

Evolving an ICT Platform for a Traditional Industry: Transforming Artisans into Entrepreneurs

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Abstract

Leather industry is a traditional industry. Kolhapuri is a traditional chappal manufactured through a manual process. This is a case study of the manner in which the design process, manufacturing process and marketing was reengineered using ICT interventions. Use of ICT helped this industry to reposition itself. The main reason for the early adoption and rapid diffusion of the new technology has been the systematic training carried out by Central Leather Research Institute for imparting skills in the local craftsman using two people from the same community. The income of craftsman increased considerably after the adoption of ICT for designing and market access. The change process was navigated and implemented in an evolutionary manner. This helped the change process to occur rapidly.

Keywords

ICT, leather chappals, computer aided design, internet for market access, traditional industry

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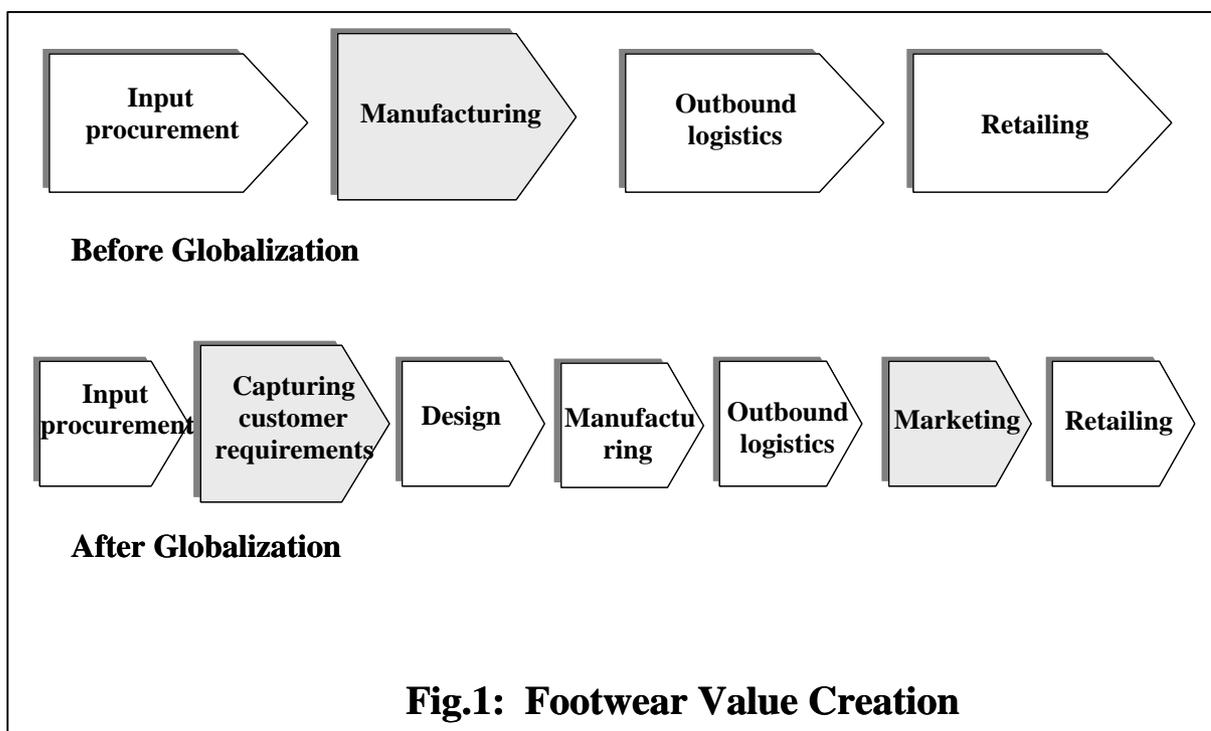
Introduction

Leather Industry occupies a place of prominence in the Indian economy in view of its massive potential for employment, growth and exports. There has been increasing emphasis on its planned development, aimed at optimum utilization of available raw materials for maximizing the returns, particularly from exports. Leather industry has been one of the traditional industries operating in India and is essentially located in certain states, but dispersed as cottage industries in rural areas. Indian leather industry is both in the organized as well as unorganized sectors. The predominant decentralized nature and small size makes it difficult to change this industry. As small scale, cottage and artisan sector account for over 75% of the total production it was technologically very under developed in design, manufacturing, packing, and logistics. This makes it necessary to be careful while designing solutions for over coming the weak technological base. The global competition has been the major driver that forced the leather industry to upgrade its technological base. Though traditionally, the Indian leather industry has been an exporter of tanned hides and skins, it has, in the early seventies, set its sights on becoming a major player in the leather products segments. Over the period of the last twenty years and particularly so in the last ten years, it has become the fourth largest foreign exchange earner in the country. The industry has become an area of export thrust with footwear having been identified as an area of extreme focus. Exports from the leather sector accounted for 4.4 per cent of India's total exports in 2000-01. The industry uses primarily indigenous natural resources with little dependence on imported resources. India is endowed with 10% of the world raw material and export constitutes about 2% of the world trade. It employs 2.5 million persons. In this paper the case of transformation of leather production using an Information and Communication Technology (ICT) platform is presented. The transformation involves improving production process, introducing new technologies and leveraging the Internet.

Scope of the Case Study

Though in absolute terms there is an increase in the exports of leather products but in percentage terms India's share in world trade remain around 2%. Over the years there has been a tremendous increase in competition at international level that is forcing leather industry to be competitive. All around the world the industry is getting automated making the whole process fast and leading to high quality end product. The competition is shifting from the manufacturing end to the product creation part of the

value chain as shown in **Fig. 1**. With the use of latest Information Technologies like Computer Aided Design (CAD) – Computer Aided Manufacturing (CAM) there has been huge increase in the product variety. Also as this industry is highly fashion dominated there is a continuous change in the product style. This requires continuous monitoring of changes in the customer style and specific customer needs.



On the other hand, most of the leather firms are in the unorganized sector. The small-scale industries, cottage and artisans sector follows old and traditional methods of manufacture. As production processes are traditional product quality cannot meet the international standard. The low quality product with limited variety has made many of the Indian leather units non-competitive. Given the nature of the leather industry, modernization of leather industry requires the following initiatives to make it efficient, agile, responsive, and competitive, namely:

- Enhance productivity
- Reduce wastage
- Increase the product design
- Automate the production process

- Understand the customer needs
- Extend the reach through e-commerce
- Introduction of new technologies

One of the traditional leather products is Kolhapuri footwear. Kolhapuri footwear, which was on the brink of closure, was revived with the technological and social intervention. Use of Information Technology (IT) not only increased the productivity and the quality of the product but also helped in coming up greater variety and achieving lower cost. Also the new Information and Communication Technologies (ICTs) makes the communication easy and at low cost. It brings the accessibility to various markets of the world. The concept of e-commerce has made it easy to go global through the use of Internet.

This case study presents the technological and social intervention processes upgrading the skills of the traditional artisans improving the product quality and bringing leather units to link up through an ICT platform. This could increase their productivity, product quality, product variety, access to newer markets leading to increased earnings and revival of a traditional industry.

An Overview of the pre-project scenario of Kolhapuri footwear industry

A cluster of villages namely Athani, Nippani, Saidapur, Miraj, Chikodi, Madhubhavi, Malgaom, Jhamkhandi and Ananthpur, on the border of Maharashtra and Karnataka States, may not ring familiar bell, but Kolhapuri, the distinctive, sturdy footwear, which is a product of these not-so-familiar villages, is certainly a household name. These villages are the land of the skilled makers of the world-renowned Kolhapuri sandals. The skilled craftsmen and artisans engaged in the 100-year-old profession of manufacturing this distinctive footwear belong to the socially backward and downtrodden class - the Samara class. This brought in the social dimension also into the change process.

This unique footwear which has carved a niche for itself in not only trade fairs, but has also found preference among foreign tourists who are well familiar with this natural, rugged, attractive footwear due to its introduction and familiarity in their own countries. The art has been handed down from generation to generation. The manufacture of Kolhapuri footwear from tanned leather is a traditional occupation that has assumed the proportions of a cottage industry with hundreds of families being involved in this vocation. In Athani, for example, there are over five hundred families involved in

footwear manufacture. Every member of the household contributes to the process by being involved in any of the following activities like cutting the leather, dipping it in water for soaking, stitching the 'patta' or weaving the 'veni'. The jobs are clearly divided within the family with the men doing the cutting, the women doing the stitching while children weaving the 'veni'. The entire family works laboriously and produces approximately 35 to 45 pairs of Kolhapuri chappals per week. These chappals are sold either to Khadi Village Industries Development (KVIC) or to Leather Industries Development Corporation of Karnataka (LIDKAR) with the artisans earning about Rs. 10 per pair.

The leather used is bag-tanned locally or in areas around Athani. In fact, the supply is far short of the demand. This leather, however, has a lot of problems in quality. It has to be soaked in water, and then hammered to smoothen it out and then the chappals are made in this condition, which is then dried out. A fairly good quality of bag-tanned leather would have an area of around 15 sq.ft. and weigh approximately 8 kgs. Animal tails, tanned and shredded, are used for stitching the chappals. The entire process of tanning the leather takes about 35 days, which is indeed quite long.

The manufacturing techniques are very traditional and conventional. The sides are cut when the leather is semi wet. The top-sole patterns are prepared and they are stitched along with heel after attaching them temporarily using a unique 'mud' taken from nearby river. A piece of canvas is also placed in between to increase the stiffness of the sole. The 'patta' pattern are pre-fabricated in various designs and then attached to the top sole. The 'anghtha' or toe-ring is also cut and then stitched to form a ring. The artisans use very crude group-grading techniques for different sizes e.g. the diameter of the 'anghtha' is "two fingers" for sizes up to size 7 and "three fingers" for sizes from size 8 upwards. Moreover, once these chappals dry out, they shrink resulting in smaller sizes and fit.

Rationale for the project

Leather is a unique commodity that links grassroot villages with high societies and traditional practices with emerging technologies. For many developing countries, leather and leather manufacturers constitute an indispensable and dependable source for export trade and foreign exchange earning. For India, leather is a high priority industrial sector and footwear exports, an extreme focus area. India has, just four decades since Independence, made significant gains from the leather trade, progressing from the

status of an exporter of 90% plus raw hides and skins to that of an exporter and predominantly leather product manufacturer.

Buoyed by good past performance and encouraged by expanding world market for leather articles, India is on move for increasing its market share from the present of around 3%. [<http://leather.webindia.com/overview.htm> - Leather Industry - An Overview - Global Scenario]. Earning foreign exchange apart, such trade expansion would mean generation of substantial employment, skill building, and entrepreneurship development and widely spread socio-economic benefits. For India, therefore, the growth of the leather industry is a direct contribution to rural advancement and socio-economic development.

Expansion of leather industry raises issues relating to sustainable development encompassing the structure of industry in the country, raw materials, ecology and environment, technological dynamics, market factors and so on. Here the role of Central Leather Research Institute (CLRI) [1], a national research institute which is a central laboratory for Indian leather sector with direct roles in education, research, training, testing, designing, forecasting, planning, social empowerment is very critical. Strengthening the indigenous base has been a main objective of the various recent national initiatives on leather in the country. CLRI has a pivotal role in all these initiatives. The National Leather Development Programme (NLDP) concentrates on bridging those critical gaps where adequate competence does not exist in the country and which need external assistance, for leather and leather products namely footwear, garments and leather goods to make them internationally competitive. CLRI coordinates this programme. It has excellent links with leather industry and it worked closely with Leather Export Promotion Council. CLRI has extension centers in major leather industry clusters and these centers help in improving technology transfer and support problem-solving activity.

It is in this background the Mission Mode project, formally known as Leather Technology Mission (LTM) was formulated and launched on January 12th 1995. The Mission focused on fostering and enhancing the traditional and new skills of workers and artisans engaged in the leather sector, especially the tiny and small unorganized units, and promoting their viable links with the organized sector. In this way it admirably complements the UNDP assisted NLDP, which was launched by the Government of India

in April 1992. The mission gained national visibility with the commissioning of 146 activities in 17 States. LTM is one of the few missions, which address social issues. The mission envisions value additions to leather through technology. Technology extension and human resource development activities account for nearly 64% of LTM initiatives.

Of these several initiatives, a technology campaign, spread over a one year time frame, had been launched at Athani and its neighborhood villages for improvements in bag-tanned leathers produced by the artisans. This was followed by the quality enhancement of the Kolhapuri footwear for which this region is well known. CLRI's interventions through training-cum-demonstration to the artisans has been a tremendous success. Several artisans have been trained in improved tanning methods of sole leather and improved methods of manufacturing. The benefits are enhanced productivity, higher yield and improved quality. It was clear that conventional approach of technology delivery is not effective and a different model may have to be used if knowledge dissemination has to be improved. This can be done only through the joint work of a research agency that has the competence for technology up gradation and an NGO that has reach in the leather artisan community.

Project goals

Given that the technology users are mostly rural artisans, technology is mostly in tacit form, practices are traditional, users are generally poor with little capability to maintain sophisticated technologies, artisans are not used are not formally trained, it became essential to design technology delivery systems that can be easily accepted. The success of a project emanates from the ability to design proper technology delivery systems. In that sense, from the beginning the goals were so designed that research agency and the NGO work together. This arrangement ensured that the artisans would be supported by the NGO for both delivering the technology and for maintaining the technology infrastructure for market access. The current SWOT analysis of the kolhapuri leather industry is shown in **Fig. 2**. The main goals envisaged are as follows:

- To demonstrate the use of technology as a grid for balanced development of the leather sector
- To demonstrate harmonious blending of traditional and new skills through innovative training and pilot programmes

- To implement and assess technology delivery systems most suited for the traditional leather industry and the rural artisans engaged out there
- To enhance the quality and standardize the manufacturing process of Kolhapuri chappals reducing their drudgery
- To enhance the designing skills of the artisans
- To help the artisans get a better unit value realization for their product
- To enhance the market accessibility of the artisans
- Focus on women as key player, as they form a significant part of artisanal work force but had not been recognized earlier

Internal	Strength	Weaknesse
	<ul style="list-style-type: none"> • Ecofriendly and natural • Ergonomically • Ethnic • Fashion appeal for 	<ul style="list-style-type: none"> • Image of low -low produ • Fewer • Not very comfortable in • Traditional industry uses conventional manufactu
External	Opportunitie	Threats
	<ul style="list-style-type: none"> • Improving the product standardizing the end • Enhancement of productivity with the • Tap newer markets platform for wider • Introduction of variety CAD/CAM 	<ul style="list-style-type: none"> • Shrinking • Gradual move toward the of a century old cottage • High budget advertising by competitive

Fig. 2: SWOT Analysis of Kolhapuri Footwear Industry

Origin of the project

The leather industry cluster making Kolhapuri footwear was in Athani. This is a region where the summer months are scorching and the summer sun relentless. The land here is semi-arid and dry where the dusty and black soil swirls. The monsoon here is short but enough for good sugarcane cultivation. The location is shown in **Fig. 3**. The people of Athani are mainly involved their traditional handicraft of distinctive Kolhapuri footwear manufacture for over hundred years. Decades of skill are focused at the fingertips of these artisans as they shape intricate traditional patterns handed down from generation to generation, into making this unique footwear. But like any other society of artisans in India, those of Athani also belong to the socially backward and downtrodden classes, like the Samara class. Kolhapuris, made from the local bag-tanned leather, have achieved a prominence of their own with emphasis on a natural and rugged look with ethnicity. Before 1940, the footwear manufactured were of a thicker variety and suitable for a rough terrain. Then, one of the families crafted an ingenious design – thinner, lightweight, flexible, with supportive side-flaps, and beautiful upper decorated with intricate weaves, braids and knots. They were called as Kolhapuris, now a household name. Athani is well known only for her Kolhapuri industry, and almost all families in the region practice this profession.



Fig. 3 Location of Athani

Changed Scenario

Kolhapuri footwear was in great demand till few decades ago and was exported to many countries in Europe. But because of the gradual degradation of their quality, the exports stopped, and they face a shrinking market. This along with the continuous rising cost of living and raw materials for their trade have pushed these artisans into a cycle of cheap materials, poor quality and still lower price. This marginalization further led many families to abandon their traditional craft for better livelihood, without any clear solutions to their problems.

Leather technology has been one area that Council of Scientific and Industrial Research (CSIR), Government of India, focused from 1950 onwards. CLRI, Madras being one of the most intensive leather research establishments working exclusively on leather technology had a national responsibility here. The organization working with the objective of serving as a reliable consultant to leather sector needs to take some concrete steps to save this vanishing cottage industry. With the support of UNDP assisted NLDP and under LTM, the CLRI started its rescue operation.

CLRI's association with the artisans of Athani started with Leather Technology Mission, which looked ways and means of improving the quality of leather, used to manufacture the Kolhapuri footwear with improved tanning methodologies. This was followed by the NLDP programme, which covered product improvement and then marketing.

The first contact

The Athani artisans used vegetables tanned buffalo hide, generally known as bag-tanned leather for manufacture of their product, sourcing it from in and around the region. The quality of this leather used to be poor. Also the tanning process used to take 35 days which was much longer than usual. Through the minor process changes suggested by the CLRI and further training imparted to the artisans for improved processing of bag-tanned leather resulted in leather quality improvement and reduction in processing time to about 15 days. To achieve this, four scientist from the CLRI stayed there in Athani, worked with the artisans, looked into their leather manufacturing process, identified the mistakes undergone, demonstrated their new process with small process changes and nudge them toward the new method. This task was not at all easy one. It involved a lot of talking, convincing & persuasion and trust building activities. According to one of the

scientist the project took around one whole year. Agencies like the KVIC and the LIDKAR also helped the process along.

The second phase of this project was sponsored by NLDP. NLDP, with the objective of fostering and enhancing the traditional and new skills of workers and artisans engaged in the leather sector, especially the tiny and small unorganized units and promoting their viable links with the organized sector, supported the project of standardization and quality enhancement of Kolhapuri Footwear.

Project Conceptualization

As one of the requirements for the project to succeed was that the scientist to know the exact reasons for low quality and high inconsistency in the end product. For this a CLRI team visited the place, collected the required data and then studied them. Also to understand the methods the artisans employed, two expert artisans from Athani were invited to CLRI and requested to make Kolhapuri footwear according to their method, which was closely followed and observed. Of this detailed study came some astonishing facts. The artisans were following traditional and conventional practices for manufacture of their footwear. This was leading to low quality end product with high inconsistency. CLRI scientists exclusively looked into each of such practices and the problem associated with them. Also they came up with the suggested measures to overcome the problems, as shown in the **Table 1**.

Table 1: Traditional Practices followed by Athani Artisans

S.No	Traditional Practice	Effect & Problem	Measures suggested
1	Did not had a standard pattern of sizing. Used fingers and hand for sizing	Inconsistent sizing of footwear. Customer cannot look for size 7 or 9 in a Kolhapuri – he has to try the chappal on	CLRI, therefore introduced standard sizing for the products it was developing
2	The sides were cut when the semi wet condition of leather	Once these chappals dry out, they shrink resulting in smaller sizes and fits	The last shapes, size and fittings were standardized. The project supplied plastic last with a toe differentiation to 1200 families
3	The top and bottom soles pattern were prepared and they were stiched around the edges with the heel	When the edges frayed the heel piece use to fall off	The pattern of stitching had been modified. The modified stitching now begin with a line across the middle from heel to toe
4	The stiff base of the chappal was achieved by stitching together layers of leather. A piece of canvas was also placed in between to increase the stiffness of the sole	The stiff base turns soggy in water	CLRI suggested the use of TRP soles as its natural color would not only give a leather look but also improve the sole abrasion and water proof properties
5	The layers of leather stitched to form sole were temporarily attached using a unique 'mud' taken from a near by river.	The layer use to separated within some time of use causing discomfort	Use of adhesives like neoprene instead of clay was suggested
6	The 'angutha' or the toe rings were another problem area. The two ends of the rings were stiched one above the other and pushed between the layers of leather	This caused discomfort to the wearer	The artisans were taught to tie the two end of the toe ring with zigzag type of joint
7	The artisans use very crude grouping techniques for different sizes. e.g. the diameter of 'angutha' is "two fingers" for size up to 7 and "three fingers" for sizes from 8 onward	Again this lead to inconsistency in the end product	CLRI designed templates for sole, insole, half sole, instep bar, toe ring strap etc. as a guide for marking, essential for fine finishing

Project Implementation

After such a detail case study and analysis the immediate need for enhancing the quality and standardize the sizing system of Kolhapuri Footwear was very clear. Shoe Design and Development Centre (SDDC), CLRI embarked on the task, sponsored by NLDP, to standardize the Kolhapuri footwear manufactured at Athani with the introduction of relevant lasts and templates. Also the various measures suggested by CLRI earlier were incorporated in the process, improving the manufacturing technique.

Once the lasts and templates were developed, two more artisans were invited to CLRI and they were requested to follow the CLRI method of manufacture by providing adequate training of new techniques developed. Once it was observed that the artisans were able to absorb the inputs provided by CLRI, onsite training at Athani was conducted for 20 families. The families were provided with a set of lasts and templates. The artisans during the pilot production in December 1996 fabricated about 400 pairs of chappals. These chappals were given to identified users in order to access the comfort and for wear trials. Based on the feedback from the users, minor modifications were provided to the families. Artisans already trained at CLRI were used as trainers who demonstrated sequentially the various steps involved in manufacture of Kolhapuri chappals using CLRI method right from cutting of leather up to final assembling using the lasts. The demonstration was carried out using leather available both at Athani and the leather developed using CLRI method.

The programme was conducted in the vernacular and even the elderly among the artisans accepted to adopt the new techniques. About 2800 pairs of chappals were fabricated during the second pilot production. The final products were fabricated during the second pilot production. The final products were checked for quality and only those, which passed the quality checks, were accepted for marketing by LIDKAR. As a follow up of the tremendous response received from the artisans for standardization and enhancement of quality of Kolhapuri chappals at Athani, 1000 families in the region were trained with NLDP support.

Extension of project under SIDE-NLDP Programme of UNDP

But much more than the technological problems, the social obstacles were daunting. The atmosphere in the region was considerably politicized, the general attitude was one of

expecting 'free deals' – grants, subsidies etc. CLRI therefore saw the need for associating another organization having strengths in this area. Dealing with a group of local artisans who are not very educated required an organisation that operates at grass-root level with experience in extension and having rural linkages. For this ASCENT was approached to participate in a co-operative effort to develop the overall economic well being of the artisans engaged in making Kolhapuri chappals.

ASCENT initially conducted small workshop with a few representatives, selected by the artisans themselves, to jointly analyze the problems and the possible solutions. Initially, the key issues emerged were – lack of capital and poor raw materials for good quality products. Most artisans wished to leave the trade and wanted training in alternate vocations. One key problem seen, though not discussed, was the fact that there was intense rivalry among the artisans, and as a consequence mutual distrust and lack of cooperation was high. Even when the artisans selected the representatives for the workshop, they still had apprehension that these representatives would gain some benefits and would not share these with others. Only after repeated clarifications from ASCENT, representatives were assured that the workshop was for everybody's benefit.

Among the issues raised in the workshop, it was seen that due to the high raw material costs, many artisans took recourse to buying cheaper materials of much poorer quality. Consequently, prices for the chappals dropped further, leading to a vicious cycle of lower prices, poorer materials, even lower prices and much lower incomes.

Another major issue, lack of capital was traced to the fact that most artisans had taken loans from banks, and a majority had come to defaulters. Loans from private moneylenders were too prohibitive in terms of interest. Hence getting money for any capital needs was very difficult. One issue was puzzling – if markets were poor, why was the price of raw materials high? On further discussions, it appeared that a few artisans and traders were able to find 'better markets' – markets, which fetched higher prices for the chappals, and so could absorb higher raw material prices. Thus the issue shifted from poor markets to lack of knowledge of markets.

As discussions continued, the group worked on what could be done to overcome these problems. It was finally agreed that initially an effort would be made to develop adequate savings within groups of artisans, which would in turn be used for loans among

themselves. It was also agreed that the groups would be of women, and that for ease of interaction, each group would limit itself to 15-20 members. Further opportunities for training, both in chappal making as well as in other trades, would be explored as and when possible.

The Self-Help Groups

While in the workshop it was agreed that the groups would be formed for saving and credit, when it actually came to forming the groups, initially there was much resistance. Most artisans did not understand the idea of saving and using that money for credit – the question asked was, “Why should we pay interest on our own savings if we take it out?” With a lot of clarifications, two groups could be formed at first. Ranjana Sannakki was the leader of the first one, named Bharatiya Mahila Sangh. The main motive was to help the artisans become self-reliant so that they could help themselves in most areas, and also to help create an atmosphere of trust among group members, to enable future working together in the group for production. Over a period of time ASCENT representatives worked with the groups, providing informal training on the role of the groups (SHG’s), the procedures and processes. For instance, in the beginning the groups did not meet regularly – the women just sent the money every week through someone or the other. Saving alone was not the motive for the group formation. The SHGs were also meant to foster a feeling of unity and friendship, in turn leading to greater co-operation, and this could not be achieved unless members met regularly, talked of many things other than just the savings and loans. This point was important enough for ASCENT to make regular meeting an essential qualification for participating in any future training, so much so that in an initial training provided by CLRI, members of one group were not chosen as it did not meet regularly.

Such strictness in enforcing group processes paid off in the next three months. Though initially members did not appreciate these processes, as groups grew they understood the importance of meeting together, following systematic procedures, and most of all, assessing any situation in terms of what themselves could do instead of depending on others - the Government, the Panchayat, the traders, etc. So remarkable was the progress in self-confidence and the closeness among the group members that they could organize a whole ‘Sangama’ of nearly 400 people, a festival of confidence of SHG members with various other development agencies, with just a little support from ASCENT.

Today there are ten SHGs – nine in Athani and one in Nippani, each with savings over Rs. 10,000, and with two having savings over Rs. 15,000. Members have taken loans from the SHGs for both personal and production purposes. An interesting feature has been inter-group loans, which helped members of one group to complete production work for exports.

The impact of the SHGs has gone beyond just savings and the self-confidence of the members. For the first time, women artisans were given a clear role, and were in public view. Many SHG members have shifted from the earlier dependent attitude to more self-reliant one. One example is the fact that many members have acquired electric connections for their homes, paying the necessary fees and taxes to do so. Earlier, the attitude was that it was the responsibility of the Government (who provided the houses) to pay the amounts and provide electricity, and that the artisans could not pay. In reality, the amount was not so large that the artisans could not pay – it was just that too many promises of free gifts had been made (and broken).

Even more important is the fact that women are now getting accustomed to taking part in decision making processes. This has spread from the SHGs to many homes, and recently to pricing and costing chappals, hitherto a male prerogative. Recent costing and pricing for chappals have been made by SHG members themselves.

The Production System

Simultaneously with the efforts of ASCENT in forming SHGs, CLRI organized a series of training programme – in production methods, in varied designs, in sourcing alternate materials, and in developing products for International Trade Fair Participants for these programme were selected jointly by SHG members, ASCENT and CLRI.

In a departure from earlier customs, both men and women were selected for training. This, for artisans of ATHANI, was a radical change. In earlier programmes, it was exclusively the men who attended the training, and the women hardly saw any place outside Athani itself. The development of the SHGs had given the women a considerable degree of confidence, and the process of inclusion in training by CLRI carried this further.

There was also a thought that, as the SHG members were exclusively women, why not select women for the training as well? In this matter ASCENT felt that as both men and

women participated in the chappal production process, the focus of development should be the family as a whole. Women needed special support in some areas, but focusing on the women alone might, in the longer term, create more tensions in the family. ASCENT had a firm belief that development should not be accompanied by conflicts in the family and community, as far as possible. Hence in the strategy it was decided early on that for all activities other than the savings and credit, both women and men would be involved and again as far as possible, couple would also be given to women-headed homes, in that some women would be selected when their husbands were absent.

What was important was that the members of the SHGs were involved closely in the process of selection of trainees. It was made clear that this training would help them learn working with new materials, and would help them overcome common defects found in the chappals. Thus groups discussed who would be the best persons to absorb such training, and equally important, would share this information with others and train other members in these methods. ASCENT provided the guidance in terms of suggesting criteria (In fact in suggesting that groups should have criteria, in the first place), but the final selection was the prerogative of groups themselves. This again added to the feeling of group strength and their well-being.

Training was provided in a range of new designs and products, in the use of different materials, and the difference such use could make to the product – the feel, the color, the suppleness and the eye-appeal. The idea was to provide the artisans a window to the outside world in terms of what a customer might feel and think, and the possibility of combining their traditional skills with modern materials and designs.

The Market links

All this was fine as far as it went. The SHGs provided better savings, small loans and greater confidence in them. The training provided better understanding of customer needs and preferences, and insights into various product possibilities. But what would all this translate to? Unless there were buyer for these products, of what use would all this training be to the artisans in terms of better incomes? Development of a market link was therefore the key to the final success. Also the earlier experiences, as observed in the evaluation of the National leather Development programme, it was clear that providing technical input alone would not help artisans adopt the improved practices to improve quality. It was also necessary to find alternate markets looking for quality product and

bring about a change in the attitudes of the artisans. Two possibilities emerged – one was to focus on the Indian market, for which it was necessary to develop links with highly quality-conscious buyers, who would be willing to pay better prices; another was to introduce these products in international fairs, and see what kind of response these generated.

Designing

Along with the search for the alternate market, the need to provide the buyers with wider choice of the product was obvious. It is a well-known fact that better designs lead higher value addition and better sales. From the earlier survey carried out, CLRI found that though the product consistency tended to be very low, the designs were appealing. Creativity and traditional vocational skills of the artisans were very high and they could easily create new designs. But new designs, if complicated were not welcomed by the artisans as it slows down their total output. In order to enhance the designing skills of the artisans and come up with more innovative and better designs CLRI gave training to them. Also it introduced simple tools, which would help them in coming up with finer designs. ASCENT also felt it important to encourage the artisans to develop their own designs, and bring to light their innate creativity. To support the artisans in doing so, and make the artisans realize the need for better designs, quality and standardize chappals in relation to market demands, ascent organized a design competition at Bangalore. The competition was sponsored by LIDKAR, the leather industries Development Corporation of Karnataka.

From Traditional to Nouveau

In the process of design skill enhancement of the artisans the project has come up with number of new designs and vibrant colors. Kolhapuris are traditional Indian footwear and normally you wouldn't think that every step you take in them has possibly been made more fashionable through innovative application of Information Technology (IT). Traditional artisans in the remote North Karnataka village of Athani are finding an unexpected ally in the computer. From shaping better designs, to hawking their wares halfway across the world, the artisans -- egged on by some IT-savvy Bangalore-based initiatives -- are leaving behind a unique trail of footprints. The Project is using CAD-CAM facilities available at their design studio at Athani to come up with new and innovative designs.

“CAD-CAM really save a lot of time, Otherwise, even to make small modifications, the artisans had to produce entirely new chappal” says an artisan.

Though CAD-CAM cannot be used by the artisans themselves (most of them being illiterate), but they can still tell the technicians what pattern they want exactly. In addition, using Internet connectivity, artisans have also been able to communicate to the designers based in Madras and can put them in touch with designers all over the world.

The difference since the inception of the project is all the more evident if one looks at variety that has been added to this popular footwear. The collection is a range of footwear that covers the traditional styles of Kolhapuris to its nouveau adaptation, as shown in **Table 2**.

Table 2: Product Range of Kolhapuri Footwear

Traditional	Nouveau
Veni (Open type)	Eva
Kapsi (Open type)	Apple
Sandal	Oval teen
Bandh toe	Rocket Trapeze Nature Fan

CLRI and ASCENT thus worked with the artisans on both fronts – to develop products for display in fairs – both national and international and to identify quality conscious buyers, who could become partners in the development processes by just highlighting the quality issues and by showing their willingness to pay higher prices for the quality products.

The upshot of all this was that the groups first worked with selected local buyers, where they made chappals of both traditional and new design, as ordered by the buyers, and for which they received slightly higher prices – this was the first understanding that better production could translate to better prices.

The second event was the participation of artisans in the Indian International leather fair, at Chennai in early 1999, This involved production of a large variety of samples, development of a detailed catalogue – in fact this was the first time there was a catalogue made for Kolhapuris, with product names and design numbers. At this point it was also felt that, as these products were made mostly in Athani, there should be a new product name – could these be called Athani chappals? True, this would mean extra effort in establishing a name against the generic brand but any way Kolhapuris did not have a strong reputation of quality – for most buyers, the term Kolhapuri evoked an image of cheap chappals, both in quality and price. If the artisans were to break free of this stereotype, would a new name help? After some thought, it was felt that developing a new brand image was important. However what to call it was still unclear at that time. For the time being, the products were just called Athani chappals, one variety of the Kolhapuris – so that while there was newness, there was also a link with the well-known Kolhapuris.

The exposure in the IILF brought forth lots of curiosity and interest, but no definite orders, primarily due to the fact that no pricing was given to interested clients at that time. This was deliberate. Both ASCENT and CLRI had realized that, in case of orders, quantities would be large, and the production would need to involve working together by many artisans. Given the atmosphere in Athani, there was a difficult proposition still. The SGHs had brought in a feeling of togetherness, but this had to be fostered further for groups to be able to work together as a single economic unit. The display was to show the outside world what was possible in terms of products, and at the same time show the artisans what was possible for them to produce for the outside world. It was also necessary for the artisans themselves to develop the costing and pricing of the products. It would have been simple for CLRI and ASCENT to independently work out the pricing and obtain the orders on behalf of the artisans – but how would the artisans themselves learn the process if it was done for them by others?

All this led to the belief that initial participation would be for exposure and awareness building. In subsequently Fairs, there would be more focus on pricing and marketing. Artisans went on participate in the Delhi shoe fair in July 1999, and in the GDS International Shoe fair in Dusseldorf, Germany. By this time the artisans were more ready to understand the concepts of costing and pricing and for the first time artisans

team received export orders worth about US\$ 20,000. These have been produced and dispatched. Artisans subsequently participated in IILF, 2000 at Chennai, and at the Swadeshi Vigyan Mela at Delhi in Jan-Feb 2000.

The development of the catalogue, incorporating new designs has continued on a regular basis. Efforts are now being made to link up with a few larger buyers in Delhi, Calcutta and Bangalore, so that the artisans do not depend on exports alone, which can be a fluctuating market.

Digital Foot Forward

And in this journey from the trail of fading footprints to once again riding on a high wave, the artisans of Athani have made a long leap going the digital and Netway for enhancing their business prospects and for a better market access. Suddenly, the most important thing in the world for Athani, a small town in Karnataka, known for its artisans who handcraft "Kolhapuri chappals" for a living, is to have e-mail connectivity and a digital design studio.

The need for Net connectivity and a design studio arose as most foreign buyers of Indian art and craft want catalogues on e-mail, correspond over the Net and send design-samples on computers. The Toehold project [2], to help Athani create better and more saleable footwear, has formally inaugurated its digital initiatives and launched its Website, toeholdindia.com. * The design studio itself will nudge the artisans into greater market-orientation. The software will create new designs and execute designs accurately for foreign clients. In addition, leather required for each new pattern is automatically calculated. In the long term, Ascent wants the artisans to use the systems themselves to bring in a greater level of participation. Plans include putting up touch-screen kiosks, which the artisans, who are at various levels of literacy, can use to look for information, themselves.

This change was not very sudden. ASCENT has been working in Athani for the last three years. It has been introducing technology to the artisans -- simple things such as clocks to remind them of the importance of time, better ways of treating leather to make it long-lasting, concepts of standardization and quality consciousness, a calculator to encourage numeric-literacy (some of the artisans strangely lack even that) and to bridge the language-barrier with visiting foreign buyers.

The Toehold website helps the artisans to draw global orders. The humble Kolhapuri footwear is becoming a globetrotter and dollar spinner. Japan, France and Bangladesh have shown interest in importing Kolhapuris through the Karnataka Leather Industries Development Corporation Ltd (LIDKAR). The Japanese love Kolhapuri for their sheer beauty, elegance and simplicity. The other markets are in Israel, Germany, Italy, the UAE, the UK, and the US.

Export orders are not new for a chappal once patronized by the erstwhile Maharaja of Kolhapur, from where it derives its name. Mainly produced in Athani and Nippani in Karnataka and Miraj in Maharashtra, Kolhapuris were once a favored export item.

Between 1974 and 1979, several consignments of Kolhapuris were exported to the US during summer for 60 and 70 cents a pair. Once private companies entered the fray, both the quality and export sales to that country dropped drastically. They now sell in the US at \$7 to \$12 a pair and in the Indian market for up to Rs. 250 a pair. The market is expanding. But the supply chain is not strong enough to cope with the expansion and the potential for development. The changing fortunes of Kolhapuris are also changing the life style of over 6,000 traditional craftsmen of Athani and Nippani in Karnataka.

Project coordination

Traditional technologies have come under severe pressure due to globalization. In order for the industry to become competitive a series of technological and organizational initiatives are essential for their survival and growth. In this revival process one needs a credible agent who can initiate the change process. In this case the research institute (CLRI) and the NGO (ASCENT) jointly worked to ensure that the change process is successful and is field based.

- **Central Leather Research Institute (CLRI) – Technological Support**

The CLRI, one of the most intensive leather research establishment has played a large role in all leather-oriented projects taken up by the NLDP, including the NLDP-Athani Project. It is a research institute, and training institution, all within the same campus.

Equipped with the state-of-art R&D facilities, a design innovation center, and study sectors, CLRI has guided the project along; providing all, from housing and food, to training, supply of materials and market research to artisans involved in this project; thus taking a traditional, age-old industry a step further toward success in this modern world.

- **Asian Centre for Entrepreneurial Initiatives (ASCENT) – Social Support**

Ascent – a Bangalore-based non-government organization with a difference. Ascent is an establishment launched by executives and business people with an interesting method of working, in the downtrodden of this nation. They believe not in charity, but in self-dependence: and making every project seems like a business deal instead of a one-side charity mission.

They believe that a person who has put lot of his own knows better how to take care of it. Thus, Ascent felt that instead of giving the people of Athani money and food, they would be better off if they were taught how to improve their work and lifestyles, so that they also hold place of their own in this industry, and all their own accord.

- **National Leather Development Programme (NLDP) – Sponsors**

This is a unique programme undertaken by the Ministry of Industry and launched in April 1992. With the assistance of UNDP, this is a programme drawn for integrated development of the Indian leather industry, and possessing very clear objectives for developing footwear manufacture, human resource areas, R&D sectors, environment friendly technologies and many more encompassing all regions of the industry.

When Athani traditional craft of making Kolhapuri and Bandh toe sandals slowly started sinking in this fast-paced world, NLDP, along with other groups of common interest launched on a project aimed at a revamp of the trade; without taking away the skill and craftsmanship of decades standing. This is the NLDP – Athani Project.

- **Leather Technology Mission (LTM) – Sponsors**

Launched in 1995, this is the first technology mission implemented directly by a science department and the CSIR. This Mission was started with very clear

development objectives like augmenting viability of hides and skin, providing extension services to rural and small-scale industries in cleaner, upgraded technologies, campaigning for quality and standardization in the Indian leather sector, enabling harmonious blending of traditional and modern skills through innovative training and HRD projects, and much more.

In this project, the Mission has reached and targeted, along with other groups, Athani artisans and their craft; so that they may have a respectable position in the Indian leather sector, by way of quality technology and design.

Benefits

Any intentional change is brought forward with some future benefits in mind. The technical and social intervention made within the artisan community of Athani region has reaped the following benefits.

- Quality of leather used as raw-material improved, along with reduced processing time and increased productivity

The Athani tanners used vegetable tanning, which makes use of local resources but is a very slow process. CLRI targeted 177 tanning families and taught them about an improved process. The improved method reduced from 35 to 15 days and the yield was 40 percent higher.

- Standardization of manufacturing method

After identifying the pitfalls of the traditional manufacturing method, CLRI scientist suggested various corrective measures. All these measures were later incorporated to devise an improved and more standardized method for manufacture of better quality Kolhapuri footwear.

- Training and up gradation of skills

The artisans of Athani were given both in-campus at CLRI and on-site at Athani, training on improved practices for manufacture of the traditional Kolhapuri footwear. In all 1208 families in the region were formally trained with NLDP support and major part of the artisans population were indirectly benefited.

- Template designed and lasts modeled and fabricated

One of the major steps in quality enhancement of Kolhapuri footwear was standardization of lasts. Aluminum and plastic lasts with toe differentiation were specifically developed for these kinds of footwear. Also templates for sole, insole, half sole, instep bar, toe ring strap etc used as a guide for marking were designed. These lasts and templates were then introduced to the artisans for their future production.

- Enhanced quality of Kolhapuri footwear

The result of the technological intervention of CLRI in the Athani region was the improved quality and more standard end product.

- Networking and knowledge transfer enabling the credit availability and competence building in artisans

The project envisaged the formation of Self-Help Groups (SGH) in order to foster a feeling of unity and friendship leading to greater cooperation. This also initiated the practice of savings, which could be used by the group members for their own use. Capacity building was the result of SHG working together for common goals

- Enhanced negotiation skills

With the training provided by the project to the artisans about the basic of leather, vendor selection, material pricing and material procurement the artisans were able to buy better raw material at a competitive price. This training enhanced their negotiation skills.

- New and more vibrant designs were created using Information Technology (IT)

The use of CAD-CAM technologies helped the project to come up with more innovative and customer centric designs. Large number of new designs are created both in traditional and Nouveau categories. A design studio with required information Technology is established at Athani nudging the artisans into greater market-orientation.

- Increased productivity

The improved and more standardized manufacturing method along with use of more sophisticated but simple tools introduced by CLRI increased the productivity of the artisans by around 20%. Also the use of templates reduced the process wastes.

- Creating their own identity

In the process of developing new and bigger market the project realized that Kolhapuri Footwear have gone very generic and had a reputation of low quality – for most buyers the term Kolhapuri evoked an image of cheap chappals, both in quality and price. So in order to break free of this stereotype, it created their own brand, “Toehold”. This has given the artisans of Athani a distinct identity.

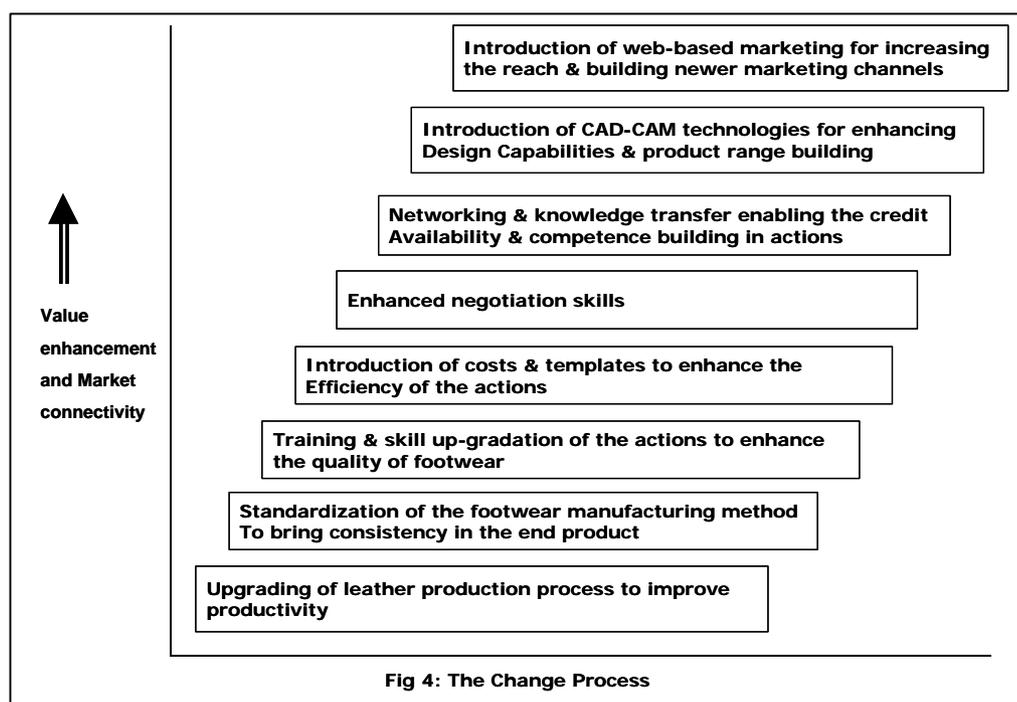
- Increased market accessibility with the help of new Information and Communication Technologies (ICTs)

The better product needs better and bigger market. This is done through both the traditional marketing practices and use of new Information and Communication Technologies (ICTs). With the help of ASCENT, the project has made a digital move by creating their own Web-site, toeholdindia.com. This is a big leap bringing the whole world with their ambit.

- Increased earning / standard of living

With enhanced quality of Kolhapuri footwear and new designs created the artisans can not only realize higher per unit value but with increased productivity and decreased waste over all profits also increases. This has a direct and straightforward effect on the lives of the artisans i.e. improved standard of living.

Any change process is a hierarchical process. It involves a series of steps which when taken bring gradual changes. Especially in case when the change is to be brought about in rural sector where the literacy level is quite low and/or in any traditional industry where very old and conventional methods/ processes are followed for quite long period of time the process is very slow as there is high resistance to change. There it is required to create a stable platform from which the real change can be brought about. This is not a monolithic project. Here, CLRI, along with its other partners, has taken gradual steps bringing the Athani artisans to a required platform by changing their old and conventional methods of production to improved ways of doing the same along with the required training for various skills up gradation. Once the artisans are brought to the minimum required level the use of ICT is made to bring the change faster and fruitful. The introduction of IT tools like CAD-CAM technologies to produce better product and create a greater product range. The project has gone Netway to get a wider reach and better communication. The step-by-step change process brought about for the Kolhapuri footwear industry at Athani is shown in **Fig. 4**.



In changing traditional industries, two aspects are crucial: trust and credibility. Without these two behavioral elements change cannot be sustained. Introduction of ICT is thus, a part of a total change package hence the degree of acceptance was high. The success of this could be seen as a model of change that other organizations could replicate. The three crucial elements that contributed to the successful adoption of ICT platform been given below:

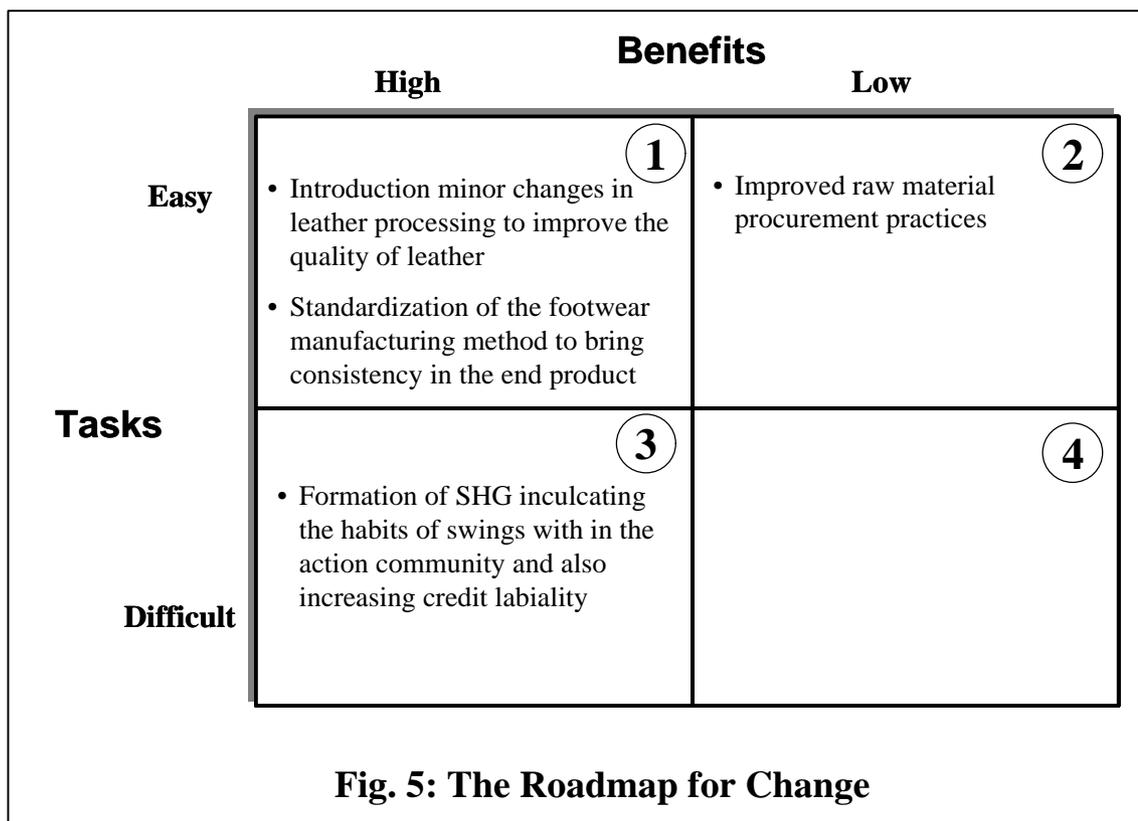
- Using a combination delivery system in which a national research institute and an NGO worked collectively
- Designing a set of interventions that are holistic and evolutionary
- Focusing on skill development or internal capacity building as the central point of change

Lessons Learnt

The experience of evolving and implementing a new ICT platform in a rural setting and a traditional industry brings in a series of learning and they are discussed below:

- Identifying early adopters
Any change process will occur quickly if early adopters are identified and then targeted for change. In this project CLRI and ASCENT carefully identified the artisans with good working hand, enough flexibility and quick learnability for bringing about the change. Both men and women were selected for training. Traditional artisans are apprehensive of change and reluctant to adopt new technologies. They are not receptive to ideas from outsiders and not willing to learn better ways of doing things. To overcome this initial inertia for change and win their confidence and acceptance, identification of early adopters from the same group is critical, who later spread the change, during the introduction of changes to the traditional community. However, once confidence has been won, the enthusiasm of target groups is sufficient motivation for the agents trying to introduce change. Hence, the crucial element of success lies in identifying early adopters [3].
- Focusing on high reward and easy to change tasks
The change process is quick to take place when the target group perceives that the benefits are high, hence it is imperative on the part of the change agent to

identify and focus initially on high reward and easy to change tasks. The change process should move in a way shown in the **Fig. 5**. The next one to be taken up are easy to change and low reward followed by high reward and difficult to change tasks. The change introduced should not be sudden and drastic. The artisans not at all welcome major and complicated changes as it completely upsets their work culture. There is a need to prepare a roadmap of change and targeting the easy one followed by the difficult ones.



- Integrating traditional knowledge and new knowledge
Any major technological change process involves people to imbibe new knowledge. Shifting from traditional knowledge to new knowledge base cannot occur spontaneously. It has to be through 'learning-by-doing'. For this CLRI invited two artisans to its premises and demonstrate the traditional methodology. After looking into that the institute's scientists suggested some new and improved techniques. This was integrated with their traditional methods of manufacture through joint work involving both scientists and artisans. These artisans were selected carefully and subsequently they acted as change agents. Capturing traditional knowledge and integrating it with new knowledge requires considerable amount of 'learning by doing'.

- Planning for markets
When the change process enhances the value of the product a change in the target market may be essential. Just providing technical inputs alone would not help artisans to adopt the improved practices to improve quality of the end product. It is also necessary to find alternate markets that need a quality product. The new designs of chappals were sold in different markets and new techniques were used for marketing. The artisans along with ASCENT visited various leather fairs in and outside the country marketing their product. Also the project initiated the usage of newer marketing channels like World Wide Web for connecting to wider market. This required careful planning and close interaction with the marketing organizations. It was also essential to get the user feedback on the changes made. This required a change in communication process and also monitoring of market movement on a continuous basis. Improved products may require repositioning of the product supported by new promotion modes.

- Using internal people as change agents
Change is generally resisted, if it disrupts the existing systems or if external persons bring it in. In this case, two people from the community were trained as change agents and who later demonstrated the improved practices among their community making the process smooth. Training and demonstration are basic instruments for carrying innovation forward. CLRI had enormous experience in changing artisans and learning from the earlier experiences also facilitated the

acceptance of change. Identification of a change agent is the critical factor in all ICT projects.

- **Sustaining Change**

Sustaining change in a rural setting requires the competence for delivering and maintaining the technological elements in a rural setting [4]. This required an organisation that operates at the community level in the villages. CLRI and ASCENT jointly provided a holistic change package, an enabling change climate and a change sustaining support system. This was the critical element that made this project work. Both the organizations had enormous previous experience and approached the problem after looking into the managerial, technological, social, organizational and economic aspects of the change process. CLRI spend considerable amount of time conceptualizing the process of change.

In any ICT project the change process has to be visualized, a roadmap has to be prepared and the change process has to be piloted so that change is purposive but not disruptive.

Conclusion

The main reasons for the rapid diffusion of the innovation and the consequent technological change have been the following:

- Training a number of people and creating a social network that facilitate communications in a community of people
- The rich experience the interface-managing agent (like the Central Leather Research Institute) has and their reputation among the community.
- The economic benefit of the innovation has been substantial whenever benefits of diffusion are rapid.

ICT has immense potential to modernize a traditional industry provided the interventions are conceptualized by experts and has a good understanding of the customer needs.

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