MICRO-ENTERPISE QUALITY[1]

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Structured Abstract

Purpose: In the developing world most citizens rely upon self-employment and micro-enterprise operations as their only source of income. Given competition from large scale industrial outfits, most micro-enterprises are finding it difficult to compete in terms of quality or price.

Design/methodology/approach: In this research, we employ case study methodology to examine how quality management could be employed in keeping such enterprises competitive.

Originality/value: We compare the literature with actual field observations to provide practical insights that may be of value to micro-enterprise owners, and might indirectly help raise their standard of living.

Findings: A number of general propositions are developed and potentially fruitful research areas identified.

Keywords: Case/field study, Quality, International/global issues, NGO, Small business.

Introduction

Industrialized countries and international agencies have plowed significant amounts of aid into the developing world (Easterly, 2006). However, in spite of the sheer size of this aid, the results have been somewhat disappointing. Research suggests that development actually occurs at the local level when market forces are followed, capital is available, and business methods followed (Easterly, 2006). For example, micro-credit loans have had a dramatic effect in rural communities around the world by bringing financial models to the very poor to enable them to start and expand businesses (Bornstein, 2005). By providing capital and financial expertise, dramatic gains in the standard of living have been documented in such communities. One factor

that could have a significant impact in the success of micro-enterprises is the extent to which they adopt quality management techniques. Quality is becoming universally important and has been described as a means to improve the competitiveness of operations in developing countries (Mersha and Merrick, 1997). However, raising quality to world-class levels is not quite that simple. Many small business owners acknowledge that their quality levels are lower than those of larger firms (Gulbro *et al.,* 2000). Given that micro-enterprises must indirectly compete with substitute items from large-scale operations, quality issues must be addressed. Hence, in this manuscript we examine the literature relevant to quality management in micro-enterprise operations and through case-study methodology develop specific propositions. These propositions generalize the applicability of quality management techniques to a new environment (micro-enterprises in developing countries) and lay a foundation for future theory development in quality management. Following the total cost of quality model, propositions derived from these case-studies are then used to provide direction to micro-entrepreneurs in lowering overall costs related to quality and hence increasing their competitiveness relative to large scale industrial operations.

Literature review

Our study is built upon the theoretical underpinnings of the operational field and includes analysis of quality within the context of literature relevant to the non-profit sector, micro-enterprises/micro-finance, small business operations, and quality and operations in developing countries.

Non-profit sector in developing countries

Given the relatively major role of NGOs, non-profit organizations, and micro-enterprise operations in developing countries, the number of studies related to their operational issues has been surprisingly low. Earlier studies primarily focused upon coordination (e.g., Terry *et al*., 1986; Sinha *et al*., 1988) and distribution decisions (e.g., Eaton *et al*., 1986; Ramani and Bhatnagar, 1988; Ramani and Mandal, 1992; Sankaran and Ubgade, 1994) in operational research models but provide few details relevant for micro-entrepreneurs.

Micro-enterprises/Micro-finance in developing countries

The literature suggests that micro-operations face unique barriers, rely more on networks and family structure, and employ social capital. Micro-operations must overcome a multitude of barriers including difficulties in accessing capital, distribution channels, business support, and markets (McElwee, 2006). Often, low production volumes limit economies of scale. Many of these operations have overcome scarcity of resources by developing and relying upon economic, social, and even kin-based networks (Miller and Besser, 2005). These networks provide micro-entrepreneurs with a sense of shared trust, accountability, and business acumen (Kibria *et al.*, 2003). In addition, clusters of similar micro-operations within specific communities provide important horizontal linkages that help micro-operations propagate, develop, and thrive (Khan and Ghani, 2004).

As developmental agents, Non-Governmental Organizations (NGOs) have recognized the importance of financial intermediation (Rao, 2004) in uplifting the very poor. Micro-credit programs have been advocated since the 1990s as a means to reduce the costs of micro-finance delivery to micro-entrepreneurs. The United Nations declared 2005 as the Year of Micro-Credit, indicating the importance of this system through which more than 20 million of the poorest households around the world, especially in developing countries, have access to micro-finance

services. These services involve a system of joint liability, in which the entire borrowing group is ineligible for further loans or is financially liable if any group member defaults. Group members undertake the burden of screening, monitoring, and enforcement that would otherwise fall on the lender. Credit is bundled with other services such as vocational training, organizational help, and social development inputs aimed at improving health, literacy, leadership skills, and social empowerment.

Small business operations

Studies on the operational dimensions of small business have been conducted over the last few decades, but the literature is surprisingly sparse. Chrisman (1985), Davis and Whybark (1976) and Fuerst (1981), identify issues relating to inventory control. Other studies have examined forecasting (e.g., Anderson, 1979; Robinson, 1979; Wacker and Cromartie, 1979), manufacturing information systems (e.g., Covey, 1981), and aggregate planning (e.g., Riggs and Bracker, 1986) in the small business context. Recently, researchers have taken a more strategic look at small enterprises (Sum *et al.*, 2004). Although these findings are certainly of value to small businesses, one must recognize that micro-enterprises are at an entirely different level. For example, Sum *et al.* (2004) found that some of the small businesses they studied had hundreds of employees and reported annual sales running in the millions of dollars. In contrast, micro-enterprises might only employ a handful of family members and their sales might run in the hundreds or thousands of dollars. Because our goal is to identify the quality management aspects of micro-enterprise operations, we draw upon the literature in operations and quality management relative to small business and developing countries and compare it with our case studies.

Operations in developing countries

Given that a majority of micro-enterprises are located in the developing world, literature relevant to operations in developing countries is of particular value to our research. Prior studies (Prasad *et al.,* 2005) have noted the importance of information, uncertainty, market orientation, linkages. Just as information systems are important for shop floor control (e.g., Chen *et al.,* 2003), the type of information available and its degree of complexity within an operation can affect the management of the micro-enterprise and, eventually, its profitability. We can gauge information complexity by the number of items analyzed for quality, time period for the analysis, and methods by which quality characteristics are communicated internally and externally. Operations in developing countries also tend to be greatly affected by the degree of uncertainty. For example, uncertainty (variance) can raise havoc in quality control. In addition, the degree of interdependence with markets can have a significant effect on quality (Hart, 1995) because customer input may require operational flexibility in terms of quality levels, design, lead-times, and production quantities. Similarly, micro-operations often require suppliers to respond to changes in raw materials and quality, requiring high degrees of coordination and linkages with suppliers.

Quality in developing countries

Significant differences in quality management have been found across countries (Maheshwari and Zhao, 1994; Zhao *et al.*,1995), and corporations have recognized that implementing quality practices internationally can be challenging (Eroglu and Machleit, 1989;

Malhotra *et al.*, 1994; Papadopoulos *et al.*,1990). Greene (1993) notes that rather than simply trying to emulate the Japanese quality process, it is important that the quality management practices reflect the underlying environmental conditions. It is, therefore, important for us to understand the various socio-cultural, political-legal, and economic factors that influence international quality management (Gosen, Babbar, Prasad, 2005; Kim and Chang, 1995; Prasad and Tata, 2003).

Methodology

Given the exploratory nature of the issues examined in this paper, the case study methodology is particularly suited to our purposes. The existing literature is largely silent on the applicability of quality management techniques to micro-enterprises in developing countries. Existing theories are available for small business, but the environmental conditions being examined differ (Stuart *et al.,* 2002). Therefore, in this study we use case methodology to examine the applicability of quality management methods refined in large/medium-sized firms to micro-enterprises in developing countries. Although the implications of this study are primarily inductive (discovery and description), the findings also extend existing concepts to a wider range of micro-operations. In addition, case studies bring up new questions and ideas that call for further exploration.

Initially, we examined twenty-four operations in three different locations within India. In Kanjipuram and Varanasi the operations were primarily weaving. Whereas in Hyderabad the operations include mirrored work, incense, and safety pin heads production. This data collection was then followed by an interview/discussion on quality management with 87 micro-entrepreneurs in Chennia belonging to fishmongers' caste and roadside stall owners. In addition,

we went back to Kanjipuram and interviewed/discussed with over 80 weavers on matter relevant to the quality.

The interviews were conducted to highlight the organizational and environmental conditions of the micro-enterprise operations, as well as the connections between these conditions and quality. The micro-enterprise owners who were interviewed were identified on the basis of being knowledgeable about the micro-enterprises and the conditions facing the enterprises at their site. The interviews were guided by open-ended questions (e.g., "What kind of information can help you make better quality products?" "Do you inspect for quality?" "Why do you remain in this cottage industry?" "Have you attempted to organize into cooperatives?" "What kind of government support do you receive?" etc.). In addition, we also interviewed numerous NGO officers ranging from the president to district managers to field workers.

We communicated directly with the micro-enterprise owners and workers located in Hyderabad and Varanasi. In Kanjipuram and Chennia, however, we had to rely upon translators. Given the long history of relations between the NGOs and the micro-credit enterprises they supported, there was a high degree of trust among all the parties.

Multiple sources of data included viewing documentation and examining physical artifacts. We were privy to reports generated by the NGO which documented their role in helping the micro-operations. Documents studied include those generated by the NGOs such as correspondence, annual reports, fliers, technical reports (including prior studies), and computer printouts. Copies of the documents used in this study have been stored.

Informal observations were made and recorded throughout the field visits, as well as at the end of each day. These observations concerned the conditions influencing the micro-enterprises, the physical settings, the production techniques and technologies, the products, and

the interactions among the micro-enterprise owners. We also observed the various stages of production within the micro-enterprise units. Finally, we were able to examine the quality of raw material, works in progress and finished goods.

Case Studies

Defining Quality

When interviewed about quality, the discussion revolved around the type of product being produced (e.g. high-end saris with higher thread counts and intricate designs versus lower-end saris with lower thread counts and simpler designs), the respective raw materials, and inspection from buyers. Quality is viewed in terms of obvious defects that would not pass inspection from buyers. Any quality defects or errors have to be absorbed by the enterprise itself.

Across all cases, none of the owners felt that their products were of lower quality relative to items produced in factories. Although the concept of quality management was quite literally a foreign concept, they believed that their quality was equal to or greater than the quality of competing [handicraft] products. Several emphasized "We have the best quality because of our years of experience" ". . . this is a family business and we make sure our products are good". Some micro-business owners, however, admitted that their quality depended on the resources they had: "We need money to get the good raw materials".

The concept of "meeting and exceeding your customer expectations" and *Kaizen* where unheard of. However, as our discussions proceeded it was clear that meeting customer needs was critical to their long-term survival. Continuous improvement and building in systematic improvements was difficult to convey, especially since many of the entrepreneurs were artisans

and relied on work methods practiced over generations. However, they were all aware of the competition and the necessity of change.

In trying to understand what changes could be made, we examined how organizational factors (information, uncertainty, market orientation, and linkages) and environmental conditions (social/cultural conditions, political/legal systems, and economic resources) influence the quality of micro-enterprise operations in developing countries.

Information

The literature (Table I) indicates that in developing countries there is a greater degree of information asymmetry as opposed to the developed world. Information asymmetry results in customers and producers being unable to perceive the value of quality appropriately (Wankhade and Dabade, 2005). Also, small businesses tend to rely upon less intensive information measures to improve quality (Hodgetts *et al.,* 1999).

In our case studies, we found that transmitting quality information along the supply chain was difficult. Information related to quality was generated only through final product inspection when a buyer simply refused shipment or demanded rework. In our interviews we heard many complaints from the mirrored work producers "Oh, any errors come out of our pockets . . . we need to pay for the material and put in our own hours to correct for the defect." Similarly, the weavers in Varanasi complained that the middlemen often stuck them with inventory when the market was slow by making "the excuse that 'the quality is not appropriate".

> *Proposition 1.* Micro-enterprise operations that rely upon limited information are likely to have lower levels quality compared to those that rely upon complex information.

Uncertainty

The literature (Table I) notes quality is reduced where there is significant uncertainty in the supply chain as found in developing countries. (Erel and Ghosh, 1997; Maheshwari and Zhao, 1994). However, in our case study it was difficult to discern whether the uncertainty in the supply chain processes was an important contributor to the quality levels.

Market orientation

Literature relevant to market orientation is better developed (Table I). For example, Voordijk (1999) found that the effectiveness of operations is correlated to its ability to service customers. Because small firms are much more nimble, they should have an advantage in meeting market needs given their flexibility and quick turnaround times (Serant, 2002). However, many of the micro-enterprises that we visited seemed quite disconnected and unreceptive to market needs in terms of quality level, raw materials, and designs.

Historically, many of the developing countries have relied upon a socialist model to control the economy. More recently, governments in the developing world have opened up economies. The literature indicates that quality levels rise when the economy is opened up to the private sector (Nagabhushana and Shah, 1999). However, research also indicates that small businesses are generally less likely to change designs in order to improve quality (Gulbro *et al.,* 2000). In our case study both patterns were evident: quality was only imperative for micro-enterprises in order to pass the product through buyers' inspections, and many micro-entrepreneurs did not include quality in the design process to reflect new market realities. Those micro-enterprises that had contact with customers were more attuned to market needs. For example, the micro-enterprise owners in Kanjipuram were connected to buyers through their

cooperative which organized "buyer-seller meets" (Arunachalam, Asha, 2006). These meets not only enabled the weavers to exhibit their talents, market their products, and enhance their incomes, but also allowed the weavers to understand and produce to the market needs and to improve quality. Such quality improvement enabled the weavers to continue to maintain goodwill with the buyers.

> *Proposition 2.* Micro-enterprise operations with a higher degree of market orientation are likely to have higher levels of quality compared to those that have a lower degree of market orientation.

Linkages

The literature related to linkages suggests that micro-enterprise operations can produce high quality products only by ensuring the level of quality of their inputs (raw materials); hence quality is enhanced when relationships with supplier networks are developed (Zhao, et al., 1995) (Table I). However, the small business literature indicates that small enterprises are less likely to work with suppliers in improving quality (Gulbro *et al.,* 2000). Similar to the literature, we found that most micro-enterprises did not seem to take advantage of their supplier relations to improve quality. Perhaps, given information asymmetry or their relative weak buying power, micro-enterprises were unaware or unable to influence the quality levels emanating from the suppliers. Some micro-operations owners felt that the middlemen were deceptive about quality issues. Weavers in Varanasi felt that if they made products on their own, the middlemen would use poor quality as an excuse to not sell them.

> *Proposition 3.* Micro-enterprises operating with strong inter-organizational linkages are likely to have higher levels of quality compared to those with weak linkages. This connection between inter-organization linkages and quality is stronger when those linkages increase the power of the operations (e.g., through cooperatives).

Social/cultural conditions

One of the critical elements of quality management today is the educational level of the population along with appropriate training. Literature related to operations in developing countries (Table I) indicates that quality is enhanced when the population is educated and well trained (Erel and Ghosh, 1997; Knotts and Tomlin, 1994; Nagabhushana and Shah, 1999, and Zhao *et al.,* 1995). However, the degree to which small business owners value quality often affects the importance placed on quality within the enterprise (Watts and Dale, 1999). In our case studies it was difficult to discern the importance placed on quality and training/education by the micro-enterprise operations. The micro-enterprises that we visited were mechanical and labor intensive in nature and the level of education or the owner's value system did not seem to affect quality levels, although the micro-enterprise owners and workers took great pride in their work. However, there did appear to be a connection between years of experience and quality, with those having more experience producing higher quality products.

Political/legal systems

The literature also indicates that quality is enhanced in developing countries when there are government departments dealing with quality (Erel and Ghosh, 1997), the government promotes economic development and privatization, and it does not interfere with business activity (Mersha and Merrick, 1997) (Table I). Local, regional, and national agencies dedicated to helping small business have also been found to potentially help raise quality (Watts and Dale, 1999). In our case studies we found mixed evidence of this. Some micro-enterprise units operated outside of the political/legal system and were unhindered by it. However, local and regional cooperatives in Kanjipuram did support design centers. The micro-enterprises or their buyers could specify the exact patterns and colors; cooperatives or commercial enterprises

generated a set of punched numerical cards which guided a weaver on what color thread to be used for every row of the fabric, thus providing a degree of quality.

> *Proposition 4.* A supportive political/legal system is likely to increase the quality of micro-enterprise operations in developing countries. Operations in areas with governmental organizations that and provide resources to micro-enterprises are likely to have higher levels of quality compared to those in areas without such organizations.

Economic resources

The literature (Table I) suggests that quality is enhanced when there is sufficient capital and an absence of foreign exchange constraints (Erel and Ghosh, 1997). However, small businesses tend to have lower quality on account of limited resources; many small firms tend to have a much narrower financial base to shelter them from errors and waste (Duffy, 2004). Our case studies support some of the earlier findings in the literature. The micro-enterprises operated with very limited capital and often had to absorb losses due to defects. The quality of products produced was influenced by resources; those who had few resources often could not afford to get high quality raw materials: "We need money to get the good raw materials". Many micro-enterprise owners, however, took pride in their craftsmanship. "Our quality of weaving is higher than anything you can find elsewhere" said a weaver in Varanasi, "You can depend on [the quality of] our work . . . it is our family business with generations of experience."

> *Proposition 5.* Micro-enterprise operations in developing countries that are able to obtain economic resources (e.g., through micro-credit providers) are likely to have higher levels of quality compared to those operations that are unable to obtain economic resources.

Discussion

Micro-enterprise operations are prevalent in the developing world. As yet, however, there is not much research that specifically examines quality in such enterprises. By conducting

case studies coupled with a literature review we were able to derive a series of propositions connecting organizational and environmental conditions (information, uncertainty, market access, linkages, social/cultural conditions, political/legal systems, and economic resources) to quality in the context of micro-enterprise operations in developing countries.

Specifically, we found that quality tended to be higher when the production process was more information intensive/specific and oriented towards market needs, inter-organizational linkages were developed and a supporting political/legal and economic system was available. These propositions can be used in helping micro-entrepreneurs.

Total cost of quality

The quality of micro-operations products relative to their larger industrial cousins is relative low. Micro-enterprise owners can simultaneously reduce total cost while at the same time improving quality based upon the Juran's (1951) quality cost model. Relative to this model, most micro-entrepreneurs are likely to be left [A] of the intersection point between the involuntary and voluntary costs [B] (Figure 1). Voluntary costs could entail time and effort spent on designing of products and processes in line with market needs, time spent on the production process and inspection. Involuntary costs tend to be more difficult to define. They include waste, use of additional materials, rework, market share loss and lower prices. Hence, if micro-entrepreneurs simply invested more on voluntary costs, quality levels would rise and lower total costs. However, competitors from large scale industrial sectors constantly raising quality levels and micro-entrepreneurs will find it increasingly difficult to compete. Figure 2 illustrates the shift in the involuntary cost curve that results from industrial competitors' successful quality improvement efforts (Prasad and Tyson, 1995). The impact of these efforts in time period t is

shown by increasing the firm's total failure costs and the optimum level of quality in period t+1. The new intersection point [C] would require micro-entrepreneurs to invest in additional voluntary expenditures simply to match the higher quality levels expected by customers now. Given the additional expenses, many micro-entrepreneurs might find their margins squeezed so much that their businesses are no longer economically viable. The only way for such businesses to survive would be to fundamentally alter their voluntary cost curve. Figure 3 shows that owing to competitors' quality improvements, the involuntary cost curve moves upward from period t to period t+1. Potentially, the voluntary curve could shift downwards from period t to period t+1 on account of the learning curve and fundamental changes in the quality processes (Prasad and Tyson, 1995). A new intersection point [D] of lower total costs and higher quality could be achieved. Fundamental changes in the voluntary cost curve can achieved by adopting Kaizen methodology, learning to increase information intensity/specificity of their production process, expanding inter-organizational linkages by going beyond the traditional supply base and connecting with buyers outside their community. In addition, the entrepreneurs could organize politically to ensure that political and legal benefits affecting their operations are accrued on their behalf. Finally, entrepreneurs need to upgrade their production processes in order to raise quality levels by utilizing capital from micro-finance ventures.

Our study derives general propositions on how entrepreneurs could improve quality relative to the micro-level environment in developing countries. For such methods to be useful in practice researchers need to operationalize and test such concepts at the micro-level. Also, in our research the connection between social/cultural conditions and quality was not sufficiently established. Given that training is such a critical part of any quality management program it is

imperative to understand this connection. For example, the intersection between literacy, religion, gender equality, caste and quality training at a micro-level needs to be explored further.

Making such adaptations in artisan/legacy production processes in poor communities that might be isolated due to distances (rural), illiteracy and community differences (caste, religion, language) is difficult. Given that most micro-entrepreneurs support a large number of family members, businesses failing on a mass scale could be a catalyst for further poverty and social tension. Government, NGOs and other social activists need to bring quality management methods to the micro-enterprise level to ensure their long-term survival. As micro-finance has helped mitigate poverty in the third world, quality management operationalized at the micro-level within the context of the developing world could help do the same.

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Table I. Relevant literature and findings.

Environment	Literature findings of small business operations in developing countries		Discovery, description, causal relationships uncovered through case study
	Developing Country	Small Business	
Information	Information asymmetry makes assessing quality and its value difficult (Wankhade and Dabade, 2005).	Small businesses tend to rely on less intensive information measures to improve quality (Hodgetts *et al.,* 1999).	Transmitting quality information along the supply chain is difficult. Buyer will simply refuse shipment if a product is defective.
Uncertainty	Quality is reduced where there is significant uncertainty in the supply chain as found in developing countries. (Erel and Ghosh, 1997; Maheshwari and Zhao, 1994)		No findings.
Market orientation	Quality is enhanced when the economy is opened up to the private sector (Huang, 2000; Nagabhushana and Shah, 1999).	Small businesses are generally less likely to improve design in order to improve quality (Gulbro *et al.,* 2000).	The micro-enterprises did not focus upon improving quality in order to satisfying market needs. The only quality imperative was not to have the product rejected by the buyer.
Linkages	Quality is enhanced in developing countries when the relationships with supplier networks are developed (Zhao *et al.*, 1995).	Small business is less likely to work with suppliers in improving quality (Gulbro *et al.,* 2000).	Given the relative purchasing power and information asymmetry, the micro-enterprises were unable to influence the quality levels emanating from the suppliers.
Social/ cultural conditions	Quality is enhanced when the population is educated and well trained (Erel and Ghosh (1997), Knotts and Tomlim (1994), Nagabhushana and Shah (1999), and Zhao et al. (1995).	The owners' values often affect the importance of quality with the business unit (Watts and Dale, 1999).	Given the mechanical and labor intensive nature of these operations, the level of education or the owner's value did not seem to affect the quality levels.
Political/legal systems	Quality is enhanced when there are government departments dealing with quality (Erel and Ghosh, 1997), the government promotes economic development and privatization, and it does not interfere with business activity (Mersha and Merrick, 1997).	Supporting local, regional and national agencies dedicated in helping small business can potentially help raise quality (Watts and Dale, 1999).	Cooperatives supported by local and regional government supported a design center. The micro-enterprises or their buyers could specify the exact patterns/colors, and the cooperative would generate numerical control cards that would be used in the handlooms to ensure quality.
Economic resources	Quality is enhanced when there is sufficient capital and absence of foreign exchange constraints (Erel and Ghosh, 1997).	In small businesses quality tends to be low on account of limited resources. Smaller firms have a narrower base to shelter customers from errors and waste (Duffy, 2004).	The quality levels in micro-enterprises tend to be lower than large-scale capital-intensive operations. Given the micro-enterprises have very limited capital and must absorb losses due to defect, ensuring defect free products was important.

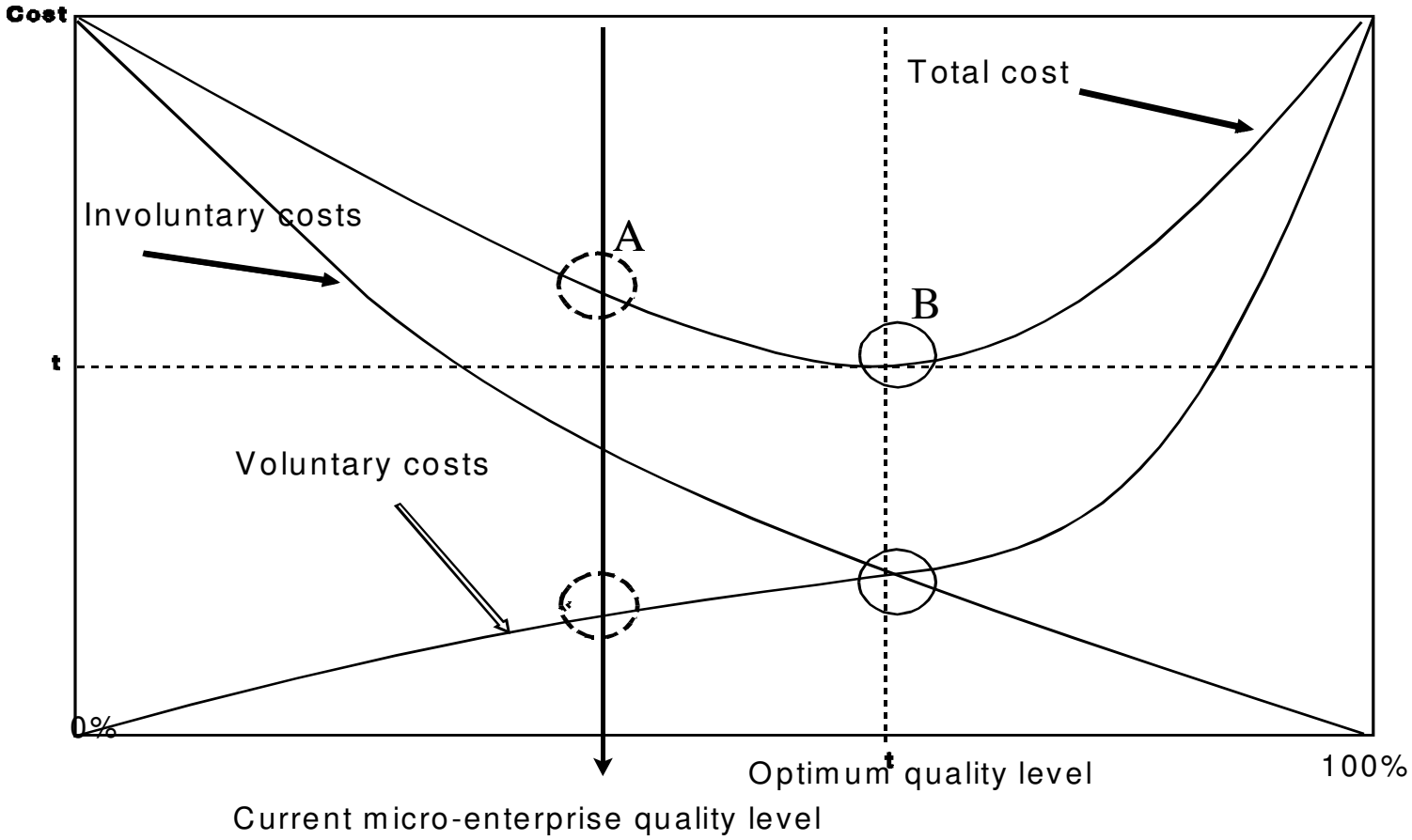

Figure 1. Improved quality and lower total cost of quality for micro-entrepreneurs.

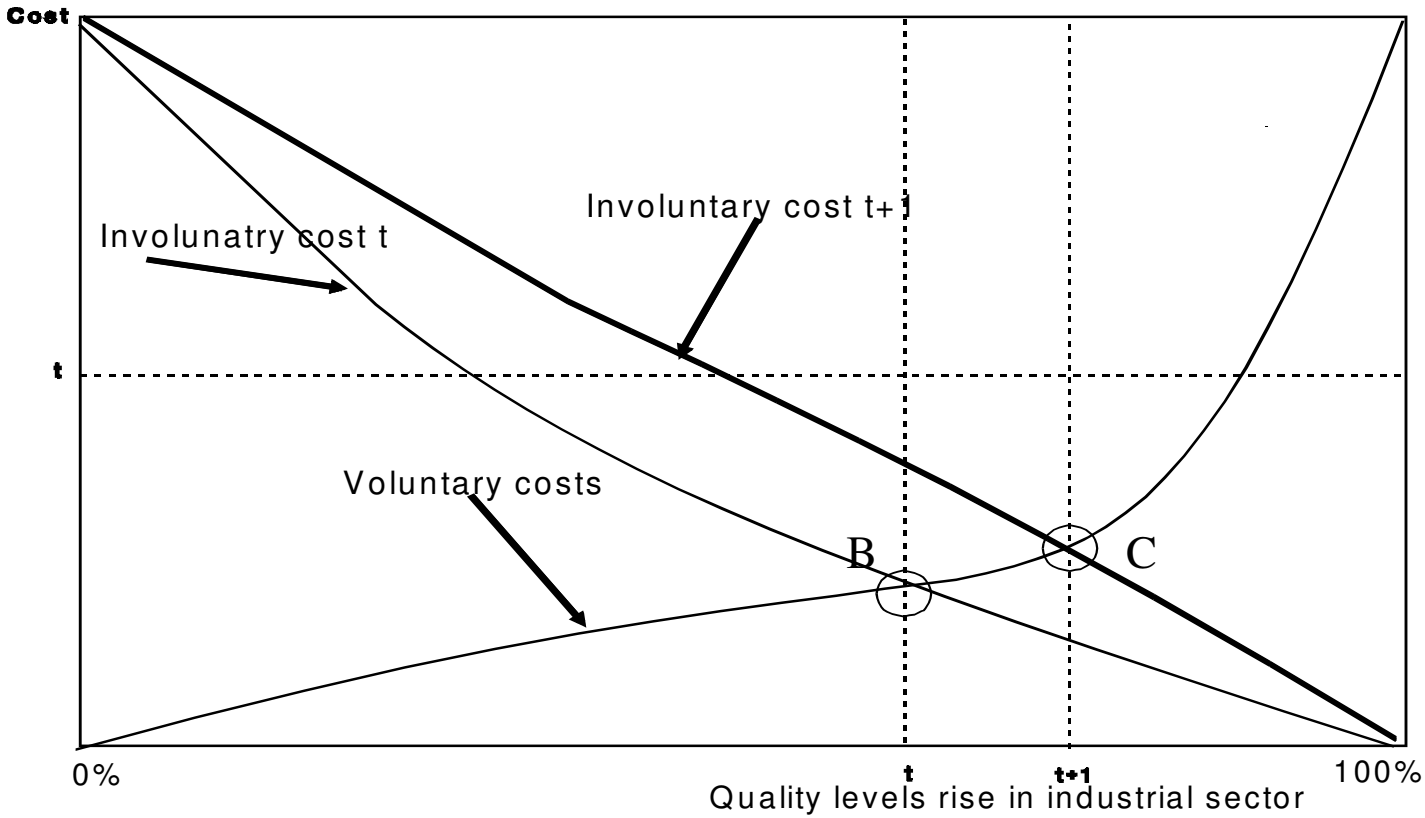

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Figure 2. Influence on involuntary cost curve due to competitors' quality improvements.

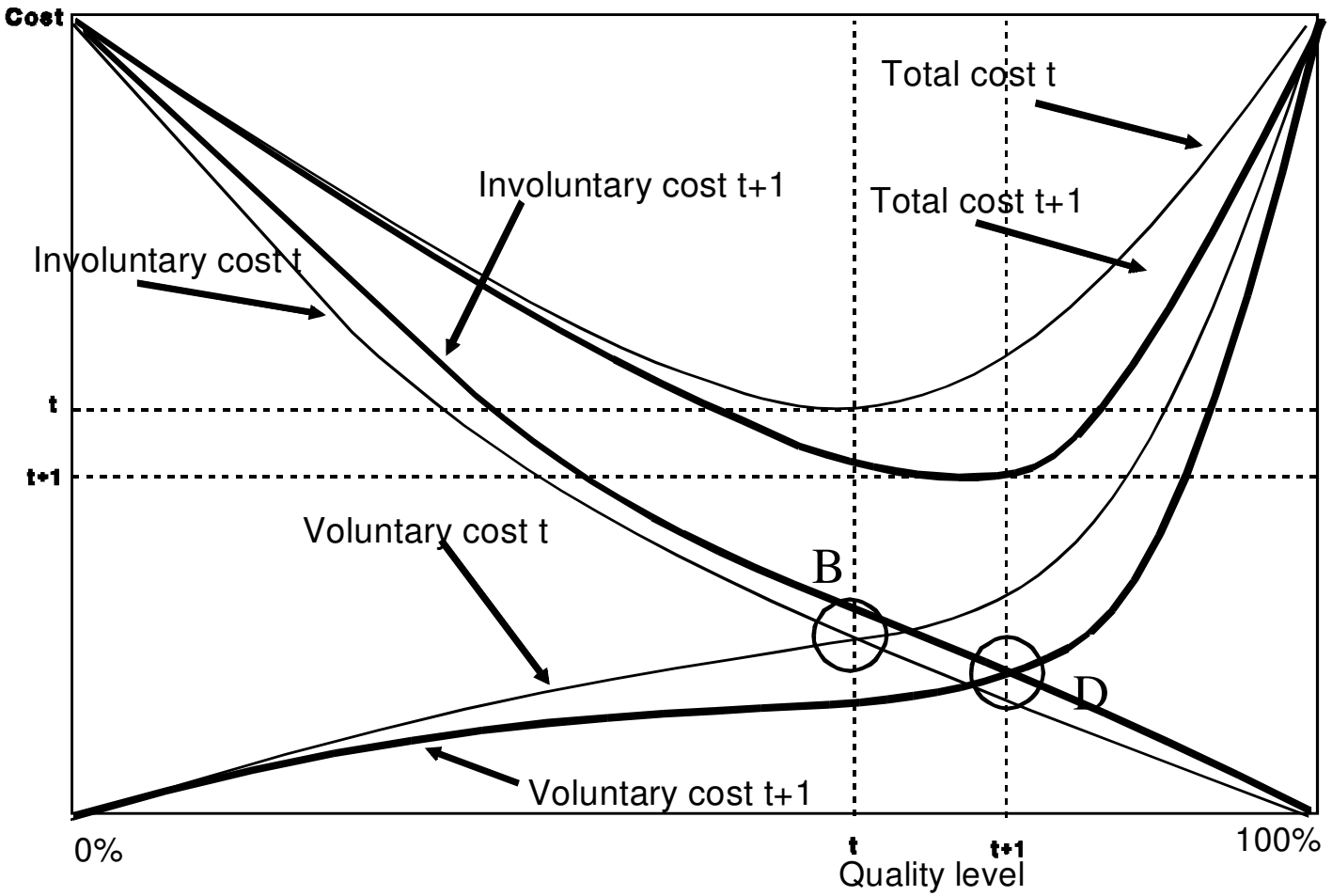

Figure 3. Reducing total cost and improving quality level by altering micro-entrepreneurs' voluntary cost curve.