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From Market Separation to Market Development at Bottom of India's Socio-Economic Pyramid:

A Case Study on Digital Empowerment Foundation's Chanderiyaan Project

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From Market Separation to Market Development at Bottom of India's Socio-Economic Pyramid:

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Executive Summary

According to Bartel's (1968) proposition, absence of efficient markets may be due to one or more of the following market separations: Spatial separation or the physical distances between producers and consumers; Temporal separation or the time difference between production and consumption; Informational separation or the informational asymmetry between producers and consumers related to products and market conditions; and Financial separation or the lack of consumers' purchasing power when they are willingness to fulfill their needs. The presence of one or more of the above market separations often leads to absence of efficient markets, especially in the bottom of the pyramid (BOP).

According to Prahalad and Hammond (2002), the bottom of the pyramid (BOP) refers to that part of the untapped markets of the world that has people living on incomes as low as $2 a day. Constituting the BOP are almost 4 billion people living primarily in Asia, Africa, and South America. In recent years, many management scholars have championed the BOP as a market for firms to sell, or source their products and services from. Prahalad (2005) notes that although poverty alleviation and developmental assistance has been traditionally a domain of the government and its developmental agencies the time has now come for the private sector to play a dominant role.

Using the context of market development at BOP, we have studied the Digital Empowerment Foundation's Chanderiyaan Project as a case study to understand how the project has been able to reduce the four market separations to develop market for Chanderi weavers in Handloom products. We used a case study approach to understand DEF's Chanderiyaan initiative. Our methodology primarily involved collecting and analyzing secondary data, followed by site visit/s to Chanderi, and conducting in-depth interviews of weavers, master weavers, customers, and employees of DEF, along with non-participant observations.

We find that DEF along with MLA has been successful in reducing market separations, specially those dealing with knowledge and skills enhancement, across all the stages of the supply chain including, sourcing, manufacturing, and retailing. In the larger context, our study throws light on how non-profit organizations like DEF can create an ecosystem of partnerships with other NGOs such as Media Lab Asia (MLA), by working closely with Government of India's Ministry of ICT, weavers, and other stakeholders, for successfully developing markets at BOP.

According to Prahalad and Hammond (2002), the bottom of the pyramid (BOP) refers to that part of the untapped markets of the world that has people living on incomes as low as $2 a day. Constituting the BOP are almost 4 billion people living primarily in Asia, Africa, and South America. In recent years, many scholars in management have championed the BOP as a market for firms to sell, or source their products and services from. Prahalad (2005) notes that although poverty alleviation and developmental assistance has traditionally been the domain of the government and its developmental agencies, the time has now come for private sector to play a dominant role.

Some scholars do (Karnani 2007), however, challenge the basic premise of developing BOP markets by arguing that the poor are likely to be exploited by companies trying to sell them products or services that they might not actually need. These critics also argue that to save the poor from exploitation, given their vulnerabilities, the companies should preferably treat them as producers and source goods and services from them enabling incomes, thereby, and working towards poverty alleviation.

Despite merits on either side of the debate on developing BOP markets, there are several advantages in treating the poor as consumers as well as producers. For one thing, the poor have largely remained absent from the market due to the paucity of a well-functioning or efficient market. Well-functioning markets are those in which producers and consumers interact to successfully engage in market exchanges. The poor can buy/sell at the informal markets of the BOP and participate in formal markets, either as consumers or as producers. Informal markets have already witnessed the participation of the poor both as producers and as consumers (De Soto, 2000). In the formal markets, however, the poor are generally absent in both these capacities.. In formal markets the BOP producers/consumers are separated from other producers/consumers due to several reasons including remote location and geographical dispersion of BOP communities, low and volatile incomes at the BOP, and the presence of exploitative intermediaries in the BOP. Previous research has found that consumers in the BOP typically have low per capita incomes but are large in numbers, which makes them an attractive market prospect (Prahalad, 2006). Moreover, poor consumers, given their awareness of branded goods have developed a high aspiration value for such goods that hold the promise of better quality and are symbols of participation in the market (Prahalad, 2006).

Developing BOP markets (in which the poor participate as consumers) has several merits. For one, the current informal markets at BOP would give way to a more efficient formal market leading to a drop in prices, which indirectly leads to higher disposable income for the poor and an eventual increase in social well-being. For example, an MNC pharmaceutical company intending to sell medicines for treating malaria in malaria-infected African countries would benefit the local society there. The incidence of disease in the affected BOP community would soon diminish causing, eventually, an overall improvement in the healthcare status and social well-being of BOP individuals.. This MNC could build economies of scale to reduce prices and develop a large market across disparate BOP communities in Africa. Participation of the poor as producers in formal markets would lead to income generation, which would eventually turn them into participants (consumers) in those very markets.. The most successful example is that of India's largest tobacco company, ITC. ITC's choupal initiative includes two arms, e-choupal and choupal sagar.

The e-choupal is an internet-based in-formation kiosk purveying updates on weather, agri-inputs, cropping patterns, and other relevant information to the small and marginal farmers at BOP helping them increase their farm pro-ductivity while building a relationship with ITC as an agriculture advisor. The farmer who sells produce at ITC's choupal sagar fetches a better price compared to one who sells to the gov-ernment-owned mandi (wholesale food grain market). Adjacent to grain pro-curement point is the choupal sagar re-tail-store where the farmer can go and shop using the cash that he or she ac-quired from selling the farm produce. This choupal initiative from the ITC at BOP in India illustrates how companies can profitably treat BOP individuals as both producers as well as consumers.

Theoretical Perspective

In this article we have used the Bartels' (1968) theory of market separations to argue that markets can be developed at the bottom of the pyramid if market sep-arations between producers and con-sumers in the markets are reduced, if not removed altogether. Bartel proposed that new markets could be developed if the following four kinds of market sepa-rations (between producers and con-sumers) were reduced:

1) Spatial separation or the physical distances between producers and consumers.
2) Temporal separation or the time dif-ference between production and con-sumption.
3) Informational separation or the infor-mational asymmetry between pro-ducers and consumers related to products and market conditions, and
4) Financial separation or the lack of consumers' purchasing power when they are willing to fulfill their needs.

Bartel also theorized that marketing is contextualized in society and since

members in the society are interdepen-dent on each other such market separa-tions are not sustainable. Bartel further argued that one of the primary roles of marketing is to reduce or remove these separations and facilitate the process of consumption. The nature of marketing activities would depend, therefore, "upon the character of the market sepa-rations found in the particular social en-vironment" (Bartel, 1968; p.32).

We find Bartel's theoretical perspective of reducing market separations for de-veloping new markets at BOP to be both managerially and theoretically elegant. We have developed and extended the theory to explain how Digital Empower-ment Foundation (DEF), our case organ-ization, successfully helped to develop a market for traditional handloom weaving products like saris, fabrics, and appar-els for women at Chanderi, a village in Madhya Pradhesh's Ashok Nagar dis-trict. We also extend the Bartel's market separation perspective by exploring a fifth new market separation-knowl-edge/capability separation that is equally important for poor producers/ consumers at BOP to participate in the market, and help it to develop further.

We used a case study approach to study DEF's Chanderiyaan initiative. Our methodology primarily involved collect-ing and analyzing secondary data, fol-lowed by site visits to Chanderi, and conducting in-depth interviews of weavers, master weavers, customers, and employees of DEF, besides inter-viewing DEF founder, Mr. Osama Man-zar, and Chanderiyaan project head, Mr. Shahid, and his team members. All in-terviews were audio-recorded and tran-scribed for analysis purposes.

DEF set up Chanderi Weavers ICT Re-source Centre (CWIRC) in 2009 as a self-sufficient community information resource center, primarily for the poor Chanderi weavers to save the dying tra-ditional handloom weaving art form in

Chanderi. The primary tasks involved skills' enhancement in weaving and textile designing, which would lead to income enhancement and social well-being. The products manufactured and sold include saris dupattas, stoles, salwar suits, tablecloth, zaris, and fabric. This process of market development at BOP in Chanderi (Chanderi weavers earned approximately Rs 3000 per month or less on average) was driven with the larger objective of reducing their dependency on (often) unscrupulous middlemen who exploited them out of market opportunities and kept them out of market. In less than three years many weaving families in Chanderi have been actively participating in the market for finished woven sarees and other forms of Chanderi art.

Our case study throws light on how non-profit organizations like DEF can create an ecosystem of partnerships with other NGOs such as Media Lab Asia (MLA) by working closely with Government of India's Ministry of ICT as well as weavers and other intermediaries as stakeholders to successfully develop the market at BOP. To begin with, we go by the accepted definition of a market being an arrangement whereby buyers and sellers can interact to determine the prices and quantities of a product or service (Samuellson & Nordhaus, 1992). Markets essentially serve three main functions, (1) matching demand and supply (or buyers, and sellers), (2) facilitating exchanges or transactions, and (3) providing institutional infrastructure (Bakos, 1998). In the first function, identification of buyers and sellers, matchmaking product offerings with needs, as well as price discovery is important. In the second function, logistics, payment mechanisms, and facilitation of credit along with communication between buyers and sellers become important. Finally, the third function includes the enforcement of legal and regulatory mechanisms. While formal markets, achieve all three functions efficiently due to the free flow of information between buyers and sellers underdeveloped markets face more complications as each of these functions may require active intervention of external agencies with the mandate to ensure that the markets work efficiently by reducing information asymmetry in the markets. External agencies like NGOs are actively helping develop markets in undeveloped informal markets in many parts of India. One such NGO that we have undertaken the case study on is DEF with its CWIRC initiative in Chanderi. To be more specific, the three functions of the market are hampered in the BOP due to constrained physical access of poor consumers or sellers to or from BOP areas, which makes logistics, distribution, and retailing an expensive proposition. Moreover, information asymmetry is rampant in BOP regions due to the widespread lack of numeracy and literacy and the prevalence of superstitions and other cultural beliefs, not to mention the poor market for education or low media penetration. The problem has been compounded by low levels of education, scant exposure to media, and high levels of dependence on local and confined community and social networks (Viswanathan & Rosa, 2007; Viswanathan, Gajendiran, & Venkatesan, 2008). Due to high normative prevalence of social, and cultural norms, the governing mechanisms are informal in nature and strongly influenced by sociopolitical factors such as religion and local community (Sheth, 2011), and less by legal or regulatory norms.

We will now discuss in detail how DEF went about developing the three functions of well-functioning markets by reducing one of the most important factors of market separation in Chanderi, that of information market separation.

In Figure 1 below, we show the four market separations, how information separation can be reduced at four levels. We are not discussing, however, the other three market separations that are also important, although not as important as information market separation in the Chanderi case.

		NATURE OF MARKET SEPARATIONS			
		1st level	**2nd level**	**3rd level**	**4th level**
TYPE OF MARKET SEPARATIONS	**Temporal**	Local & home-made solutions Poor consumers and poor sellers	Link income generation and consumption	Reduce wastages and storage of products	Localize production
	Spacial	Localize production and innovation in services	Involve poor consumers in production and innovation in services	Develop poor people as local entrepreneurs to develop local solutions	Localize production
	Information	Reduce illiteracy and increase education, and skills	Increase awareness	Bridge digital divide to bring information symmetry	Assimilation with the market-based system
	Financial	Remove poverty traps and debt traps	Increase income of poor consumers	Increase savings and investments	Increase purchasing power

Figure 1: Four market separations, and the four levels at which it operates Chanderiyaan Project from Digital Empowerment Foundation (DEF)

Chanderiyaan Project from Digital Empowerment Foundation (DEF)

DEF is an NGO registered under the Societies Registration Act XXI of 1980, with its own governing body, board of directors, and team members. It is headed by Mr. Osama Manzar, who founded the NGO in 2002. DEF works with the mission and vision of economically and educationally empowering the poor people through the use of information and communication technology, and the digital media leading to their digital inclusion. Since 2003, DEF has initiated several path-breaking projects in diverse areas of social and economic development using ICT in some form. CWICTRC is one of the several initiatives, besides, Neerjaal, Manthan Award Ceremony for e-Content practices, and Digital Panchyat.

Chanderiyaan is the brand name of Chanderi Weavers ICT Resource Centre (CWICTRC), which started in the Ashok Nagar district of Madhya Pradesh in collaboration with Media Labs Asia and by the support of the Ministry of Communication & Information Technology. Chanderi has a population of around 30,000 (2001 census) members of which a third belong to weaving communities; of these communities more than 60 percent of the looms belong to Muslim families. Earlier the poor weavers were dependent on the latter because they lacked the purchasing power to buy raw material and did not own their own looms. These weavers also lacked the skills to create their designs or even approach customers for orders. The project primarily involved providing technical education to the textile weavers leading to, in the process, some 30 computers centers being opened and run for weavers to learn to create new designs by using special software (CAD). At the same time, DEF has also been digitally preserving old traditional handloom designs at its resource center. Weavers, with the help of printouts of designs created by them, are putting the latter into the loom.

The Chanderiyaan project is involved with weavers throughout the entire life cycle of crafting.

DEF's Chanderiyaan project has helped develop the knowledge and skills of the poor weavers of Chanderi in several ways. The project's activities include a skill builder program, forming of self-help groups, and the provision of handlooms to the poor, weavers' block printing, and kalamkari. They also include managing the Chanderi e-Commerce portals. Another part of the Chanderiyaan initiative is the Chanderi Integrated ICT for Development Program (CIDP) through which DEF has been promoting entrepreneurship, healthcare, education, and tourism. Deployment of ICT in the social entrepreneurship program is part of the CIDP; this includes a setup for tailoring, weaving, and embroidery work requiring hardware like a plotter printer for printing Chanderi sari designs at the resource center. This center has, so far, trained more than 150 people in the weaving process on looms, embroidery work, and block printing on clothes. A Jacquard block-printing machine was

also procured to print weaving designs on clothes. More than 90 people have been trained, and more than 40 students are currently undergoing training on computerized integrated embroidery designs providing end-to-end solution

So far, the resource centre has created and digitally stored in their design library more than 3500 Chanderi designs by training more than 105 weavers in design making. More than 350 students have also been trained in apparel designing and tailoring. Also undergoing training are more than 40 students in stitching work, and 68 students in skill builder program.

Figure 2 below shows the various stakeholders who have worked closely with DEF on this project. Figure 3 shows the CWICTRC business processes and supply chain. Figure 4 discusses how the CWICTRC has helped reduce the four market separations at BOP in Chanderi. Figure 5 discusses how DEF has bridged market separations in Chanderi for weavers, working closely with dozens of self-help groups (SHGs) to maintain and develop the weavers' supply chain.

Goals/Mission	Stakeholders Activities	Designing	Weaving	Apparel Production	E-commerce And Retails
Earning money through sustainable livelihood	Chanderi Community	Learning and creating design on the computer	Putting that design into the handloom	Preparing final products	Present at retail shop for selling
Empowering people through information	Digital Empowerment Foundation	Providing training for computerizing textile designs	Providing raw material linkages	Proving space for stocking the final product	selling though e-commerce
Establishing and facilitating ICT application	Media Lab Asia	Media Lab Asia is supplying all the ICT resources– card punching machine, CHIC, CARPET and CAD software. Trained 12 master designers for helping weavers		NA	DEF and Media Lab Asia have jointly built up e-commerce website.
Promoting of Electronics and IT-IT enable service industry	Department Of Information Technology Govt. of India	Proving fund and monitoring on CWICTRC project			

Figure 2: CWICTRC Stakeholders' Activities

Business Process	Supply Chain	Involvement	Before CWICTRC	After CWICTRC	Market Separations
Place	MP State Govt.	DEF	At home, at SHG Centre	Raja Rani Mahal	Spatial
Money/ Cost	Govt. of India & Bank	DEF	Take huge loan	Take less loan	Financial
Technical Setup	MLA	DEF	Not Available	Available	Temporal
Looms (Hand Looms)	?**	DEF	Handloom	Handloom	Financial
Raw Materials (Cotton, Silk, Zari)	BFC*, MEC*, SWEA*	DEF	Purchased from Master weavers	Supply by DEF	Informational
Training (Textile, Weaving)	MLA	BOTH	Not Available	Available	Skill
Designing on computer	MLA	BOTH	Not Available	Available	Temporal
Apparel Designing	MLA	Weavers, DEF, MLA, BFC	Done by own	Done in CWICTRC	Information
Weaving Pattern	MLA	Weavers, DEF, MLA, BFC	Done by own	Done in CWICTRC	Skill
Embroidery	N/A	Weavers, DEF, MLA, BFC	Sent to Jaipur	Done in CWICTRC	Skill
Block Printing	N/A	Weavers, DEF, MLA, BFC	Sent to Jaipur	Done in CWICTRC	Skill
Finished Product	MEC	DEF	Exhibition	Via CWICTRC	Skill
Bulk Buyer	MEC, Exhibitions	DEF	Exhibition	Via CWICTRC	Skill
Retailing & Marketing	DEF	Weavers and DEF	Own shop at home	CWICTRC shop	Information and Financial
Income		Weavers		Increased	Financial

Figure 3: CWICTRC Business Processes, and Supply Chain

*BFC – Barefoot College, *MEF – Mother Earth Craft, *SESA - Self Employed Women's Association, *DEF – Digital Empowerment Foundation

Stakeholders Market Separation	Spatial Separation	Temporal Separation	Informational Separation	Financial Separation	Knowledge/ Capability Separation (New)
Chanderi Community	They are present in retail outlet. Customers are directly reaching to them	Chanderi weavers are producing apparel faster than ever before. Also time required to reach the latest designs/ products to market is reduced	Sharing information about exhibitions	Spending their incomes into buying raw-material	Shown eagerness to learn new techniques and skills.
Digital Empowerment Foundation (DEF)	E-Commerce Website and Retail shop in Raja Rani Mahal	Introduced ICT based services	Market related information through the supply chain. Ex – Mother Craft, BFC, SEWA	Equally distribute profits among the weavers	Training program on cloth design, apparel design, finish product design
Media Lab Asia (MLA)	If earlier Chanderi weavers went to other places for designing, then MLA helped to reduce the separation	Card punching machine, CHIC, CARPET and CAD software tool is helping reduce designing time	Setting up and running resource center.	Proving funds for technical set up	Training and supply the equipments. Card punching machine, CHIC, CARPET and CAD software.
Department Of Information Technology Govt. of India	No direct help, but financial support to DEF and MLA Govt. of India providing fund through the DEF				

Figure 4: CWICTRC Market Separations

Separation \ Supply Chain	DEF- SHG Supply Chain							
	Sourcing			Manufacturing				Retail & Marketing
	Hand Looms	Raw Materials	Weavers	Designing	Weaving	Embroi-dering	Block Printing	Marketing
Spatial Separation	Bridging the physical gaps between looms manufacturers & weavers	Bridging the physical gaps between raw material manufacture & weavers	Formed SHG for work together	Earlier weavers might go to other places for computer design training. Now in Chanderi	Learning new weaving patterns in chanderi. Bridge by DEF & MLA	Started recently by DEF	Started recently by DEF	Created e-commerce website by DEF & MLA
Temporal Separation	NA	Purchased from far-away location thus consuming more time	Working together at one place, saving time	Production time reduced by DEF & MLA	Jaqard Card Punching machine helps reduce weaving time	Started recently by DEF	Started recently by DEF	Buyer can buy products any time from home. Bridge by DEF & MLA
Informa-tional Separation	Earlier Weavers didn't know from where to buy low priced hand looms Bridge by DEF	Earlier weavers did not know where to buy low priced, good quality raw materials. Bridge by DEF.	DEF allocate weavers to work with them.	Adopt new designing technology	Adopt new weaving patterns	Started recently by DEF	Started recently by DEF	Supplying exhibition information to the weavers. Bridge by DEF.
Financial Separation	Weavers did not have enough money for purchase handlooms. Bridging separations by DEF.	Government funds utilized on raw material purchase. Bridging separations by DEF.	Weavers now have a fixed salary with incentive	Insufficient money for learning. Bridging separations by DEF & MLA	Insufficient money for learning. Bridging separations by DEF & MLA	Insufficient money for traveling & learning. Bridging separations by DEF & MLA	Insufficient money for traveling & learning. Bridging separations by DEF & MLA	Profit sharing with SHG. Bridging separations by DEF.
Knowl-edge/ Ca-pability Separation (New)	Increase knowledge about using hand loom	Become efficient in judging & purchasing raw material.	Increase knowledge about new weaving pattern	Designing in computer increasing weavers' capability. Bridging separations by DEF & MLA	New weaving patterns increasing weavers' capability. Bridge by DEF & MLA	Learning new technique increasing weavers' capability Bridging separations by DEF& MLA	Learning new technique increasing weavers' capability. Bridging separations by DEF	Knowledge about how to sell products

Figure 5: DEF- SHG Supply Chai

Reducing Information market separations to develop markets in Chanderi- The DEF way

Chanderi weaving communities are involved in weaving activities that pass through steps such as designing, weaving, apparel production, and e-commerce & retail, after the involvement of DEF in Chanderi since 2009. The weavers' objective is to earn money through sustainable livelihood. At the designing stage the weavers learn to create new designs on computers at the resource center (internet enabled). ⚼At the second stage, they put those design into the handloom for weaving. Finally, the final products get ready for being sold through retail outlets and exhibitions. DEF has a fair amount of control over all these activities. Their mission is to empower people who are engaged in these activities by providing correct information. At the first stage DEF imparts training to them on computerized textile designs. Before the weavers start actually weaving, DEF provides raw materials' linkages to them. After completion of the final products, DEF provides space for stocking them, which it then tries to sell through its e-commerce website. It also encourages participation in exhibitions in nearby towns (some of the master weavers have their own sales teams and make trips to exhibition towns for one week at a stretch).

Media Lab Asia is also involved in this project. Its objective is to establish and facilitate ICT application. MLA is supplying ICT resources including card punching machine, CHIC, CARPET, and CAD software. It has trained twelve master designers for assisting the weavers. MLA is also attached with DEF for building up the e-commerce website. Government of India's motive is the promotion of IT-ITES enable service industry. To ensure the project's success the Ministry of Information Technology has provided funds and is monitoring the CWIRCTRC project at every stage of production as well as the attainment of its finality in reaching it to the ultimate consumers. Currently, the ministry of IT is concerned with making the CWIRCTRC project sustainable so that DEF can exit this project to concentrate on other projects and the local Chanderi weaver's communities (many time represented by their SHGs) can take charge of themselves.

Chanderi weavers' community removes/ reduces spatial separation by participating in exhibitions, or by selling their produce to master weavers who can then sell the same in fairs. This is a major departure from the past when poor weavers not only received very low weaving charges (much lower than the amount mandated by government), but were also exploited by master weavers and kept away from the markets. Nowadays customers are able to interact with the weavers during exhibitions. Moreover, weavers are now able to produce the fabric faster than before, which is actually removes or reduces temporal separation, given the reduction in designing time and costs, besides the weaving time. Weavers also share information regarding different exhibitions among themselves. By

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⚼ In fact the entire Chanderi town is wi-fi enabled by DEF, and the entire cost of accessing internet is borne by DEF (reimbursed by Deptt of ITC, Government of India), but it is free to use by localities.

doing this they help remove/ reduce informational separation. They reinvest their profits into their business, which means that financial separation also gets removed or reduced. Weavers are always aggressive towards learning- this reduces knowledge/ capability separation. For example, during the visit to the Chanderi site, the case writers met many hitherto unemployed children of weavers who are now actively engaged in some role in the supply chain of the business with some in sales, some in designing, while others are directly involved in weaving.

DEF has also launched an e-commerce website [http://chanderiyaan.net/] that has been successful in removing/ reducing spatial separation between the buyer and the seller. DEF has also introduced ICT-based services for Chanderi weavers. Introducing new technologies to the unpenetrated areas helps remove/ reduce temporal separation. Weavers earning more weaving charges (when they weave for other master weavers) or getting more profits when they weave and sell directly, has led to reduction in financial separation. DEF provides training programs on cloth design, apparel design, and finished product design, which enhances the weavers' knowledge-base. This how, knowledge/ capability separation gets removed/ reduced.

DEF is closely attached with SHGs that were formed by DEF. Working closely with these Self-Help Groups DEF has been proving them with capital. It also helps them manage the capital and monitor how the capital is used in terms of purchasing of raw materials, paying weaving charges, and collecting the money from the market after selling. There is also a production manager, a member of the SHG, who manages the production and marketing of the products and is paid a salary from DEF. At the end of the year, profits generated from these operations are distributed among the SHG members. At the time of

MLA activities have also helped to remove/ reduce separation. MLA, in collaboration with DE, proving ICT-based support in CWICTRC, where all the weavers are working together reducing spatial separation. MLA has also introduced a card punching machine, CHIC, CARPET and CAD software tool, which is helping reduce designing time leading to reduction in temporal separation. The entire cost of this technical setup has been borne by Ministry of IT, thus helping indirectly reduce market separations in the Chanderi market. Besides, MLA and DEF are providing training and supply technical equipments, which actually help the weavers reduce/ remove knowledge/ capability separation. MLA has been instrumental in developing, implementing, and operating the e-health project that aims to keep the weavers healthy at all times and ensure that no setback occurs to their regular incomes. MLA has also been instrumental in promoting tourism at Chanderi by operationalizing the tourism website and providing mobile-based information to tourists.

writing this case, the economy of the Chanderi weavers was estimated by DEF to be approximately Rs 150 crores, a huge leap from around Rs 70 crores in less than 3 years.

Broadly speaking, there are three stages in the supply chain- sourcing, manufacturing, and retailing. At each stage of the supply chain, DEF has reduced market separations. After DEF came to Chanderi it provided over 30 handloom machines to the poorest weavers enabling them to weave and earn a livelihood, thus reducing spatial and financial separations. Raw material is another important aspect of weaving. Here DEF provides linkages, which again helps remove/ reduce the separations. Weavers play the main role in

weaving. DEF has formed an SHG reducing, thereby, spatial separations among the weavers. DEF got the permission from the government to use the premises of the famous Rajarani Mahal, which is now being used by the weavers for weaving and for training on designing. At the same place, weavers get trained on weaving patterns and embroidery. Due to computerization of the designing process the estimated time has gone down from 10-15 days (when it was done manually) to less than a day, thanks to the card punching machine. Similarly, it took the weavers 20-25 days for setting the loom for a new design, which has now reduced to less than 3 days.

The last stage of this supply chain is retailing and marketing. Through the e-commerce website customers can now purchase products at any time, although the website is still in its pilot stage. DEF also provides information on low price handloom and good quality low price raw materials. Along with this, DEF provides training on computerized design and weaving. At the end of the supply chain, DEF provides information on different exhibitions. All these activities help reduce information separation. DEF has also tied up with garment factories and has been getting the weavers trained for sewing in order to prepare

manufacturing apparels in the near future. Before DEF plans to exit the ecosystem it created in Chanderi, it wants it to run in a sustainable manner. For example, one of the objectives is to increase the number of looms with poor weavers, from 30 today to almost 150 in the near future. Other objectives include running IGNOU certified and DOEACC certified courses commercially, and registering itself with MP Tourism. If the Chanderi market becomes sustainable in the medium term- two years as decided by DEF- (the government currently provides a grant of Rs 11 million to DEF, and MLA to support the project)- then it would be a real test of market development as a consequence of bridging market separations.

The Chanderi town is estimated to generate Rs 65 crores ($ 13 Million) of business annually. Most weavers have admitted to their incomes increasing from Rs. 3000/- to Rs. 6000/- because of the Chanderiyaan project. Moreover, the project has resulted in making 90% of the weaver population reduce its dependence on master weavers (large businesspersons who acted as intermediaries in the supply chain), thus disentangling themselves from their exploitative practices.

Appendix

Wireless supporting Tele health programme

The public health centre in Chanderi has a tele-health facility provided by DEF & Media Lab Asia. This tele-health facility was facing the issue of internet connectivity. The Chanderi Wireless project has now ensured seamless internet connectivity. Local doctors are now able to connect with senior doctors working in district headq uarter hospitals. This has enabled doctors to send their patients' medical reports like ECG, BP, and Blood Sugar to district hospitals for referral suggestions. Around 15-20 patients receive tele-health facility every day supported by improved connectivity.

Wireless contributing in design repository

The wireless project has contributed in generating a design repository in Chanderi. Weavers have accessed connectivity to source design patterns based on which new designs are being created. Till December 2011, the design repository has more than 250 new design patterns that are regularly sourced by the weavers to plant on raw woven cloth.

Wireless supporting Schools & Madarsas in Chanderi

The project has resolved the issue of internet connectivity in 13 schools, including one girls' school and two (2) Madarsas (Islamic Education Centre), which never had experienced ICT lab and internet connectivity. Thus, students and teachers are now able to access information and knowledge for their education and curriculum activities. All the 11 schools and 2 madrasas of chanderi are also connected with wireless connection. Each of these have also been provided 2 computers each by Chanderiyaan to develop their ICT Lab.

Wireless supporting Digital Panchayat Centre

In Chanderi, there are 40 village councils, which have never experienced of internet connected, are now utilizing the facility of internet for their official purpose at the Digital Panchyat Centre. Panchayat members are now using this facility for day-to-day work of panchayat such as creation of online content, maintaining database of NREGA (National Rural Employment Guarantee Act) scheme, etc.

Media Lab Asia led TeleMedicine project

It is also a part of the Chanderiyaan project. The telemedicine component works through the Community Health Center (CHC) at Chanderi provided by the government. The CHC operates out of a small room which has the complete MLA's tele-health kit and a computer with a link to district head quarter hospital for referrals and diagnosis based on the information of the patient sent from local chanderi based hospital. This health-based initiative has helped to keep the weavers at Chanderi healthy, thus ensuring a stable level of their incomes. MLA also has led the initiatives on promoting virtual tourism, and ensuring preliminary-level designing software for training and capacity building.

Wireless for Community Project

An independent project from DEF helps to provide and enable last mile internet access provisioning through wireless networking technologies using free spectrum. Chanderiyaan project became the first cluster-based project with wireless for community project being tried, and tested. Today, the entire 3-5 kilometers of the Chanderi is completely wi-fi enabled. Any local resident can become member of the community created by Chanderiyaan and avail the internet connection through wi-fi, like more than 100 connections with unlimited use already present as members of the Chanderiyaan community. The impact of w4c project has made even government officials and offices want the connection from Chanderiyaan rather than from BSNL. w4c is an unique project initiated by Internet Society and DEF, where ISOC has also been contributing with financial support.

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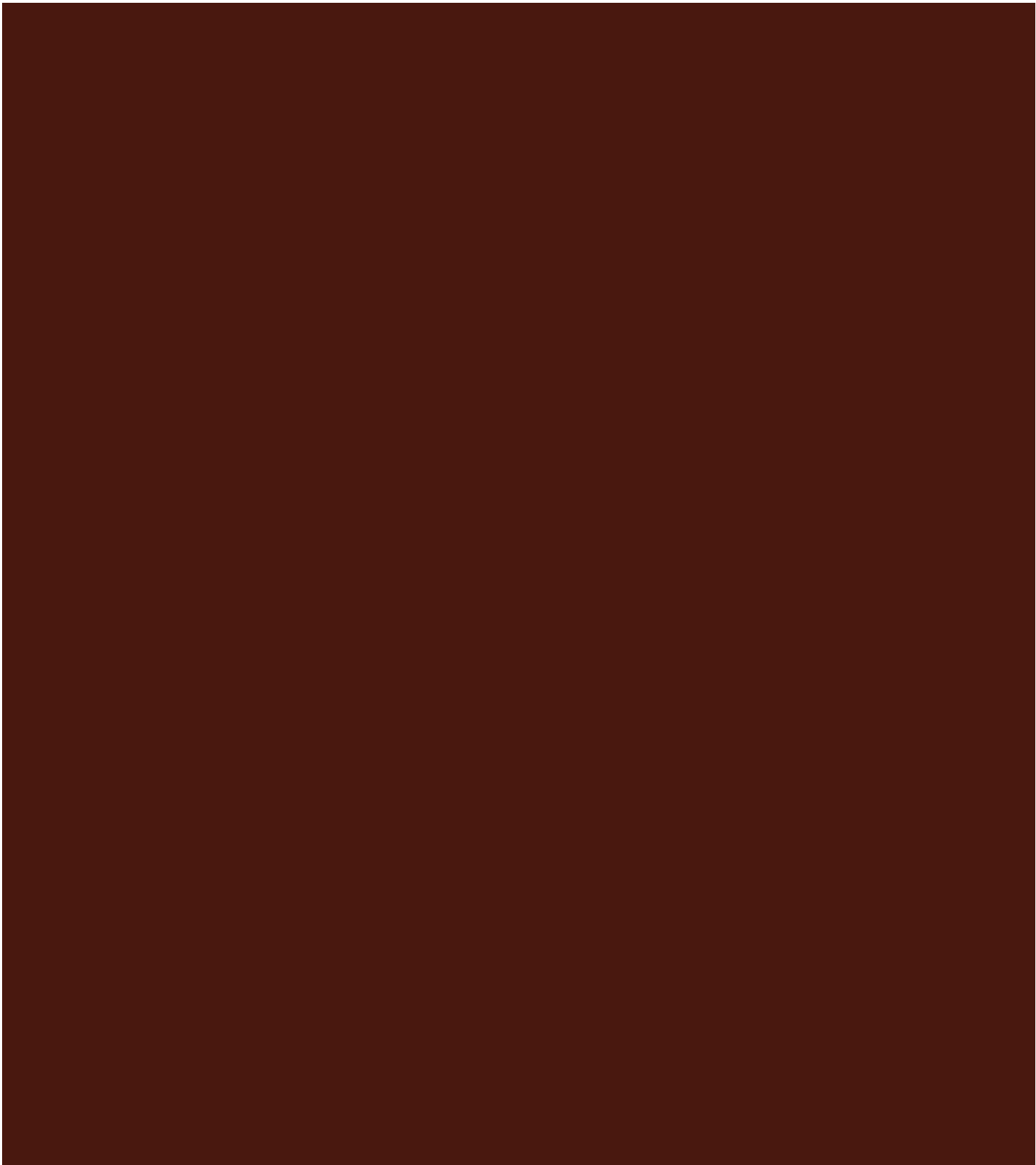
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