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# Strategy and Factors Affecting the Supply Chain of Manufacturing Industries in Saudi Arabia

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## Abstract

Supply chain management is becoming very important in the agile manufacturing industries of nowadays. It is imperative to study the strategy and factors affecting the integration of supply chain management in company's operating divisions. Forecasting and quality functions should be integrated in supply chains. It is assumed that SCM can improve the efficiency and effectiveness of company's transformation process. Hence it is important for companies in Saudi Arabia to follow this trend and began implementing SCM to squeeze the excessive fat out of their operations.

The paper will start by general introduction with an overview about supply chain management. Then, it will summarize the theoretical background for strategy. In next section method and research methodology will be discussed with analysis of results. Finally, the paper will close with a conclusion

**Keywords:** Supply Chain Management, Strategy, Factors, Manufacturing industries, Lean and Agile Supply Chains

## 1. Introduction

Today's businesses have become extremely complex. Consumers have become highly discerning in their choice of products and services. The pressure of competition has accelerated product changes, supercharged by shortening product and technology development lifecycles. Convergence has shifted the balance of power in favor of the consumers thereby giving way to globalization of businesses and integration of economies. Although this may have thrown open a plethora of opportunities for all – in the form of variety and choice, it has at the same time added the highest degree of uncertainty and unpredictability to business processes. To combat these risks and challenges, organizations round the globe are re-organizing and streamlining their supply chains because it focuses on actions along the entire value chain. The supply chain perspective is predicated on the fact that competition is shifting from firm versus firm to supply chain versus supply chain, and SCM is the approach to designing, organizing, and executing these activities.

During the 1990s, many manufacturers and service providers collaborated with their strategic suppliers to upgrade traditional supply and materials management functions and integrate them as part of corporate strategy. Supply chain management has gained significance as one of the 21st century manufacturing paradigms for improving organizational competitiveness. SCM has been considered as a competitive strategy for integrating suppliers and customers with the objective of improving responsiveness and flexibility of manufacturing organizations. The integration of functions would result in potential benefits such as inventory reduction, improved delivery service, and shorter product development cycles because of close coordination between functions.

According to the definition of SCM by the Global Supply Chain Forum, SCM is the “integration of key business processes from end user through original supplier that provides products, services, and information that add value for customer and other stakeholders”.

To elaborate more, a general SCM model is given as follows:

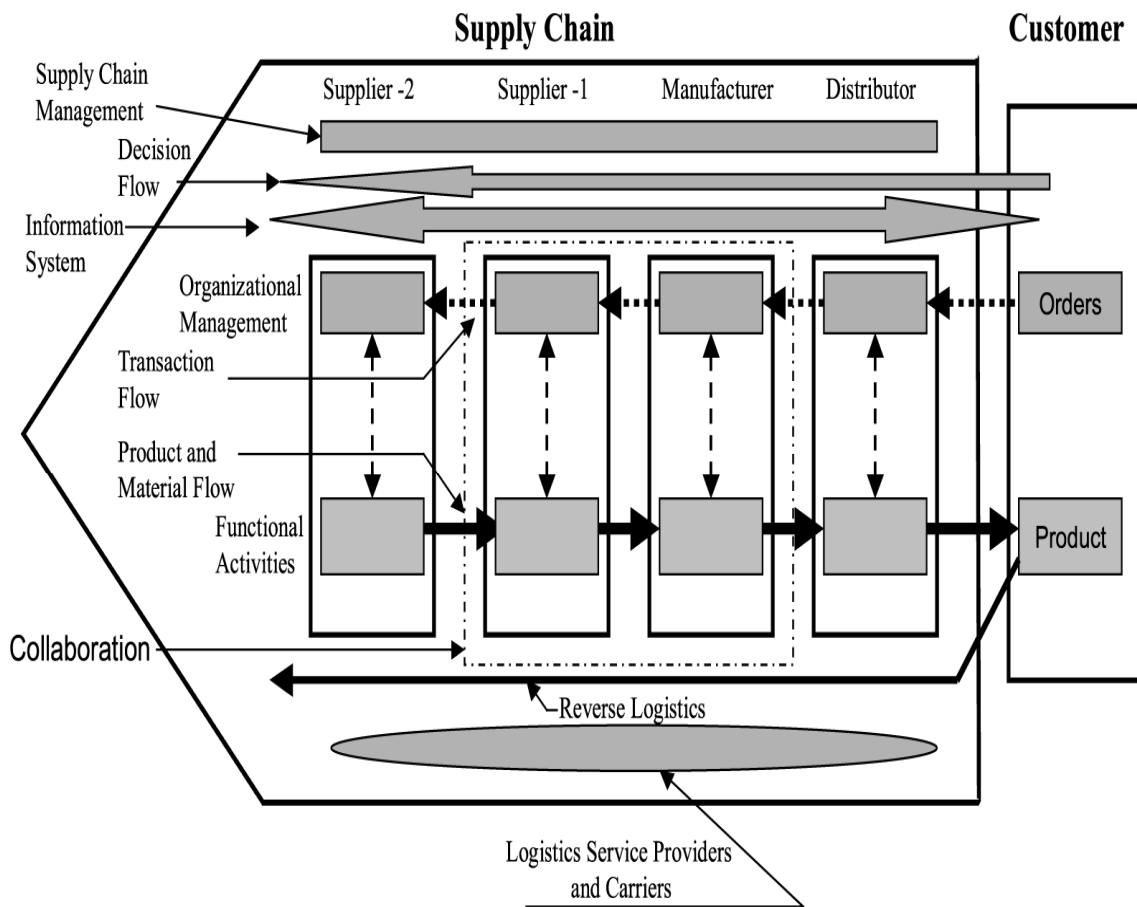


Figure 1: SCM Model - Stefan and Martin, 2008

Enterprises worldwide face challenges such as competitive pressures, increasing global competition, decline in profit margins deregulation in many business environments, most multinational corporations are pursuing different innovative operational strategies to secure market share and improve profits. Specifically, Discrete Manufacturing markets driven by mass customization and e-commerce are forcing retailers and manufacturers to shorten planning cycles, compress manufacturing lead times, and expedite distribution which made enterprises worldwide feel the importance of SCM. It is becoming more crucial for the survival of world class enterprises.

The same effect is getting transferred to Middle East where companies have very seriously started thinking for innovative solutions to overcome the sudden pressure and competition with the local industry. Before the 1990s, Saudi organizations operated in a protected environment. There was very little competition even amongst domestic players. Business was driven by almost monopolistic strategies. However the de-regulation of the Economy in the last decade has attracted global players in every industrial sector and has unleashed a new competitive spirit in the Saudi organizations. Foreign companies have started stepping in the Kingdom to satisfy the regional demands of consumer goods. In searching for a solution that would lead towards continuous improvement, attentions are getting diverted to SCM which is a totally new technology of managing the business and the relationship among all the members, back to the original suppliers and out to the end consumers.

Environment changes have been so dramatic and sudden that Saudi Arabian organizations have realized the inappropriateness of competing effectively in isolation from their suppliers and other associates of supply chain. The need for adopting collaborative methodologies, at this stage, is more than ever before because of the recent economic deregulation and globalization of the world wide industry. The traditional “protective” economic, industrial and organizational boundaries have been demolished. Although Saudi Arabia is one of the fastest developing economies of the world, it needs a different approach to put its economy on the path of sustainable economic growth.

Saudi Arabia got a big market of Consumer Products that is why many international companies have located there plants in the region to facilitate the demands cost effectively. Mostly Consumer goods are produced

through Discrete manufacturing processes. These types of industries got a major scope of implementing SCM and realize the benefits as the coordination between functions count a lot and that ultimately result in cutting down the overall product cost to make it more competitive in market. Effective management of the supply chain is viewed as the driver of reductions in lead times and material costs, and improvements in product quality and responsiveness.

## 2. Theoretical Background For Strategy

In recent years, numerous theories and paradigms have been used by scholars to understand why some strategic supply chains succeed in creating value while others do not. Strategic supply chains as organizational entities are more likely to succeed when they are able to adapt and align with the demands of the external environment (Thompson, 1967). A second theory that helps explain how strategic supply chains can mobilize to create value and that goes hand in hand with contingency theory is Lewin's ,1951 force field theory. Force field theory implies that the driving forces (external threats combined with internal benefits) must exceed the resisting forces (e.g. culture, structure, perceptions of how things should be done) so that any organizational entity – in this case a company within a supply chain – can change and survive in changing environments. The ability to scan the environment for the forces driving SCM, to identify the potential barriers (or resisting forces), and to implement bridges (so as to over come resistance) enables members of a supply chain to maintain competitive success in changing environments and markets and become a successful strategic supply chain. Typically, the contingency model is driven by dynamic technological innovation, management skills across department and organizational functions, and integration vertically and horizontally across industry (Stonebraker and Afifi, 2004; Funk, 1995; Hammer and Champy, 1993; Lawrence and Lorsch, 1967). These drivers can be considered driving forces (Lewin, 1951). Although these drivers push for supply chain collaboration, barriers or resisting forces push back (Lewin, 1951). Such resisting forces include lack of member support, inadequate measurement and information systems, and organizational culture. Nevertheless, organizations are not powerless in terms of choices or their ability in attempting to overcome these barriers. Strategic supply chain partners can create and implement initiatives that bridge the gap between a supply chain and a strategic supply chain. Some of these bridges include people empowerment, information integration, and alliance design.

In competitive market companies usually offer a wide range of products and services in various types of non-coherent business environments. There are no SC strategies that are applicable to all types of products and markets.

It is therefore of growing importance to develop a differentiated SC strategy to stay competitive. This implies that the SC strategy needs to incorporate several solutions each appropriate to a specific product or market condition and this concern both the supply, operating and distribution parts of the SC strategy. Various manufacturing strategies – such as make-to-stock (MTS), deliver-to-order (DTO), assemble-to-order (ATO), sourcing-to-order (STO), and make-to-order MTO) – have been adopted in numerous enterprises with the aim of satisfying the needs of specific customers in specific markets (Amaro et al., 1999). Fisher (1997) initiated research where suggesting that companies need to distinguish between functional and innovative products and argued the latter should be supplied with responsive (agile) SCs while the former should be supplied with efficient (lean) SCs. There is an essential difference between lean SCs that focus primarily on efficiency (i.e. costs and productivity) and agile SCs that focus primarily on responsiveness (Fearne and Fowler, 2006). SCs emphasizing efficiency creates a risk that production does not meet customer demand, while SCs emphasizing effectiveness creates risk of low-production efficiency.

Special product refers to a product with low volume and erratic demand, a short life cycle, or a high level of customization. In contrast, standard product refers to a product with a more stable demand, longer life cycle, or with no or limited customization. Figure below shows the resulting matrix and the four suggested SC strategies. As can be noted, the matrix suggests that there are four possible generic SC strategies. Firstly, when demand is predictable and replenishment lead-times are short, a lean continuous replenishment strategy is appropriate. In contrast, when demand is unpredictable and replenishment lead-times are long, a leagile SC strategy is appropriate. Moreover, when lead-times are long and demand is predictable, a lean SC strategy is appropriate, for example, make and source ahead of demand in the most efficient way. Finally, when demand is unpredictable and lead-times are short, an agile SC strategy, based on rapid response, is required.

		DEMAND CHARACTERISTICS	
		Predictable	Unpredictable
SUPPLY CHARACTERISTICS	Long lead-time	LEAN (Plan and execute)	LEAGILE (Postponement)
	Short lead-time	LEAN (Continues Replenishment)	AGILE (Quick Response)

Figure 2: Christopher et.al, 2006

The three SC paradigms of interest: lean, agile, and leagile are described in more detail below.

### 2.1 Lean & Agile(Leagile) Supply Chains

Although lean and agile approaches are often discussed as opposing paradigms, they share a common objective: meeting customer demands at the least total cost (Goldsby et al., 2006). It is in terms of the characteristics of this demand and the basis of meeting customer demand that the two approaches differ (Goldsby and Garcia-Dastugue, 2003). Moreover, numerous researchers have suggested that the lean and agile approach can be integrated in a variety of ways to create so-called “leagile” strategies (e.g. Childerhouse and Towill, 2000; Christopher and Towill, 2001; Stratton and Warburton, 2003; Mistry, 2005). Thus, it is not really a question of lean or agile, but rather the thoughtful selection and integration of suitable aspects of these paradigms appropriate to the specific SC strategy (Christopher et al., 2006). Table illustrates a comparison of attributes among lean, agile and leagile SCs. Christopher and Towill (2001) have visualized three distinct lean-agile hybrids. The first is founded on the Pareto Rule, recognizing that 80 percent of a company’s revenue is generated from 20 percent of its products. It is suggested that the dominant 20 percent of the product assortment can be managed in a lean manner – given that demand is relatively stable for these items and that efficient replenishment is the appropriate objective, while the remaining 80 percent can be managed in an agile manner (Goldsby et al., 2006). The second lean-agile hybrid is founded on the principle of base and surplus demand, recognizing that most companies experience a base level of demand over the course of the year. It is suggested that the base demand can be managed in a lean manner, while demand peaks over the course of peak seasons or heavy promotion periods can be managed in an agile manner (Goldsby et al., 2006).

Distinguishing attributes	Lean SC	Agile SC	Leagile SC
Focus	Cost-efficiency	Responsiveness	Both
Typical products	Standard (commodities)	Special (fashion)	Standard, special and modular
Market demand	Predictable	Volatile	Volatile and unpredictable
Product variety	Low	High	Medium
Product life cycle	Long	Short	Medium
Customer drivers	Cost	Lead-time availability	Service level
Market winner	Cost	Availability	Cost and availability
Market qualifiers	Quality, lead-time, availability	Quality, cost, lead-time	Quality and lead-time
Profit margin	Low	High	Moderate
Dominant costs	Physical costs	Marketability costs	Both
Stock out penalties	Long-term contractual	Immediate and volatile	No place for stock out
Purchasing policy	Buy goods	Assign capacity	Vendor-managed inventory
Information enrichment	Highly desirable	Obligatory	Essential
Forecast mechanism	Algorithmic	Consultative	Both/either
Lead time compression	Essential	Essential	Desirable
Eliminate muda	Essential	Desirable	Arbitrary
Rapid reconfiguration	Desirable	Essential	Essential
Robustness	Arbitrary	Essential	Desirable

Figure 3: Sources: Naylor et al. (1999), Mason-Jones et al. (2000), Olhager (2003), Bruce et al. (2004) and Agarwal et al. (2006)

Leagile SC systems have several advantages. Firstly, it increases the company's ability to fine tune products to specific customer wishes. Secondly, inventory can be held at a generic level resulting in fewer stock-keeping variants and hence few inventory in total as well as lower inventory carrying and obsolescence costs. Thirdly, because the inventory is generic, its flexibility is greater, given that the same components, modules or platforms can be embodied in a variety of end products. Fourthly, forecasting is easier at the generic level than at the level of the finished item. Finally, the ability to customize products locally means that a higher level of variety may be offered at a lower total cost, enabling strategies of "mass-customization" to be pursued. In order for leagile SC systems to succeed, a reliable supplier network that can supply parts and services is necessary (Feitzinger and Lee, 1997).

Supply chain strategy differs from traditionally accepted company strategies in that it requires the coordination and commitment of multiple firms to implement company strategic objectives. Supply chain strategy utilizes inter-firm coordination as the capability that facilitates achievement of objectives focused on revenue growth, operating cost reduction, working capital and fixed capital efficiency to maximize shareholder value (Christopher et.al 2006). The essence of supply chain strategy emerges from research focusing on the impact of inter-organizational relations on marketing strategy.

Failure to link performance to strategy may lead to the inability of the supply chain to achieve goals and meet customer expectations, and will not provide the vision necessary to influence individual goal-directed behaviors.

### 2.2 Aligning of supply chain strategy with business strategy

Strategy can be defined as "a set of dynamic, integrated decisions that one must make in order to position one's business in the complex environment". Thus strategy is basically the actions taken in order to achieve company's goals and business objectives. Today's environment of business is dynamic and agile. It cannot achieve the required goals by strategies characterized by organizations, which are looking to achieve dominance against competitors and mainly relying on order-winning criteria. Instead, it requires a focus on synchronized management of the flow of physical goods, associated information and allied services from sourcing through consumption (Christopher et.al 2001). Supply chain management covers the entire range in its decision-making framework. Hence, the need for supply chain strategy for competitive advantage in contrast to what it was earlier, demanding top-level management attention. The challenge is to take supply chain to a more strategic level within the firm so as to have a sustainable

Supply chain strategy must be aligned with the business strategy in order to achieve the goals in the agile environment. Presently, a majority of Saudi organizations have a weak alignment of supply chain strategy with business strategy. As a result of which the actions do not result in bottom-line gains, as narrated by the survey



results. This is primarily so, because the organizations are rigidly structured along functional lines with department-specific performance measures. They have failed to adopt performance metrics, which are derived from a supply chain objective to meet business needs. As a first step, Saudi organizations need to resolve the performance measurement issue so that the departmental metrics are aligned with the overall supply chain objective to meet the business objective.

### 3. Method

To study the major factors affecting the functionality of SCM, a survey questionnaire was designed to analyze the facts and figures as well as qualitative responses about the supply chain practices in organizations. The survey was basically to quantify the extent of deployment of supply chain strategies, the structure of supply chain in various industry sectors and the problems encountered in organizing supply chain systems by organizations for strengthening supply chain management.

Reason of having the survey is to examine the current practices and the extent to which these operational factors are perceived as important in formulating SCM initiative.

The respondents were requested to fill out a questionnaire so as to extract responses on the supply chain and logistics issues faced in industries of Saudi Arabia. In addition to the questionnaire, the responses received were validated through personal interviews to gain an insight into the business strategies and supply chains.

The following are the split details based on different industry types surveyed.

<b>Industry Description</b>	<b>Number of Responses</b>	<b>Response Percentage</b>
Electronics	6	11.54%
Transportation	4	7.69%
Industrial Products	9	17.31%
Chemicals	4	7.69%
Utilities	5	9.62%
Mills	3	5.77%
Consumer Products	8	15.38%
Others	13	25.00%
<b>Total</b>	<b>52</b>	<b>100%</b>

Table 1. Sample Profile

Survey was sent to different departments including purchasing, logistics and manufacturing functions of the company. The survey questionnaires were e-mailed first to purchasing managers and were asked that they forward the survey to the appropriate personnel in purchasing, manufacturing or logistics. The average respondent had 7.5 employees reporting to him/her, and between seven and ten years of experience in their present occupational field. In this section, the respondent profile by position and function is presented.

The literature was reviewed to have an idea of the factors affecting the efficiency of SC and tried to incorporate it in the survey below to get feedback and device changes to make the chain function more effectively.

<b>Respondent Position</b>	<b>Number of Responses</b>	<b>Response Percentage</b>
Senior Executives	12	23.08%
GM/Senior Managers	14	26.92%
Managers	12	23.08%
Individual contributors	14	26.92%
<b>Total</b>	<b>52</b>	<b>100%</b>

Table 2. Respondent Profile by Position

<b>Respondent Function</b>	<b>Number of Responses</b>	<b>Response Percentage</b>
Purchasing	9	16.67%
Logistics	7	12.96%
Distribution	8	14.81%
Planning & Scheduling	12	22.22%
Sales	3	5.56%
Engineering	5	9.26%
Marketing	2	3.70%
Finance	1	1.85%
Other	7	12.96%
<b>Total</b>	<b>54</b>	<b>100%</b>

Table 3. Respondent Profile by Function

### 3.1 Research Methodology

An organized approach was adopted to design the questionnaire by carrying out the consultation first with the practitioners and academicians. Available worldwide surveys were also reviewed in the light of Saudi Economics which helped in designing a comprehensive Questionnaire. Firstly the designed questionnaire was distributed to individual contributors as a sample check to groom it up by eliminating the short comings indicated. The refined questionnaire was sent to targeted sources. Once the feedback was received, the data was sorted and analyzed. All the responses were compiled and tabulated to depict outcomes of survey.



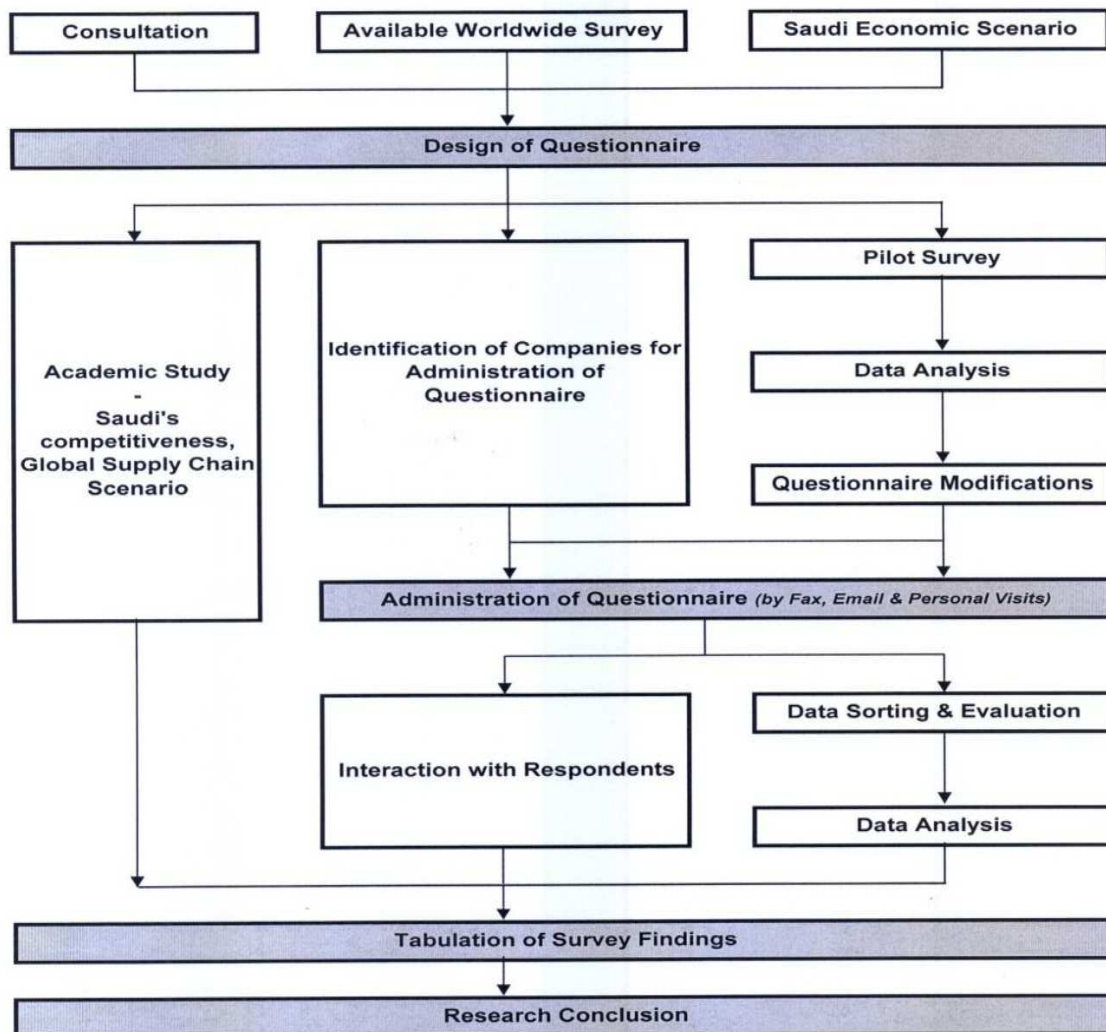


Figure 4: Research Methodology

### 3.2 Data Collection

The survey instrument was distributed by email and fax with a cover letter explaining its purpose. The recipients were asked to complete the survey within two weeks and either fax or email the completed form to a designated address. Recipients were also encouraged to distribute the survey to other practitioners within their firm. Of the 70 surveys distributed, 50 usable surveys were returned for a response rate of 74.28 percent.

### 3.3 Analysis

The results indicated that SCM initiatives should be integrated with purchasing, manufacturing, materials management, logistics, quality and forecasting functions. This is in agreement with the goals and objectives of SCM philosophy and indicates that SCM initiatives should engage within and outside the organization. Therefore, in order to develop and implement SCM plans, it needs the commitment and involvement by senior management of the company and its operating business units.

The responses received would serve as a guideline to develop Supply Chain structure and strategy in a way that it would be best fit to business and tackle key functional areas that affect the performance of Supply Chain.

Survey showed that most of the business executives in Saudi organizations have realized the real need to have structured supply chains for profitability and competitiveness. However, not many of them have given a serious thought to putting an integrated structure in place. To overcome this, organizations need to change the way people think about supply chains – the obligation of which relies on the top management. It also requires supply chain managers to understand business processes that run across organizational boundaries, establish their interdependencies, streamline or reengineer them so that they meet customer requirements. It is only with thoughtful and thorough understanding of business processes that such integration can be achieved.

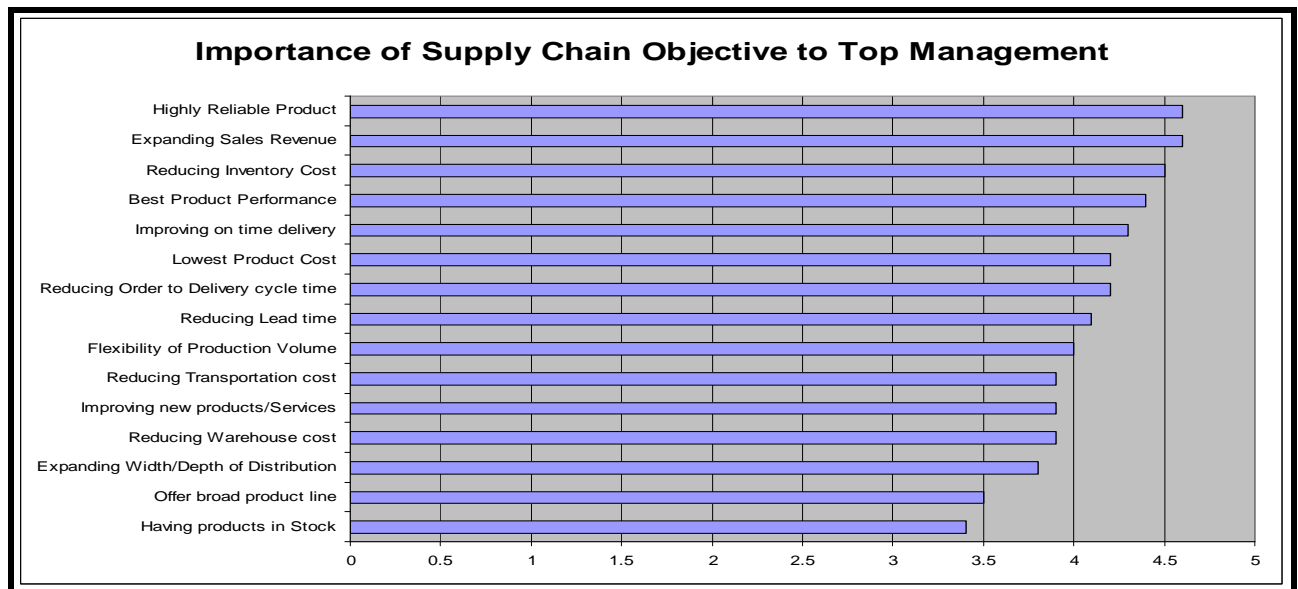


Chart 1: Importance of Supply Chain Objective to Top Management

The supply chain strategy should be aligned with the overall business strategy. This could be achieved by having trust and information sharing among supply chain partners. In this way they can promptly respond to customer's demand with unique and tailored offerings. Effective integration is the key because if one of these links fails, the organization's performance may suffer and may not meet the expectations of its customers, or the service level of its competitors. The primary benefit of integration is that all business units and supply chain partners share the same data, synchronize actions and minimize distortions in demand management (Kalambi, 2000).

The focus on inventory management gives evidence to the fact that the Saudi industry has realized that the inventory levels will have to be monitored and maintained at the lowest possible level, in order to deliver superior bottom-line results.

***Inventories through partnership*** : Supply chain management provides the ability to capture demands from the market, quickly translate it to supplier requirement and finally fulfill consumer needs. This entire exercise involves forming alliances with supply chain partners. Partnership and strategic alliances form the bedrock of such a competitive supply chain strategy. It calls for Saudi organizations to collaborate with supply chain partners for product design, product development, logistics, warehousing, market reach, manufacturing and procurement – all with the objective of cutting down inventories in the entire supply chain framework. However, this is easier said than done. It involves a dual strategy of fostering trust as well as optimizing resources, performance and gains across the supply chain. Successfully accomplishing this twin-objective requires a reciprocal and continuing commitment of human, technical, and informational resources on the part of supply chain partners.

Management of inventory has received considerable attention over the years. Managers assign different reasons for holding or not holding inventory. Some of the major reasons for holding inventories by Saudi organizations include: improving customer service, hedging against price changes and contingencies; achieving production, purchase and transportation economies; protecting against demand and lead time uncertainties; and balancing supply and demand. Each of these motivators is presented here under:

***To be cautious against price changes and contingencies:*** The research data showed that respondents indicated seasonality of demand in their businesses. Table below provides percentage of sales in season for percentage of respondents.

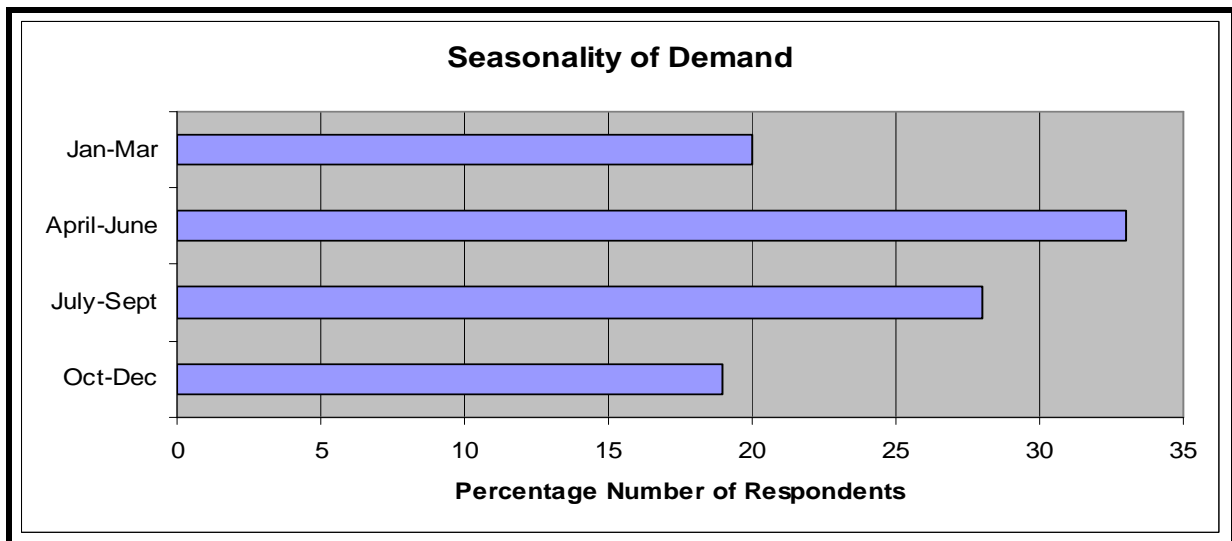


Chart 2: Seasonality of Demand

Businesses are forced to be cautious against price changes and contingencies by maintaining high inventory levels so as to fulfill demand during the peak season. The demand of products for Saudi organizations varies not only across seasons, but also within a month. This holds true for all the months round the year. This not only increases the complexity of supply chain management, but also is the main contributor to the building up of inventory during the month.

**To protect against demand and lead time uncertainties:** The lead times in the supply chain network in Saudi are high. This is brought to the fore by the respondents during the course of the study. Furthermore the research also reveals that around 50 percent of the respondents have an average shipment accuracy to carry inventories to enhance customer satisfaction.

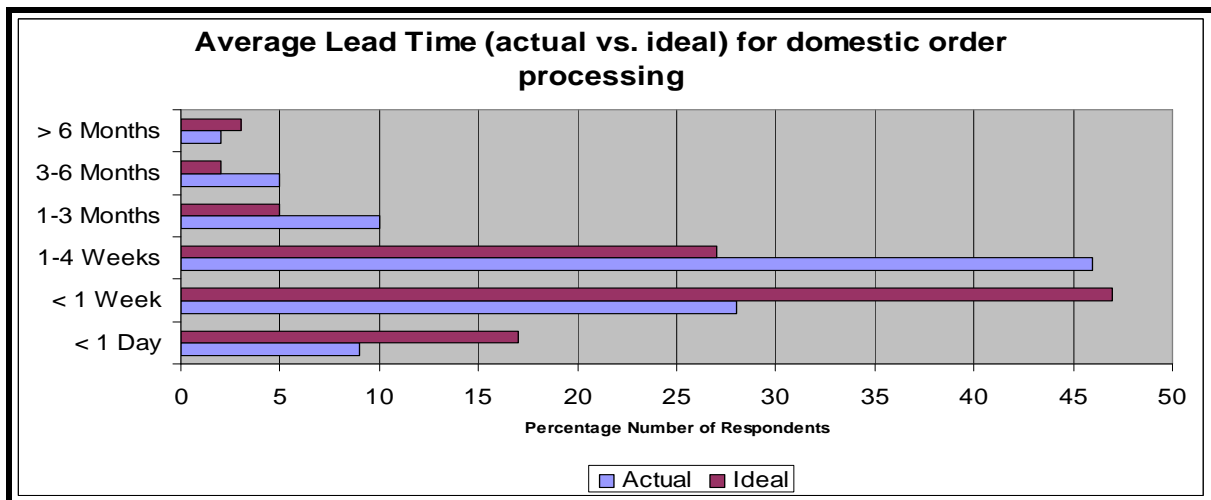


Chart 3: Average Lead Time

**To balance supply and demand:** Supply chain planning thrives on the accuracy of demand forecasting. Respondents state having used a host of techniques and methods for demand forecasting. Popular methods in use for forecasting demand included simple average, time series, regression and causal models. However, only around 50 percent of the respondents indicated a forecast accuracy of 10 percent. These accuracy levels are low forcing organizations to carry a high level of inventory in the supply chain network.

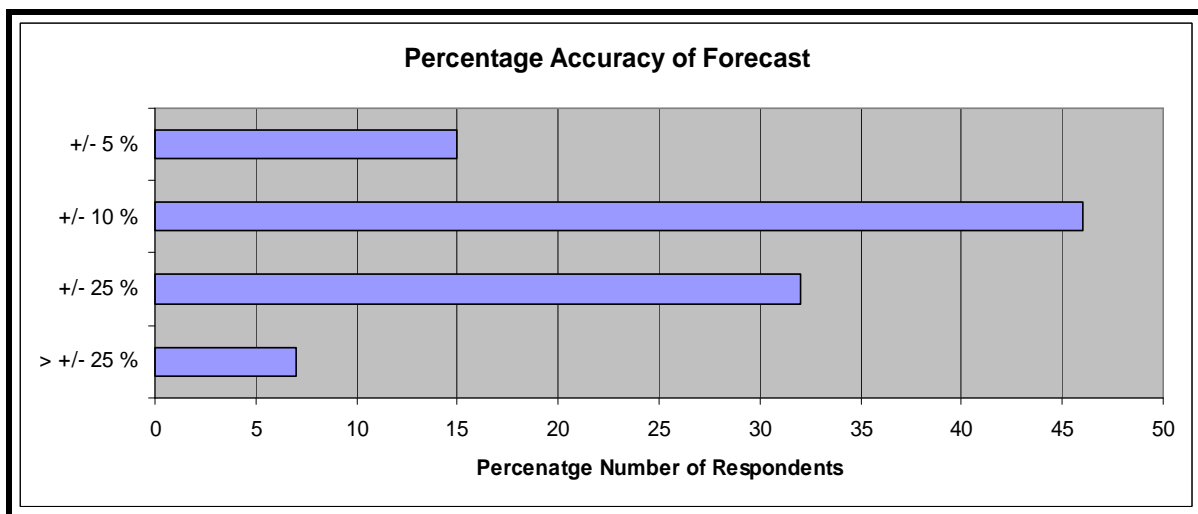


Chart 4: Accuracy of Forecast

**Non-moving inventory:** About 82.7 percent of companies indicate rate of obsolescence of inventory to be less than 10 percent, while 6 percent indicate the obsolescence at 25-50 percent requiring an urgent focus by organizations to release blocked resources.

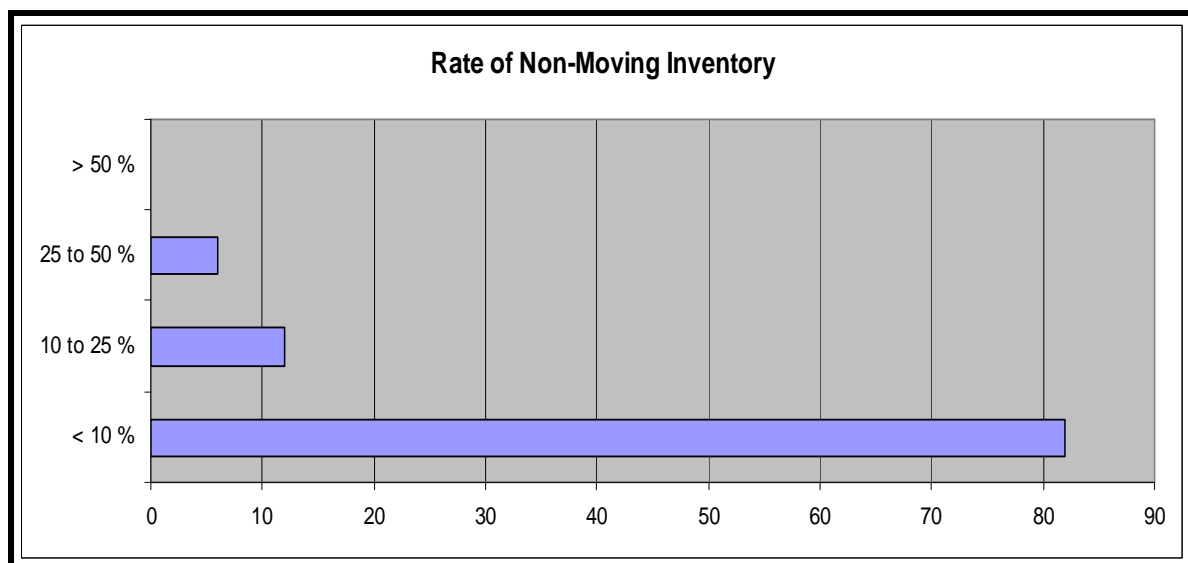


Chart 5: Rate of Non-Moving Inventory

**Relationship Management with Suppliers:** The questionnaire was designed to carry multiple questions relating judging the relationship with suppliers. These data were collected to study the impact of suppliers' relationship in reducing lead time and improving the quality of the material received.

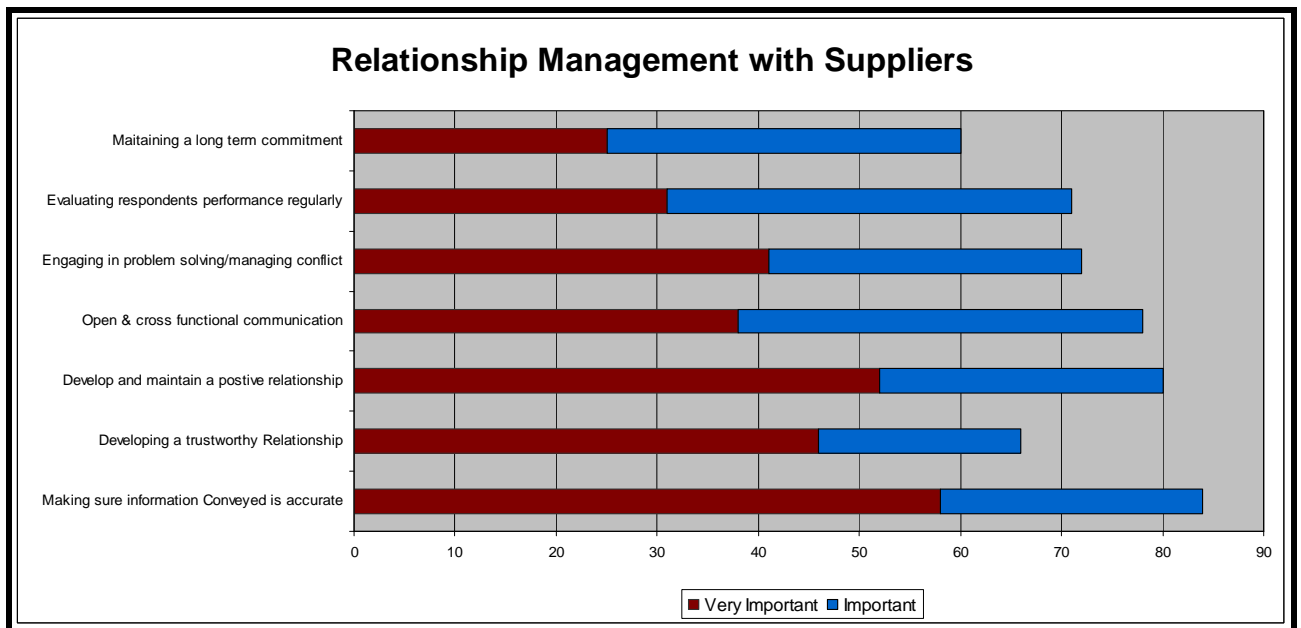


Chart 6:Relationship Management with Supplies

**Materials Management:**The respondents also indicated that forecasting techniques are not adequately used. Similarly, only few respondents indicated that programs to improve supplier performance are in place, which shows the need for further action.

The survey results also indicated the lack of interest in logistics planning and setting up of distribution channels. Logistics is a key part of SC and has to be dealt with due attention to smoothen up the flow resulting in cost effective and more reliable SC.

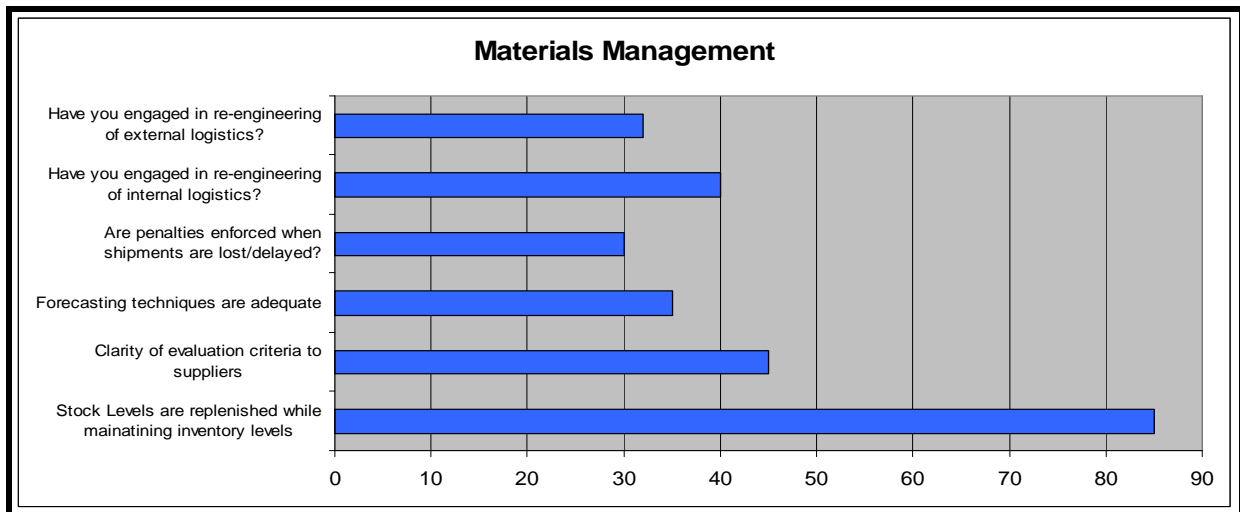


Chart 7: Materials Management

**Corporate Culture:** The respondents were asked to rate on a three-point scale from “some extent”, “great extent”, to “completely”, to examine the degree to which the operational issues related to corporate culture strategic success factor were being addressed company wide. This is intended to provide a realistic illustration of the proportion of employees that hold positive perceptions of the organizations culture. Figure below summarizes the survey results.

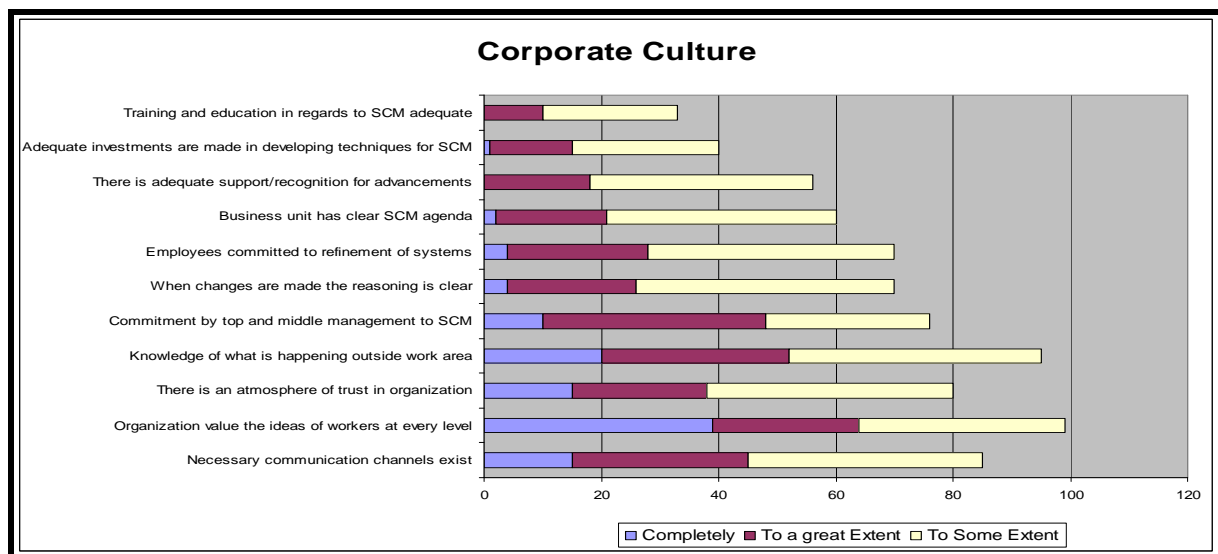


Chart 8: Corporate Culture

These findings signal a responsive and supportive work environment that should be able to integrate SCM initiatives on these basic building blocks. A significant number of employees feel that their organization appreciates and incorporates employee ideas and concerns. Also the results support the assertion that this organization uses communication channels that support cross-functional coordination and planning. One area that was somewhat unexpected was that so many respondents felt that top and middle management were committed to SCM. This may indicate that senior and middle management need to be proactive and commit themselves for SCM initiatives. They also need to invest more in training and education to encourage employee involvement to develop and implement SCM plans.

#### 4. Reasons To Implement Supply Chain

The top eight reasons that are believed to be the significant reasons for implementation of SCM initiatives include: reduce costs of operation, improve inventory, improve customer satisfaction, improve lead times, remain competitive, and increase flexibility as 86 percent 82 percent 75 percent 75 percent, 71 percent and 64 percent of the respondents perceived that they are important. It also signifies that the respondents believe that an SCM plan can improve the efficiency and effectiveness of company's transformation process. Improving output quality and increasing market share were believed to be the other two reasons for SCM implementation, each receiving 49 percent. These low ratings may not signify that they are not important since they already perceived improving customer satisfaction and lead times, reducing costs of operation, and remaining competitive as significantly important. It is also possible that the operating facilities of the company may have implemented quality improvement projects and improved quality of their products and services to compete strongly in the market place.

The most common response for not implementing SCM was "still planning"; which can be interpreted as consistent with a low level of implementation. The second most common answer was "not enough people to implement". Those respondents who responded to "not enough people" might be indicating that they need assistance in implementation or central coordination, rather than more permanent employees. The third most common response was "present system works." This could be interpreted as the resistance of employee involvement as they think the current system is working and why they should go for SCM. When questioned about the degree to which SCM initiatives have been fully established in their respective companies, 50 percent responded to a low degree and 35 percent recorded medium levels of integration. This indicates that the company can provide direction to its operating companies the importance of SCM and the gains to be made by implementing SCM. Training and education regarding SCM requirements and the benefits that would be achieved by implementing SCM plans could also alleviate this problem.

#### 5. Conclusion

It is not surprising to observe that a significant majority of respondents perceived purchasing, inventory control, logistics and manufacturing as the most important functions to be integrated within the supply chain management paradigm. Still a significant proportion of respondents felt that forecasting and quality functions



should be integrated. Most of the respondents indicated low level of SCM integration in the company's operating divisions. Therefore, it is not clear if the respondents intended to cite what measures they would use or already they are using to measure SCM improvement efforts. Some may have answered negatively because of the low level of integration, and some yet did not answer at all. When respondents were asked to rate the general effectiveness measures achieved as result of SCM initiatives, "reduced inventory levels", "increased customer satisfaction", "compressed order cycle time", "improved relationships with upstream partners", and "improved teamwork and cooperation among employees" were found to be significant as 59, 59, 58, 58 and 56 percent of the respondents indicated that these measures were "somewhat" to "fully" achieved. "Reduced operating costs" (54 percent) and "increased customer service levels" (54 percent) are the other two general effectiveness measures achieved. When the respondents were asked to rate which performance measures used, the respondents indicated that inventory turns, cost reduction, and on time delivery as the only three most important measures that are being used to evaluate the SCM plans with 63, 61 and 57 percent of them agreeing. Delivery times, lead times, and output quality are the other measures used, however, with only 54, 48 and 48 percent of the respondents agreeing. One would expect higher proportions for all these performance measure if SCM plans were effectively implemented. As explained earlier, the low level of SCM implementation could be the reason for these perceptions and indicates the need for further improvement.

It also signifies that the respondents believe that a SCM plan can improve the efficiency and effectiveness of company's transformation process. Improving output quality and increasing market share were believed to be the other two reasons for SCM implementation. Companies in Saudi Arabia should be following this trend and began implementing SCM plans to squeeze the excessive fat out of their operations.

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