs. 10,000 but below Rs. 12,000
 - d. any other (please specify)
12. Did you hear about computer?
 - a. Not heard
 - b. Just heard
 - c. Heard and seen
 - d. heard, seen and had the interest to learn
13. Did you know the use of computer?

- a). Theoretically and Practically b). Only theoretically
c). Not known at all d). A little bit was known
14. How did you get to know about the Akshaya project of the government?
a). House surveys of the entrepreneurs b). Kudumbasree
c). Friends d). Any other (please specify)
15. Why did you decide to undergo training at the Akshaya center?
a). I was forced to go
b). because training was available at the affordable rate
c). I had the innate desire to learn, and hence took the opportunity
d). As per the policy of the govt. it was my turn and so I happily went
e). Since computers have become an essential part of everyday life these days, when the opportunity came, I decided I will not miss it and hence used it.
f) to have the satisfaction of understanding at least a bit of what the modern technical education is.
16. How many persons in the house were willing to attend the classes at Akshaya centers?
a). Only one b). two c). three d). four
17. When the Akshaya Project's aim is to train one person from each house, when there is more than one person willing to learn in the house, how did you make a final choice of one person?
a). We had a common understanding at home
b). Since school going children were not allowed, preference was given to the others
c). preference was given to senior most person
d). Preference was given to youngest non-school going person
e). Any other (please specify)

Part II: Information relating to the post training period:

18. What did you feel during your first class at the centre?
a). Exciting, because an opportunity, otherwise would not have come to me, has knocked on my door
b). Felt difficult to understand but had the desire to continue to learn and get it
c). Though difficult to understand, yet continued, because of the encouragement of the trainers and the entrepreneurs.
d). could not understand at all
e). Any other (please specify)
19. Did you like to attend classes in the morning or evening?
a). Morning (please specify the reason):
b). Evening (Please specify the reason):
20. What made you go through all the 15 hours classes?
a). The desire to have the basic knowledge of the computer

- b). The satisfaction that I could learn computer even without the basic education
 - c). I could go with my children/grand children to the same classes
 - d). I wanted to learn so that I could later learn the use of internet, create an email id to chat with my people living in Gulf countries.
 - f) Any other (please specify)
21. Did you feel like discontinuing the classes before completion of 15 hour classes?
a) yes (please specify the reason) b) No
22. What did you feel after completing the 15 hour classes?
a). Mere satisfaction that I have learnt the basic knowledge of computer
b). Satisfaction that I could participate in the 2nd phase implementation of the project where I could get to go through the computer course at the subsidized rates
c). I could learn internet usage, have personal email id to talk to my people abroad
d). I could use this knowledge to manage a system at home and learn more and use it for home business
e). Any other (please specify)
23. When did you complete your training?
(Please specify the date of completion)
24. Did you feel that the 15 classes of training, useful?
a) Yes (please specify the reason)
b) No (please specify the reason)
25. What have you done with your knowledge acquired in the classes, after completing the training?
a) Joined the e-vidya classes offered at the Akshaya centers
b) Sitting at home, planning to get a computer of my own
c) Inspired the other young members in the family to learn more about computers
d) learnt internet operation, created my own email id and started chatting with my people in gulf country
f) Any other (Please specify)
26. Could you generate any income, with the help of the knowledge you acquired through Akshaya training?
a) if yes please specify the source and the amount:
b) if No please give the reason:
c) if there is any future plan of income generation please specify the plan
d) Any other (please specify)
27. Kindly describe your aspirations/feelings/plans, that occurred after going through the Training.
a) developed the desire to buy a system and learn more
b) developed the desire to join a computer center to get a formal computer degree.

- c) Developed the desire to become the beneficiary of the Akshaya project's second and third phase implementation.
 - d) Any other (please specify)
28. What are your suggestions for the government to fulfill your aspirations?
- a) No. of classes can be more than 15 hours
 - b) E-vidya and e-literacy can be combined so that at a stretch good knowledge of the computers can be had by the beneficiaries
 - c) Present plan Akshaya project implementation is good
 - d) Any other (please specify)
29. How do you like the Idea of Akshaya Project and in what direction you feel, it should be modified so that the social and economic relevance of the project will improve?

Thank you very much for your cooperation and valuable time

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