**INDIAN INSTITUTE OF MANAGEMENT CALCUTTA**

**WORKING PAPER SERIES**

**WPS No. 716/ November 2012**

# From Market Separation to Market Development at Bottom of Pyramid: Case Studies on Two Non-Profit Organizations

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# From Market Separation to Market Development at Bottom of Pyramid: Case Studies on Two Non-Profit Organizations

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**From Market Separation to Market Development at Bottom of Pyramid: Case Studies on Two Non-Profit Organizations**[Σ]


## Abstract

*In this working paper, we analyze two non-profit organizations, Digital Empowerment Foundation (DEF), and Barefoot College, and study how these NGOs helped to develop markets at BOP by reducing market separations. We use, and extend Bartel's(1968) theoretical lens of market separations that suggest that markets fail to develop if one or more of the following market separations are present. These market separations are- temporal separation, financial separation, information separation, and spatial separation. In our case studies, we also find fifth and a new market separation which we label, " Capability Separation" that connotes the lack of adequate market-skills with producers and/or consumers to participate in the markets, and which if present, can mitigate market development at BOP. We propose that our case studies provide new insights on market separations perspective to developing markets at BOP by paying more attention to specific market separations that inhibit market development, as highlighted in our case studies. We also propose that capabilities separation is the not only the 'only human separation' but also acts as a catalyst such that reducing this separation accelerates reduction in the other four market separations. Towards this objective, identification of capabilities or knowledge separation (of poor producers/consumers at BOP) as a key market separation forms one of the major contributions of our research.*


"The poor and illiterate people of our villages do not need charity, they only need opportunity"

\- Baba Amte

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


[Σ] The case writers would like to thank Arindam Sur for providing valuable research assistance for drafting these case studies.

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 information 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 productivity 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 government-owned *mandi* (wholesale food grain market). Adjacent to grain procurement point is the choupal sagar retail-store where the farmer can go and shop using the cash that he or she acquired 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 separations between producers and consumers in the markets are reduced, if not removed altogether. Bartel proposed that new markets could be developed if the following four kinds of market separations (between producers and consumers) were reduced:

1) *Spatial separation* or the physical distances between producers and consumers.
2) *Temporal separation* or the time difference between production and consumption.
3) *Informational separation* or the informational asymmetry between producers 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 interdependent on each other such market separations 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 separations found in the particular social environment" (Bartel, 1968; p.32).

We find Bartel's theoretical perspective of reducing market separations for developing new markets at BOP to be both managerially and theoretically elegant. We have developed and extended the theory to explain how Digital Empowerment Foundation (DEF), our case organization, successfully helped to develop a market for traditional handloom weaving products like saris, fabrics, and apparels for women at Chanderi, a village in Madhya Pradhesh's Ashok Nagar district. We also extend the Bartel's market separation perspective by exploring a fifth new market separation-knowledge/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, as our first and primary case study. Our methodology primarily involved collecting and analyzing secondary data, followed by site visits to Chanderi, and conducting in-depth interviews of weavers, master weavers, customers, and employees of DEF, besides interviewing DEF founder, Mr. Osama Manzar, and Chanderiyaan project head, Mr. Shahid, and his team members. All interviews were audio-recorded and transcribed for analysis purposes.

DEF set up Chanderi Weavers ICT Resource Centre (CWIRC) in 2009 as a self-sufficient community information resource center, primarily for the poor Chanderi weavers to save the dying traditional 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 & homemade solutions *Poor consumers and poor sellers* | Link income generation and consumption | Reduce wastages and storage of products | Localize production |
| | ***Spatial*** | 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**

**Case Study 1: 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, | Sent to Jaipur | Done in CWICTRC | Skill |

| | | | | | |
|---|---|---|---|---|---|
| | | BFC | | | |
| Finished Product | MEC | DEF | Exhibition | Via CWICTRC | Skill |
| Bulk Buyer | MEC, Exhibitions | Weavers and DEF | Shopkeeper, Mast. weavers | Mother Earth | Information and Financial |
| 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<br>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** | **Embroidering** | **Block Printing** | **Marketing** |
| **Spatial Separation** | Bridging the physical gaps between looms manufacturers & weavers | Bridging the physical gaps between raw material manufactu re & 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 faraway location thus consuming more time | Working together at one place, saving time | Productio n 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 |
| **Informational 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 technolog y | 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 | Governme nt funds utilized on raw material purchase. Bridging separations by DEF. | Weavers now have a fixed salary with incentive | Insufficie nt money for learning. Bridging separation s by DEF & MLA | Insufficie nt money for learning. Bridging separation s by DEF & MLA | Insufficient money for traveling & learning. Bridging separations by DEF & MLA | Insufficie nt money for traveling & learning. Bridging separation s by DEF & MLA | Profit sharing with SHG. Bridging separations by DEF. |
| **Knowledge/ Capability Separation (New)** | Increase knowledge about using hand loom | Become efficient in judging & purchasing raw material. | Increase knowledg e about new weaving pattern | Designing in computer increasing weavers' capability . Bridging separation s 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 separation s by DEF | Knowledge about how to sell products |

**Figure 5: DEF- SHG Supply Chain**

**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 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

[♠] 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.

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.

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.

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 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, and developing their capabilities such that their market participation increases.

**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 headquarter 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.

## Case Study 2: Barefoot College

Barefoot College (BFC) was established in Rajasthan, India in 1972 with the aim to provide villagers in rural hinterlands opportunity to learn and thereby a chance to improve their standard of living. Formerly referred to as Social Work and Research Centre (SWRC), BFC operated as an NGO in the areas of education, water, solar energy, healthcare, handicrafts, and vocational training. Education was the primary sector of operations. Rural children were denied the opportunity for getting educated as they were viewed as a wage earner at home. Hence BFC innovated by introducing the concept of night schools which did not hamper with the daytime work of the children. The coursework was also innovative with the content funny and interesting to elicit interest of the children.

BFC works in the sector of water included installation of 1300 hand pumps, 200 water tanks and a large-scale rainwater harvesting project. Solar Energy was one of the later initiatives taken by BFC. In 1989, BFC initiated the solar energy project that received interest from countries in Africa and Asia. Participants were given the certificate of Barefoot Solar Engineer with six months of training. BFC also introduced solar cooker, solar pumps and solar lantern that helped villagers increase their means of earning a livelihood by helping them work for 4 more hours at night. After completion of training, villagers would go back to their villages and setup Rural Electronic Workshop for training fellow villagers.

BFC also did substantial work in the field of healthcare. It helped bring basic healthcare services such as doctors, medical camps, dispensaries, pathology laboratory and mother & children care facilities to the previously uncovered rural villages. BFC also spreads awareness about various diseases. The results have been substantial with over 5000 patients being treated each year. Handicraft was another area of work of BFC with households deriving majority of their earnings through handicrafts. Art such as hand crafting was successfully marketed with bulk of sales coming from overseas sales. Over 200 artisans from 40 villages were jointly involved in the work. BFC ensures a certain minimum wages for the craftsmen. Tilonia products soon became famous with handbags being the most sought after product.

Vocational training was provided in all sectors including mechanical engineering, solar engineering, artistry, carpentry, water pump repair, etc. BFC's activities themselves led to the generation of half of the livelihood as no urban workers were involved in BFC activities.

We will now describe in some details about BFC's effort in different sectors(Source BFC archives and website).

**Education**: - Education was the basic root of development. That development could be reflected in many ways. Poor peoples couldn't send their children in regular school,

because of the afraid to lose one earning person. In rural area, girls were most neglected persons; there was a concept of child marriage. In 1975, BFC started night school. The concept of night school toiled, because it was not hampering their working time as well as earning also. The course curriculum was not in a regular format. Course structure was very interesting, realistic, and funny, so that children became curious to attend the classes. Through the night school, BFC increased decision making power, ability to perform in real situation, and other activities like 'Bal Mela'.

**Key Information**:-

- Since 1975, over 50000 children have passed through night school, and after passing school most of them were engaged in working in different department of barefoot college.
- Mobile Library – A jeep was roaming around the villages with books, during the night school.
- 150 night schools across the 600-800 KM in 5 districts of Rajasthan are run by Barefoot College.

**Health Care**: - Significantly boost reflected in rural health sector. It was possible only for the willpower of BFC. In earlier, villagers were used to go town for diagnosis & treatment. BFC made it possible in rural premises. Doctors, medical camps, dispensaries, pathology laboratory, and mothers & children care facilities they got at door stop. It was revolution for the villagers' life. They started to spread awareness about perilous diseases among villagers.

**Key Information**:-

- 24,834 tests have been conducted till date in rural pathology laboratory.
- Since 1975, 6,827 women and 11 men from 300 villages have attended family planning camps
- 650 patients recover from tuberculosis.
- Every year 5000 patients came and treated minor illness.

**Crafting**: - Crafting was the key area of earring for rural household; one-third of total earning comes from crafting. Through the hand stitching they have created varieties of designer product. In 1996-97, the amount of total grossed sell was 4.5 million INR. Most of the product sold out by foreign countries. Over 200 artisans from 40 villages jointly involved in appliqué work, embodying, block printing, garments, toys, leathers, and several other activities. BFC made sure few things, those are

1) Artisans will get minimum wages decided by the state government.
2) Environmental friendly methods are encouraged, an obvious example beings the use of vegetable dyes.
3) Special focus on women.

Demand of the Tilonia products was very high, especially handbags. In every year SRWC sells over one million rupees of products. Sales strategies avoided middleman exploitations. A rural crafts shop established in Binjarwada villages for promoting sells.

**Water**:-
**Key Information**:-

- SWRC Installed 1300 hand pumps.
- Nearly 200 tanks has been constructed with capacity of approximately 1.5 core little rain water.
- Neerjaal initiative has been taken by BFC associating with DEF and Global Rainwater Harvesting Collective (GRWHC). This was an initiative of collecting information on water of the different villages.

**Livelihood**: - Livelihood was provided in all possible sectors. BFC initiative itself was generate half of the new livelihood, because they didn't use urban expertise. BFC trained poor peoples, made them capable to work as Barefoot Mechanical Engineer, Barefoot Solar Engineer, Barefoot Artist, and Barefoot Carpenter. That was a simple way to generate livelihoods.

**Solar Energy**: - Until 1989, every initiative worked successfully, but some how BFC realized that there was a gap into their initiatives and that gap was fulfilled by Solar Energy. This initiative was unbeaten therefore poor people from Africa, Bhutan and Afghanistan came into Tilonia campus for six months training. BFC enthusiasm, motivational skill helps to carried out 60 years old grandmothers to learning solar technology, and became Barefoot Solar Engineers. Not only engineer, but teacher also. They had introduced solar pump, solar lantern and solar cooker in the villages, which helped villagers to lead their life in a better way. They could work 4 more hours at the night time. This initiative was also helped to generate livelihood. After completion of training, villagers went back to their respective villages; they had done setup of Rural Electronic Workshop (REW). Few members were working in REW and got stipend. Through this was BFC generated livelihood for poor villagers.

**How BFC reduce market separations**

BFC is present in are working in different sectors such as solar energy, education, water, health, and craft. At micro level, they are helping poorest people of the world, who live in remote villages, but are they working alone? – Definitely No. They have also corporate tie ups, and seek funds from Government. Barefoot College trained poorest people, so that they could provide service to other poorest people in their respective village. For trained people, BFC have required raw materials that have been supplied by private companies. In 2000, BFC launched Rural Electronic Workshop (REW) with 37 types of different instruments, which costs around Rs. 2, 04,815. Now if we look from Market Separation side then we will find it has been reduced.

**BFC Work Flow**

Created Training Center in Tilonia, Rajasthan – BFC representative visiting remote village of the world – village people or committee selected people for training purpose – interested selected people come Tilonia Campus – BFC trained them for 6 months – sent them back to their village – sent materials to their village for new workshop setup –

install workshop there by trained people – They have trained more interested people from their village – repair & maintenance work done in centre.
**Clause**: - BFC involved maximum women in every initiative.
**Reason**: - They found men are un-trainable, restless, impulsive, ambitious, and they wanted to get a certificate. The monument they got a certificate; they leaved from the village, and went to city for job searching.
**Clause**: - Every trainer was barely literate.
**Reason:** They did not want to depend on urban expertise. They wanted to learn by themselves, and wanted to become self-sufficient.
**Clause:** - In every initiative they have searched and made poorest poor people's involvement.
**Reason**: - BFC wanted to explore hidden talents of the poorest poor people.
**Clause:** - In every initiative, they have used low cost bottom up approach.
**Reason**: - BFC wanted poor people should obtain their voice, get the leadership quality, and become self-sufficient.
**Clause:** - Every initiative was local community based, and supervised by community members.
**Reason**: - BFC believed in team work.

Karnani raised a question that how can anybody else decide what is best for the poor? Here. Prahalad argues that the poor have the right to determine how they spend their limited income. Exactly poor peoples are choosing their suitable requirements, and NGO like BFC is giving them options to lead their life in a better way. For example REW build up in Ladakh is based on poorest people's jointly decision; also they have decided how much they will contribute in every month for solar system. Villagers also pay salary to the Barefoot Solar Engineer (BSE). While BSE are getting salary, also villagers are able to work at night at least four hours, and earning more money.

## Lower Prices + Raise Income = Poverty Alleviation

Barefoot solar system is the classic example of poverty alleviation. Poorest people do work for earnings, like farm harvesting, animal harvesting, stitching, cooking and produce different hand made products. They did all the work in day time, because there was no electric connection. At night time they used wood, kerosene for lighting, which was costly and not eco friendly. They did not have information about solar energy. When BFC started working on it, poorest people in the villages got aware about this cost effective solar system. By the help of BFC poorest people in the villages were able to use it through low monthly contribution. They gave this contribution in fund for repair and maintenance. Its mean they are using it in low prices as customers. Let's see how it was helping BOP people to raise income.

After completion of training, BOP people went to their respective village. In next 4-5 days, BFC sent materials to their villages for open a new REW. BSE was getting monthly salary or stipend from REW. BSE was the full time employee at REW, they was responsible for repair and maintenance work. The whole village house was light up. Then they could work at night by the help of solar light, which was more 4 hours. By working

more 4 hours, they could produce more products, and by sell them was earrings more money, which was helping them to purchased new products.

**Table 1: BFC Solar Energy Model and Stakeholders Activities**

| **Activities** / **Stakeholder** | **Sourcing Materials** | **Training** | **Service** | **Feedback** |
|---|---|---|---|---|
| **BFC** | BFC purchase electronic equipment | Arranging training environment | Providing initial setup cost for REW | BFC modifying initiative according to req. |
| **BOP Customers** | | Actively participating as trainer & trainee | Contributing operational cost. Working as BSE | Feedbacks forwards to BFC |
| **Exide Batteries** | Supplying Batteries | Batteries used during training | Batteries are helping to run the products & avail the service | |
| **Local Market** | Others Material | Others material used during training | Others material are helping to run the products & avail the service | |

**Table 2: BFC Solar Energy: Market Separation**

| Stakeholders / Market Separation | Spatial Separation | Temporal Separation | Informational Separation | Financial Separation | Knowledge/ Capability Separation |
|---|---|---|---|---|---|
| **BFC** | Avail light facility at village | Increase the work time | Providing training & information to the villagers | Invest earning to save the cost of wood & kerosene. | Increased technical knowledge on products |
| **BOP Customers** | Building REW in village. Going for training. | Reducing repairing time through REW | Spreading information to others villagers. | | |
| **Government** | Encouraging villagers to learn & to go abroad for training. | | | Providing funds | |
| **CAPART** | | | | Providing financial aid | |

**Table 3: BFC – Solar Energy Business Process, Supply Chain, and Effects**

| Business Process | Supply Chain | Involvement | Before Solar Energy | After Solar Energy | Market Separations |
|---|---|---|---|---|---|
| Place | Rajasthan Govt. | BFC* | Electronic Light | Solar Light | Financial, Informational |
| Fund | Foreign, CAPART, Govt. | BFC | | | Financial |
| Purchase Instruments | Exide | BFC | | | Informational |
| Training to BOP Peoples | BOP* | BFC | | | Informational, Knowledge |
| Service at BOP | BOP | BFC | | | Financial, Informational, Knowledge |
| REW* | BOP | BFC | | | Financial, Informational, |
| Earning | BOP | BFC | | | Financial |
| Feedback | BOP | BFC | | | Informational |

* BOP – Bottom Of Pyramid, REW – Rural Electronic Workshop, BFC – Barefoot College.

**Table 4: BFC – Solar Energy Supply Chain**

| Separation / Supply Chain | Sourcing | | | Service | | Feedback | |
|---|---|---|---|---|---|---|---|
| | **Electronic Instrument** | **Raw Material** | **BOP People** | **Training to BOP** | **Service at BOP** | **Earning** | **Feedback** |
| **Spatial Separation** | Bring instruments from the market for training & service purpose | Bring raw materials from the market for training & service purpose | Come Tilonia campus for get training | | Local repair & maintenance availability | | Customers send feedback at local center |
| **Temporal Separation** | | | | | Service available at village | Extra working hour at night | |
| **Informational Separation** | BOP peoples are known from where they will get electronic instruments | BOP peoples are known from where they will get raw materials | BOP peoples are now aware about solar energy | Getting information about solar light | Solar light repair & maintenance related information are now available for BOP people | | Customers feedback are easy accessible |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Financial Separation** | BFC proving the expenses of electronic instruments | BFC proving the expenses of raw materials | BOP peoples are now earning through solar energy | BFC proving the expenses of training | ? | More production hours give more income | |
| **Knowledge/Capability Separation** | | | | BOP peoples are getting knowledge about solar energy | BOP peoples are getting knowledge of repair & maintenance | | |

## Concluding remarks

In our analysis of these two non-profit organizations, Digital Empowerment Foundation (DEF), and Barefoot College, we try to show how NGOs may help to develop markets at BOP by reducing market separations. Leveraging Bartel's(1968) theoretical lens of market separations, and by finding and adding the fifth and a new market separation, " Capability Separation" our case studies provide new insights on market separations perspective to developing markets at BOP by paying more attention to specific market separations that inhibit market development. We also propose that capabilities separation is the not only the 'only human separation' but also acts as a catalyst such that reducing this separation accelerates reduction in the other four market separations. Towards this objective identification of capabilities or knowledge separation (of poor producers/consumers at BOP) as a key market separation forms one of the major contributions of our research.

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