LESSONS TO BE LEARNT FROM STUDYING QUALITY MANAGEMENT IN A DEVELOPING ECONOMY

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Managing the Quality Process

In recent years much has been written on quality management, largely emanating from developments in Japan and the USA. Europe has followed a similar route but has also more aggressively pursued the notion of third party quality certification programmes based around the International Standards Organisation (1SO) 9000 series. The subsequent literature takes two different stances. In the first instance, a narrow, systems — bases approach which stresses the benefits of proceduralising organisational activities with the overall objective of achieving conformity and uniformity of repeated tasks (McTeer and Dale, 1994). As might be anticipated, advocates of this approach highlight the benefits of adopting such a series as ISO 9000 (see Long et al, 1991, Brennan, 1994). Such a school of thought reflects the third stage in the evolution of quality management as identified by Garvin, where it has moved from an initial stage of basic inspection, through to the development of quality manuals, to the stage of developing external, third — party certification. Many commentators would argue however that such a perspective fails to address the fourth era as identified by Garvin — where quality is viewed as being strategic in nature and focuses on the concept of *kaizen*, or continuous improvement as the major change agent. This lat-

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ter perspective broadens out the definition of and responsibility for quality from a narrow quality control perspective to one where the total organisation becomes involved in its management.

This view of quality is referred to in the literature as *total quality management* and is based on three central platforms: a customer focus, continuous improvement and teamwork. Smith et al (1994) argue that such an approach demands a major shift in mind set on the part of the organisation and where TQM is adopted as a philosophy for doing business. Authors such as Ho (1994), Saylor (1992) and Hakes (1991) identify a number of characteristics or principles of TQM. They are identified in Figure 1.

FIGURE 1: THE BASIC PRINCIPLES OF TQM

- Leadership
- Commitment
- Total customer satisfaction
- Continuous improvement
- Total involvement
- Training and education
- Ownership
- Reward and recognition
- Error prevention
- Co-operation and teamwork

Problems of Implementation

The preceding discussion highlights the extent to which the management of quality has grown in stature. However Sink (1992) injects a cautionary note by observing that many companies who claim to practice the fundamentals of TQM, in fact, fail to fully understand the radical changes in corporate culture required to achieve such a position.

The preceding discussion highlights a number of potential difficulties with the implementation of TQM; not least being the need for an environment that is conducive to the development of a corporate culture and one that fully embraces the concept at all levels within the organisation. This issue of the overall environment takes on even

greater significance when consideration is given the management of quality in the context of developing economies.

Managing Quality in the Developing Economy

Within the literature, comparatively little attention has been paid to the difficulties of managing quality in developing economies. Lakhe and Mohanty make a realistic effort to identify the general constraints faced in such circumstances. They are highlighted in figure 2.

FIGURE 2: CONSTRAINTS TO QUALITY MANAGEMENT IN DEVELOPING ECONOMIES

• Lack of employee involvement and participation in quality efforts
• Lack of management commitment and motivation
• Perception that quality is an optional extra
• Belief that quality costs money
• Lack of communication and trust between suppliers, dealers, management and unions
• Unorganised and indifferent customers
• Lack of political support
• Lack of established quality standards and inadequate test facilities
• Obsolete technologies
• Low level of education
• Negligible investment in technologies, R & D, and employee's education
• Disrespect to the people as far as quality of life is concerned
• Undesirable social tensions, such as terrorism and violence

(Lahke, R.R. and Mohanty, R.P. (1997)).

These characteristics reinforce the view that managing quality in such circumstances is fundamentally more difficult than the prescriptive literature suggests; given its assumption that organisations recognise the importance of quality and are willing to do something about it, in a business, economic and social environment which is supportive of such an initiative. This latter influence largely dictates the response which the individual firm will make towards the issue of quality. Additionally, the fact that indigenous companies operating in developing economies are, by definition, small, means that they are constrained by the typical problems which face the evolving firm: lack of resources, lack of management expertise and lack of scale. Such companies also tend to supply the local market and, as a consequence, feel under little or no pressure to commit further resources to quality improvement, when customers themselves, are unwilling or unable to understand the benefits which can accrue from better quality products.

The unsophisticated nature of customer demand and preferences is another recurring theme that is evidenced in developing economies. In such situations, where the degree of differentiation and product alternatives is very narrow, many customers when making a purchase decision use price as the evaluative criterion. This has implications for the management of quality because many companies argue, not unreasonably, that there is no incentive to invest in quality as the market is not prepared to "pay" for the added value. This further reinforces the view that quality is viewed as a "cost" and not an investment in developing economies.

The Need for a Contingency-based Approach

It is argued that any discussion of the management of quality in the context of a developing economy needs to be carried out in the recognition that a prescriptive approach to TQM will almost certainly lead to an unrealistic view of what can be achieved by such companies in an environment where so much militates against the adoption of quality improvement programmes. Likewise such an approach will fail to properly grasp the underlying differences in the attitude to doing business which prevails in different developing economies. As highlighted in figure two, these attitudes can vary substantially. The perception of quality as an "optional extra" and a cost to the company, rather than an investment, is alien to the explicit framework which underpins many of the TQM approaches identified in the literature, given that it is designed for companies operating in an econ-

omy which is developed; rather than one which is evolving from a low level of awareness about the importance of quality. This false perception can be juxtaposed with the flawed view that exists in developed economies: that managing quality is about achieving standards accreditation. Both viewpoints are wrong because they ignore the holistic view of quality which follows the *kaisen* principle; continuous improvement. Put simply managing quality is about a journey that a company embarks on, not a destination.

It is submitted that it is more realistic to argue that the behaviour of small firms in the area of quality management is a function of various specific contextual variables, such as the environment, the customer base and the level of education of both management and workforce.

The remaining part of this article focuses on a case example of how one particular region in Pakistan has addressed this problem. It concludes by proposing a contingency — based approach to the management of quality, in light of the findings from the study.

The Centre for Agricultural Machinery (CAMI) — Mian Chiannu, Pakistan

The background to this empirical investigation originates from a series of British Council funded visits to Pakistan. The overall objective of these visits was to undertake empirical research in a number of marketing and business-related areas. The nature of business in the Punjab region of Pakistan is that of small, family-owned firms. It is primarily an agricultural region, and has traditionally been the focal point for the cotton and textile sectors. Because of the importance of agriculture in this area, a Centre for Agricultural Machinery was formed.

This centre was established in 1989 under a bilateral agreement between the Pakistani and Dutch governments with the objective of accelerating the process of industrialisation in the region of the Mian Chiannu region and to increase the productivity of the agricultural sector by means of quality improvements of farm implements manufactured around the area. This area is traditionally a key supplier of agricultural implements to local farmers. Within the region, 94 local manufacturers were identified. Most of these can be described as small scale manufacturers involved in the repairs or in the manufacture of implements such as cultivators, rotavators, rear blades, cotton seed-cum-fertiliser drills, cotton/maize planters, cotton ridges, tractor mounted boom sprayers, wheat threshers, trolleys etc. None of

these manufacturers could be described as having any form of specialised edge over a specific implement or piece of equipment.

The core objective of CAMI is to provide assistance to local entrepreneurs in a number of different areas such as training, credit facilities, prototype development and the provision of extensive common facilities, thus providing a base to improve the effectiveness and efficiency of the production process. While these objectives might appear to be straightforward to implement in a developed economy, it was recognised from an early stage that CAMI had to overcome very traditional and conservative attitudes about technologies, ways of working and doing business within an evolving economic and business environment.

One of the critical elements in the manufacture of agricultural machinery is the manner in which machined parts and tools are hardened to increase their strength and resistance to wear and tear. The objective of heat treatment is to make the steel better suited, structurally and physically, for some specific application. Thus, in terms of addressing the need for improvements in the quality of such agricultural implements, the way in which such manufacturers perform this function needed to be assessed. The specific objectives of the study undertaken by CAMI were:

- to examine the market requirements and attitudes to heat treatment among the manufacturers
- to identify the role which the centre could play in providing assistance and improving the quality of the implements, and
- to determine how local entrepreneurs presently meet their needs for heat treat and related products.

Research Methodology

The data accumulation process consisted of two categories; secondary and primary data collection. The former was gathered from in - house data and other organisations operating in this field from Sialkot, Lahore, and Multan. This identified the most recent technological developments which had been adopted in Pakistan with regard to heat treatment. In order to collect primary data for the market study, an extensive survey was carried out in the target area, which included Multan, Shujaabad, Lodhran, Khanewal, Mian Chiannu, Chihawatni, Sahiwal, Burewala, Arif Wala, Vehari and Tiba Sultan Pur.

A structured questionnaire was used and it included questions on various aspects of heat treatment including its type, scope and associated problems. This aspect of the manufacturing process was deemed to be a critical indicator of the quality level of the product, given its impact on life span, maintenance and servicing issues. This survey was designed to provide first hand information about the heat treatment facilities currently existing in the market and how its importance is viewed by the potential users of this facility. It also was perceived as a generator of a data base to work out likely demand for heat treated parts which could be handled by CAMI.

A local qualified mechanical engineer conducted the survey. Eighty-two manufacturers from the original companies identified from the secondary data participated in the survey. All of them could be classified as small, with an average of 20, in terms of number of employees, and being owner — managed or family run businesses. The major difficulty faced during the administration of the interviews was the reluctance, suspicion and hesitation of the respondents to provide information on issues such as output, capacity and prices. This was overcome, in part, by the tactful and friendly manner of the interviewer. However some allowance has to be given to the overall accuracy of the information provided. It also points up some of the problems associated with the implementation of a research methodology in a developing economy, where such activities are viewed in a negative, suspicious way by potential respondents.

Four segments of the market for heat treated parts were surveyed: agricultural machinery, textile machine, agro-based and auto-based manufacturers.

Research Findings

Most Common Processes Used in the Industry

The findings in this section revealed that the respondents utilise a basic method of the heat treatment process; known as the case hardening approach. The parts to be treated are placed on a charcoal furnace along with potassium nitrate, in a pot for a half an hour to two hours. This hardens the surface of the part. Fifty one per cent of the respondents followed this approach. Two of them stated that they also use a gas torch for the heat treatment process, which has the effect of darkening the surface of the component. This creates the perception

among the customers that the heat treatment is more effective and provides an indication that the part has been tempered.

Of the 82 respondents, 60 per cent had a basic charcoal furnace facility available to them internally; 5 per cent had other facilities available, such as electric furnace, gas torch or a lead bath, and 35 per cent did not have any facility in their workshop.

TABLE 1: PERCENTAGE OF RESPONDENTS SATISFIED WITH THE HEAT TREATMENT FACILITY THAT THEY POSSESS

Satisfied	**Number of Respondents**	**Percentage**
Satisfied	42	77
Not Satisfied	12	23
Total	**54**	**100**

These findings indicate a number of worrying aspects that affect the attitude of such manufacturers to quality improvement. The respondents who were not satisfied with the heat treatment facility were asked what additional facility would they like to acquire. Virtually all of them were unclear as to the future direction which they would take, or stated explicitly that they did not have any plan for future expansion or modernisation. Only three companies expressed an interest in installing electric furnaces or oil baths.

TABLE 2: NUMBER OF RESPONDENTS AVAILING OF OUTSIDE HEAT TREATMENT FACILITY

	Number of Respondents	**Percentage**
Using Outside Facility	32	39
Not Using Outside Facility	48	59
No Response	2	2
Total	**82**	**100**

As expected, the majority of companies using outside facilities do not have an internal mechanism. Some however also make use of such a facility where they consider their own processes to be inadequate or inappropriate.

TABLE 3: LEVEL OF SATISFACTION WITH EXTERNAL HEAT TREATMENT FACILITIES

Level of Satisfaction with External Heat Treatment Facilities		
	Number of Respondents	**Percentage**
Not at all Satisfied	1	3
Satisfied to some extent	17	53
Fairly Satisfied	12	38
Highly Satisfied	2	6
Total	**32**	**100**

This table indicates that while the majority of the users of outside heat treatment facilities express satisfaction, only six per cent claim to be highly satisfied with the level of service offered. It should be noted that the level of satisfaction is relative to the general environment that prevails in such a developing economy: there is no pressure emanating the customers to the manufacturers for maintaining high levels of quality in the products. In many cases average or indeed below average machinery is acceptable to them.

This, in turn, points up to a problem which the survey indirectly identified: the lack of awareness on the part of both customers and manufacturers about the relevance of seeking quality improvements in all aspects of their business.

While there is a large market in this region for parts in agricultural machines and the agro-based industries, which require heat treatment, the market itself is engulfed with low quality and sub - standard parts. The market is highly competitive. The manufacturers compete almost exclusively on price rather than on quality or on product attribute or distinctive features pertaining to the product. The focus therefore for many such companies is on cost. This reinforces the perception made earlier about quality being perceived as an "optional extra" and not as something which can contribute positively to future sales and profitability.

This is compounded by the unsophisticated nature of the customer base: lacking in knowledge about the products on offer, seek benefits through low priced products. Under these market conditions, the heat treatment is considered to be an unnecessary activity which the manufacturers cannot afford due to its impact on the cost of production.

This reflects the dilemma which faces many small companies operating in such a developing economy: how to achieve the correct balance in the equation between service, quality and cost competitiveness?

Clearly the customer cannot be blamed for this apparent indifference to quality. The manufacturers lack the knowledge, motivation and necessary skills required to educate the market place about the benefits which will accrue from purchasing machinery which has benefited from heat treatment; longer life spans, less servicing and maintenance and lower operating costs in the longer term. The basic levels of heat treatment which were handled internally by those manufacturers in the survey, could be charitably be described as "minimalist" in nature. On a more cynical level, they could be termed deceptive and nothing more than a misrepresentation of the original objective.

Recommendations Arising from the Survey

The Centre for Agricultural Machinery Industries (CAMI) has an important role to play a broker between the manufacturers and the customers in this region. The survey indicated that entrepreneurs located in districts other than Mian Chiannu, were not that familiar with the range of services provided by CAMI. There is clearly a need to project its activities in this region.

This should involve the organisation of seminars in selected towns such as Multan, Khanewal, Burewala and Vehari. Manufacturers would therefore be given the opportunity to hear about the aims and objectives of CAMI, see the range of facilities which are on offer and also examine common parts which have been given proper heat treatment and which achieve a certain quality standard.

CAMI should also establish *"information and display"* centres in the important towns in the region. This will provide a link to the manufacturers and act as a central location for the collection and delivery of heat treated parts, so that manufacturers are saved from the time and expense of commuting to CAMI's office in Mian Chiannu. Arrangements can include daily collection and delivery.

It is not sufficient that CAMI provides the necessary services. The manufacturers must also be trained in the field of heat treatment so that the necessary skills and expertise can be transferred. This will have the effect of heightening their awareness of the importance of heat treatment for improving the quality of their parts and change their attitude towards this important aspect of manufacturing. While

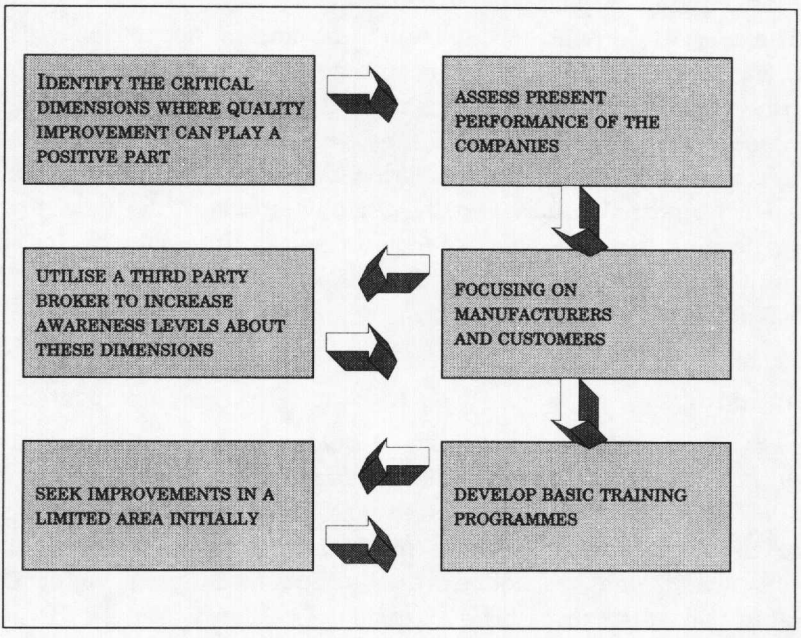
training skills currently exist within the staff at CAMI, it is also recognised that more detailed technical training is needed. This can be addressed in the medium to long term.

There is also a need to educate the farmers in the region. It is a "two way" process and, as a consequence, it is not enough to concentrate on only one link in the chain. The farmers are the users and purchasers of the machinery and they need to be persuaded to buy products that contain the parts bearing the stamp of CAMI on them. This can be partially achieved by demonstrations in the local town where farmers can see the products in action. It should be implemented in the form of a collective effort between CAMI and the manufacturers.

Conclusions

This paper has examined the role of quality in the management of small, entrepreneurial firms, within the context of a region located in a developing economy. It is argued that quality is of critical importance in the interface between marketing, entrepreneurship and manufacturing, and has not received adequate attention within the literature on small firms. The particular problems associated with manufacturing in developing economies are articulated in an earlier section of the paper. It becomes readily apparent that much of the literature on quality is not relevant when the characteristics of such a business environment are considered. It is argued that a contingency-based approach is needed where more pragmatic issues such as quality improvement programmes take precedence over the more grandiose notions associated with total quality management. A framework for handling the management of the quality process in such a business environment is presented in Figure 3.

FIGURE 3: A FRAMEWORK FOR MANAGING QUALITY IN SMALL FIRMS IN THE DEVELOPING ECONOMY — PHASE ONE



This framework is based on the pragmatic notion that a company operating in such a business environment has to "learn how to walk, before it can run". There is no mention of quality standards or total quality management in this initial phase of development: they come later. It is essential that the groundwork is laid in this phase, where manufacturers, customers and employees develop an understanding of the role which quality plays in *all* aspects of the firms operations, before notions of certification and TQM come into consideration.

The findings from the survey undertaken in the Mian Chiannu region of Pakistan highlight the task facing those entrepreneurs who manufacture agricultural machinery. Before any talk can take place of implementing quality programmes, there is an initial need to place the issue of quality in context in the first place. It is argued that a centre such as CAMI has a critical role to play in this regard.

Benchmarking is often viewed as a technique that can benefit companies. By studying "best practice" within the industry and in non-related industries. This in turn focuses the attention of companies on areas where a competitive advantage can be attained. CAMI can play an influential role in this process by acting as an independent

monitor. It is argued that a relatively simple set of procedures be used in such an exercise. Within the region, there are a small number of "entrepreneurial" companies who are willing to implement ideas put forward by CAMI. It is these companies that can be featured in such a benchmarking exercise. The most effective method for highlighting the benefits of utilising the services offered by CAMI is to feature "successful" companies in the promotional literature and at the training seminars. This follows the maxim that "nothing succeeds like success". This in turn will lead to a change in attitudes over a period of time.

The indications from the survey are such that quality improvement will occur, but only in a gradual, sequential manner. It will not happen in the short term.

Since the survey was undertaken, CAMI has refocused its scale of activities and paid specific attention to the twin issues of education and training. It has run a number of "awareness" sessions in the major villages in the region. It has also provided training courses for key personnel, including foremen, skilled and semi-skilled workers from the more "entrepreneurial" companies in the area. A number of companies still view involvement with CAMI as an extra cost, and remain to be convinced by the potential benefits that might accrue to them.

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