



INDIAN INSTITUTE OF MANAGEMENT CALCUTTA

WORKING PAPER SERIES

WPS No. 675/ May 2011

**A Market Separations Perspective to Analyze the Role of ICT in Development at the
Bottom of the Pyramid**

by

Monideepa Tarafdar

Associate Professor, Information, Operations and Technology Management; College of Business
and Innovation, The University of Toledo; 2801 W. Bancroft Street, MS # 103; Toledo OH 43606

&

Ramendra Singh

Assistant Professor, Indian Institute of Management Calcutta, Joka, Kolkata 700104

A Market Separations Perspective to Analyze the Role of ICT in Development at the Bottom of the Pyramid

Research in Progress Paper

Abstract

The “Bottom of the Pyramid” “BOP” defined to include people sustaining on less than US \$2 a day is believed to consist of over four billion people. A principal problem facing BOP consumers is lack of access to essential goods and services, due to unavailability (Prahalad 2005) and/or non-affordability. Similarly, BOP producers find it difficult to identify, connect with, and market their products to, potential customers. This research in progress paper examines the research question: How can Information and Communication Technologies (ICT) facilitate market development at the “Bottom of the Pyramid” (BOP)? Combining concepts from the theory of Market Separations and the Automate-Informate-Transform classification of Information Systems (IS) roles, from the marketing and IS literatures respectively, we develop propositions describing how ICT can reduce particular types of market separations between consumers and producers at the BOP, and thus facilitate market development at the BOP. Our study uses qualitative primary data (interviews with 32 respondents in India) and secondary data. Ongoing analysis indicates that consumers and producers in markets at the BOP are indeed separated from one another due to four types of market separations-spatial, temporal, financial and informational. Application of ICT can reduce these four separations to facilitate exchange and consumption for BOP individuals. Expected contributions and implications are discussed.

1. INTRODUCTION

The “Bottom of the Pyramid” (BOP), defined to include people sustaining on less than US \$2 a day (Prahalad and Hammond 2002) is believed to consist of over four billion people, living primarily in Asia, Africa and South America (Hammond et al, 2007).). A principal problem facing BOP *consumers* is lack of access to essential goods and services, due to unavailability (Prahalad 2005) and/or non-affordability (Karnani 2007). Similarly, BOP *producers* find it difficult to identify, connect with, and market their products to, potential customers (Karnani 2007). Traditionally, these problems have been tackled through poverty-alleviation and developmental assistance programs from government and private organizations (e.g. Walsh et al, 2005). However, emerging ideas (e.g., Prahalad and Hammond 2002; Viswanathan et. al., 2008;

Vishwanathan et. al., 2010) suggest that market development at the BOP can be an important mechanism for addressing them. Markets at the BOP are those that include consumers and/or producers that belong to BOP communities. Well-functioning markets at the BOP are those for which market exchanges between producers and consumers take place efficiently (Huang and Rozelle, 1998). They are important for at least two reasons. First, to enable BOP consumers and producers to connect with the larger mainstream economy and have access, respectively, to its sellers and buyers. Second, to facilitate market exchanges between BOP consumers and producers, generating local economic activity.

Even though markets at the BOP are important, it is difficult to develop them, for a number of reasons. These include - remote location of BOP communities making physical distribution of goods costly (Vachani and Smith 2008); BOP individuals having low and uncertain incomes; and the presence of “informal” local markets having exploitative intermediaries with asymmetrical information access (Prahalad and Hammond, 2002)

production and consumption. *Informational separation* describes informational asymmetry between producers and consumers relating to products, demand and other market conditions, whereby one side has more information than the other. *Financial separation* is lack of

3. RESEARCH PROPOSITIONS

Based on the above discussions, we develop theoretical propositions for examining our research question, as shown in Figure 1. Specifically, we suggest that particular conditions at the BOP aggravate the four market separations, that the roles of ICT can mitigate the separations, and that reduction of these separations can lead to market

individuals develop coping mechanisms, one of them being densely networked social and

3.3. Market Separations and Market Development at the BOP

BOP markets are characterized by poor infrastructure, information asymmetries and weak institutions (Viswanathan et al., 2009), hence are poorly developed. BOP individuals are geographically dispersed and often live in physically inaccessible places having poor transportation facilities (Vachani and Smith, 2008). Such spatial separation can be bridged by localizing product/service development and sourcing indigenous technologies and resources to create goods and services. Temporal separation implies that production and consumption of goods and services are separated in time. It is relevant for BOP producers who live in rural areas, particularly farmers living on subsistence farming (Yunus, 2007) and producing perishable and seasonal commodities such as food grains and other agricultural produce. Informational separation happens because BOP consumers and producers have asymmetrical knowledge of products/services and market conditions, given their low levels of literacy and lack of access to broad-based information sources. Financial separation implies that buyers of goods and services do not possess adequate purchasing power at the time that they have the willingness or need to buy. Reducing each of these separations facilitates greater spatial, temporal and informational proximity between consumers/ producers at the BOP and marketers/buyers within or outside BOP and thus leads to increased exchange in BOP markets. Thus, reducing the four market separations is an effective way of developing these markets.

Therefore we posit:

Proposition 3: Reduction in market separations at the BOP leads to market development at the BOP.

4. METHODOLOGY

We adopted a positivist, qualitative research design (e.g. Yin 2003). Our initial research propositions were framed a-priori, using theoreti

facilitated exchange and consumption for them. Interviews, lasting between 15 and 60 minutes, were audio-recorded, transcribed and coded. Axial coding (Strauss and Corbin 1998) was done to identify data that reflected our three init

We find that *low skill levels* lead to **financial separation**. Most of our BOP respondents had low skills as a result of which they were engaged in poorly paid, jobs such as those of daily wage earners or household help, which resulted in financial separation. As one household maid mentioned, “*When I don’t have enough money to buy what we need, I wait till I can save enough. Sometimes that means going without medicine, if I am sick.*”

We find that *poor information access* can lead to **temporal separation**. For example, a housemaid, i.e. a BOP producer of housekeeping services, mentioned, “*the only way I come to know which household is in need of a housemaid is through my network of other housemaids. There is no organized way of knowing what positions are available, many times I don’t have full time work and my services go asking.*” That is, services by BOP service providers may be available, but there is not enough information to identify those who are ready to consume them at that time.

We find that *poor information access* also results in **spatial separation** because it leads to physically localized and restricted forms of exchange. When asked how far they traveled to make their purchases, many of our BOP interviewees responded with, “*I visit local shops, usually less than a mile or two away*”. When asked why they did not go further, they said that they knew only about the local shops. Additionally, we discovered that local shopkeepers gave them low interest or interest free credit, since they often did not have the cash to pay for their purchases, further preventing them from going beyond local markets.

5.2. Proposition 2: ICT and Market Separations at the BOP

We find that the three roles of ICT reduce the four market separations. For each separation, we provide examples we have analyzed so far, from primary and secondary data.

We find that the transform role reduces or bridges **spatial separation**, through the transform role, by means of whole or partial digitization of products that enables easily scalable distribution models that reach remote areas. Smart Communications, a telecommunication company in Philippines, developed a system for rural cell phone users to electronically operate their prepaid mobile phone accounts through a SIM card and text messages, instead of buying physical phone cards from retailers, often many miles away. Retailers used the SIM card to open, close or recharge accounts electronically, overcoming spatial separation from the BOP customer (Anderson 2006).

We find that ICT reduces **temporal separation** through the automate role, by helping reduce time lag between production and consumption. The automate role creates process efficiencies to reduce time lag between production of perishable dairy products by BOP producers, and their use by buyers. For E-Choupal, as mentioned by a regional head *“With manual scales and record keeping for grains, there was delay in weighing and transportation of the grains. With handheld devices for recording inventory and an ERP application for tracking it, our collection processes are faster and we can get the grain to the mills sooner.”*

We find that **financial separation** can be reduced or bridged by making products and services more affordable for BOP consumers. The transform role, through product digitization, enables

beneficial conditions for BOP individuals. That is, the presence of the separations prevents the presence of these conditions.

For example, BOP buyers have access to more goods and services. Rural tele-health initiatives, in reducing the spatial separation between healthcare providers and BOP individuals have enabled the latter to access healthcare diagnosis from hospitals in the bigger cities, as demonstrated by initiatives in Uganda and India (Govindrajan 2010). Reduction of financial separation makes it possible for BOP consumers to have access to simple financing mechanisms like credit cards, and reduction of information separation facilitates access to insurance (Kanungo 2003) and agricultural products. Further, BOP producers have greater access to buyers, for their goods and services. As part of the E-Choupal initiative for instance, information about the price that farmers would get for their grains is communicated through Internet kiosks in the villages. Such reduction of informational separation through digitized delivery of price information has enabled farmers to find appropriate buyers for their produce.

6. ONGOING DATA ANALYSIS, EXPECTED CONTRIBUTION AND RELEVANCE TO GOALS OF SIGDEV

We expect our ongoing data analysis to yield further detailed insights and illustrations regarding our research hypothesis. In particular we expect to understand how (1) each of the four roles of ICT reduces market separations, (2) what the outcomes of such reduction are, (3) which roles might be particularly important for a specific separation, and (4) interdependence between the separations. We hope to present these findings at the workshop.

The BOP, in spite of being a considerably large segment, has not been explicitly addressed in the literature on ICT-driven development. In particular, the relationship between ICT deployment and economic/social benefits implicates social and individual processes that are not theoretically well understood. Emerging commentary in the BO

understanding within the third discourse, for understanding *how*

- Govindarajan, V., A Telemedicine Innovation for the Poor That Should Open Eyes, Harvard Business Review Blog, November 9, 2010, Retrieved from <http://blogs.hbr.org/govindarajan/2010/11/a-telemedicine-innovation-for-the-poor-that-should-open-eyes.html> on April 20, 2011
- Hammond, A. L., Kramer W.J., Katz, R.S., Tran, J.T., and Walker, C. 2007. The Next Four Billion: Market Size and Business Strategy at the Base of the Pyramid. Washington, DC: World Resources Institute, International Finance Corporation.
- Huang, J., and Rozelle, S. 1998. "Market Development and Food Demand in Rural China," *Economic Review* (9:1), pp.25-45.
- Jarvenpaa, S.L. and Leidner, D.E. 1998. "Information Company in Mexico: Extending the resource-based view of the firm to a developing country context," *Information Systems Research* (9,4), pp. 342–361.
- Karnani, A. 2007. "The Mirage of Marketing to the Bottom of the Pyramid: How the Private Sector can Help Alleviate Poverty," *California Management Review* (49:4), pp. 90-111.
- Kanungo, S. 2003. "Information Village: Bridging the digital divide in rural India," *The Digital Challenge: Information Technology in the Development Context*, Krishna and S. Madon (eds.), Aldershot: Ashgate, pp. 104–123.
- Kiri, K. and Menon, D. 2006. "For Profit Rural Kiosks in India: Achievements and Challenges". I4D. <http://www.i4donline.net/articles/current/article.asp?articleid=700&typ=Features>
- Korpela, M., Soriyan, H.A., Olufokunbi, K. and Mursu, A. 2000. "Made in Nigeria Systems Development Methodologies: An action research project in the Health sector", *Information Technology in Context: Studies from the perspective of developing countries*, Avgerou and G. Walsham (eds.) Aldershot: Ashgate, pp. 113–133.
- Madon, S. 2005. "Governance lessons from the experience of telecentres in Kerala," *European Journal of Information Systems* (14), pp.401-416.
- Prahalad, C.K. 2005. *The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits*, Upper Saddle River, NJ: Wharton School Publishing.
- Prahalad, C.K., and Hammond, A. 2002. "Sell the World's Poor, Profitably," *Harvard Business Review* (80: 9), pp. 48-57.
- Prahalad, C.K., and Hart, S. L. 2002. "The Fortune at the Bottom of the Pyramid", *Strategy+Business* (26:1), Booz, Allen & Hamilton Inc, pp. 54-67.
- Ruth, J.A., and Hsiung, R.A. 2007 "A Family Systems Interpretation of How Subsistence Consumers Manage: The Case of South Africa," *Advances in International Management Series* Vol. 20, Rosa, J.A., and Viswanathan, M., (Eds.), Oxford: Elsevier, pp. 59-87.
- Strauss, A., & Corbin, J. 1990. *Basics of qualitative research: Grounded theory, procedures, and techniques* Newbury Park, CA: Sage Publications
- United Nations Human Development Report 2010 [Retrieved from http://hdr.undp.org/en/media/HDR_2010_EN_Table1.pdf on April 20, 2011]
- Vachani, S., and Smith, N.C. 2008. "Socially Possible Distribution: Distribution Strategies For Reaching The Bottom of The Pyramid," *California Management Review* (50: 2), pp. 52-84.
- Viswanathan, M., and Rosa, J.A. 2007. "Product Market Development for Subsistence Marketplaces: Consumption and Entrepreneurship beyond Literacy and Resource Barriers," in *Advances in International Management Series*, Vol. 20, Rosa, J.A., and Viswanathan, M. (Eds.), Oxford: Elsevier, pp.1-17.

- Viswanathan, M. Gajendiran, S., and Venkatesan, R.2008. *Enabling Consumer and Entrepreneurial Literacy in Subsistence Marketplaces*. New York: Springer.
- Viswanathan, M., Sridharan, S., Gau, R., and Ritchie, R. “Designing Marketplace Literacy Education in Resource-Constrained Contexts: Implications for Public Policy and Marketing,” *Journal of Public Policy & Marketing* (28: 1), 2009, pp. 85-94.
- Walsh, J. P., Kress, J. C., & Beyerchen, K. W. (2005). Book Review Essay: Promises and Perils at the Bottom of the Pyramid. *Administrative Science Quarterly*, 50(3), 473-482.
- Weill, P. “The relationship between investments in information technology and firm performance: A study of the valve manufacturing sector” *Information Systems Research*, (3: 4), December 1992, pp 307–333.
- Yunus, M. “The Nobel Peace Prize 2006 Nobel Lecture,” *Law and Business Review of the Americas* (13: 2), 2007, pp. 267-275.
- Yin, R. 2003. *Case study research: Design and methods*, Thousand Oaks, CA: Sage Publications.
- Zuboff, S.1998. *In the Age of the Smart Machine: The Future of Work and Power*. New York: Basic Books.

A Market Separations Perspective to Analyze the Role of ICT in Development at the Bottom of the Pyramid

Research in Progress Paper

Monideepa Tarafdar (Corresponding Author)

Associate Professor

*Information, Operations and Technology Management,
College of Business and Innovation*

The University of Toledo

2801 W. Bancroft Street, Toledo, OH 43606 USA

Phone: 419-530-2442

Email: monideepa.tarafdar@utoledo.edu

Ramendra Singh

Assistant Professor, Marketing

W-404 New Teaching Block;

Indian Institute of Management Calcutta

D.H.Road; Joka; Kolkata 700104; India.

Phone: 91-33-24678000(Ext-552); 91-9883599998.

Email: ramendra@iimcal.ac.in