



## EVALUATING THE IMPACT OF TRAINING, COMMUNICATION, LEADERSHIP AND BUSINESS PERFORMANCE, IN IMPLEMENTING MANUFACTURING STRATEGY, IN MEDIUM SIZED ENGINEERING COMPANIES

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### ABSTRACT

The aim of the research is to evaluate the impact of training, communication and leadership on the formulation and implementation of a sustainably viable manufacturing strategy in medium sized companies. Five medium sized engineering companies that are into manufacturing of steel products were selected for detailed case studies. The focus of the study looked into two main issues, firstly how these companies formulated their manufacturing strategies, secondly how training, communication and leadership impacted on the implementation of their strategies. Overall business performance for these companies was assessed for a period of three years. A relationship was established between manufacturing strategy and business performance. The ability of the employees to deliver a quality product, through a sound quality assurance process was found to correlate with business performance. Employee oriented leadership was found to have supported a smooth implementation of the manufacturing strategy, while inadequate training methods and task oriented leadership were found to stifle the successful implementation of a manufacturing strategy.

## 1. INTRODUCTION

Strategy is the determination of basic long-term goals including objectives of an the enterprise, the adoption of courses of action and allocation of resources necessary for carrying out these goals

Chandler,[1]. Strategy enhances management's focus on linkages between external market requirements and internal organizational and technological resources, capability and competitive advantage, Sun. H., et al,[2]. Enterprise strategies include corporate / business strategy and functional strategies,[2] Business strategy is the common theme or strategic posture at higher levels of the organisational, encompassing all activities in an organisation. Functional strategies include manufacturing strategy, market strategy and Research and Development strategy, [2]. Manufacturing strategy is a pattern of decisions, both structural and infrastructural, which determine the capability of a manufacturing system and specify how it will operate to meet a set of manufacturing objectives which are consistent with overall business objectives, Platts,[3], Hayes et al,[4], Swamidas et al,[5], Skinner,[6].

Factors that influence the choice of a manufacturing strategy include market requirements, manufacturing resources, competitive intensity of the environment and how the manufacturing strategy is aligned to the business strategy, Skinner, [7]. Five decision areas that are considered in coming up with and implementing a manufacturing strategy, include 1) plant and equipment; 2) production planning and control; 3) labour and staffing; 4) product design / engineering and 5) organisation and management,[7]. This paper evaluates the impact of training, communication and leadership on the formulation and implementation of a manufacturing strategy in five medium sized companies, a research gap identified by Thun,[8] and supports the work of, [7].

Past research did not pay attention to soft management issues of training, leadership and communication on individual companies in developing economies like South Africa. Most research has been done on the relationships between manufacturing strategy, competitive strategy, business performance and distinct competencies that include price (cost), quality, service and flexibility, [3] and did not cover factors that affect management's ability to formulate and implement a successful manufacturing strategy, Anderson et al, [9]; Bates et al,[10]; Williams et al,[11]; Kim et al,[12]; Avella L. et al,[13]; Amoako-Gyampah,[14].

Manufacturing strategy formulation and implementation brings about organisational changes both at management and workers level and this needs to be well managed if a company is to succeed, hence the focus of this paper.

Case studied companies will be known as Company A, B, C, D and E, all medium sized companies involved in manufacturing of steel products. Companies were categorised into medium enterprises according to the National Small Business Amendment Act No. 26 of 2003, and specifically due to their total turnover and total gross asset values.

Company Name	A	B	C	D	E
Products	Drilling Rods	General Engineering	Conveyor Equipment	Hydraulic Equipment	General Engineering
Number of Employees	25	21	35	71	16
Yearly Turnover	R45 M	R45 M	R52 M	R75 M	R15 M
Exports	Yes	No	Yes	No	No
Value of Capital/ Assets	R 23 M	R 18 M	R 22 M	R 60 M	R 14 M
ISO 9000 Registration	Yes	Yes	Yes	In-process	Yes

**Table 1.1: Summary of case studied companies**

## 2. OBJECTIVES

This paper has the following objectives:

- 1- To evaluate the impact of leadership, training and communication on formulation and implementation of manufacturing strategy in a medium sized company.
- 2-To evaluate the impact of a manufacturing strategy has on business performance in medium sized engineering companies.

## 3. LITERATURE REVIEW

### 3.1 Manufacturing Strategy

Manufacturing strategy ensures a match or congruence between the company's markets and the existing and future abilities of the production system, Lewis, [15]. It addresses issues that include: manufacturing capacity, production facilities, use of technology, vertical integration; quality; production planning / materials control; organisation and personnel. Four different types of manufacturing strategies exist namely market-based, product-based, capability-based and price-based, Cagliano et al, [16]. Fine et al, [17] identified and examined four manufacturing strategy content issues which are cost, quality, delivery and flexibility while De Meyer et al, [18], used principal component analysis to identify eight dimensions of manufacturing strategy including quality, flexibility, product-process adjustments, and the role of the workforce. In both studies flexibility was shown as the most important. American and European manufacturers are most concerned with improving product quality, whereas their Japanese competitors are concerned with improving flexibility and reducing costs, Minor et al, [19]. This research will focus on organisation and personnel, as it looks into the impact of training, leadership and communication on manufacturing strategy implementation.

### 3.2 Competitive Strategies

Choice of a competitive strategy is part of management / leadership and must be communicated to all employees, who must also be trained in-order for their entire efforts to focus on achieving the desired goal, hence the focus of this paper. A company can compete successfully in at least four basic ways, namely as a cost leader, a differentiation strategy, a focus strategy and flexibility, Owen [20].

Competitive Strategy	Description
Cost leader	Manufacturing to the lowest cost, generates - high contribution which can be used for research and development. Factors that favour cost leadership are high market share, access to favourable price of raw materials, products are easy to manufacture, wide range of products, state of the art investment.
Differentiation	Offers products that are unique, superior to your competitors. It can be through brand image, technology or design and a better service. Products attract a premium price. Factors that favour differentiation are creative flair, strong research and development, strong marketing and ability to introduce new products quickly into the market.
Focus Strategy	Involves cost leadership or differentiation. Focuses on a niche market, effectively markets its products to a small but well defined set of customers.
Flexibility	Ability to produce customised products. Competitive factors are short lead times, reduced costs and volume flexibility.

**Table 1.2: Summaries of Competitive Strategies**

### 3.3 Product life cycle

Product life cycle is characterised by how products evolve, markets grow, competitors enter, the market matures and finally in most cases declines,[20]. These different product phases have different implications both for marketing and manufacturing. This paper will concentrate on the manufacturing implications. Of interest to business are products that are in the growth phase because while they offer potential for high rewards they also require substantial investment of both money and managerial effort,[20] hence the need to appreciate the impact of training, leadership and communication on manufacturing strategy formulation and implementation.

Product Position	Description
Market entry	Design under review, low volume production, requires flexible manufacturing system with general purpose equipment.
Rapid growth	Design is established, competition and volume increases, tasks are highly structured and automated.
Maturity	Products compete more on price, volumes are high permitting 'economies of scale', high automation with special purpose machines.
Decline	Price competition becomes severe, volume decreases. No more opportunity to run highly automated plant efficiently. Companies exit from the market. In late decline phase price is no longer critical but rather the availability of spares.

**Table 1.3 Summaries of Product Life Cycle**

### 3.4 Training

Training helps subordinates to better understand their responsibilities, authority and accountability, Smit, et al, [21], as they contribute to achieving the objectives and goals of the organisation. The aim of training is to impart new knowledge, skills and attitudes (KSA), on employees for the sole purpose of performance improvement, Holladay, et al [22]. Burke, et al [23] argued that training is enhanced by the application of KSA through

factors such as goal setting, workload, peer support, coaching, supervisor feedback, individual motivation and job design. Modern and competitive organisations enhance their capabilities by setting up structures that foster a culture of continuous learning and information sharing, Wickramasinghe, [24].

Training must enable workers to adapt to the fast changing global competitive environment, since this is one of the key organisational capabilities, Harvey, et al [25]. Other key factors that help organisational superior performance is attained through sound knowledge management and proper organisational learning, Theriou, et al [26], this is supported by Lee, et al [27] who reported that learning capacity and knowledge capability factors can be sources of an organisation's competitive advantage. The impact of training will be evaluated through tangible and intangible factors, Griffin, [28]. Tangible factors include reduced errors and improved quality while intangible factors will include improved employee motivation and self esteem. The research will also look into barriers to job-related training.

### 3.5 Leadership

Leadership initiates change, with a new vision for the organisation, encouraging as well as motivating people to support the new initiatives, Kotter, [29]. Top management leadership creates goals, values and vision that guide the pursuit of business activities of an enterprise, through the promotion of creativity, developing integrated teams, defining and communicating the shared vision, (manufacturing strategy), and generating compromise, Guillen, et al, [30],, 2001; Goetsch et al [31]. A good leader creates an enabling environment through their inter-personal relationships and influences others in the change initiative, such as during manufacturing strategy implementation, Das, et al [32]. Leaders play three roles, namely setting direction, aligning people and motivating and inspiring people, [29].

Competent leaders have a global mindset, Brake, [33] and such leadership's attribute supports the formulation and implementation of a manufacturing strategy. Progressive leaders keep abreast of world standards of competition, Birchall et al, [34]; they understand the global nature of their businesses and are able to analyze current trends and market conditions, [33]. Research has identified two types of leadership behaviours namely task-oriented and employee oriented [21]. Task-oriented has control and supervision of subordinates as its focus while employee oriented applies motivation and participative management.

### 3.6 Communication

Communication involves the process of transmitting meaningful information. At managerial level communication occurs in three levels intrapersonal, interpersonal and organisational, [21]. Of interest in this paper is the interpersonal and organisational communication. Formal network follows the hierarchical structure of the organisation while the informal network follows links grown out of relationships between employees and management, [21]. Mills, et al, [35] advocated for the use of strategy charts as way that would help managers to communicate and verify a company's manufacturing strategy. The diagrammatic representation of the strategy chart includes events made up of verifiable objectives, decisions and actions called events, [35].

Of interest in this paper is how an organisation systematically gathers, analysed and communicates data for quality problem solving activities, often called Quality Management Information (QMI), Schrienderjans, [36]. QMI provides a wide range of data from purchasing, marketing, manufacturing, design, customers and suppliers, Phan, et al

[37]. Communication has also been enhanced by use of software packages such as Enterprise Resource Planning (ERP) and use of Intranets within a company's different departments. Intranets with the support of relevant software such as Enterprise Performance Management (EPM) help employees including management to have a clear understanding of a company's strategy through the display of important information, Denton, [38]. EPM collects data from other applications such as customer relationship management and ERP.

### 3.7 Business Performance

Business performance is used to monitor and control business growth and profit, drive improvement, achieve alignment with organisational goals and to reward and discipline employees, Bittitci et al, [39]; Simmons,[40]. Monitoring business performance helps companies to make decisions within needed time frames, [32]. Sun et al, [2] reported that implementation of manufacturing strategy can positively contribute to corporate performance on issues like profit, market share and quality improvement, on time delivery and these business performance indicators will be investigated in this paper. Other business performance metrics include an evaluation of assets and liabilities of the business from the balance sheet, business cash flow, investing activities, internal comparison of cost and sales, comparison of debtor and creditor values between past and present balance sheets and customer satisfaction level through complaints and reviews from the end users, [41]

## 4. METHODOLOGY

The research methodology of this study includes relevant literature review, and detailed case study on five medium sized engineering companies. Case studies, Yin, [42] can be used to explore, describe, explain and compare while Denscombe, [43] stated that case studies focus on one instance's relationships and processes in a natural setting with the possibility of using multiple sources and methods for both data gathering and analysis. The triangulation method will be used for data gathering as suggested by Scandura et al, [44]. The method will include extensive literature review, a cross functional mail survey (with well prepared questionnaires) and in depth case studies with interviews conducted at the five medium sized companies. Triangulation offers more complex, overlapping descriptions of the case and makes the report more trustworthy, Lapan et al, [45]. Woodside, [46], identified three triangulation aspects that the researcher must do in-order to get a deep understanding of the case under study, namely:

- observations done by the researcher within the environments of the case,
- probing by asking case participants for explanation and interpretation of "operational data" and
- analysis of written documents and natural sites occurring in case environment.

The interviews will be face to face with promised confidentiality to facilitate candid responses. Site visits and analysis of company databases, documents and face to face interviews, will serve as motivation for the findings.

### 4.1 Questionnaire Design

The questionnaire is composed of five parts, Ward, [47]; Demeter, [48]; [2], including, Environmental Factors, Competitive Strategy, Manufacturing Strategy, Business Performance and Organisational Capability which included Training, Leadership and Communication. The questions were constructed to be answered using a five-point Likert scale.

## 5. FORMULATION OF MANUFACTURING STRATEGY

The methodology presented by [20], was followed in coming up with manufacturing strategies of the five case studied companies. The formulation of the manufacturing strategies followed a formal strategic planning process that was communicated within these companies, [9]. Management at these companies identified product families that had more contribution in terms of their sales and profits. These product families became the focus of this study. Manufacturing strategy for each company was then formulated mainly from the manufacturing activities undertaken in each company together with an analysis of their current strengths and weaknesses.

### 5.1 Product family market data

Table 5.1 below shows products that had more contribution on the companies' business performance. These products influenced the choice and formulation of manufacturing strategy. The analysis of the products included how the product family was performing in terms of sales, contribution, market share and growth measures, [20]. Growth measures were subjectively assessed using a five point Likert scale. Managers were asked to indicate their product position relative to their competitors.

-2	-1	0	+1	+2
Declining rapidly	Declining	Static	Growing	Growing rapidly

Company	Product family	Sales as % of total sales	Contribution as % of total contribution	Market share ranking	Growth / Vulnerability	Market growth/ Stage of life cycle
<b>A</b>	Drilling Rods	80	75	35 %	+1	+1
<b>B</b>	Winch Shafts	65	55	20 %	+ 1	+ 1
<b>C</b>	Conveyor equipment	60	40	40 %	-1	0
<b>D</b>	Hydraulic cylinders	85	80	60%	+1	+1
<b>E</b>	Refurbishment of coal mining equipment	45	60	30 %	0	+1

**Table 5.1: Basic product family market data**

### 5.2 Current manufacturing performance

After product families were identified, the next step was to assess how the current manufacturing practice was performing, against competitive factors, Tony, and Slack, et al (1998), and is shown in Table 5.2 below. The scale below was used by all companies to rate themselves.





-2

0

+2

Performance gives strong disadvantage vs competitors

Performance gives strong advantage vs competitors

Company	Product family	Features	Quality	Delivery - Lead Time	Delivery-Reliability	Design	Volume	Cost
A	Drilling Rods	+1	+1	-1	0	+1	0	-1 15% too high
B	Winch shafts	0	0	+1	-1	0	0	-1
C	Conveyor Equipment	+1	0	+1	0	+1	0	0
D	Hydraulic Cylinders	+1	+1	0	+1	+1	0	+1
E	Refurbishment of coal mining equipment	0	0	+1	+1	0	+1	0

Table 5.2

### 5.3 Competitive criteria

Competitive criteria identify a company’s methods of competition. The table below shows summaries of the case studied companies’ competitive strengths rated according to the competitive criteria. The letter Q for order-qualifier was entered in the appropriate box for any factor that is a prerequisite for being in the market. 100 points were allocated for the six factors in each row, [20]. All companies indicated that quality is of high importance.

Company	Product Family	Features	Quality	Delivery	Flexibility Design Volume	Price	Lead-time Reliability
A	Drilling rods	60	Q	-	20	20	-
B	Winch shafts	-	Q	30 (short)	-	30	40
C	Conveyor equipment	40	Q	-	25	30	15
D	Hydraulic cylinders	50	Q	20 (short)	10	20	-
E	Refurbishment of coal mining equipment	-	Q	40 (short)	10	40	10

Table 5.3: Summaries of competitive priorities of case studied companies



Company	A-Drilling Rods	B-General Engineering	C-Conveyor Equipment	D-Hydraulic Equipment	E-General Engineering
Type of Manufacturing Strategy adopted	Advanced Technology and Innovation based	Delivery - speed and reliability	Innovation and Flexibility	Technology based and Quality	Flexibility and Cost

**Table 5.4: Manufacturing strategies adopted by the five companies**

## 6. FINDINGS AND ANALYSIS

Out of 90 questionnaires distributed, only 31 were collected for analysis, representing a 34.4 % response rate. From the five-point Likert scale, averages were computed for each construct and for each company. A minimum of six individuals were interviewed at each company.

Company	A (7 responses)	B (6 responses)	C (5 responses)	D (9 responses)	E (4 responses)
Environmental Factors	Rapid changes	Moderate changes	Slow changes	Moderate changes	Slow changes
Manufacturing Strategy	Innovation and Advanced Technology	Flexibility and delivery	Innovation, flexibility and cost	Technology, delivery and cost	Flexibility and cost
Business Performance	Moderate	Moderate	Low	High	Low
Training	Moderate	Low	Low	High	Low
Leadership	Supportive	Supportive	Non Supportive	Supportive	Non Supportive
Communication	Clear and Formal	Clear and Formal	Not Clear and Informal	Clear and Formal	Not Clear and Informal

**Table 6.1: Responses from the Questionnaire**

The following findings on Training, Communication, Leadership and Business Performance:

### 6.1 Training

Companies B, C, and E exhibited lack of employee training and this was cited as a serious challenge to the implementation of a manufacturing strategy. Companies A and D embraced new technologies and took their employees for training in Computer Numerical Control (CNC) software applications such as MasterCam and quality improvement courses. This was found to have enhanced their competitiveness, thus agreeing with the work of, [27]. Tangible and intangible factors, [28] were noticed in these two companies, namely reduced errors, improved quality and improved employee morale. Company A demonstrated three components of knowledge management that influence a firm's performance, Bogner et al, [49] which are the company's ability to produce new knowledge, to build on that knowledge and to capture on subsequent spin offs.

The research could not quantify, in terms of monetary value, the return on investment made by these training activities. Another limitation was that the research did not look into the quality of training offered, the quality of the methods and techniques used, the quality of pedagogical resources used and the trainer's knowledge as suggested by Pineda, [50]. Barriers to job-related training that were discovered in this research were that workers were too busy at work, courses offered were too expensive, lack of employer support and that some courses were offered at an inconvenient time and location.

## 6.2 Communication

Companies C and E exhibited poor communication, which was revealed through emotional barriers that include fear, mistrust and suspicion, most of the workers were withdrawn highlighting interpersonal barriers. Communication was found to be better in companies A, B and D. Manufacturing strategy was well understood, there was greater manager-worker trust and improved employee satisfaction. These companies had sound process management, quality performance data such as defect rate, scrap and rework were effectively collected, analysed and shared this showed an improvement in their quality. This agreed with the work of Zu et al, [51] who established that quality metrics when calculated from reliable and valid data can be used for quality improvement purposes. These companies also exhibited formal networks of communication; it was evidenced by a much more understanding of manufacturing strategy from shop floor up to management levels. The research established that all companies have very minimal investment in information systems, the link between costing office, drawing office and shopfloor was found missing, giving a negative impact on overall organisational performance, de Burca et al, [52]

## 6.3 Leadership

Companies A and D had most successful leaders, they exhibited all four key leadership factors as reported by Chally, [53] which are the ability to proactively deal with problems, keep their workers motivated, loyal and committed, ability to make effective decisions and a willingness to take appropriate risks. The research also established that employee oriented leadership found in companies A, B and D, supported a smooth implementation of the manufacturing strategy as compared to a task oriented leadership, found in companies C and E, this agreed with the work of, [21]. Companies C and E are owner-managed and exhibited lack of managerial expertise and organisational capabilities and this led to both poor strategic business planning and human resource management, Pansiri, [54]. Companies A and D have the capacity and resources to nature and retain a core leadership group, giving them a competitive advantage in the external market place, Ulrich, et al, [55]. Individuals external to the organisation are more willing to engage with companies that have a stable leadership, Killian et al, [56].

## 6.4 Business Performance

Companies A and D were found to have flat organisational structures, this enabled them to be flexible, adaptable and responded quickly to changes in their business environment, Garengo, [57]. In both companies customer requirements were met through continued innovation of products and better communication, Singh, et al [58]. These were the only companies that provided meaningful performance data of quality and sales contribution, from 2009 to 2011, on which a correlation of improved quality and business performance was established, Table 6.3 and 6.4. Interaction plots were constructed, Figure 6.1 and 6.2. Histogram graphs of delivery reliability were drawn for the period 2009 to 2011, Figures 6.3 and 6.4 for company A and Figures 6.5 and 6.6 for company D. All companies did not disclose their financial information and balance sheets making it difficult to analyse

Return on Investments, Assets, Cash flow and profits. The research did not cover external performance due to unavailability of data. Warranty costs and the rate of field repairs or service were not obtained although the number of warranty claims against sales was very low.

Company	A	B	C	D	E
Market share	Moderate	Low	Low	High	Moderate
Sales growth	Moderate	Low	Moderate	High	Moderate
Share holder return	High	High	Low	High	Low
Customer satisfaction	High	Moderate	Moderate	High	Moderate
Financial Performance	High	Low	Low	Moderate	High
Return on capital	High	Low	Moderate	High	Moderate
Quality	High	Moderate	Low	High	Moderate
Investment in New Technology	High Tech	Moderate Tech	Low Tech	High Tech	Moderate Tech

**Table 6.2: Summary of Business Performance metrics from Questionnaire responses**

From performance data supplied by Company A, on the performance of drilling rods' percent good quality (X) and sales contribution (Y) for the period 2009 to 2011, a strong positive correlation of 0.868 was established as shown in Table 6.3

	X	Y	XY	x <sup>2</sup>	Y <sup>2</sup>
mar	58	62	3596	3364	3844
jun	62	60	3720	3844	3600
sep	65	64	4160	4225	4096
dec	60	67	4020	3600	4489
mar	64	70	4480	4096	4900
jun	70	75	5250	4900	5625
sep	73	72	5256	5329	5184
dec	77	74	5698	5929	5476
mar	80	76	6080	6400	5776
jun	82	77	6314	6724	5929
	691	697	48574	48411	48919
$\bar{x}$	69.1,		$S_x =$	8.141867	
$\bar{y}$	69.7,		$S_y =$	5.814637	
$S_{xy} =$	41.13		$r =$	<b>0.868785</b>	

**Table 6.3**

From performance data supplied by Company D, on the performance of hydraulic cylinders' percent good quality (X) and sales contribution (Y) for the period 2009 to 2011, a strong positive correlation of 0.936 was established as shown in Table 6.4

	X	Y	XY	x <sup>2</sup>	Y <sup>2</sup>
mar	60	65	3900	3600	4225
jun	62	63	3906	3844	3969
sep	64	67	4288	4096	4489
dec	63	70	4410	3969	4900
mar	66	68	4488	4356	4624
jun	68	73	4964	4624	5329
sep	70	76	5320	4900	5776
dec	72	79	5688	5184	6241
mar	75	80	6000	5625	6400
jun	76	78	5928	5776	6084
	676	719	48892	45974	52037
$\bar{x}$	67.6,	$S_x =$	5.257376		
$\bar{y}$	71.9,	$S_y =$	5.838664		
$S_{xy} =$	28.76	$r =$	<b>0.936928</b>		

Table 6.4

Figures 6.1 and 6.2 show the interaction plots of percent good quality and sales contribution for the years 2009 to June 2011, for both companies A and D. Both graphs show that there has been a steady rise on both quality output and sales.

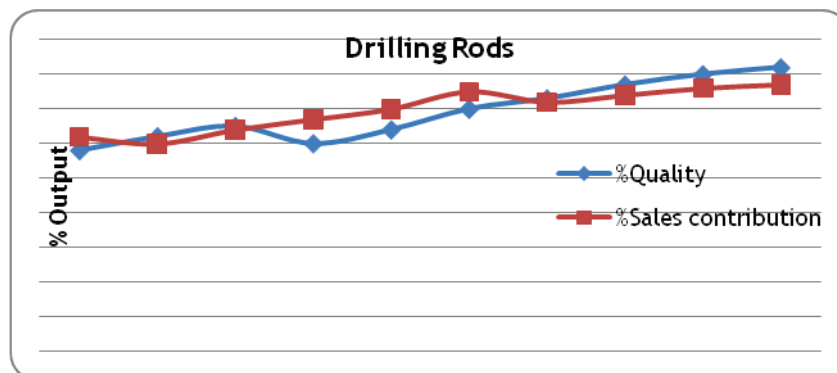
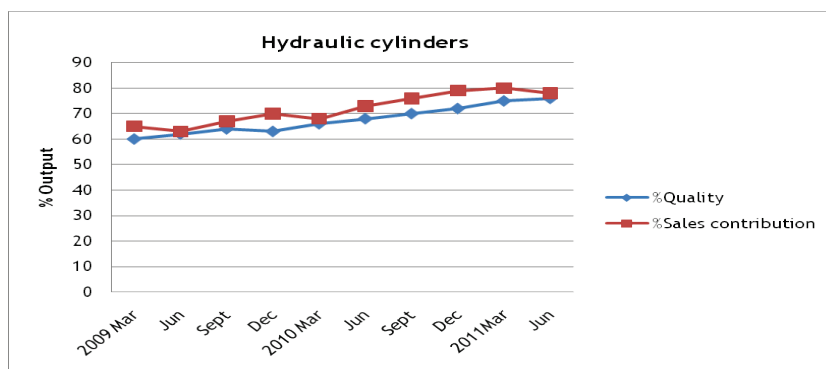


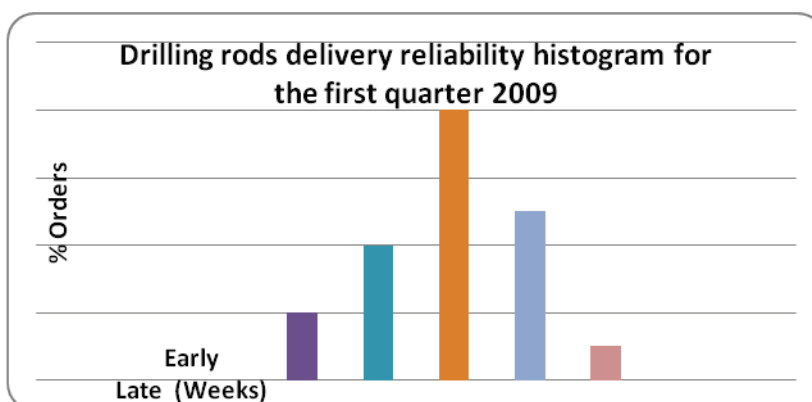
Figure 6.1: Interaction Plot for Drilling Rods-Company A



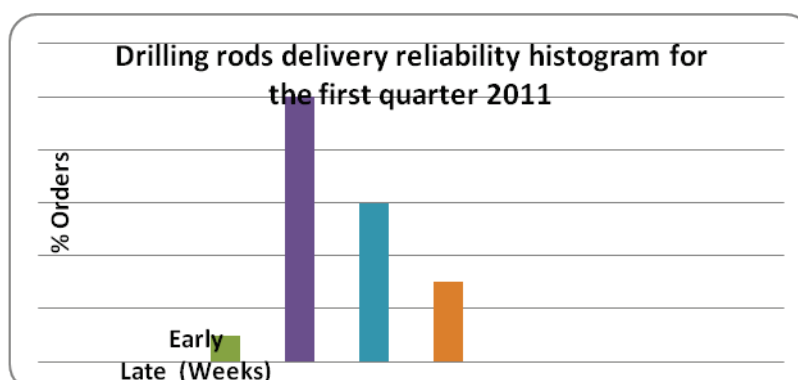
**Figure 6.2: Interaction Plot for Hydraulic Cylinders- Company D**

Delivery performance measurement is another metric for business performance. Typical measures for delivery reliability are % customers’ orders met in full, % order lines met in full, % order value met and % line item quantities met, [20]. Delivery reliability histograms were drawn for the first two quarters of 2009 and 2011 for both companies A and D.

Figure 6.3 and 6.4 show that delivery reliability of Company A has improved. In the first quarter of 2009 90 % of of their orders could not meet the delivery due dates, while the first quarter of 2011 shows that only 45 % of their orders still miss the delivery due date.



**Figure 6.3: Delivery Reliability for first quarter 2009-Drilling rods**



**Figure 6.4: Delivery Reliability for first quarter 2011-Drilling rods**

Figure 6.5 and 6.6 show that delivery reliability of Company A has improved. In the first quarter of 2009 70 % of of their orders could not meet the delivery due dates, while the first quarter of 2011 shows that only 20 % of their orders still miss the delivery due date.

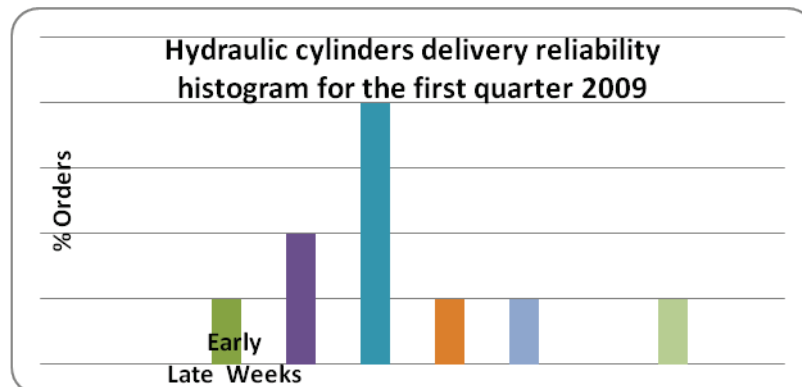


Figure 6.5: Delivery Reliability for first quarter 2009-Hydraulic cylinders

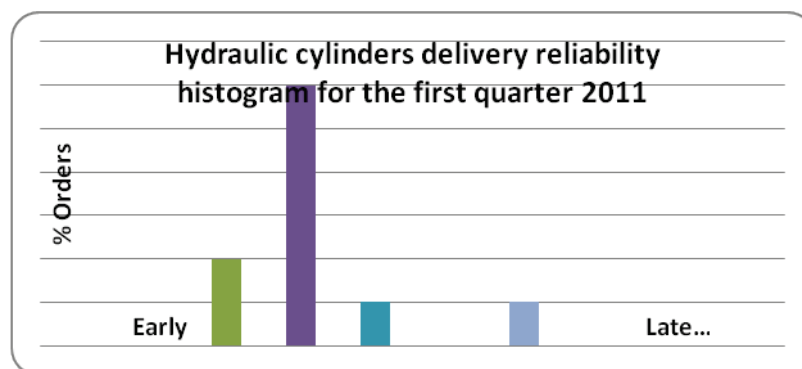


Figure 6.6: Delivery Reliability first quarter 2011-Hydraulic cylinders

## 7. LIMITATIONS

Companies B, C and E seemed to have suffered scarcity of resources, [58]; hence they did not provide sufficient data of their operations even though they had adopted a manufacturing strategy. This limited the business performance analysis to two companies only, A and D. The structures of medium sized companies do not allow them manpower flexibility such as moving personnel from one area to another.

## 8. CONCLUSION

Companies, A and D successfully implemented their manufacturing strategies; this was evidenced by the obtained results. A positive impact on business performance was obtained from sound leadership, focussed training and sound communication. Lack of capacity to attract high performing individuals, lack of capital to buy new equipment, lack of ability to sustainably implement TQM programmes that would enhance quality products were noted as serious challenges for medium sized companies. Future research can cover competitive priorities that are associated with innovation in medium companies as well as the impact of e-business on manufacturing strategy.

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