

# An Empirical Study of Supplier Development Practices in a Developing Economy - SMEs Perspective

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*Abstract:-* SME (Small and Medium Enterprises) sector forms as much as 99% of business entities around the world. While SMEs in developed economies are getting fair attention of policy makers, those in developing economies, particularly in South Asia, are yet to get such attention. Being the primary suppliers to most exporting firms, or being exporters themselves, the performance of SMEs can be fairly expected to contribute to industrial development and growth of an economy. With the recent emphasis by businesses around the world on “core-competence”, more and more activities are being outsourced to SMEs in developing economies. However the performance and business practices of SMEs in developing economies remain much lower than those of SMEs from developed economies. Considering the lack of required policy support for SMEs, effective Supplier Development by large buyers presents a potent tool for developing the performance and business practices of SMEs in developing economies. Based on the literature base addressing current supplier development practices around the globe, particularly in developing economies, this paper presents the results of a survey of Supplier Development activities undertaken by manufacturing firms in Pakistan. The results offer an insight into the most and least used techniques with discussion on the reasons of adoption or otherwise. The results will be of interest to large firms that outsource their business activities to South Asia.

*Key- Words:-* SMEs, Supplier Development, Outsourcing, Developing Economies, Pakistan, Extended Enterprise.

## 1 Introduction

On average in world economies, 99 % of all enterprises are SMEs. They account for nearly 80 % of the em-

ployment and nearly 80% of all value addition within the economy, directly and indirectly. Similar numbers can be expected for GDP (Gross Domestic Product) and Exports. Almost similar statistics are available for

many economies such as Hong Kong, Japan, Singapore, China, India and Pakistan. These statistics cement the importance of manufacturing SME sector in world economies. In their seminal work, Briscoe, Fawcett, & Todd [1] have shown that in USA, SMEs account for 98 % of all manufacturers, and account for two third of the country's manufacturing workforce. Of the 19.3 million enterprises in the European Union (EU) today, 99.8% are defined as SMEs, employing about 75 million people. The average European business provides employment for 4 people, including the owner/manager [2]. Most of the OECD (The Organization for Economic Co-operation and Development) governments institutionalize policies and programs to support and develop SMEs. These attempts are designed to offer solutions to problems in such areas like finance, technology and innovation, e-commerce, management, internationalization etc.

The performance and growth of SME sector in an economy can be directly related to the overall growth of the economy. In Pakistan's case, many seminal works such as Bhutta, Rana & Asad [3] have reported the performance of SME sector as "low", and the federal and local policy interventions put in place and the agencies formed to facilitate SMEs seem to be yielding no positive results. In this situation, it is important to architect low-cost quality improvement model for SMEs that can realize sustainable improvement in their performance and thus an overall sustainable growth in Pakistani businesses is achieved.

The need for such unconventional intervention is amplified after considering a general absence of large businesses in Pakistan which have enough resources to build and improve their own quality systems. In the subsequent sections this study reviews the nature, performance and health of SMEs in Pakistan, and a case is built for the research at hand.

## 2 SMEs in the Developing World

SMEs in developing economies are markedly different from the developed economies in many ways. Not only the performance of this sector is much lower in developing world, the policies and incentives offered by the governments present a contrast when compared to the developed economies. The International Finance Corporation (IFC) [4] has noted that:

*"in much of the developing world the private economy is almost entirely comprised of SMEs".*

They have further mentioned that:

*"they are the only realistic employment opportunity for millions of poor people throughout the world."*

In his seminal work on the Economic Role of SMEs in World Economies, Lukács [5] mentioned that:

*"a significant section of SMEs in developing countries remains in traditional activities generally with low levels of productivity, poor quality products, serving small, localized markets. There is little or no technological dynamism in this group, and few "graduate" into large size or modern technologies. In many poor countries, there is also a large underclass of (formal and informal) micro enterprises that eke out a bare survival."*

## 3 Supply Chain and Supply Chain Management

From the perspective of a large buyer company having SME(s) in its upstream supply chain, managing the performance of the SME(s) is essentially a subject of "Supply Chain Management". Various texts and scholarly works offer various definitions of a Supply Chain and Supply Chain Management, from their specific perspectives. A brief discussion on the following definitions of Supply Chain available in contemporary texts is intended to establish a context for the discussion on this faculty that will follow.

For instance, according to Christopher [6], a supply chain is "a network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer". According to Chopra & Meindl [7], Supply chain management "involves the management of flows between and among stages in a supply chain to maximize total profitability". It "consists of all parties involved, directly or indirectly, in fulfilling a customer request" [8]. It "encompasses all activities associated with the flow and transformation of goods from the raw material stage (extraction), through to the end user, as well as the associated information flows [9]. Material and information flow both up and down the supply chain" [10]. Generally, a supply chain can be referred to as a system of organizations, information and resources involved in facilitating the transportation of a product or service from the initial supplier to the end customer. The activities involved in Supply Chain are aimed at transforming raw materials into a finished product which reaches the end customer, or the con-

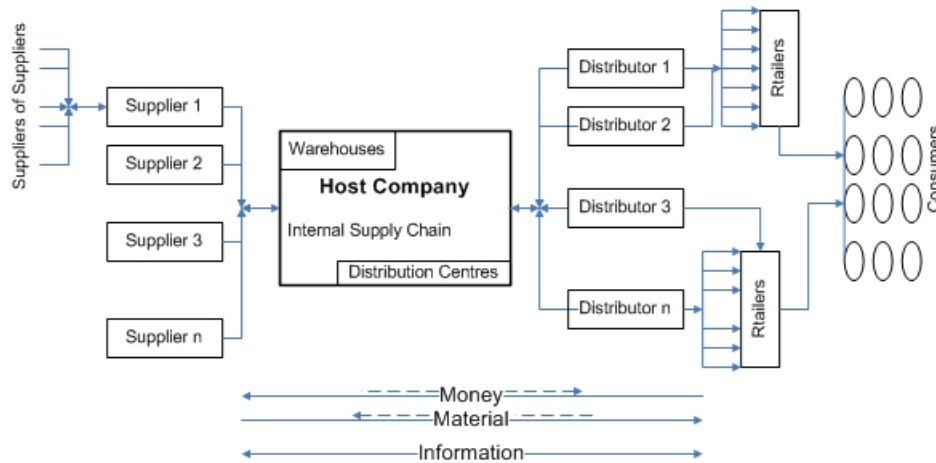


Figure 1: A Comprehensive Supply Chain

sumer. Used or partially worked upon products may re-enter the supply chain at any point where residual value is recyclable. Figure 1 represents such a supply chain. A typical supply chain begins with human and nature's regulation of natural resources, followed by extraction of raw materials. Many transportation, production, and storage processes ensue in various geographical locations, and finally the usable product reaches the consumer.

## 4 SMEs Value in Supply Chains

In general, SMEs have business capabilities which are usually not possessed by larger firms (which are their customers or potential customers). The absence of these capabilities in larger firms is characterized by the larger firms' inherent inability to "create" these abilities at acceptable costs. These capabilities can include: [11] [12] [13] [14]

- The level of entrepreneurial behavior and initiative exhibited by the employees is higher thus creativity is encouraged; similarly, the desire for success is strong since employee can see personal returns and growth in business.
- Due to the fact that SMEs do not get the best brains in the market, their labor costs are relatively low. Correspondingly, the "contract patterns" under which their workforce is engaged and developed are not highly restrictive.
- SMEs have minimal formal organizational hierarchy; most functions being personally supervised by the entrepreneur or the owner. Thus the level of "organizational bureaucracy" is lower. This put

together with other inherent factors in SMEs mean greater operational and functional efficiency.

- Since the operations are small and focused; SMEs can have shorter times to market.
- The level of documentation is lower.
- SMEs can respond to changes much quickly as compared to LMEs.
- SMEs are under lesser focus of regulatory and other watch-dog agencies.

Considering the capabilities above, which in general are absent in larger firms but are proven to provide benefits to businesses; it is to the advantage of larger firms to seek SMEs integration in their supply chains to exploit those capabilities.

### 4.1 Integrated Logistics in SMEs

Despite the popularity of the integrated logistics concept and its many applications and tremendous impact it can have on the performance of a business, very few publications have discussed it from the standpoint of SMEs. Indeed, since the early 1990s, only a dozen or so scientific papers published in journals with reading committees have dealt directly with logistics issues for SMEs. [15] [16]

In the context of development of working relationships among businesses, particularly SME sub-contractors, (though not necessarily among businesses of a single supply chain or a supply chain network) Wynarczyk & Watson [17] have observed that the development of embedded relationships between firms is clearly facilitated when the interacting employees believe that they share

a common economic situation, ethnic identity and/or value system. By engendering mutual trust, resource sharing and innovation, such embedded ties have the potential to create a viable and less costly alternative to formal governance systems based upon contracts. Many researchers [18] [19] [20] have addressed the possibility that firms that adopt an explicit strategy of relying upon such partnership arrangements are able to innovate, remain competitive and improve their business performance relative to other firms. This work however is broader in nature and has no focus on businesses partnering for a particular product or businesses that are essentially in a buyer-supplier relationship. They have also not addressed peculiarities of a Supply Chain, and have not addressed the impact of such relationships on quality performance of the interacting firms.

Pegels [21] stresses the importance of integrating the functional areas for improved productivity and quality in manufacturing organizations. The objectives to be achieved from enhanced functional areas integration are improved communication and co-operation between the various functional areas involved in developing a product from the point of concept to delivery of the product to the customer. Pegels [21] has however not discussed such integration across to suppliers, whose performance can arguably have more critical impact on the finished good than some functional areas within a company such as accounting.

## 4.2 Supplier Development

Krause, Handfield & Scannel [22] have defined supplier development as:

“any set of activities undertaken by a buying firm to identify, measure and improve supplier performance and facilitate the continuous improvement of the overall value of goods and services supplied to the buying company’s business unit. These activities include, but are not limited to, goal setting, plant visits, supplier audits, supplier training, performance measurement, supplier certification, supplier recognition and efforts to instill a philosophy of continuous improvement in the supplier.”

Cited in Krause, Handfield & Scannel [22], Hahn, Watts & Kim [23] defined supplier development as:

“any systematic organizational effort to create and maintain a network of competent suppliers”.

They further classified development activities into narrow and broad perspectives.

The narrow perspective involved “the creation of new sources of supply when there are no adequate suppliers to meet the firm’s requirements”, which is also referred to in the literature as reverse marketing[24]. The broader perspective involved “a long-term cooperative effort between a buying firm and its suppliers to upgrade the suppliers’ technical, quality, delivery, and cost capabilities to foster ongoing improvements” [25]

In the same seminal work, Watts and Hahn [25] have identified an *inventory of supplier development activities* undertaken by buyer firms. A brief summary of the same is shown in Table 1.

## 4.3 Supply Chain and Supplier Development in Developing Economy Context

The exchanges encountered in the supply chain occur between different entities that seek to maximize their revenue within their own sphere of interest. Their knowledge of the remaining players of the supply chain remains variable, sometimes non-existent. Similarly their ability to influence the governing dynamics of a supply chain vary, with stronger controls over their own operations and decreasing controls as they move further in supply chain.

Considering the fact that effective supply chain management affects industry wide business benefits such as improved logistics and informed decision-making, it can be argued and inferred that a business’s “knowledge of other players in its supply chain” and its “ability to influence the governing dynamics” of a supply chain will further the ability of a business to achieve the benefits that are expected out of effective supply chain management.

Unfortunately, seminal works and industrial data on the supply chain practices in Pakistani businesses are non-existent. While some anecdotal references are made to the supply chain practices of high performing local and multinational businesses; comprehensive case studies are not available.

In discussion with supply manager of a leading Tobacco Company, it was revealed that the level of knowledge of the company about other members of its supply chain is very high. The company has been successfully able to positively influence the players in upstream supply chain up to the level of tobacco farmers. While the company has been internationally recognized for its excellence in Supply Chain Management, no major seminal work has been published either in a journal or other periodical which reports the details. In similar discussions with

managers, SCM practices of a major Textile mill were also revealed as highly effective. Though the company does not have a high level of penetration when it comes to the information about other players in upstream supply chain; it has established a very comprehensive supplier selection process based on extensive quality assurance practices.

While similar anecdotal references are available for capital goods industry, textile sub-sectors such as socks etc,

food item manufacturers etc; the number of case studies and published works that explore these practices remain exceptionally low.

Keeping in view the limitations cited above, this work builds upon authentic opinions of Supply Managers and available literature with an acceptable degree of reliability. However, the knowledge generated in this work will be furthered; both in parallel and in future.

Table 1: Inventory of Supplier Development Activities

Supplier Development Activity	Publication Reference
Buying from alternative suppliers to provide competition to current suppliers	<i>Hahn et al. 1986; Giunipero, 1990; Dyer &amp; Ouchi, 1993.</i>
Evaluation of Supplier performance	<i>Hahn et al. 1989; Giunipero, 1990; Watts &amp; Hahn, 1993.</i>
Raising Performance expectations	<i>Monczka et al. 1993.</i>
Recognition and awards for outstanding suppliers	<i>Galt &amp; Dale, 1991.</i>
Promises of current and future business if supplier performance improves	<i>Giunipero, 1990; Monczka et al. 1993; MacDuffie &amp; Helper, 1997.</i>
Training and Education of a supplier's personnel	<i>Galt &amp; Dale, 1991, Monczka et al. 1993.</i>
Exchange of personnel between the two firms	<i>Newman &amp; Rhee, 1990.</i>
Direct investment in supplier by a buyer firm	<i>Galt &amp; Dale, 1991, Monczka et al. 1993.</i>

Source: Hahn et al. (1990)

#### 4.4 Market Forces demanding increased Supplier Development

The following worldwide trends and forces call for a comprehensive integration between larger businesses and their suppliers:

- *Increased cost competitiveness:*  
The efficiency of a business is a sum of its internal or operational efficiency and that of its suppliers (Detailed discussions follow). Mathematically:

$$\Sigma\eta = \eta_i + \Delta\eta_s \quad (1)$$

where  $\Sigma\eta$  represents overall efficiency of a busi-

ness,  $\eta_i$  represents its internal efficiency and  $\Delta\eta_s$  represents the collective efficiency of its suppliers. Thus cost competitiveness can only be achieved if it is sought at both internal operations level and at the level of ones suppliers.

- *Shorter product life cycles:*  
Product life cycles are reducing dramatically. While this trend is amply visible worldwide with the quick obsolescence of telecom and computer related products, same trend is taking over in textile and other sectors in Pakistan. The increased market demand of innovativeness in products and its delivery, competitive forces are driving considerable drop in lifecycles of textile material, designs

and delivery requirements.

With shorter lifecycles, bureaucratic and lengthy processes in supply chains are a sure recipe for failure. Only crisp and swift supplier management based on complete integration can compliment these reduced lifecycles.

- *Faster product development cycles:* Early introduction of a new product is often rewarded with a large market share and sufficient unit volumes to drive costs down rapidly. Thus product development cycles are reducing worldwide and also in Pakistan, calling for integration among all links of a supply chain.
- *Globalization and customization of product offerings:* Customers the world over can increasingly afford and are demanding a greater variety of products that address their specific needs. Mass customization has become the new marketing rule.
- *Higher overall quality:* Increasing customer affluence and tougher competition to supply their needs have led to demands for higher overall quality.

These increased demands on OEMs for improvements in product design, manufacturing, cost, distribution and support are being imposed, in turn, on their supply chains.

#### 4.5 The Extended Enterprise

More recently, the loosely coupled, self-organizing network of businesses that cooperates to provide product and service offerings has been called the Extended Enterprise, which is often used as an alternate term for a Supply Chain. The Extended Enterprise, however, is a more descriptive term than supply chain, allowing ideas that express more permeation of operation of one business into that of another. A simplified version of the much advertised McDonald's enterprise captures the idea. The concept of Supplier Development essentially emanates from Supply Chain Management. [26] have suggested that synchronizing suppliers' capabilities with buyer's expectations is a cornerstone of all supplier development activities. The gaps identified between buyer's expectations and suppliers' capabilities thus become focus of such activities. (Figure 3)

## 5 Supplier Development in Pakistan

Companies around the world are being constantly forced to reduce their costs of operations to remain competitive. With a fierce growth in competition, innovative and forward looking companies have adopted various techniques to reduce costs and enhance performance; while others have practiced traditional cost cutting method of waste reduction/elimination. Many companies have adopted a focus on their core activities, thus outsourcing those parts of their operations which lie outside their core-competence. Cooperation with subcontractors can potentially make the operations more efficient and thus enable goods to be purchased at lower prices.

In Pakistani manufacturing sectors, the extent of outsourcing varies across firms. A more traditional and prevalent approach has been to outsource support functions and other manpower extensive functions; such as logistics. Very few businesses have outsourced part of their manufacturing activities; while the practice of outsourcing most of manufacturing operations, thus developing a competence in assembling; which is fairly prevalent in west; is almost non-existent in Pakistan.

Krause & Scannel [27] have argued that suppliers can have a direct impact on the cost, quality, technology, delivery, flexibility, and profits of the firms that have their final product's parts outsourced to these suppliers. A company will obviously enjoy competitive advantage from its supply chain if its suppliers are relatively more capable; thus the competitive advantage is formed on the basis of supply chain capabilities rather than individual firm's capability. Krause & Scannel [27] have also cited Lewis [28] and Morgan [29] to claim that "many buying firms report a need for supplier improvements ..." and that some type of buying firm intervention is necessary to ensure that suppliers may meet the future needs and expectations of buying firms.

Essentially, outsourcing is a strategic decision, where a firm decides to rely on another firm to perform a part or parts of its operation; thus accepting that the performance of supplier or subcontractor will potentially decide performance of the host company. Such reliance on outside companies carries dividends and risks. An average company can become highly competitive if it has suppliers/subcontractors producing highest quality on lowest costs. Similarly, a well-performing company can lose business if its suppliers/subcontractors are average (Figure 4). This requires high level of effectiveness in the cooperation between firms; thus suppliers and sub-

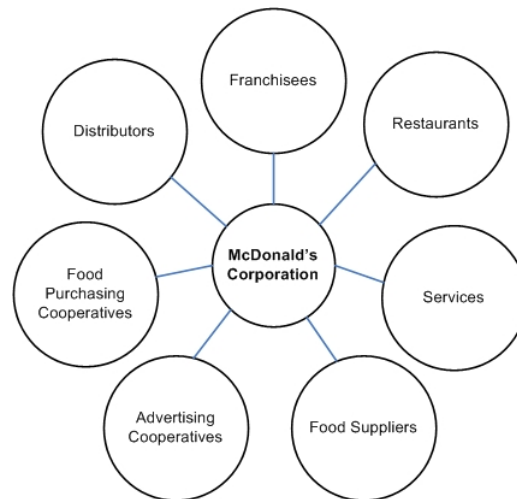


Figure 2: Extended Enterprise - McDonald's Simplified

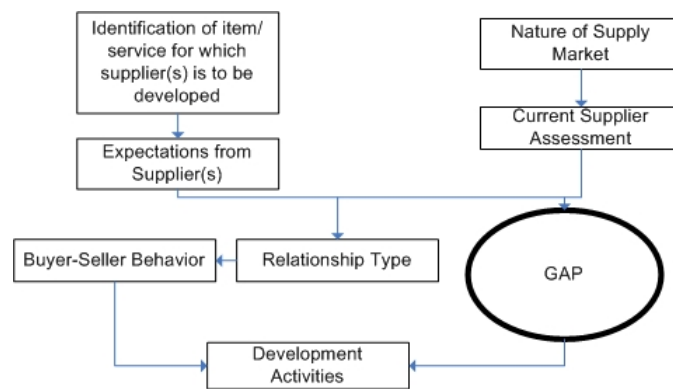


Figure 3: Supplier Development - Adopted from Dunn &amp; Young (2004)

contractors have to address specific problems relating to their sectors of activity, special fields and working practices.

Unfortunately for the host manufacturing companies in Pakistan, most suppliers and subcontractors are not large and resourceful enough to have developed in-house systems that compliment hosts' requirements. Lee (2004), [30] Kureshi et. al. (2006) [31] and Economic Survey of Pakistan [32] have concluded that most manufacturing firms in China and Pakistan are SMEs. Many other similar studies and reports have shown similar results for economies around the world. SMEs by their very nature are resource constrained, thus having a limited capacity of investing in quality improvement initiatives. In such situations, companies must find alternate ways to improve the performance of their suppliers to remain competitive.

## 6 Contemporary Supplier Development Practices

Supplier development is a well researched field with substantial scholarly work available to analyze the contemporary SD practices. The studies, however, come mostly from developed economies.

Krause [33] has discussed the variety of activities used by buyer firms for developing the capabilities and performance of their suppliers. The results indicate that most of the buyers have used supplier development activities such as "Providing supplier with feedback about the results of its evaluation", "Inviting supplier's personnel to your site to increase their awareness of how their product is used" and "Site visits by your firm to supplier's premises to help supplier improve its performance". As a corollary, activities like "Investment in the supplier's operations", "Use of 4 or more suppliers for a purchased item to create competition among

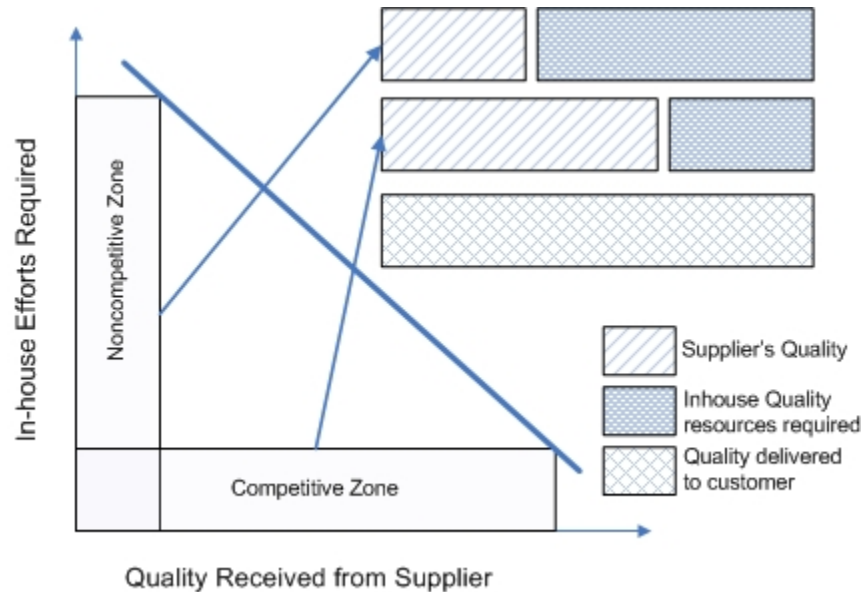


Figure 4: Effect of Suppliers' Quality on firm's Competitiveness

suppliers" and "Training/education of the supplier's personnel" have been used seldom or never. Krause [33] has reported reduced incoming defects and cycle times; and improved on-time deliveries and orders received complete as a result of these Supplier Development activities. However, mixed response has been received from suppliers when asked if their product/service costs have decreased or their sales have increased. Similarly, the ability of suppliers to improve product design as a result of Supplier Development activities was reported as mixed. Krause [33] has mentioned that supplier development effort can incur fairly high expenditures to the host company, thus it has been suggested that such activities should be undertaken only when they are expected to yield maximum benefits.

## 6.1 Supplier Development Survey

A questionnaire was administered to industry practitioners who were involved in taking outsourcing decisions in their businesses. No prior discussions were undertaken which could potentially help the respondents form an opinion.

Responses were sought on the extent of supplier development activities carried out by each firm. The survey also gathered preliminary information on the perception of these practitioners about the possible outcomes if organized supplier development was undertaken in more diverse ways through activities that potentially incur (higher) costs. Respondents were also asked to rate the supplier development activity for the

potential strategic reliance it places in the supplier.

The unit of analysis for the research is "Buyer-Supplier Link". This implies that a single respondent could give multiple responses; one for each supplier they choose to report.

The questionnaire was administered by three methods:

- E-mail requests were sent to a database of 110 managers who are involved in Supply Management in their companies. The activity got response from 21 managers (response rate 19%) generating 37 usable responses. (Mean: 1.76 supplier per respondent)
- Questionnaire was personally administered to 6 managers/owners during structured interviews. This generated 21 responses. (Mean: 3.5 supplier per respondent)
- Questionnaire was provided to 25 managers/owners during academic sessions at Center for Advanced Studies in Engineering, Islamabad, to be returned after completion. This generated 12 responses from 10 respondents. (Response rate 40%, Mean: 1.2 supplier per respondent)

The core of potential respondents for e-mailed questionnaire was essentially random. The other two sets of respondents were however, not random; covering all possible respondents available.

All respondents were from the northern industrial belt of Pakistan, including the cities of Islamabad, La-



Table 2: Groups and Return Rates of Questionnaires

	<b>Email Re-requests</b>	<b>Structured Interviews</b>	<b>Scholarly Forums</b>
<b>Requested</b>	110 (78%)	6 (4.3%)	25 (17.7%)
<b>Returned Usable</b>	37 responses from 21 responders	21 responses from 6 responders	12 responses from 10 responders
<b>Means: Suppliers per respondent</b>	1.76	3.5	1.2

hore, Faisalabad, Sialkot, Hattar and Peshawar. A total of 70 responses were received from 37 respondents, thus representing an overall response rate of approximately 27%. Nearly 50% of the respondents were owners of the businesses, while 100% were involved directly or indirectly in the decision making relating to outsourcing.

Minitab 15 software was used for data analysis.

## 7 Results

The terms “Outsourcing” and “Supplier Development” were discussed, as appropriate to the medium used for questionnaire administration, with all the respondents for all possible semantic variations. For the purpose of this study, outsourcing does not include procurement of operating supplies, maintenance suppliers and raw material used to make the final product. It only includes finished part-products that are integrated into the final product of the host company. For example, in the production of confectionary products, buying of milk, cream, flour, sugar etc. or that of machinery maintenance products is not included in outsourcing. The procurement of wrapper sheets for candies, finished with logos of the host company etc. is included in outsourcing. Similarly, if third party logistical arrangements are used for shipments, whether in upstream supply chain or in downstream supply chain, it is included in outsourcing.

### 7.1 Delphi Survey of Used Techniques

Supplier development techniques, discussed in several seminal works [33] [34] [35] [27] [26] were listed to form a “base” and were discussed in several Delphi sessions at CASE; and in representative industries. It was concluded that the following two techniques were not being practiced in the Pakistani manufacturing sector, i.e. “Use of 4 or more suppliers for this purchased item to create competition among suppliers” and “Use of a sup-

plier certification program to certify supplier’s quality, thus making incoming inspection unnecessary”. The possible cases which do practice these techniques were not considered.

The two were thus removed from the base list of techniques for questionnaires. Similarly 02 new techniques were added to the base list for questionnaires for being generally prevalent in the industry, and not considered in the seminal works cited above. They are “Inviting suppliers to social gatherings in the host firm” and “inviting suppliers to religious gatherings in the host firms”. Table 2 exhibits the list of Supplier development techniques that were investigated for their use.

The replies were sought on a liker scale of 1-5, with the following semantic expressions:

- 1 = the technique is always used
- 2 = the techniques is often used
- 3 = the technique is used sometimes
- 4 = the technique is generally not used
- 5 = the technique has never been used

### 7.2 Use of Supplier Development Techniques

To examine and compare the central tendency and variability of the distributions reported in the survey, a boxplot of the use of different supplier development techniques is shown in Figure 7. The location of the median, the height of the rectangular box, and length of the whiskers provide an overview of each distribution’s characteristics. The asterisks show outlier values.

It can be seen from the graph that none of the supplier development techniques is really followed industry-wide since all the techniques have been reported by variable number of respondents as “never-used”. The provision of feedback to suppliers about their performance remains predominantly informal. (Informal feedback:

Table 3: List of Techniques for Supplier Development

T-1	Inviting Suppliers to Social Events taking place on buyer's premises
T-2	Inviting Suppliers to Religious Events taking place on buyer's premises
T-3	Using 2-3 suppliers for the same out-sourced unit to generate competition
T-4	Verbal or Written requests to supplier for improving quality
T-5	Informal Assessment of Suppliers with no set rules
T-6	Formal Assessment of Suppliers with known consent and set rules
T-7	Giving Informal Feedback to Supplier on their quality performance, usually verbal
T-8	Giving Formal Feedback to Supplier on their quality performance, usually recorded and kept
T-9	Promise of Future Benefits in return for improved quality
T-10	Cross Site visits of buyer and supplier firms' personnel
T-11	Recognition of Supplier's better performance in shape of rewards
T-12	Investment in Supplier's Operations
T-13	Training of Supplier's personnel

*T=Technique*

Mean: 1.313 SD: 0.479, R=1; Formal feedback: Mean: 4.375, SD: 1.147, R=3). These also point towards a clear lack of effective communication channels between supply links and thus indicate a lack of supplier integration.

The relatively low use of "promise of future benefits/business in return of good quality" (Mean: 2.9, SD: 1.309, R=4) indicates a non-committing behavior by large buyers and also a possibility of inconsistent and episodic performance by small suppliers. The very low use of rewarding and recognizing suppliers' good performance, making investment in suppliers' operations and training suppliers' personnel can be attributed to a relatively high cost of such activities. It can also be attributed to the general inability of these techniques to generate immediate financial benefits. Such bottom-line centered behaviors indicate a reactive and short term planning on part of large buyers.

Many large US businesses offer free trainings to the personnel of their suppliers, thus not only creating a basis of strategic relationship, but also ensuring that they can transform their suppliers' business functions to compliment their own through effective training. Such initiatives also improve overall competence levels in the

suppliers and can help develop a robust SME sector. For example, McDonnell Douglas (now part of The Boeing Company) offers free courses to its suppliers including:

- Benchmarking
- Design for Assembly
- Design for Manufacturability
- Design, Manufacturing, and Producibility Simulation
- Developing Team Performance
- Effective Presentation Seminar
- Preferred Supplier Certification
- Quality Function Deployment/The Taguchi Approach
- Statistical Process Control

The following table also shows the central tendencies of the reported distributions, and offers numerical details of the boxplot in Figure 7.

Table 4: Statistical Summary of Used Techniques

Variable	N	N*	Cum Pct	Mean	SE Mean	St Dev	Min	Median	Max
T-1	70	0	100	2.443	0.131	1.099	1.000	2.000	5.000
T-2	70	0	100	2.029	0.127	1.063	1.000	2.000	5.000
T-3	70	0	100	2.286	0.138	1.156	1.000	2.000	5.000
T-4	70	0	100	2.286	0.141	1.181	1.000	2.000	5.000
T-5	70	0	100	2.429	0.160	1.336	1.000	2.000	5.000
T-6	70	0	100	3.343	0.168	1.403	1.000	3.000	5.000
T-7	70	0	100	2.429	0.170	1.420	1.000	2.000	5.000
T-8	70	0	100	7.700	0.168	1.408	1.000	4.000	5.000
T-9	70	0	100	2.900	0.157	1.309	1.000	3.000	5.000
T-10	70	0	100	2.757	0.162	1.356	1.000	2.000	5.000
T-11	70	0	100	4.329	0.109	0.912	2.000	5.000	5.000
T-12	70	0	100	4.043	0.107	0.892	2.000	4.000	5.000
T-13	70	0	100	4.400	0.101	0.841	2.000	5.000	5.000

*T=Technique, Abbreviations used are explained in Table 3.3*

Table 5: Variation Range of used techniques

Variable	Range
T-1	4.000
T-2	4.000
T-3	4.000
T-4	4.000
T-5	4.000
T-6	4.000
T-7	4.000
T-8	4.000
T-9	4.000
T-10	4.000
T-11	3.000
T-12	3.000
T-13	3.000

### 7.3 Most and Least used Supplier Development techniques

The most used techniques come out to be:

- Giving Informal Feedback to Suppliers on their quality performance (Mean: 1.313 SD: 0.479, R=1)
- Informal Assessment of Suppliers (Mean: 1.563 SD: 0.629, R=2)
- Inviting Suppliers to Religious Events (Mean: 1.687 SD: 0.479, R=1)
- Cross Site visits (Mean: 1.812, SD: 0.750, R=2)

Similarly, the least used techniques come out to be:

- Investment in Supplier's Operations (SD: 4.625, SD: 0.500, R=1)
- Recognition of Supplier's better performance in shape of rewards (Mean: 4.500, SD: 1.033, R=3)
- Giving Formal Feedback to Suppliers on their quality performance (Mean: 4.375, SD: 1.147, R=3)
- Formal Assessment of Suppliers (Mean: 4.188, SD: 1.167, R=3)

It was observed that the firms consistently using supplier development techniques were found to have a visibly better organizational culture, and Quality Management was generally prevalent in the firms. Similarly, firms using least or none of the techniques were more rudimentary in their operations. The direction (whether

Table 6: Variation Range of used techniques

Variable	Q1	Q3	IQR	Skewness	Kurtosis
T-1	2.000	3.000	1.000	0.66	0.13
T-2	1.000	2.250	1.250	1.13	0.97
T-3	1.000	3.000	2.000	0.63	-0.47
T-4	2.000	2.000	0.000	1.21	0.64
T-5	1.000	3.250	2.250	0.59	-0.85
T-6	2.000	5.000	3.000	-0.28	-1.23
T-7	1.000	4.000	3.000	0.70	-0.87
T-8	3.000	5.000	2.000	-0.73	-0.81
T-9	2.000	4.000	2.000	-0.09	-1.21
T-10	2.000	4.000	2.000	0.39	-1.09
T-11	4.000	5.000	1.000	-1.42	1.28
T-12	4.000	5.000	1.000	-0.97	0.52
T-13	4.000	5.000	1.000	-1.48	1.73

single tail or two-tailed) of the observed relationship between quality performance and use of Supplier Development techniques has not been investigated.

## 8 Discussion, Limitations & Future Research

The study and discussions with managers reveal that supplier development has not been adopted formally by most of the large Pakistani businesses. Any efforts to this end remain episodic in nature, and after the completion of the event that instigated the effort, supplier development is not pursued further.

The industry does not seem to have adopted even some of the no-cost techniques such as promises of future benefits in return for better quality. With the evident benefits of such activities and yet a reluctance on part of businesses to adopt it represents the proverbial case of “who-will-bell-the-cat”. The short-term planning discussed earlier might be an impetus of this.

Such situations need attention of policy making bodies like Small & Medium Enterprises Development Authority (SMEDA) of Pakistan, who can benchmark the practices of developed economies and help create an environment of free communication and trust between large buyers and small suppliers. A sustained adoption of supplier development can only be achieved by making the large buyers “interested” in it. The strategic impact of each adoption or non-adoption and its appreciation/consideration by buyers has not been investigated in this study.

It can also be seen from a quick glance on the list of least and most adopted Supplier Development tech-

niques that techniques carrying significant monetary costs are not being used. On the other hand, the techniques that have least monetary costs are being used. This can also perhaps indicate the reluctance of business owners in Pakistan, vis-à-vis investing in suppliers or supply chains; which is correctly perceived as not bringing in short term financial dividends. As such, this trend implies a reactive approach to business management.

The reasons for adoptions of certain techniques and non-adoption of others are not clear, though costs associated with such adoptions come out to be a significant complimenting or inhibiting factor.

This study however, does not include the business size of investigated firms into consideration, a factor which is expected to yield significant results [25]. This factor merits serious consideration for further investigation in a developing economy context. Similarly, causal relationships need to be established between non quality specific performance of firms, such as financial performance, competitiveness etc. and their Supplier Development practices.

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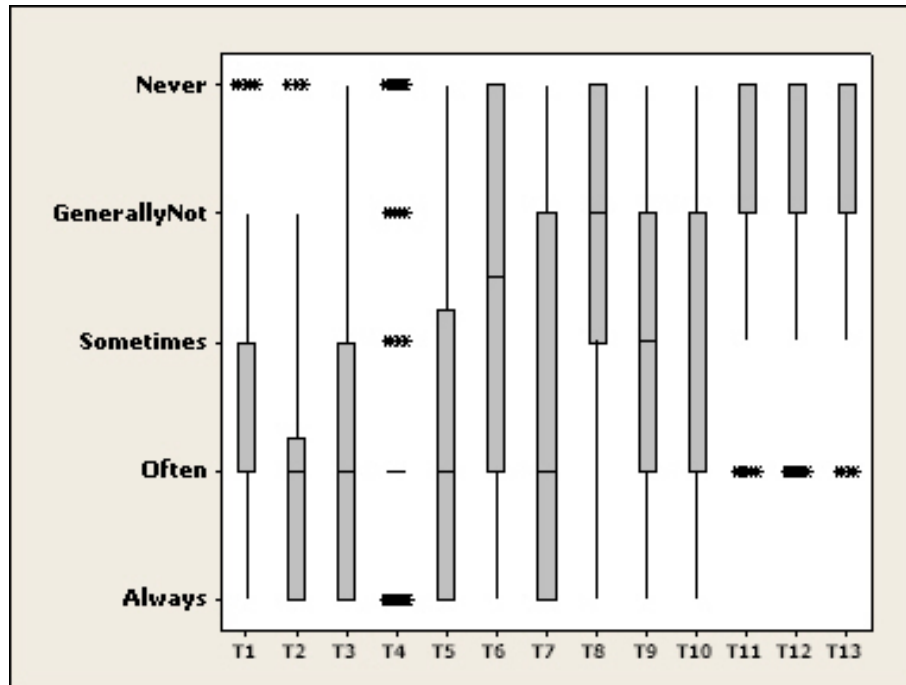


Figure 5: Boxplot of Use of SD Techniques

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