

Delivering humanitarian assistance at the last mile of the supply chain: insights on recruiting and training

Andrea M. Prado
INCAE Business School
roy.zuniga@incae.edu

Daniel Calderón, INCAE Business School

Roy Zúñiga, INCAE Business School

Abstract

Humanitarian operations management research has focused on structural issues and resource allocation, but little is known about human resources delivering aid at the last mile of the supply chain. Our analysis yields insights into the way the organization can implement recruiting and training practices to work with BOP personnel.

Keywords: Humanitarian operations, last mile, base of the pyramid

Introduction

Operations management at the last mile has proven to be a challenge, not only to companies, but also to humanitarian and non-governmental organizations (NGOs) delivering goods and services to geographically isolated communities, particularly in developing countries. Besides the lack of infrastructure and access to basic services, this segment of the population usually lives under conditions of extreme poverty, which implies a set of logistical, social and even cultural challenges for those organizations operating in this context. Therefore, it is urgent that we improve our understanding of how to effectively deliver humanitarian aid at the last mile.

Humanitarian logistics encompasses a broad range of operations, including the distribution of medical and food supplies to prevent diseases and hunger, as well as of critical supplies in a post-disaster period (Holguín-Veras et al., 2012). This paper focuses on regular humanitarian logistics (RHL) along the continuum of logistical operations, which goes from commercial at one extreme to post-disaster at the other.

Operations management research that focuses on delivering products and services has emphasized the study of structural issues and analytical questions, paying little attention to human resources issues (Ahmad and Schroeder, 2003; Scudder and Hill, 1998). Similarly, humanitarian operations research has paid more attention to resource allocation and vehicle fleet management models (Yi and Kumar, 2007; Jaller, 2011; Holguín-Veras et al., 2012; Pedraza, Stapleton and Van Wassenhove, 2011) than to human resource teams to deliver aid on the ground. Therefore, even if scholars have generated knowledge on how to deliver packages to a specific destination, we still need to understand how to access and train the human resources that will perform the next action: opening the package and distributing the product at the community level in these isolated locations.

The main objective of this paper is to analyze how the local organizations that partner with humanitarian organizations and MNCs can manage the human resources necessary to deliver products and services at the last mile. We use an exploratory case study of a Nicaraguan NGO that delivers medicines to rural communities to analyze the human resource practices that allow the organization to achieve its mission at the last mile. Finally, we conclude with a discussion of the managerial and scholarly implications and provide suggestions for future research.

Literature Review

By uniting efforts through initiatives such as the Millennium Development Goals, the international community seeks to improve the quality of life of the poorest of the poor worldwide (Pedraza, Stapleton and Van Wassenhove, 2011). Humanitarian organizations (HO) and international aid agencies (IAO), are also called upon to participate in these efforts (Prahalad and Doz, 1987). In addition, MNCs are not only joining forces through their corporate social responsibility strategies (London and Hart, 2004), but also are trying to develop inclusive businesses targeted at including this segment of the population—often referred to as the base of the pyramid (BoP) (Prahalad and Hammond, 2002)—either as consumers or as suppliers.

BoP refers to the global poor, most of whom live in developing countries. Approximately three to four billion people live at the BoP and have an income of less than \$2 a day (Prahalad, 2005; Prahalad and Hart, 2002). Organizations serving the BoP face significant challenges related to business infrastructure and market failures. Among the distribution challenges that make it difficult to deliver aid or access to the BoP markets are poor roads, communications, and electricity infrastructure; information problems; lack of knowledge and skills; illiteracy; informality; and no access to credit (Vachani and Smith, 2008; London and Hart, 2004). Khanna and Palepu (1997) refer to these market failures or the lack of proper entities to supply organizations' needs as *institutional voids*.

Parmigiani and Rivera-Santos (2014) analyze how institutional voids affect MNCs' supply chains and how these companies overcome them successfully to operate at the BoP. The study reveals two main ways in which these organizations have dealt with such voids. First, MNCs partner with NGOs to fill the void by building local capacity through training. Second, some MNCs have addressed the lack of skilled labor at the BoP by maintaining high value-added processes at their headquarters in developed countries, while allocating those requiring less-skilled labor in the developing countries where they want to operate. However, little is known of how these organizations actually perform human resources practices at the last mile.

Human resources management (HRM) contributes to creating and sustaining organizational performance and competitive advantage (Arthur, 1994; Huselid and Becker, 2011; Gerhart and Milkovich, 1992). However, operation management scholars rarely study human resources practices (Ahmad and Schroeder, 2003). Moreover, the studies that do so focus mainly on manufacturing facilities in developed countries. Research exploring HRM in organizations delivering services or humanitarian aid, particularly at the last mile of the supply chain, is lacking; thus, research is needed to explore these practices for organizations operating in different strategic contexts (Ahmad and Schroeder 2003).

In this paper, the focus is on human resources recruiting and training practices, as we believe that they are essential to filling the labor market void that organizations encounter at the BoP. The limited pool of skilled candidates in this segment of the population, as well as the difficulty of geographically reaching some of these communities, can hinder recruiting processes.

These conditions also make it necessary to provide training to local employees at the last mile in order to successfully serve these communities.

Methodology and Data Collection

Methodology

To understand how organizations operating at the BoP fill the labor market void, we conducted an in-depth case study of a Nicaraguan-based NGO that operated a network of socially-oriented pharmacies called *ventas sociales de medicamentos* (VSM).

Following Meredith (1998) and Voss et al. (2002), we conducted an exploratory research case to address our research question. Case study research usually combines data collection methods such as interviews, observations, archives, and questionnaires (Eisenhardt, 1989). Moreover, a case study is a history of a past or current phenomenon, drawn from multiple sources of evidence, including direct observation and systematic interviewing, as well as public and private archives (Leonard-Barton, 1990).

Single cases have limitations. Conclusions, models, or theory developed through a single case has limited generalizability (Voss, Tsikriktsis and Frohlich, 2002). Other potential problems include observer biases, the risk of misjudging a single event, and exaggerated data (Leonard-Barton, 1990; Voss et al., 2002). We sought to minimize these problems by having all three authors engaged in the data collection and analysis.

Data Collection

We gathered our data from multiple interviews, fieldwork, and archival sources. From July 29 to August 8, 2014, we visited Nicaragua, where we conducted interviews and visited various rural communities where AMC operates. In Managua, the authors interviewed six representatives of the AMC management team at the headquarters; these included the NGO's President, Health Programs Director, VSM Manager, and VSM management team. Afterwards, and together with representatives of AMC, we traveled to the South Atlantic Autonomous Region (RAAS), which constitutes an appropriate setting in which to address our research question, as it is one of the most geographically isolated and impoverished regions in Nicaragua. Participatory observation took place during the on-site field supervision visits conducted by Erlin Rugama, VSM Program Director, and Luis Lindo, VSM Field Supervisor. The on-site visits focused on three areas: operations and management, pharmaceuticals, and training and evaluation.

Acción Médica Cristiana: Case Description

Nicaragua is the second poorest country in Latin America. By 2014, it had an estimated population of approximately six million people. According to the World Bank (2009), 42.5 percent of this population lived below the poverty line in 2009. The capital, Managua, is home to about one fourth of the country's total population and most of its public services and government agencies. Nicaragua is geographically divided into three regions—Pacific Lowlands, Caribbean Lowlands, and Central Highlands—with populations from different ethnic backgrounds inhabiting the country.

By 2013, its GDP per capita was \$1,367 (constant 2005 dollars). Households have deficient public services, with approximately one third of the population having no access to potable water and more than two thirds having no electricity services. Waste management is a national problem, as 70 percent of the garbage is neither collected nor processed.

The Caribbean Lowlands represent about 57 percent of the national territory and are inhabited by approximately four percent of the national population. Infrastructure is extremely deficient in this area. Communities in this territory are connected by a network of navigable rivers and lakes. Their degree of isolation is worsened by the low availability of public services and healthcare services. Most of the local population in this region lives in poverty conditions and has little access to formal education (i.e., it exhibits high illiteracy rates).

Nicaraguan medicine and dentistry students founded Acción Médica Cristiana (AMC) in 1984. Since its inception, AMC has defined itself as a Christian organization that implements community health and development in impoverished Nicaraguan communities. Its vision was to become an agent of social change, so that communities and municipalities could implement their own health and development models.

Initially, the organization focused on bringing charitable primary health care and dental care to rural isolated and impoverished communities. Since 2000, the scope of its operation grew to include community development and preventive healthcare services. AMC also made the achievement of financial sustainability one of its goals. During their social services in rural communities, the students realized that the people in the Atlantic region (also known as the Caribbean lowlands composed by the North and South Atlantic region) had the least access to healthcare services. In 2000, AMC decided to venture into franchises, which AMC neither operated nor owned. However, to align them with the organization's mission of providing access to low-cost and high-quality medicines in poor communities, the franchises needed to have the same quality controls and standards (including price policies) as the VSMs.

AMC's pharmaceutical warehouse customers included the network of VSMs and franchises, donating associates (e.g., churches that donated medications), international medical missions (e.g., Doctors without Borders), and pharmacies managed by the Nicaraguan Health Ministry. VSM organized the operation as follows. First, the VSM management team centralized the purchases to international suppliers and delivered the product to a pharmaceutical warehouse in Managua. From this warehouse, AMC distributed the product to the different customers in the network. Each VSM had a single person—called a dispenser—in charge of managing it. **Figure 1** shows the project's operational structure.

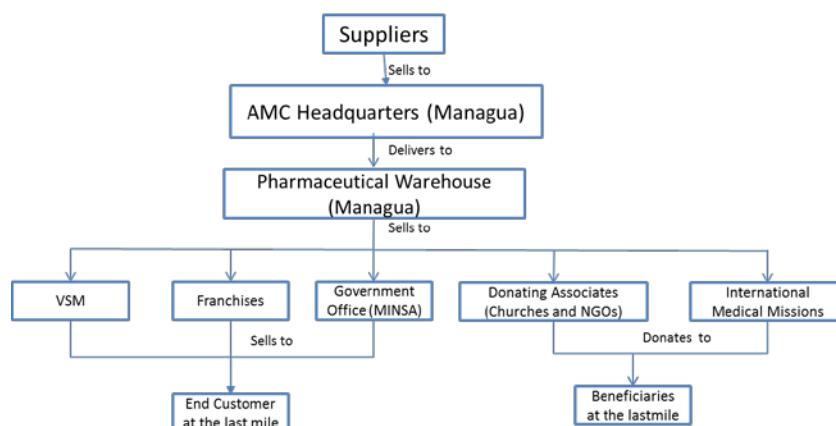


Figure 1: Diagram summarizing VSM's operations

AMC relied on third-party distribution to reach the last mile in the Atlantic region (i.e., using public bus and commercial boat services to ship packages in some of the destinations). On

the Pacific side, due to better infrastructure conditions, AMC used its own truck to deliver its product at the last mile.

Human resources was one of the key elements of the VSM project, which required two types of personnel—administrative and operational. The former were in charge of the administrative tasks performed in the headquarters. Activities such as purchasing, quality control and testing, supervision, information processing, forecasting and general management required skilled labor to effectively implement them. Many of the management decisions of the VSMs in the different locations were centralized and made by the management team in Managua. Recruiting skilled labor for these positions in the capital was relatively easy.

The dispensers were assigned to different VSMs operating at the community level. Recruiting these resources was more challenging given the low levels of education at the last mile. Another source of difficulty was these regions' ethnic diversity (e.g., miskito, ramas, and creoles), which meant that some of these communities spoke different dialects. AMC recruited dispensers who spoke the local dialect so they could interact with the customers effectively. This limitation sometimes threatened the effectiveness of recruiting and training processes.

Dispensers had multiple responsibilities. Their tasks included a) managing the overall VSM operation; b) assuring quality of the product through standardized pharmaceutical practices; c) handling the inventory; d) keeping financial and operational forms up to date and properly filled out; and e) managing the working capital in order to pay their own wages, and local expenses. Since the available labor at the community level often lacked the know-how to perform these tasks, AMC provided training in both managerial and technical areas.

AMC's recruiting practices at the last mile

Recruiting personnel to work at the last mile is a challenging process, particularly if the organization seeks to hire members of the communities in which they operate. Management often has to get directly and actively involved in the selection process to identify potential candidates. Advertising for a vacant position in these communities is not an option. Traditional mechanisms (i.e., newspapers, and online channels) are not likely to be available in these places. As most community members know each other, AMC relies on them to recommend local candidates and participate in the selection and recruiting processes. At the last mile, the VSM management team cannot be on top of AMC operations on a daily basis due to the isolation of these areas. If community members are involved in the establishment of the VSM, they are more likely to support it by playing—even if indirectly—a monitoring and supervising role. Hiring a dispenser recommended by the community contributes to its members' engagement in the project. And, clearly, the community leaders would likely know better which local individuals could best fulfill the necessary requirements for the position.

In sum, the process of evaluating values and attitudes in potential candidates also benefits from having a set of pre-defined criteria and procedures to follow. In fact, AMC developed a script to guide the interview process (e.g., a list of questions to ask the candidates and behaviors to observe). This process, together with the VSM management team's years of experience with the context in which they operate, makes it possible to assess whether the candidates have the necessary qualities. As observed in the AMC recruiting strategy, effective recruiting of local personnel to work at the last mile focuses as much on values and attitudes as on a set of skills that can be acquired through training.

AMC's training practices at the last mile

AMC provides VSM dispensers with training in both managerial and technical areas. Managerial training consists of developing the necessary skills for them to effectively operate the VSM. The VSM management team teaches them how to manage inventory; place orders; receive, store and return merchandise; keep records; and track transactions (e.g., sales, expenses and profits). This training also aims to teach dispensers AMC's operating standards and procedures. The technical training focuses on teaching them how to diagnose symptoms and prescribe medication accordingly. AMC has developed a structured training program aimed at giving new hires a comprehensive overview of how the organization operates, while offering dispensers the opportunity to acquire knowledge in several areas.

Once AMC has hired a new dispenser, she receives 110 hours of initial training, divided into several stages. The first stage encompassed 30 hours of face-to-face training. The second stage requires the dispenser to spend 30 hours as an intern in a real VSM location, working under the direction of a certified dispenser with more than five years of experience. Twenty self-study hours, during which the trainee solves practical problems that she would likely encounter while managing a VSM, constitutes the third stage of the training. The next stage consists of another 30 hours of one-on-one *in situ* training, during which dispensers can clear up questions that came up during the internship practice and receive feedback from the VSM training team. At the end of each of these stages, the training team evaluates whether the dispensers have achieved the training goals. To accomplish this, the team uses multiple methodologies, such as case discussions, individual case analysis, exercises related to both managerial and technical issues, and role-playing. AMC has developed a set of written guidelines for conducting these evaluations. For example, AMC has evaluation manuals for communication skills.

One of the questions arising when designing a training program is: *What capabilities does the organization want the trainees to develop?* Therefore, along with the managerial and technical aspects of the operation, new entrants receive a training module focused on how to organize the community to solve its own problems.

With almost 100 local distributors (owned VSMs and franchises) scattered all over Nicaragua, AMC decided to standardize a set of forms to lower costs, manage variability, maximize efficiency, and improve communication and controls between the headquarters and the dispensers. As mentioned before, some of these forms keep records and controls over sales, expenses, medicines dispatched with and without a prescription, number of persons served, number of treatments provided, inventories, and medicine orders. Dispensers receive training on how to fill out these forms and use their information to make better management decisions.

Putting control systems and standard procedures into effect is likely to increase the performance of organizations operating at the last mile, as they can compensate for the lack of daily supervision over community-level distributors. However, for these instruments to be effective, the organization has not only to make sure they are as easy as possible to use, but also has to train its personnel at the last mile to use them correctly. AMC has done both. The organization provides manuals that explain to dispensers—step-by-step—how to calculate the indicators and how to fill in the requested information on the appropriate forms.

Although organizations can standardize some of its practices, there might still be cases in which dispensers need to make technical decisions about issues not predefined in the training materials. Manuals can be a handy resource under these circumstances. However, if the manual does not provide guidelines to solve the situation, having access to highly-skilled and knowledgeable resources within the organization can help overcome the problem. For example, AMC encourages dispensers to communicate with either the local health community leader—

whenever available—or any of the members of the VSM management team. Complementing the training programs with access to formal and informal support networks strengthens the local distributors' performance by providing a mechanism to address unexpected variability (gray areas) in the operations at the last mile.

Once a year, dispensers from all around the country gather together for five days, which provide them with the opportunity not only to network and get to know each other, but also to share experiences and discuss the challenges they face in the field. By organizing these retreats, AMC facilitates knowledge exchange and sharing of best practices among the dispensers, who work by themselves in isolated communities year-round.

Selection, Recruitment and Training at the Last Mile: A Systematic Approach

We explore how an organization that operates at the BoP fills in the labor market voids in these regions by implementing a set of strategic human resource management practices. Our analysis focuses on the organization's selection, recruitment and training practices, and, based on an exploratory case study, we propose a systematic approach to implementing these practices at the last mile. **Figure 2** depicts a flow diagram of the different components of this approach.

We argue that by using these practices, organizations can not only improve the performance of their human resources at the last mile, but also effectively deliver humanitarian aid to the BoP. If operations management systems that standardize processes and procedures along social and organizational networks were to accompany these HRM practices, the probability of achieving these results would increase.

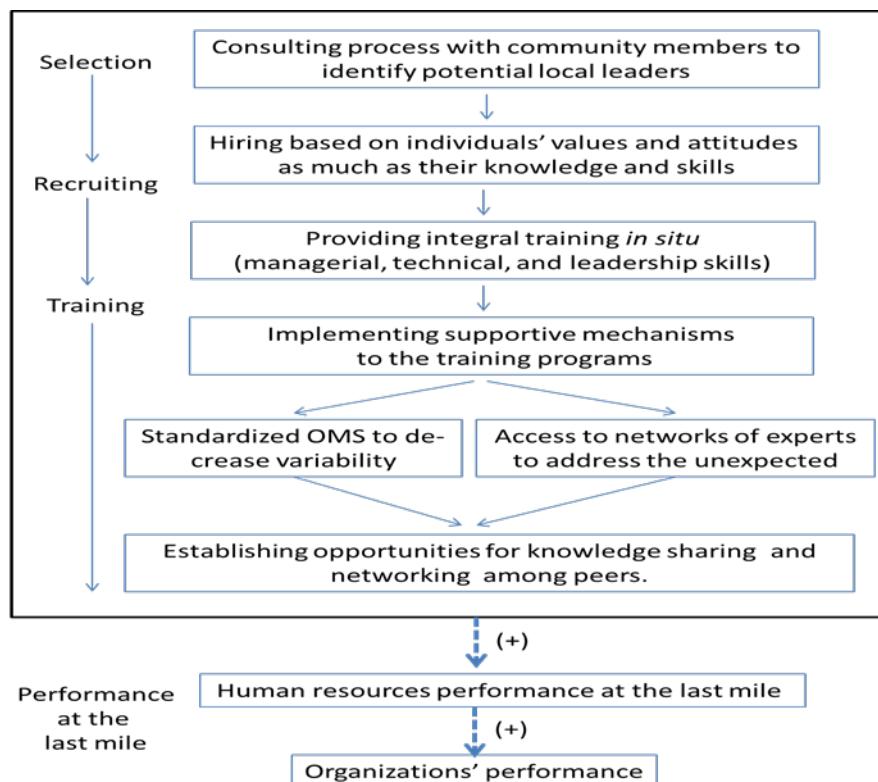


Figure 2: A Systematic Approach to Recruiting and Training at the Last Mile

Our proposed approach includes the following practices. First, a consulting process with community leaders to help identify suitable local candidates increases the community members' engagement in and commitment to the project, as well as the likelihood of finding the right people. Second, hiring criteria based as much on values and attitudes as on knowledge and skills allow the organization to recruit candidates with traits that are difficult to teach. Interviews and interaction with the candidates in their local contexts are useful for recruiters to assess these individual traits—more difficult to evaluate than knowledge and skills—and to judge the candidate's fit with the organization's culture.

Training local human resources to deliver humanitarian aid at the last mile is strategic for an organization operating at the BoP, given the lack of skilled labor in these contexts. As shown in **Figure 2**, our proposed approach includes three practices that are likely to increase the effectiveness of training programs at the last mile: First, individual training programs delivered *in-situ* should be integral to preparing human resources to work with little supervision in their local communities—i.e., they should address managerial, technical, and leadership skills. Second, implementing supportive mechanisms to complement the training allows human resources at the last mile to leverage other sources of knowledge and information. These mechanisms include: a) standardized operations management systems (OMS) consisting of, among other things, manuals and controls that compile information and describe procedures for decision making and task implementation; and b) access to either formal or informal networks of experts to consult with in case of unexpected situations.

Third, the organization can organize events or find opportunities for its human resources working at the last mile to share their knowledge and experiences. These interactions can result in continuous improvement of the organization's OMS. Providing such opportunities to meet also helps to strengthen networks among peers, thus increasing the level of support and responsiveness of informal networks. These three practices would contribute to more-effective training programs for the organization. This systematic approach to selection, recruitment and training practices is likely to improve human resources' performance at the last mile. As a result, the organization's overall operation could also be positively affected.

Discussion and Conclusions

This study departs from traditional Operations Management research, where the main focus has been on the structural domain (capacity, technology, and facilities), and less on the so-called infrastructural issues (organization, human resources, planning and control) (Sousa and Voss, 2008). Humanitarian logistics scholars have studied issues such as inventory and warehouse management, replenishment and transportation along the supply chains (Holguín-Veras et al., 2012; Pedraza, Stapleton and Van Wassenhove, 2011). Our study contributes to this stream of research by analyzing how organizations can better manage their human resources to effectively deliver products and services at the last mile.

We also contribute to the limited body of knowledge on the impact of HRM in the supply chain (Ahmad and Schroeder 2003; Gowen and Tallon, 2003) and to the human resource management literature more generally. HRM scholars have already established the positive impact of recruiting and training practices in overall organizational performance (Becker and Huselid, 2006; Huselid, 1995; Combs et al., 2006). As Huselid and Becker (2011) suggest, the field would benefit from a better understanding of strategic workforce differentiation (i.e., identifying which jobs are strategic within an organization and applying differentiated human resource practices

accordingly within the organization). In this sense, our study explores HRM for those people working at the last mile. Without these human resources, the delivery of products and services at the BoP would not be complete, no matter how many and how effectively operations management systems are implemented at the headquarters. Therefore, our proposed systematic approach to recruiting and training at the last mile responds to the call for research in this direction.

Our study does have limitations, which open avenues for further research. First, since it is based on a single case study, it is exploratory and conceptual in nature. Therefore, even if we provide a description of an organization's recruiting and training strategies that have worked in the BoP context, empirical testing of the impact of a systematic approach to HRM at the last mile would be a logical follow-up to this study. Second, our analysis does not include the compensation and incentive systems for these human resources. Future research could explore the impact of different models of compensation for the performance of these human resources.

Acknowledgments

We thank the Central American Healthcare Initiative (CAHI) for financially supporting this research.

References

Ahmad, S., & Schroeder, R. G. (2003). The impact of human resource management practices on operational performance: recognizing country and industry differences. *Journal of Operations Management*, 21(1), 19-43.

Arthur, J.B., (1994). Effects of human resource systems on manufacturing performance and turnover. *Academy of Management Journal*, 37(3), 670–687.

Becker, B. E., & Huselid, M. A. (2006). Strategic human resources management: where do we go from here?, *Journal of Management*, 32 (6), 898-925.

Combs, J. G., Ketchen, D. J., Jr., Hall, A. T., & Liu, Y.(2006). Do high performance work practices matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology*, 59, 501-528.

Eisenhardt, K.M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532–550.

Gerhart, B & Milkovich G.T. (1992). Employee compensation: Research and practice. In M.D. Dunnette and L.M. Hough (eds.) *Handbook of industrial and organizational psychology*, 3: 481 – 569. Consulting Psychologists Press: Palo Alto CA

Gowen III, Charles & Tallon, William J.(2003). Enhancing supply chain practices through human resource management. *The Journal of Management Development* 2003, 22(1)

Holguín-Veras, J., Jaller, M., Van Wassenhove, L. N., Pérez, N., & Wachtendorf, T. (2012). On the unique features of post-disaster humanitarian logistics. *Journal of Operations Management*, 30(7), 494-506.

Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*,38(3), 635-672.

Huselid, M. A. & Becker, B. B. (2011) Bridging Micro and Macro Domains: Workforce Differentiation and Strategic Human Resource Management. *Journal of Management*, 37(2), 421-428.

Jaller, M. (2011) Resource Allocation Problems During Disasters: The Cases of Points of Distribution Planning and Material Convergence Handling. Civil and Environmental Engineering, Troy, Rensselaer Polytechnic Institute, Ph.D.

Leonard-Barton, D. (1990). A dual methodology for case studies: synergistic use of a longitudinal single site with replicated multiple sites. *Organization Science*, 1(3), 248-266.

Khanna, T., & Palepu, K. G. (1997). Why focused strategies may be wrong for emerging markets, *Harvard Business Review*, 75(4), 41–51.

London, T., & Hart, S. L. (2004). Reinventing strategies for emerging markets: beyond the transnational model. *Journal of International Business Studies*, 35(5), 350-370.

Meredith, J. (1998). Building operations management theory through case and field research. *Journal of Operations Management*, 16(4), 441-454.

Parmigiani, A., & Rivera-Santos, M. (2014). Sourcing for the Base of the Pyramid: Constructing Supply Chains to Address Voids in Subsistence Markets. *Journal of Operations Management*

Pedraza Martinez, A. J., Stapleton, O., & Van Wassenhove, L. N. (2011). Field vehicle fleet management in humanitarian operations: a case-based approach. *Journal of Operations Management*, 29 (5), 404-421.

Prahalad, C. K. (2005). *The fortune at the bottom of the pyramid: Eradicating poverty through profits*, Wharton School Publishing.:Upper Saddle River, NJ.

Prahalad, C.K., & Hammond, A.L. (2002). Serving the world's poor, profitably. *Harvard Business Review*.80, 48–57.

Prahalad, C.K. & Hart, S.L. (2002) 'The fortune at the bottom of the pyramid', *Strategy and Business*, 26, 2 -14.

Prahalad, C. K., & Doz, Y. L. (1987). *The multinational mission: Balancing global integration with local responsiveness*. New York, NY.

Sousa, R., & Voss, C. A. (2008). Contingency research in operations management practices. *Journal of Operations Management*, 26 (6), 697-713.

Scudder, G.D., Hill, C.A. (1998). A review and classification of empirical research in operations management. *Journal of Operations Management* , 16, 91–101.

Vachani, S., & Smith, N. C. (2008). Socially Responsible Distribution: Distribution Strategies for Reaching the Bottom of the Pyramid. *California Management Review*, 50(2), 52–84.

Voss, C., Tsikriktsis, N., & Frohlich, M. (2002). Case research in operations management. *International Journal of Operations & Production Management*, 22(2), 195-219.

World Bank, 2009. World Development Report 2009: Reshaping Economic Geography. *Quebecor World*, US.

Yi, W., & Kumar, A. (2007). Ant colony optimization for disaster relief operations. *Transportation Research Part E: Logistics and Transportation Review*,43(6), 660-672.