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QUALITY MANAGEMENT AND SUPPLIER DEVELOPMENT

MA THESIS

Submitted for a Masters Degree By Research

Durham University Business School 1998

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LORRAINE MONTFORD

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ABSTRACT

QUALITY MANAGEMENT AND SUPPLIER DEVELOPMENT

Central to the concept of T.Q.M. is the nature of the relationships which organisations develop with their suppliers. As organisations improve their own internal efficiency there becomes a need to look externally to their suppliers in order to seek competitive advantage.

Previous work on supplier development has focused mainly on the automotive industry. This research is based primarily on the quality management systems and supplier relationships which have been developed at J.Barbour and Sons Ltd, an international clothing company whose name is synonymous with Quality.

The research indicates that the organisational structure and culture of companies within the U.K. does not readily support all the principles of T.Q.M. More evidence needs to be sought regarding the benefits to the organisation. Characteristics associated with various types of supplier relationships are defined i.e traditional and partnership. Dependent upon the type of product supplied and by whom, organisations may wish to develop their suppliers to a greater or lesser degree. As a result of the research, recommendations are then given for organisations implementing T.Q.M. or Supplier Development programmes in order to improve the quality of their goods or services.

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CHAPTER ONE

INTRODUCTION

1.1 Total Quality Management

During the 1990s within all sectors of industry and throughout the U.K. there has been a widespread use of Total Quality Management techniques. To many, Total Quality Management represents a much broader issue than previous management initiatives.

"Total Quality Management is a challenge to conventional management techniques and to the theories that underlie them."

(Grant et al 1994 p25)

John Oakland defines T.Q.M. as:

"An approach to improving the competitiveness, effectiveness and flexibility of a whole organisation. It is essentially a way of planning, organising and understanding each activity, and depends on each individual at each level." (Oakland 1993 p22)

It encompasses not only the usual product, service and process quality improvements, but also people development and improvement. "It thereby involves everyone in the organisation and associated business processes."

(Dale and Cooper 1992 p19)

The main principles associated with T.Q.M. include continuous improvement, involving customers and suppliers in decision making, performance measurement, teamwork, employee involvement and

communication between all operations.

Total Quality rhetoric therefore preaches empowerment, commitment and trust based on equality and shared goals. (Ryder 1993 p23)

Gateshead Training Consultancy, Business and Industry Centre 1993 identifies the main principles of T.Q.M. as follows:

- The Philosophy - Prevention not Detection
- The Approach - Management Led
- The Scale - Everyone Responsible
- The Measure - The Costs Of Quality
- The Standard - Right First Time
- The Scope - Company Wide
- The Theme - Continuous Improvement

T.Q.M. provides a whole systems approach to Quality Management. The need for such an approach in the U.K. has been instigated for a number of reasons, including the present economic climate and increased competition from abroad on account of an improvement in foreign management techniques. In Japan for example a national campaign driving the application of continuous improvement principles has helped enable Japanese Companies to become the most cost effective and highest quality producers in the world. (Whyte 1994 p37)

Due to increased competition and higher customer expectations it is essential for an organisation to address the issue of product or service quality. The cost of Quality mismanagement has been estimated by

Mortiboys as 15 to 30% of Sales revenue. (Mortiboys 1990 p39)

The following reasons have been identified for organisations in the U.K. adopting T.Q.M. methods (Dale et al 1990(a) p6):

- a) Realisation that a Q.A. system (ISO 9000) does not necessarily mean that a continuous improvement approach to quality is adopted.
- b) The setting of stringent Quality requirements by major customers. eg Ministry of Defence standards such as AQAP, Defcon and Defstan.
- c) National Quality Campaigns and awards e.g. Baldrige, Deming and European Quality Awards.
- d) The teachings of the Quality Gurus and other Quality experts i.e. Deming, Juran, Crosby, Oakland and Taguchi.
- e) The loss of market share to competition both at home and abroad.
- f) Increased contact with the Japanese who demonstrate the benefits which can be attained through the use of Total Quality techniques.
- g) Published case studies and management literature proclaiming the success stories i.e. Nissan, Rank Xerox, Ford and Hewlett Packard.

Companies in the U.K. are therefore starting to adopt T.Q.M. principles in an effort to help remove unnecessary and costly waste, to locate and eradicate sources of error and to provide the customer with products which they actually want. (Dale et al 1990(a) p6) A survey carried out in the North of England showed that only 2% of the respondents had never heard of T.Q.M., that 62% claimed to be implementing T.Q.M., and that the

remainder were learning about T.Q.M. and considering its adoption. (Whyte and Witcher 1992)

It is vital that any process or system which an organisation implements as part of a T.Q.M. programme should be in keeping with the organisation's overall corporate strategy. Ideally each organisation should develop its own methods of Best Practice based on T.Q.M. principles. Morrison (1990 p27) suggests this is what the Japanese have done. They considered all the techniques of Western style Quality Control, and retained and developed those which they preferred i.e. quality circles, cause and effect diagrams, parts per million philosophy and company wide Quality Assurance.

The adoption of a Total Quality Management approach is seen as the natural way forward for organisations which have already adopted basic quality techniques.

However, the interpretation and implementation of T.Q.M. principles is not as straight forward as many would imagine. The extent to which such practices can, or have been adopted and with what degree of success will be discussed. Ultimately, there is no magic formula or recipe for success and every organisation will need to realise that T.Q.M. is not an end in itself:

"They (Lynx Plc) learned the first rule of T.Q.M. implementation that although measurement is all important, there is no final result, no ultimate measure of success in fact no achievement at all just continuous improvement." (Oakland and Porter 1994 p7)

1.2 The Role of Suppliers

There are many interpretations of Total Quality Management and ultimately the responsibility lies with each organisation to formulate their own views. One common principle is that suppliers should be involved in the improvement process:

"No Total Quality programme is complete if it does not address the Supplier issue." (Oakland and Porter 1994 p165).

Oakland and Porter (1994 pxi) see the core of T.Q.M as being the Customer-Supplier relationship, both internal and external, believing that it is there where the process should be managed. In reality there may be no absolute way of assuring the Quality of an organisation's products or services, but whatever action is taken one should not ignore suppliers and the manner in which they are treated must be addressed. (Dale and Plunkett 1990 p352) It is certainly vital that organisations develop and improve relationships with their suppliers, irrespective of whether this represents an activity implemented as part of a large scale T.Q.M. programme or as an isolated project on its own.

The quality of purchased supplies is critical to the quality of an organisation's finished product. (Lascelles and Dale 1990 p257) Crosby (1979) for example estimates that 50% of an organisation's quality problems are caused by defective purchased materials. (Smock 1982 pp51-57) An increase in technological specialisation has meant that many

organisations now look externally to source products which they previously used to produce in-house. For many such companies the purchase of material from suppliers and sub-contractors may account for at least 50% of manufacturing costs and in some cases i.e. the automotive industry the figure can be as high as 70%. (Lascelles and Dale 1990 p257)

Despite the obvious need to control purchased supplies and develop appropriate working relationships with suppliers, some companies still retain very traditional attitudes towards their supplier base. A survey carried out by Whyte and Witcher (1992) showed that only one half of the respondents had carried out any sort of research to gather information on their suppliers. It also indicated that organisations were still continuing to make all their purchasing decisions on the basis of the lowest bid and that little progress had been made towards developing closer relationships with any of their suppliers:

"If the full benefit of T.Q.M. is to be obtained then there is a need to examine the ways in which the closer supply chain relationships can be developed and managed." (Whyte and Witcher 1992 p32)

1.3 Objectives

The objective of the research is to increase understanding of supplier development and the nature of the relationships which can be formed with suppliers. This will be done through case study research using the subject literature to provide the foundation for the work and framework for analysis.

The traditional approach to dealing with suppliers has typically been based on the assumption that they are adversaries. This has led to practices such as multiple sourcing, frequent switching from one supplier to another and buying solely on price per unit. A climate of mistrust, fear, dishonesty and frustration often developed on both sides hampering long term quality improvement. (Lascelles and Dale 1990 p258) Research undertaken by Duncalf and Dale (1990 p152) highlighted the following areas as being typical of the relationships which organisations developed with their suppliers.

- a) Lack of formal procedures for assessment and selection of suppliers.
- b) Not involving Quality staff in supplier assessments.
- c) Poorly defined communication links and points of contact between purchaser and supplier.
- d) Supplier performance not being measured.
- e) Unco-ordinated feedback of information both to and from the supplier.
- f) Purchasing decisions being taken on price per unit, not on the "Total Cost" (so called by Dr W.E.Deming 1982 p23) of doing business with the supplier.

In order to overcome such problems, a move away from the traditional supplier relationship to one where a "partnership" between the organisation and its supplier was formed was thought to be necessary.

"Effective Supplier Development requires Purchasing organisations to treat Suppliers as long-term business partners which necessitates a fundamental shift from the traditional customer-supplier relationship

to one of co-makership." (Lascelles and Dale 1990 p268)

A good supplier relationship was then seen to exist embodying trust, good value, co-operation, common understanding and mutual benefit. (Choppin 1991 p309)

To date, the majority of research into Supplier development has been carried out on large organisations, mainly within the automotive industry. (White and Wyatt 1990, Lascelles and Dale 1990) Most vehicle manufacturers purchase the majority of their components and so the calibre of their suppliers is of great importance. Nissan have developed "PPQA" - PreProduction Quality Assurance so that suppliers self assure their own products, practice defect prevention (not detection) and have stable controlled processes.

Similarly Ford practice "Q101" whereby they work with their suppliers to ensure that all supplies reach a predetermined standard.

Within the textile industry, fewer studies have been undertaken. The textile industry, like all specialised industries has its own particular characteristics i.e seasonal variations, whims of fashion and a wide range of materials available. (McShane and Hawkyard 1994 p454) Within the industry the introduction of Quality Systems has been comparatively slow. In 1993 only 400 of 5,000 textiles Companies had ISO 9000 registration and even fewer had any form of T.Q.M. initiatives in place. (British Standards Institute 1993 p12)

In the same way that certain principles of Total Quality Management may or may not be suited to an organisation's structure and culture, the same may be true of the principles of Supplier Development. Influencing factors will include size, economic power and history of the organisation, its workforce, methods of process control applied, and types of suppliers within its supplier base. Each organisation will have to determine its own methods, dependent upon its own objectives and those of its suppliers.

The objectives of this research are therefore two fold:

- a) To identify the role of suppliers within a Total Quality Management framework.
- b) To analyse and suggest means by which organisations can work with suppliers in order to improve the Quality of their goods and services.

The case study chosen for this research is J. Barbour and Sons Ltd.

The Company needs little introduction - an Internationally renowned clothing company who lead the way in garment technology and whose brand name is synonymous with Quality!

1.4 Structure of Thesis and Areas of Study

The structure of the thesis is split into four distinct sections:

1. Purpose of the research.
2. Quality Management - Literature review and case study analysis.
3. Supplier Development - Literature review and case study analysis.

4. Analysis of findings, conclusions and recommendations.

Section One (Purpose of the Research)

Chapter one - is a general introduction which puts forward the objectives of the research. Total Quality Management and Supplier Development are defined and an explanation is given as to their importance.

Chapter two - considers how the research was carried out (methodology) and identifies the principle sources of information i.e. literature review followed by case study.

Chapter three - introduces the reader to the main case study organisation J.Barbour and Sons Ltd. An overview of the company is given with respect to its history, product range, reputation and culture. The characteristics of the textile industry are considered, including the quality systems which have been adopted to date.

Section Two (Quality Management)

Chapter four - is a general introduction to Total Quality Management, its evolution and the main principles as advocated by the quality gurus. The implementation of T.Q.M. is considered, including any barriers to implementation.

Chapter five - reviews the Quality Management System at J.Barbour and

Sons Ltd. Aspects of the Quality System which are based on Total Quality Management principles are highlighted.

Section Three (Supplier Development)

Chapter six - focuses on the different types of relationships which may be formed with suppliers. Using the characteristics identified by Saunders (1994) the nature of a traditional/adversarial relationship is outlined. The principles upon which more co-operative relationships are formed are then considered. The practices implemented by large firms mainly from within the automotive industry are summarised.

Chapter seven - addresses the control of the three groups of suppliers to Barbour. The procedures applied and activities undertaken are reviewed.

Section Four (Analysis, Recommendations and Conclusions)

Chapter eight - analyses the extent to which J.Barbour and Sons Ltd have adopted principles in line with current academic thinking on Total Quality Management. Recommendations relevant both to the case study company and others are then made.

Chapter nine - The penultimate chapter analyses the implementation of supplier development activities at J.Barbour and Sons Ltd with respect to Saunder's partnership approach (1994). Factors affecting supplier relationships are considered and recommendations as to how Barbour and

other companies can develop appropriate supplier relationships are given.

Chapter ten - The final chapter draws conclusions on the research undertaken at J.Barbour and Sons Ltd and suggests general guidelines as to the implementation of Total Quality Management and supplier development. It also reviews the methodology and considers areas for further research.

CHAPTER TWO

METHODOLOGY

2.1 Introduction

This chapter considers the methodology of the research and the approach adopted in order to fulfil the research objectives as stated in section 1.3.

The "methodology" as defined by Jankowicz therefore attempts to provide:

"A rationale or argument for the approach adopted to the data as well as a simple statement of the methods that constituted that approach." (Jankowicz 1995 p174)

2.2 Research Design

The principle aim of the research was to review the significance of developing successful relationships with suppliers within a T.Q.M. framework and to provide recommendations as to how this could be achieved. The research was carried out in two parts. Firstly, a literature review to provide the foundation for the work and the framework for analysis. Then secondly, a case study i.e. collection of data and analysis of information from the primary case study organisation which provided the focus for the research.

i) The literature review

The literature review was carried out in order to gather information on Quality Management and Supplier Development and covered areas such as:

- a) Existing theories or models.
- b) Examples of other Case studies.
- c) Results of any surveys which indicated the extent of the adoption of T.Q.M./Supplier Development initiatives.
- d) Any lessons learnt, conclusions drawn or recommendations from other academics or industrialists.

The case study work of other researchers was drawn upon in particular, to give the final recommendations and conclusions a more general application and hence a greater degree of validity. The sources used to identify both primary and secondary data included electronic data bases, theses, management journals, books, published papers, dissertations and seminar proceedings.

ii) Selected Approach : The Case Study

Various types of research were considered. It was decided that both surveys and experimental research were more suited to providing purely quantitative data and for proving theoretical propositions or hypotheses. The results of a survey questioning organisations on their relationships with their suppliers for example, would have provided data from a cross section of the population at one specific moment.

A cross sectional survey, sampling large numbers of organisations or situations, would only have provided a snapshot of each organisation. The issues explored would mainly have been in the present, allowing only for

very broad conclusions to be drawn with little scope for recommendations.

Action research did also not seem appropriate as it seemed impractical to orchestrate problems and solutions involving suppliers. It was also unlikely that any organisation would have allowed research of that nature to be undertaken.

As a result, it was decided that an indepth case study would be the most appropriate.

"Some of the classic studies in organisational research have derived from detailed investigation of one or two organisations" (Bryman 1989 p170)

Jankowicz cites the advantage of the case study over other methods as follows:

"The case study attempts to be comprehensive and involves describing and analyzing the full richness and variety of events and issues in the department or organisation in question." (Jankowicz 1995 p181)

It can be used in a variety of ways, three of which suggested by Bryman (1989 pp174-5) are relevant to this research:

- a) Employed in an exploratory manner in order to achieve insights into previously uncharted areas i.e. Supplier Development initiatives in the textile industry.
- b) To allow for findings in other studies to be confirmed i.e. conclusions

from other studies identified during the literature review.

- c) Used in order to test existing theories or models i.e. relating to Q.A. or suppliers.

The case study allows for different methods of data collection to be employed, thereby combining both quantitative and qualitative research. Certain themes can be drawn out from the data and different emphases placed on aspects of the information during the analysis. Whereas surveys tend to be focused on the present, the case study is longitudinal in that it focuses on one or a small number of organisations over a long period of time. Time series data can be gathered over periods of time that are significantly longer than the immediate focus of the research, thereby addressing the "change process" of an issue. The work which an organisation undertakes with its suppliers can be placed within the broader context of the organisation's activities, so any organisational changes or influencing factors can be accounted for.

"The case study explores issues in the present and in the past as they affect a relatively complete organisational unit in which you look to the future by means of recommendations you make." (Jankowicz 1995 p172)

This characteristic of the case study is especially appropriate to the type of research being undertaken, since its primary aim is to provide recommendations for organisations (and the case study organisation itself) for future Supplier Development initiatives.

iii) **The Case Study : J.Barbour and Sons Ltd**

The principle case study selected was J. Barbour and Sons Ltd. Few studies had previously been carried out in the textile industry on either Quality Management or Supplier Development. No previous research had been carried out at J.Barbour and Sons Ltd and as the company are World leaders in their field it was hoped that there would be lessons from which other organisations could learn. (Appendix 1 gives an introduction to the company).

Selection of the main case study organisation was also influenced by the fact that from March 1995 the researcher was employed at J.Barbour and Sons Ltd as Supplier Auditor within the Quality Assurance Department. It is not uncommon for research to be carried out by an employee of an organisation. Dalton (1959) studied the behaviour of managers whilst working as a manager himself within the organisation. Although not in a position to establish any formal experiments, he gathered qualitative data through observations and quantitative data from company statistics.

For a researcher, being an employee of the organisation has its own problems which need to be taken into account when drawing recommendations and conclusions.

"Research in organisations can be seen as something of a political minefield." (Bryman 1988 p12)

a) Accessibility of information.

The researcher was ideally positioned for collating data. No problem arose in gaining access to the organisation, in gaining trust, or of "getting on" with respondents. The latter of which, Buchanan et al describe as being fundamental to the quantity and quality of data gathered. (Bryman 1988 p9)

There was also no time constraint in conducting the research, other than the registered period of study allowed for submission of the thesis.

b) Stakeholders/Gamekeeping.

In certain instances, if an outside body is funding the research then they may try to steer the research in a certain direction and influence the conclusions drawn. As this research was self-funded and no individual within the organisation was responsible for approving the thesis, then it is fair to say that the research represents a true record of the findings as the author saw it. (Bryman 1988 p9)

c) Independent v Involved.

It was necessary to review the data critically in the role of a researcher, rather than as a Supplier Auditor employed by the host company. A certain degree of objectivity was maintained by the fact that the Supplier Auditor was not involved in policy setting, but in carrying out the related activities. Reason (1988) advocates such critical subjectivity and the importance of maintaining a degree of consistency to the results of the research.

"Recognising one's own needs and experiences but not allowing

oneself to be overwhelmed by them." (Easterby-Smith et al 1993
p39)

d) Ethics.

The researcher had access to confidential information and so had to ensure that this privilege was not abused. In order to maintain the trust between Barbour and their suppliers, they remained anonymous and sensitive data was displayed in an appropriate manner.

In order to extend the framework of analysis and provide a greater degree of validity to conclusions, data was sought from other clothing manufacturers and from suppliers to J.Barbour and Sons Ltd.

It did not prove possible to gain access to any local clothing manufacturers as the companies were competitors of the case study organisation and were uneasy about allowing an outsider access to sensitive data. Instead, interviews with the following personnel were carried out at Barbour's premises:

- a) Group Quality Standards Manager - Claremont Garments
- b) Ex Work Study Engineer - Dewhirst Clothing Ltd
- c) Ex Factory Manager - Dewhirst Clothing Ltd

Claremont Garments and Dewhirst Clothing Ltd are both medium sized companies in the North East, manufacturing garments predominantly for Marks and Spencer. The two former employees of Dewhirst Clothing Ltd who were interviewed had left the company in the past six months and were

now employed by J.Barbour and Sons Ltd. Although the data gathered was not sufficient to provide direct case study comparative analysis, it did allow reference to be made to other clothing manufacturers for benchmarking purposes.

The views of the suppliers to J.Barbour and Sons Ltd on key issues were also sought. The researcher maintained regular contact with the suppliers through the role of Supplier Auditor, so it was relatively easy to question them on subjects such as their in-process controls and the level of assistance in meeting quality standards offered by J.Barbour and Sons Ltd.

2.3 Research Methods

The case study allowed for the following research methods to be applied:

- a) Participant observation - inside or first person account.
- b) Archival sources of data.
- c) Interviews - un/structured, non-directive.

The principle method used in the research was participant observation supplemented by access to documents and some semi-structured interviewing. The use of questionnaires, simulation, tests or experiments was not considered to be suited to fulfilling the objectives of the research. Questionnaires would only have provided answers to a number of simple questions through the attainment of basic quantitative data.

Multiple sources of evidence were drawn upon from the same subject area

in order to thoroughly check out and validate initial conclusions. (Yin 1994)
Although the research was mainly qualitative, using interpretive techniques in order to gain information on a certain method or situation, whenever possible inferences were backed up with hard quantitative data.

As a "participant observer" the day to day activities of the Supplier Auditor allowed for much data collection to be carried out.

"Participant observation permits insights into problems faced and solutions achieved, thereby offering tips to others." (Bryman 1988 p p1)

The position of the Supplier Auditor within the organisation is shown in the appendices (Appendix 3) and responsibilities include:

- a) Interpreting and documenting the Quality Control statistics for each supplier.
- b) Supporting Production and Buying Personnel, with statistical information and recommendations during meetings with suppliers.
- c) Working directly with suppliers to identify areas for improvement, detailing suitable Q.A. elements that may be required.
- d) Monitoring any corrective actions adopted by suppliers and reporting on their effectiveness.
- e) Assisting in the approval of new suppliers.
- f) Undertaking supplier audits on their Q.A. activities and documenting any findings and corrective actions.
- g) Involvement with product quality problems to support Production or

Buying personnel.

Archived primary and secondary data was used in order to supplement the data collated from March 1995 onwards. Semi-structured interviews using open ended techniques were carried out with:

- a) Key personnel from J.Barbour and Sons Ltd. i.e. Group Quality Standards Manager, Factory Managers, Production Supervisors, Purchasing and Quality Control personnel.
- b) Employees both past and present, from Claremont Garments and Dewhirst Clothing Ltd.
- c) Representatives from suppliers to J.Barbour and Sons Ltd.

Although a framework was used to ensure that all issues were covered, a non-directive approach was adopted in order that different perspectives and insights could be accommodated.

"The interview is the opportunity for the researcher to probe deeply, to uncover new clues, open up new dimensions of problem and to secure vivid, accurate inclusive accounts that are based on personal experience." (Burgess 1982 p107)

Throughout the research the accuracy of the information was continually questioned including how accurate it needed to be or indeed could be. When interviewing, the relationship between the researcher and the interviewee was understood in order to accommodate interviewer bias i.e the interviewer recording what he/she wants to hear. Similarly the sequence in which the subject matter was addressed, any inadvertent omission of questions or

unrepresentative sampling were taken into account when analysing the results i.e. the use of leading questions or prompting of the interviewee.

2.4 Validity

The principle case study organisation provided the main focus of the research. The validity of case studies and in particular on drawing conclusions from one indepth case study needs to be understood. Bryman states that:

"Case study researchers have often been very apologetic about the external validity of their findings, but there is a growing view that such diffidence may be unwarranted." (Bryman 1988 p18)

Those critical of case studies include Dingwall (1980) who refers to them as "highly anecdotal" stating that:

"We do not know how far the accounts involve a reconstruction and rationalisation, viz, they may not be quite the "warts and all" portrayals they appear to be"(Bryman 1988 p2)

Bryman cites Pugh (1971), Craig-Smith (1989), and Bresnen (1988) as questioning the validity of generalisations which are drawn solely from the analysis of one case study.

"Theoretical conclusions derived from case studies are not considered to be valued unless the case can be demonstrated to be "typical" of the phenomena under investigation." (Craigsmith 1989 p55)

In order to give validity to his own research, Dalton (1959) supplemented the work carried out in his own organisation with conclusions drawn from

studies by others, thereby:

"Giving confidence that things he had observed in his own organisation were quite likely to be taking place in most other organisations." (Easterby-Smith et al 1993 p30)

In this case, all conclusions drawn are based not only upon the research carried out at J.Barbour and Sons Ltd, but also on case studies carried out by other researchers and information gathered from the interviews carried out with (former) employees of two other textile companies. This allows for conclusions and recommendations to be representative of organisations in general and not just of the case study in question.

Worsley et al (1970) and Mitchell (1983) have argued that the validity of one indepth case study analysis is dependent upon the plausibility of the logic of the analysis. In this case data has been collected using a variety of different research methods in order to validate the accuracy of the findings; a process often referred to as "triangulation". By collecting data on the same phenomenon at different times and places within the study and by drawing on examples from other case studies validity is sought.

The conclusions drawn from the case study research can be used both to generate new and build on existing theory. To conclude, it can, therefore, be seen that external validity has been sought by:

- a) The use of a variety of different research methods during the case study research.

- b) Drawing on examples of other case studies in order to combat the problem of generalisation, which may arise through focusing on one case study in isolation.
- c) Following a clear line of argument and logic throughout both the research and the subsequent interpretation of its findings. This was achieved by focusing on the objectives of the thesis i.e. identifying the relationships developed with suppliers within a T.Q.M. framework and the type of supplier relationships which may be formed as a result.

CHAPTER THREE

CASE STUDY: J.BARBOUR AND SONS LTD

3.1 Introduction

The focus of the research into Quality Management and Supplier Development is centred on the analysis of data drawn from the case study of J.Barbour and Sons Ltd. Through this analysis and a review of the relevant literature, conclusions on Supplier Development can be drawn. The chapter therefore considers:

3.2 The history and general profile of J.Barbour and Sons Ltd.

3.3 The textile industry and the nature of the market in which the company operates.

An overview of the company will help explain the culture and the nature of the supplier relationships developed.

3.2 The History of J.Barbour and Sons Ltd

J. Barbour and Sons Ltd is a family owned private limited company. Originally set up in South Shields, Tyne and Wear in 1894, the Company still has its head office at Shields plus several other operating sites throughout Scotland and the North East of England. The company has several overseas distribution centres and a manufacturing site in New Zealand. "Barbour" is a household name and the wax jacket (the company's main product) is known throughout the clothing industry as the "Barbour Jacket".

"The best British clothing for the worst British weather".(Logo of J.Barbour and Sons Ltd in the 1990s)

Initially, the company traded via a small draper's shop and a mail order catalogue selling oilskins. They were bought by seamen, riverworkers and then later farmers, anglers, shooters and motor cyclists. Although the product range was primarily waterproof clothing, its success led to expansion into other areas such as motor cycling suits, shoes, socks, equestrian wear and general countrywear clothing.

In the 1930s:

- a) A new type of oiled cotton was introduced into the product range which was developed from lighter cotton materials and produced an oiled cotton fabric which was more flexible and tougher than the old oilskin. It was known as "Thornproof" and today forms the basis of the Company's oiled cotton jackets and coats.
- b) The company designed and manufactured two new motorcycle suits, the "Universal" and the "International" which have since been chosen by innumerable national trial teams and individual competitive riders. They laid the foundations for Barbour's ascendancy after the Second World War as the leading manufacturer of motor cycle clothing.
- c) Barbour gradually became a major manufacturer. More powerful machines were purchased and by 1939 there were ten employees producing 220 articles of clothing a week. By the end of the war, as a result of government

contracts, the number of employees had trebled.

The company then entered the post war period in the primary role of independent oiled clothing manufacturers.

The success of the company continued and in the 1970s there was increased demand as more people began to buy the Barbour jacket as fashion garments. In order to meet the demand, the company extended manufacturing operations by adding to and updating their clothing range. (Appendix 2) The Company now offers a wide range of "lifestyle clothing" with over 200 products and 15 types of jackets to choose from including:

- a) A wide variety of heavy, lightweight and flyweight thornproof jackets and shooting vests; knitwear including jumpers, gloves, scarves, stockings; fleece jackets; quilted waistcoats and jackets.
- b) Ventile, derby tweed and loden jackets; sweatshirts, footwear, shirts, breeks, trousers, bags, wallets, belts, handkerchiefs.

Those listed in category (a) are manufactured inhouse whereas those in category (b) are "factored" products manufactured by outside suppliers.

Since 1973, (apart from garments which are identified as second quality and are sold in the seconds shops,) Barbour has not sold directly to the public. Instead the company has a very strong network of dealers and distributors. Continued demand for the company's products in the 1980s resulted in additional manufacturing sites, a Distribution centre and a Customer Services factory being set up. Much of the increased demand especially

from the United States and Europe came from the garment being sought as a fashion garment. Today, up to 60% of the company's sales are exports and recent demand for the Barbour products has come from as far afield as Japan.

3.3 An Introduction to J.Barbour and Sons Ltd

i) Company Reputation

"The Company's vision is to be the world's leading country clothing supplier, recognised for its quality of product and service."

(Managing Director 1997)

Barbour are at the top end of the market for outdoor clothing, selling on quality, reliability and brand name. Although Barbour operates within the garment industry the company's products are not primarily fashion garments. As a result the product range is not updated each season, in the same manner as a company such as Dewhirst would update theirs.

Barbour is in a similar position to Locharron, manufacturers of traditional Scottish knitwear in that:

"The company (Locharron) must deliver the quality and exclusivity that are part of the product and failure to do this would result in loss of market share." (Ryder 1993 p61)

Although cheaper imitations of wax jacket do exist, the Barbour jacket is viewed by the consumer as being meaningfully different from the competition. To this extent Barbour have almost created a barrier to entry

through "differentiation" of the product. This is brought about by the reputation of product quality and reliability of service associated with the clothing which they produce.

Barbour, like Marks and Spencer, through product differentiation and associated market forces, inhibit other companies from entering the market in which they trade.

"Marks and Spencer is perceived by customers as a unique retailer with an image for reliability and quality which it seeks to ensure through a carefully coordinated mix of staff training, product and quality specification and control at supplier level, high levels of technical competence within the firm and strong corporate values supportive of the quality image." (Johnson and Scholes 1988 p65)

The Barbour traditions of quality, service and reliability have been recognised by receiving three Royal warrants, an accolade only given to regular suppliers to the Royal household. They have also twice received the Queen's Award for Export.

ii) **Company Culture**

J.Barbour and Sons is a very traditional company. Its age (over 100 years old), the fact that it is family owned, and even the industry and area within which it operates i.e. manufacturing in the North East, have all contributed to the culture which has evolved over a period of many years. Family firms are renowned for power cultures, for being resistant to change and very

inward looking. (Wilson and Rosenfield 1990 p230) At Barbour for example it is not uncommon for an activity to be referred to as "The Barbour Way". Although the company is still owned by the Barbour family, since the 1970s Margaret Barbour (the chairwoman) has taken a backseat and allowed the Managing Director to take overall control of the company on a day-to-day basis. The Barbour family trusts "the management team," to implement any necessary actions required to ensure continued success. In practice there is little influence from the family, so that the characteristics as suggested by Wilson and Rosenfield (1990 p9) associated with family firms are not as evident within the company as one would first expect.

The company is, however, (as shown in the organisation chart Appendix 3) very hierarchical and a culture has developed which is very authoritarian. Reporting to the Managing Director is the first line of Managers (i.e. Sales, Purchasing, Distribution, Management Services, Work Study, Quality and the Group Factory Manager), most of whom are supported by Assistant Managers. With respect to the manufacturing sites, a Factory Manager and Factory Manageress have responsibility for up to 100 machinists, supported by a supervisor and chargehand from each machine line.

Lines of communication throughout the company are normally vertical and one would only expect to deal with those directly above, below, or equal to oneself in the organisational hierarchy.

3.4 The Textile Industry

The characteristics of the textile industry will now be considered. An

understanding of the industry may help explain why quality systems or supplier development initiatives implemented may be different or similar to those in other industries i.e. automotive industry.

J.Barbour and Sons Ltd operate within a highly competitive clothing market where competition is fierce both from U.K. companies and those abroad. The workforce is predominantly female and the industry is subject to seasonal fluctuations in demand, changing consumer tastes and the uncertainties of fashion. (McShane and Hawkyard 1994 p454) The majority of clothing is manufactured on a mass production basis, with a high throughput of goods based on predetermined production schedules and targets. A skilled workforce is utilised, who are likely to be paid on a piece rate or bonus system, and whose work (at least in the U.K.) is likely to be subject to some sort of inspection in order to ensure product quality.

i) History of the Textile Industry

In the 18th and 19th centuries British textiles led the world. (British Standards Institute 1993 p12) Advances in machine technology, improved access to transportation and a growing labour force meant that British cotton at this time could be produced in bulk at low costs. In the late 19th and early 20th centuries there was a decline in the textile industry within the U.K., and a combination of events and social changes resulted in the end of the Lancashire mill's dominance of the world textile market. With the American civil war and a blockade on Southern raw cotton, problems were

caused in production, and India (the largest single importer of U.K. cotton textiles at the time) imposed protective tariffs on British cotton goods whilst increasing its own production. The rising costs of raw materials, labour and transport meant that the U.K. cotton industry was threatened by cheap imports many of which were from India. (British Standards Institute 1993 p13)

In the 1990s the British clothing and textile industry is still threatened by competition from India and the Far East. As the clothing industry is characterised by labour intensive production, in order to utilise cheap labour and keep unit costs low, some U.K. and European manufacturing companies are now choosing to carry out production of clothing in the Far East and other developing countries. Dewhirst Clothing Ltd now use subcontractors based in Romania and Claremont Garments have manufacturing sites in Morocco and Romania.

"If the British (textile) industry is to survive and compete successfully with low wage countries, it must provide a better quality product efficiently and with less labour." (McShane and Hawkyard 1994 p454)

Quality is therefore of paramount importance to the U.K. textile industry and it may be the key factor which can make British garments more marketable than those manufactured abroad.

ii) **The Importance of Quality in the Textile industry**

The British Standards Institute (1993 p12) reported that textile companies which had realised the importance of quality and implemented quality systems to BS 5750, had improved quality and efficiency and provided themselves with a competitive edge.

"These companies are now leaner and fitter and are experiencing economic benefits as the implementation process has proved cost effective in terms of reduced waste, a reduction in the number of substandard products, and improved customer satisfaction." (British Standards Institute 1993 p12)

This view is also held by Nigel Wreford-Brown who is the merchandise director of the John Lewis Partnership department stores. (British Standards Institute 1993 p12) He believes that if the principles of Quality management are not taken on board by garment manufacturers, then it is likely that we will continue to see the decline of the U.K. garment industry at the expense of imports. In a report undertaken by the British Standards Institute in 1993 it was stated that although larger textile companies (such as Lonrho Textiles Ltd on which the article was based,) have welcomed quality management systems:

"The overall response from the clothing and textile industry with some 400 registrations out of an approximate total of 5000 company establishments, has been slower than in many other industrial areas." (British Standards Institute 1993 p12)

There is no obvious reason for this, but Gowdry, director of the Clothing and

Footwear Institute International suggests that the nature of the fashion industry with its tight deadlines and frequent changes in design, coupled with constant time pressures and fire fighting management techniques, may go some way to explaining the slow uptake of registration to BS 5750/ISO 9000. (British Standards Institute 1993 p13) Alternatively the decision of companies within the textile industry not to achieve formal ISO 9000 registration may not necessarily mean that they do not implement quality systems or produce goods of a satisfactory standard.

iii) The Use of Quality Systems within the Textile Industry

Within the textile trade there has traditionally been a "seconds" mentality and until recently a zero defects mentality as recommended by Crosby (see section 4.3) would have been regarded as "pie in the sky". (McShane and Hawkyard 1994 p454)

There has always been an acceptance by companies such as Barbour and Dewhirst Clothing Ltd that:

- a) 100% inspection is required.
- b) Seconds and/or rejects will occur i.e. "seconds mentality".

Three reasons may account for such assumptions.

Firstly, the textile industry is very labour intensive and as garments are produced by machine operators it is understood that faults will occur.

Secondly, the inspection of a jacket takes relatively little time compared with say the inspection of an aero engine at Rolls Royce, or a car at Ford, where

final inspection may take several man days. The final inspection of a jacket (see Appendix 4 : Floor Section Method Sheet E0106 Sewing Inspection) is likely to take 5 to 6 minutes which accounts for maybe 10% of the time taken to produce the jacket. Thirdly, the cost of faulted goods within the clothing industry, can to a certain extent be recouped as the garments can either be reworked or sold as seconds. However, the costs incurred should an engine not meet the manufacturer's specification are likely to be much higher and are unlikely to be offset.

A situation has arisen in certain areas of the textile industry known as "stratified quality assurance", where the more powerful customer receives a higher quality product than one with less purchasing power. (Note, this is not the case with Barbour who only manufacture and sell garments of first quality to retailers. A small seconds shop on site sells any seconds.) The norms which have developed within the industry help explain the quality management systems adopted.

"Traditionally quality assurance in the textile industry was an inspection based grading system which ensured that the best quality output went to a powerful customer, Marks and Spencer." (Lascelles and Dale 1990 p257)

Companies such as Marks and Spencer soon realised that although they were not receiving seconds, they were paying a high cost for conforming products by financing their suppliers expensive inspection system. In order to prevent this, they encouraged their suppliers to develop quality systems

based on prevention rather than detection. Dewhirst Clothing Ltd for example have implemented Statistical Process Control. This technique is associated more with modern quality methods and the prevention of problems and allows Dewhirst to identify warning levels in the production process.

iv) Suppliers within the Textile Industry

Within the textile industry, different relationships and varying degrees of control will be found between the supplier and purchasing organisation.

"This will depend upon the type of product, its value, lead times, frequency of orders, product range, number of other suppliers in the market and whether or not the product is a commodity or critical part."

(Chief Buyer, J.Barbour and Sons Ltd 1998)

Suppliers who manufacture for Barbour are likely to keep relatively low stock levels of Barbour products, and the product range remains relatively stable. This can be compared with suppliers to M&S, who as a high street retailer do not keep any stock themselves and require their suppliers to manufacture a wide range of garments in small volumes on a very short lead time as and when required. Textile companies manufacturing for Marks and Spencer and subject to the demands of the fashion industry are consequently likely to work under considerable time pressures.

3.5 Conclusion

The textile industry has been slow to introduce quality systems which are based on the principles of Total Quality Management and of prevention rather than detection.

Traditionally the industry is used to a 100% inspection regime whereby faulted garments are identified at the end of the manufacturing process and then classified as either seconds or rework. Indeed it may take companies such as Marks and Spencer, Dewhirst Clothing Ltd and J.Barbour and Sons Ltd to challenge the existence of seconds and stratified Quality Assurance which prevails within (some areas of) the industry.

Within the textile industry different relationships will be formed between suppliers and customers, depending upon the nature of the product supplied, to whom and with what frequency. The quality of the garment, has been highlighted as being important in securing the survival of the U.K. textile industry. In the following chapters we can consider how this challenge is being met by J.Barbour and Sons Ltd. Companies such as Barbour may be instrumental in helping bring the industry forward to adopt more modern methods of quality management.

CHAPTER FOUR

TOTAL QUALITY MANAGEMENT - A LITERATURE REVIEW

4.1 Introduction

The aim of this chapter is to provide a general introduction to the history, concepts and application of Total Quality Management. The British Standard for Total Quality Management gives the following definition:

"Management philosophy and Company practices that aim to harness the human and material resources of an organisation in the most effective way to achieve the objectives of the organisation." (BS 7850 Part 1 1992)

Unlike the processes of Quality Control and Quality Assurance, T.Q.M. is more elusive and less well defined than its predecessors, and can be said to represent a wide range of diverse practices. The one key factor which quality initiatives seem to share is a concern to encourage each employee to take responsibility for the continuous improvement of production and delivery processes. (Wilkinson and Willmott 1995 p4)

Total Quality Management is generally seen to encompass the principles of employee commitment, minimisation of quality losses, customer satisfaction, problem identification, process measurement, personal accountability and development, participation by all and the alignment of corporate objectives and individual attitudes. (British Standard 7850 Part 1 1992 pp4-5) An organisation exhibiting a Total Quality Management culture would be

committed to:

- a) Educating, training and developing all employees.
- b) Satisfying customers and suppliers both internal and external in the improvement process.
- c) Team work and the involvement and recognition of employees in improving their own processes.
- d) Continually measuring the process against a series of key indicators.
- e) Planning and organisation with commitment and leadership from the top. (Dale and Cooper 1992 pp19-22)

For the purpose of analysis we shall take the author's own definition of Total Quality Management:

"Total Quality Management represents a management style, associated structure and methods aimed at continuous improvement of an organisation through focusing on the customer, understanding the process and involving all employees." (Montford 1996)

An organisation adopting T.Q.M. principles will extend this to include the relationships developed with their suppliers. It is necessary to define the basic concepts of T.Q.M. and their origin so that the subsequent relationships developed with suppliers can be understood.

4.2 The Evolution of Total Quality Management

In recent years Quality Systems in the U.K. have evolved rapidly. Traditional systems were based on compliance to specification and the allocation of

blame. The inspection and detection of faulty products led to a quick fix and firefighting approach. This approach did not stop the non-conforming product from being made, thereby failing to eliminate the root cause of the problem. Preferable to this is an approach based on prevention and the adoption of a new operating philosophy based on Quality planning and improvement. Within the U.K. there is now a move towards promoting a culture of continuous improvement, empowering people and involving them in decision making.

"During the past twenty years inspection systems have been replaced or supplemented by Quality Control; Quality Assurance has been developed and refined and the most progressive Companies are now working towards Total Quality Management." (Dale et al 1990(a) p3)

The British Standard for Quality Systems BS 5750 was introduced in 1979 and in 1983 the Government launched a National Quality Campaign in order to promote its use. During the early 1980s:

"The U.K. Government and bodies such as British Standards Institute have implemented Quality initiatives to encourage firms to develop programmes to improve Quality." (Saunders 1994 p152)

The campaign matured throughout the 1980s, helping to promote a country wide commitment to Quality. In 1989 the Department of Trade and Industry launched a Managing into the '90s programme which promoted a strategic approach to the four key areas of design, purchasing and supply, manufacturing management and Quality. Lascelles and Dale (1989 pp201-9)

in assessing the success of the campaign stated that:

"The majority of respondents have found the material to be useful and believe that the campaign has benefited their organisations in terms of increased awareness of the importance of Total Quality Management." (Lascelles and Dale 1989 p205)

Quality Management therefore started to take a high profile within industry. In addition to Government campaigns, quality initiatives were also found to be initiated by one or more of the following change agents or opportunities - chief executives, competition, demanding customers, a greenfield venture or a restart situation. (Dale et al 1990(a) p12)

Different stages in the evolution of Quality Management in organisations can be identified. Dale et al (1990(a) p4) suggests four stages i.e. Simple inspection based systems, Quality Control, Quality Assurance and Total Quality Management. Witcher (1994(a) pp3-4) suggests Quality Control, Quality Assurance, Total Quality, Total Quality Management, Total Customer Satisfaction and Total Customer Delight as the six distinct stages. Irrespective of the conflicting views on the different stages of evolution, most researchers are agreed that progressive organisations will move from systems based upon detection to all-encompassing systems based upon prevention. (Dale and Cooper 1992, Witcher 1994(a), Oakland 1993 and Crosby 1979) Fig 1 summarises the main points which the author believes to be significant for each stage in the evolution of T.Q.M. The table shows that Total Quality Management is not merely a technique or system, but a

FIG 1 STAGES IN QUALITY MANAGEMENT

	SIMPLE INSPECTION BASED SYSTEMS	QUALITY CONTROL	QUALITY ASSURANCE	TOTAL QUALITY	TOTAL QUALITY MANAGEMENT
PRINCIPLES /KEY FEATURES	After the event screening process. No prevention controls. Very basic.	Reasonable degree of process control. Systematic regulation of production variables.	Addresses root cause of quality problems. Use of Quality techniques i.e. Quality Costing, Auditing, SPC.	Principles of Q.A. applied company wide e.g. Sales, Accounts, Distribution. Quality ingrained in organisation's culture.	Holistic business approach, including principles of T.Q. Q.A. and Q.C. Focuses on meeting customer requirements and achieving business goals through process of C.I. Right First Time Approach
APPLICATION	Incoming goods or those on the production line are examined or tested to meet certain requirements. Non conforming product scrapped, reworked or concessions.	Checking and inspection system to ensure level of quality. Use of specs, standards, drawings. Collection of performance data.	Planned and systematic prevention activities both in manufac and design of product. Quality system may be approved by 3rd party organisation.	Involvement of all levels and high degree of commitment. Teamwork. Use of quality techniques and methods.	Employees participate actively in mangt of quality. Company wide culture with an emphasis on Continuous Improvement of product and services.
CONTROL OF SUPPLIERS	Unlikely to involve suppliers or customers directly.	Testing of incoming material but little feedback to suppliers.	Approved Suppliers List or Vendor Rating System. Monitoring of quality of supplies. Communication based on conformance to spec. delivery dates, purchasing docs.	Understanding of internal/external supplier relationships.	Application of Quality Management. principles extended to treatment of suppliers and partnerships formed with them if appropriate.

Company-wide culture with an emphasis on continuous improvement of products and services designed to exceed customer expectations. To achieve this the correct management principles have to be in place to support the T.Q.M. philosophy.

The common principles of Total Quality Management can be summarised as follows and shall be used as a framework for analysis of the quality system adopted at the case study organisation.

- a) Agreed requirements should be set for both internal and external customers.
- b) Quality improvements can only result from planned management action and should aim to reduce waste and total costs.
- c) Customer requirements should be met first time every time.
- d) Focus should be on the prevention of problems rather than on acceptance of them and then trying to cope in a fire fighting manner.
- e) All employees should be involved from all levels across all functions.
- f) A culture of continuous improvement should be established with an emphasis placed on promoting creativity.
- g) Emphasis should be placed on measurement in order to help assess and meet requirements.

(Flood 1995 p48)

A greater sophistication in the application of Quality Management techniques would be expected to be found within a T.Q.M. company. Such organisations are often characterised by a high degree of flexibility in

responding to customer requirements, the existence of autonomous work groups and the involvement of everyone in the organisation in achieving customer satisfaction.

4.3 Quality gurus

The Quality gurus have played a significant role in the development and shaping of Quality systems. They all address similar themes i.e. continuous improvement, control of suppliers and customer satisfaction, but each adopts a slightly different approach depending on his own background and experiences.

"The gurus speak the same language but have different dialects."

(Oakland 1989(b) preface)

Fig 2 summarises the main ideas of the gurus as interpreted by the author. With regard to suppliers, Deming appears to have addressed the issue in more depth than others. He is of the opinion that organisations should aim for single source supply buying only from vendors committed to quality. Juran opposes this, maintaining that multisourcing is more appropriate, allowing suppliers to remain competitive. (Juran 1988) Deming believes that competition should be reserved for an organisation's competitors not their customers and suppliers:

"He that hopes only to meet the competition is already licked."

(Deming 1982 p19)

He believes that organisations should work with individual suppliers and invest time and money in order to improve quality costs and develop long

term relationships with them. He directly opposes the more traditional practices of buying on lowest cost, playing one supplier off against another and switching from one supplier to another on the basis of cost. From his fourteen point plan, Deming advises:

"End the practice of awarding business on the basis of price tag. Instead minimise total cost. Move toward a single supplier for any one item on a long term relationship of loyalty and trust." (Deming 1982 p23)

This enables long term commitment to be developed, enhances planning controls, allows investment in expertise, enables performance to be assessed over a period of time rather than on the strength of the first items delivered and fosters the development of co-operative attitudes. (Choppin 1991 pp316-318) Whether or not such a relationship is necessary for all suppliers will be considered during the research.

Both Oakland (1993) and Deming (1982) believe that it is the ability and potential of the supplier which is important, in particular their ability to continually improve customer satisfaction and reduce service and failure rates. Crosby is of a similar opinion that suppliers should be viewed as an extension of the organisation's own business. (Crosby 1979)

Ford can be used as an example of a company who required their suppliers to maintain an effective system for the control of quality, utilising statistical process control on the significant characteristics of the product, in order to pursue never ending improvements in quality. (Dale et al 1990(a) p12) In

addition to Ford, other international companies have confirmed their allegiances towards the quality principles as stated by Deming. The British Deming Association which was founded in 1987 is supported by Hewlett Packard, ICI and Mars; and companies represented in the organisations' research groups include British Telecom, East Midlands Electricity, Lucas Engineering and the Cabinet office.

The table in Fig 2 shows how the philosophies and quality management methods as advocated by the "Quality gurus" vary. To some, the different perspectives adopted towards T.Q.M. could cause confusion.

"Just deciding where to begin is so difficult that many may never get off the starting block." (Smith 1986 p4)

Smith states that the Quality Manager may draw little comfort from the writings of the gurus in the task of leading quality improvement through an organisation, referring to the condition as "Total Quality Paralysis". Dale et al (1990(a) p6) are also of the opinion that managers are confused by the amount and variety of information which is made available to them. Even with respect to the control of suppliers the gurus differ in various ways in that Deming advocates single source supply whereas Juran criticises it.

"Many books champion the cause of quality management (e.g. Oakland 1989(b), Drummond 1992, Bank 1992, Dale and Cooper 1992) yet so few studies address its actual meaning, or reflect upon its practical implementation or social significance. (See Xu, 1993 and Rippin 1993 for exceptions to the rule.)" (Wilkinson and Willmott

FIG 2 KEY PRINCIPLES OF THE QUALITY GURUS

	DEMING	JURAN	TAGUCHI	FEIGENBAUM	CROSBY	OAKLAND
GENERAL	National hero of Japan. Background in SPC.	Defines quality as fitness for use.	Statician. Defines quality as the loss imparted to society from time product is shipped.	Believed quality was a way of managing an organisation.	Defines quality as "Right first Time" Advocated "Zero defects" and "Quality is free"	Brings together ideas of the gurus. Developed model of TQM
KEY PRINCIPLES	Focus on problems of variability by adopting a systematic and rigorous approach to Quality.	Juran trilogy - quality planning, control and improvement. Aim to reduce the cost of quality.	The loss function and off line Q.C. including process optimisation.	4 stage approach. Set the standard, Appraise, Take necessary action, Plan improvements	5 absolutes of Quality inc. Quality is conformance not elegance.	Identified hard considerations - systems, tools, teams and soft-commitment and communication.
APPLICATION OF PRINCIPLES	Developed PDCA cycle, adopted by companies such as Nissan. Emphasised Continuous Improvement through problem solving.	Responsibility for success depends on top management. Quality must be planned.	Taguchi methods have enabled organisations to use experimental design in tackling quality problems and involving Q.C. at design stage.	Stressed human aspects of Q.C. Involvement of all employees in improvement of own work methods.	14 step plan on how to change an organisation. Only performance measure is cost of quality.	Believes customer-supplier relationship to be fundamental to TQM i.e. supply chains.
SUPPLIERS	Advocated single supplier and l/t loyalty and trust. Apply SPC to incoming material. Feedback data to suppliers. Opposes buying on lowest price.	Suppliers to be formally surveyed, rated and helped to overcome shortcomings. Advocates multi sourcing to retain competitiveness.			Suppliers to be viewed as an extension to the business. Believed most faults arose from incorrect purchasing specs.	Criticises purchasing on price alone. Emphasises Total Cost and ability of suppliers to continually improve, innovate and reduce costs.

1995 p1)

However "Total Quality Paralysis" does not have to be the condition which organisations subscribe to. In using the knowledge base that the Quality gurus have founded, organisations should be selective and aim to find the theories and methods which best suit themselves. Niven (1993) was of the opinion that "yes", the general concepts of T.Q.M. could be applied to most companies, but he also realised that:

"There is no reason to force a standard structure or mechanism to the quality improvement process. Each programme must be carefully tailored to each company by managers and employees." (Niven 1993 p25)

An example of an organisation which developed its own bespoke system is the Esso Research Centre based at Abingdon U.K. (Oakland and Porter 1994 pp52-60) When they started their process of continuous improvement they realised that there was no published methodology applicable to a research organisation and so employed consultants to help them. The end result of a research operation is not always as predictable as in a manufacturing operation, where much of the previous experience in T.Q.M. had been gained. They decided to adopt the consultant's approach which had previously been implemented by Rank Xerox and IBM and modify it to suit themselves. As a result, they chose not to implement all the original ideas of the consultants, since they believed that:

"It would be difficult to apply the concepts (of a cost of Quality measurement system) in detail to Research and Development where

failure can be turned into an important learning point." (Oakland and Porter 1994 p55)

They took the relevant points from other companies' experience of quality systems and adapted them to suit themselves, resulting in what they believed to be the most appropriate course of action and the reason for its subsequent success.

Numerous cases can be found of companies who have won Quality Awards like the Deming Quality Award, Malcolm Baldrige Award and the U.K. and European Quality Award i.e. Rank Xerox, TNT, Rover and IBM. The cost savings and results which they have achieved as a result of implementing a Quality Management system are the key factors stressed. There is less literature and supporting evidence to suggest how companies who experience difficulties in applying T.Q.M. principles can overcome them. Possible reasons for the lack of guidance in this area is described later in the chapter.

4.4 The Implementation of T.Q.M. Principles

Berry (1991 pp7-10) identifies the following advantages that can be gained through the implementation of T.Q.M. principles:

- a) Improved profitability and effectiveness i.e. increased market share, return on investment and growth.
- b) Increased organisational effectiveness brought about by the powerful and sustainable competitive advantage of a supportive culture.

Associated benefits would include increased employee involvement and inter departmental communication, improved industrial relations and a decrease in employee turnover.

- c) Improved customer satisfaction, which is imperative to sustaining long term competitive advantage.

Oakland et al (1994), analysed the business results of 29 companies who were known to have implemented Total Quality Management over at least a five year period. The research indicated that most of the companies exhibited positive performances in comparison with other companies in their industry. It was concluded that this indicated an association between the introduction of T.Q.M. and bottom line results. (Oakland et al 1994 p600)

Throughout T.Q.M. literature examples can be found to support the advantages of implementing T.Q.M. principles. The Tioxide Group Ltd for example which is part of the ICL group of companies have been at the forefront of the Quality movement for many years and are supportive of the benefits which a T.Q.M. system can bring. (Oakland and Porter 1994 pp63-75) Over the last decade they have been involved in quality circles, teamwork, statistical process control and quality costing. All such initiatives have converged to give an effective ongoing Total Quality Management programme:

"Initiatives in seemingly quite different areas have converged to give an effective T.Q.M. structure." (Oakland and Porter 1994 p70)

Oakland and Porter (1994) in their case studies on Total Quality Management cite Shortsbrothers Plc as another success story of Total Quality Management. (Oakland and Porter 1994 pp159-174) The company are the largest industrial employers in Northern Ireland and are involved in the design and manufacture of civil and military aircraft. They launched a Total Quality programme in 1987 and since then have launched over 1300 Quality improvement projects with an estimated saving of 46 million pounds per year. Shortsbrothers Plc have also won British and Northern Ireland Quality Awards. They believe their reasons for success were due to being able to gain the commitment and involvement of personnel at all levels.

"The majority of Project teams have enjoyed their involvement and found Continuous improvement both challenging and rewarding."

(Oakland and Porter 1994 p164)

In direct contrast to the "success" stories depicted in literature and journals such as Quality World, a more critical approach looking beneath the surface "gloss" can illustrate a different story. The adoption may not be as widespread as quality advocates may like to suggest, and problems can be encountered acting as stumbling blocks to the adoption. Kearney (1991) carried out a survey of 100 companies and found that:

- a) Companies continue their T.Q.M. programmes even if there are no tangible benefits.
- b) 50% of companies believed that their T.Q.M. programmes were successful even if there were no tangible benefits.

c) 20% of companies surveyed reported actual tangible benefits.

The Economist relayed the results of the survey in an article "The Cracks in Quality." (The Economist 1992 p85) Comparing the results of the survey with a similar survey in the U.S.A., 35% of companies practising Total Quality reported a failure to achieve any tangible benefits. These results paint a somewhat depressing picture of T.Q.M. with companies realising that they had achieved little or no tangible benefits but still continuing with the implementation.

Barry Witcher carried out various surveys in the North East of England and Scotland. The first was in 1990 with the Scottish Development Agency. It concluded that Total Quality Management in Scotland was very functionally orientated and the incidence of true T.Q.M. whereby all the key principles were supported by the necessary organisational culture and behavioural processes, was a rarity. (Naden and Bremner 1991)

In 1992 Whyte and Witcher as a result of a survey of companies in the North of England concluded that although Total Quality Management was becoming more strategic and company-wide, it was still very inward looking. Consequently it often failed to address the important issues of customer orientation and satisfaction through company-wide continuous improvement. (Whyte and Witcher 1992)

The third survey carried out in Scotland in 1993 in conjunction with the Scottish Quality network showed that T.Q.M. principles were continuing to

be adopted by organisations in an ever deepening fashion and have become more widespread. A need was identified for T.Q.M. principles adopted within organisations to extend through to the market place and to customers so that the full tangible benefits could be realised. (Witcher 1994(b))

The result of the three surveys showed that there was an increasing adoption of T.Q.M. in the early 1990s, but that adoption did not generally encompass all the principles of T.Q.M. in a holistic manner.

Oakland believed that an organisation could not blame T.Q.M. for any lack of tangible benefits if the system had not been implemented correctly.

"Many poor business performances can be traced back to poor implementation of Total Quality Management." (Oakland et al 1994 p601)

He believed that the link between T.Q.M. and business performance could only be established if it could be determined that the organisation had effectively introduced T.Q.M. in the first place. If it was introduced with a sound plan, a clear mission and tangible goals, and if the whole process was implemented correctly then benefits would be reaped over a period of five years. (Oakland et al 1994 p602)

Organisations may be increasingly adopting what they believe are Total Quality Management programmes. According to Oakland et al (1994) and Deming (1982) the method of implementation is of primary importance and if significant tangible benefits are to be gained, then the adoption of an

holistic Quality Management culture is required. Perhaps this leaves the advocates with an easy way out if a programme fails, for it is always possible to identify an area where the methods implemented differ from those prescribed.

There has been a lack of critical research studies done on T.Q.M., since critics who dismiss it as a passing fad have not felt it worthy of undertaking any critical analysis. (Wilkinson and Willmott 1995 p1) The organisational structure and behavioural processes required to support T.Q.M. principles have been highlighted as a key area where inadequate consideration has been paid regarding T.Q.M. implementation. (Webb 1995, Wilkinson and Willmott 1995)

"The cultural change aspects of TQM remain under-explored within the Western context, with many companies indicating a general reluctance to discuss the problems associated with implementing quality initiatives." (Dawson 1995 p173)

The lack of critical analysis has allowed the "quality gurus" to put forward the benefits of T.Q.M. unchallenged, enabling them to blame the weaknesses of top management or another barrier to implementation rather than the T.Q.M. programme itself when failures occur.

"There is little evidence gathered to resolve the question of the effectiveness of quality systems, let alone their desirability." (Wilkinson and Willmott 1995 p7)

4.5 Barriers to T.Q.M. Implementation

Most of the problems with implementing true T.Q.M. would appear to stem from the characteristics of the organisation and its resistance to change.

i) Organisational Structure

Traditional management structures in the West are hierarchical in nature whereas most T.Q.M. companies have relatively flat management structures (Wilkinson and Witcher 1990 p9). Flat structures have the following characteristics: delegation of responsibility, control is relatively participative, the organisation is organic in nature, there is a high integration between functions and a high degree of commitment to the overall objectives defined by the organisation. For organisations within the U.K., to take on a typical T.Q.M. organisational structure there is therefore required:

"A major shift in corporate culture and style of working." (Wilkinson and Witcher 1990 p9)

ii) Culture

T.Q.M. is based on the concept of empowerment. In theory, this means changing traditional management style and handing down responsibility to those below, hence the flatter organisational structure. In practice many organisations in the U.K. still practice authoritarian management styles of leadership. Empowering the workforce and giving them responsibility for their own decisions will require a change in culture for the organisation:

"Allowing for autonomy turns out to be very difficult for many

managers." (Flood 1995 preface)

It is middle managers who may have the most problem with relinquishing their authority. Wilkinson and Witcher (1990 p14) refer to their commitment to T.Q.M. as being questionable stating that it does not rise much further than mere compliance to instructions.

Organisational politics and power struggles within the work environment have meant that some organisations may only pay lip service to Total Quality Management. (Flood 1995 preface) Industrial relations within the U.K. are traditionally poor in that we have a class based society with a divide between management and workers. T.Q.M. cannot exist in such an environment of workforce and management conflict, as it undermines the basis of the behavioural requirements of Total Quality Management.

Wilkinson and Witcher (1990 pp10-18) suggest that it is due to such internal politics and the individual interests of those involved that T.Q.M. has only been partially implemented in the U.K. Many of the writers on quality base their ideas on organisational cultures similar to those found in Japanese industry. No account is paid to the characteristics which may be exhibited by traditional manufacturing companies in Britain, such as the case study organisation.

"T.Q.M. literature implicitly leans towards a view of management as a technical resource with management strategy seen as a rational and linear process." (Wilkinson and Witcher 1990 p9)

iii) **Timescale of Implementation**

The manner and timescale of implementation will have a bearing on the programme's success. Oakland and Porter (1994 p. ix) warn against what they call the "blitz" approach, believing that this results in a lot of hype and disillusionment. Instead, they advocate a more progressive approach which is slow, planned and purposeful, based on a long term commitment to T.Q.M.

Such an approach may not be suited to the style of management adopted within certain organisations. Managers are often under pressure to produce immediate results and adopt a very short term view of their surrounding activities. Maximising returns in the short term may be done at the expense of sowing seeds for long term gain. A slow and steady improvement of the operation or business may be frustrating for a manager if they see their competitor making significant improvements and striving to take competitive advantage. (Flood 1995 preface)

iv) Resources

The resources a company has available for training, manpower and other facilities, may have a bearing on the extent to which they can fully implement a T.Q.M. culture. Small companies may not have the necessary resources to provide the appropriate infrastructure which is required. Similarly if a company has a T.Q.M. programme in place and then suffers cash flow problems, it is not uncommon for the Quality programme to be the first company initiative to face cut backs.

In a case study by David Niven "When times get tough, what happens to T.Q.M.?" (1993 pp25-34) he suggests that companies may have adopted T.Q.M. as part of a long term approach to growth, but then if they start to struggle financially there is no indication or advice available as to how they should cope. Many companies face the business trade off of rapid time to market versus perfection, and if a company is in financial difficulties or under pressure, unfortunately it may be the Quality system and its related activities which suffers.

v) Formation of Work Groups and Teams

The concept of T.Q.M. can be described as "anti-expert" in that the formation of teams and autonomous groups play a large part in its application. If a company is used to being made up of like minded groups i.e. researchers, salesforce and accountants, it will have become somewhat segmented with a lack of integration between functions. These groups of experts need to be broken up and allowed to form cross functional teams. Any difficulties in doing so, can be a significant barrier to T.Q.M. implementation.

Flood (1995 preface) warns against going to the other extreme and forming too many internal work groups and teams. As T.Q.M. promotes the idea that colleagues must be thought of as internal customers, in some cases this may be taken too far and too many groups and committees are formed to serve one another, with no consideration to the external consumer.

The correct balance therefore needs to be found by each organisation with

respect to the quantity, size and purpose of autonomous work groups and teams formed.

vi) Quantitative/Qualitative Measures

One of the main principles of Total Quality Management is measurement of the process in a statistical manner. Hard quantitative measures are required in order to enable statistical procedures to be implemented. However managers may not be used to breaking down their activities in such a way and may find it difficult to undertake any form of analysis. Alternatively, some issues may not lend themselves to any form of measurement. Managers then struggle in attempting to implement any degree of qualitative analysis.

"Managers are lost because they are given little direction on what to do when soft qualitative measures are the best." (Flood 1995 preface)

Oakland also found that managers were more comfortable with addressing the hard issues of T.Q.M. rather than the softer issues (Oakland and Porter 1994 pxi). If managers are unsure of, or unable to measure their processes or activities, whether it be in a quantitative or qualitative manner, then one of the key principles of T.Q.M. is not being addressed.

Oakland and Porter (1994 pxix) believe that some of the obstacles to T.Q.M. implementation and an organisation's resistance to change can be overcome through communication, education, involvement, facilitation and support.

They suggest that Senior managers use the following approach to reinforce the culture change required throughout the organisation:

- a) Gain commitment to change.
- b) Develop a shared mission or vision.
- c) Define the measurable objectives.
- d) Develop the mission into its critical success factors.
- e) Understand and gain ownership of key processes.
- f) Break down critical processes.
- g) Monitor and adjust the process.

In theory this sounds very plausible, and in practice there may be examples where the approach has proved successful. In reality, it represents another example of the responsibility for the overall success of the programme being placed solely on those responsible for the implementation. Any failure of the programme can be seen to be management's inability to address the above steps. The guidelines given are very general, in order that they are applicable to most organisations. This only serves to make them more open to interpretation and difficult to apply to the organisational process.

4.6 Conclusion

It can be seen that various barriers do exist within organisations which may hinder the implementation of Total Quality Management. Preconceived ideas about Quality do not help. Quality is often promoted as being a relatively straight forward approach that will get to the root of all difficulties i.e "Quality is Free" (Crosby 1979). T.Q.M. strategy also assumes that:

- a) Quality is less costly to an organisation than poor workmanship.
- b) Employees naturally care about their work and want to improve it.
- c) Organisations are made up of highly interdependent parts necessitating the formation of cross functional teams to solve problems.
- d) An employee's work effectiveness is directly linked to the quality of the system that management have implemented.

(Hackman and Wageman 1995 pp310-311)

In reality, much hard work may need to be put into a Quality system. Significant benefits can often only be obtained with the corresponding amount of effort and external factors outside of the organisation's control may have an influence on the success of the project.

"T.Q.M. is a risky venture and the failure to implement it correctly can leave a company much worse off than it was before it even considered the process." (Niven 1993 p26)

When organisations encounter difficulties which they had not expected they then have to identify ways of dealing with them.

"Difficulties with implementation may be so strong that facilitators work round them rather than getting to the root causes." (Wilkinson and Witcher 1990 p20)

As a result of such problems it is not uncommon for T.Q.M. to be partially implemented. Wilkinson and Witcher (1990 pp10-15) suggest that only partially implemented Total Quality Management prevails in the U.K.

Although companies may have understood the basic principles of T.Q.M. if they have not had the necessary infrastructure or ability to change, then true T.Q.M. will not have been implemented.

CHAPTER FIVE

QUALITY MANAGEMENT AT J.BARBOUR AND SONS LTD

5.1 Introduction

The aim of chapter five is to critically review the Quality Management System implemented at J.Barbour and Sons Ltd. The chapter addresses the following areas:

- a) The characteristics and structure of the formal quality system which has been implemented to ISO 9000 approval. Consideration is also given to the quality assurance procedures, methods and systems which have been introduced as a result.
- b) The activities which have been implemented, either as part of the quality system, or as other company initiatives, which are in keeping with Total Quality Management principles.

Arguably the most significant characteristic of the Barbour quality management system is that it is fully computerised with the minimal amount of paperwork. The system has attracted attention from companies such as Nissan, Taunton Cider and Warburtons Bread. Described by Lloyd's Register of Quality Assurance as "The Paperless Quality Assurance System" they confirmed that:

"For a company whose image is steeped in tradition, its Quality Assurance system is remarkably hi-tech" (Lloyds Register of Quality Assurance March 1994 p2)

5.2 The Evolution of the Q.A. System

Barbour has always been associated with Quality.

"Think of Barbour and you automatically think of Quality" (Lloyds Register of Quality Assurance 1994 p2)

Prior to the 1990s, there existed documented procedures which had been developed in order to maintain the Company's own standards of Quality. In the early 1990s, company management decided to further develop existing systems and gain ISO 9000 approval.

As the company was already working to quality standards, work instructions and method sheets, the question was asked by employees "why do we/ should we change?" In order to allay any fears the Group Quality Standards Manager confirmed that the Quality Management System was to be built on existing systems and that whilst change was inevitable registration to ISO 9000 would not change the company out of recognition. In reality it was found that:

"Implementing a Quality Management System, in accordance with ISO 9000, didn't prove too problematic for its manufacturing unit."
(Lloyds Register of Quality Assurance 1994 p2)

The objective was not just to impress customers but for the system to act as a management tool enabling the company to:

- a) Formalise existing Best Practice.
- b) Ensure that Best Practice would be carried out at all sites.
- c) Ensure that such practices would be extended to cover all areas of work throughout the company. (Group Quality Standards Manager

1994)

Key to its success was that the system should not be seen as a subculture outside of the normal operations of the company. The project was led by the Group Quality Standards Manager who was supported by a Project Steering Committee made up of Senior Management, consultants and other co-opted members both from within the company and outside. The system was to be integrated with the system already used on the company's mainframe computer system i.e. purchase order processing, production planning etc. "Bespoke" software was developed using the expertise of software consultants and a user friendly and paperless system, within which all systems were fully integrated, was created. Both hardware and software were specific to the requirements of the company, so no problems arose through trying to implement systems which had originally been designed for other companies or industries. By ensuring that the software was relevant to Barbour, it enabled it to become the vehicle through which all responsibilities and operations were controlled.

In order to confirm Barbour's long standing commitment to quality and to provide a focal point for the new Quality System, a Quality Policy was developed (Appendix 5), an extract from which is as follows.

"The Company believes that the pursuit of Total Quality in product, delivery systems, and after sales service will help achieve growth and build profitability in an environment which provides secure and

rewarding employment to all members of staff and management."
(Quality Policy Statement J.Barbour and Sons Ltd,
Signed by the Managing Director 16 August 1994)

To support the policy and to provide a more easily identifiable way for employees to relate to quality, the following slogan was developed:

"Quality is never having to say you're sorry". (J.Barbour and Sons Ltd 1994)

It was displayed on noticeboards throughout all factories and offices. A similar statement is used by John Wybrow (Technical Director Philips) who quotes the words of a line operator at Philips Components Blackburn, whose definition of Quality is "Never having to say sorry to a customer". (Dale and Cooper 1992 p8)

The slogan illustrates the importance which both companies attach towards satisfying their customers.

"This view reflects that it is highly desirable for an individual's personal esteem and pride to be associated with a product, service and organisation with which the customer is totally satisfied". (Dale and Cooper 1992 pp8-9)

Focusing attention on the customer and aiming to improve the standard of the overall package offered is a key principle of Total Quality Management.

5.3 The Quality Assurance System

The activities for which the main sites of J.Barbour and Sons Ltd were

approved by Lloyds Register of Quality Assurance to ISO 9002 in October 1993 were as follows:

"The manufacture, warehousing and distribution of outdoor weatherwear garments including jackets and coats. Procurement and manufacture of outdoor weatherwear and trousers, gloves, headwear and scarves. The provision of customer services including re-waxing, alterations and repair of Barbour products." (Barbour Certificate of Registration to ISO 9002 1993)

Three key areas of the formal Q.A. system, i) the computer software ii) traceability and barcoding and iii) the moderation of inspectors will now be considered in more detail.

i) Computer Software

The computer software has a significant role in the administration of the Q.A. system. It is maintained and updated by the Management Services department, and access is available to over 25% of the company's employees from the managing director to line supervisors and chargehands. Below this level it was decided that direct access to the system via a terminal was not required, since the supervisory structure in place would ensure that any relevant information would be passed on to those who needed it. Information which is available to users is detailed in Fig 3 and referenced in Appendix 6. The system was set up as "read only" to all users apart from the Q.A. and Work Study departments who are responsible for

FIG 3 DOCUMENTS ON THE Q.A. SYSTEM

DOCUMENT	USED BY	EXAMPLE
QUALITY MANUAL	All employees	QM-02.00 Policy Statement
QUALITY PROCEDURES	All employees where applicable	PR0303 Induction Training PR0106 Control of Forms PR0510 Eyeletting PR0501 Jig and Attachment Register
QUALITY FORMS (QARF)	All employees where applicable	QARF 0202 Internal Audit Plan QARF 0403 Product Size Range QARF 0105 Authorised Sealed Samples
METHOD SHEETS	Production Staff	HM0013 Attach Barbour Label to Lining EE0079 Midline Inspect Jacket
PRODUCT SPECIFICATION	Production Staff	A150 Beaufort Jacket Sage
FACTORED GOODS SPECIFICATION	Purchasing Dept/Supplier	D620 Barbour Sweatshirt Olive
RAW MATERIAL SPECIFICATION	Purchasing Dept/Supplier	0051/054/A Blue Check Lining
GARMENT TOLERANCE SHEET	Quality Control Dept/Supplier	A5 Durham Jacket Sage
STYLE RECORD CARDS	AM5 - Dept (Design)	A7 International Jacket
SEWING MARKER TEMPLATES	AM - 5 Dept (Design)	SEW.00 Master
FINISHING MARKER TEMPLATES	AM - 5 Dpt (Design) /Production	FIN.04 Supplier Reference
RECUT PATTERN REGISTER	AM - 5 Dept (Design) /Production	A98 Solway Zipper Jacket Olive
CALIBRATION REGISTER	Q.A. Dept/Production	CALIB.13 Hat Size Measure
JIG AND ATTACHMENT REGISTER	Mechanics/Production	MA.0013 Leather Binder
BILL OF LABOUR	Work Study/Production	A100 Bedale Jacket Sage
BILL OF MATERIALS	Purchasing Dept /Production	A155 Beaufort Jacket Sage
TRAINING RECORDS	All employees where applicable	L.Montford (Supplier Auditor)

amending documents such as work instructions, procedures, bills of labour and garment tolerance sheets. All employees are responsible for initiating changes or suggesting amendments to the documents. Staff are notified of changes to documents via a purpose designed Electronic Mail System. Hard copies of any documents can be printed off i.e. for discussion with machinists working away from the computer terminal. Any copies of Q.A. documents printed off will have an "uncontrolled" status and can only be used for up to 5 days thereby ensuring that all hard-copies in circulation are current. The procedures and extensive range of work instructions and method sheets (see Fig 3) serve to provide a high degree of control of the company's operations.

ii) Traceability and Barcoding

The Quality Assurance System was designed to ensure complete traceability of the product. From ordering of raw materials, the product can be traced through its manufacture to despatch to the customer. The system can generate information as to who approved a supplier and when, plus the date an order was placed with the supplier. Information is also available to indicate when the goods were received and (if it was a raw material) which manufacturing site it was despatched to for use in production, or (if it was a finished product) when it was inspected at Quality Control, by whom, and with what result.

In order to control the quality of the products manufactured in-house, each

garment has its own unique bar code which indicates the month and year it was manufactured, at which site and on which machine line. Traceability therefore stays with the product throughout its life, whereas at Claremont Garments traceability only exists during manufacture as the garments are held on bar coded hangers signifying the relevant operation.

The mid-line and final inspection points at Barbour are linked together electronically so that the product cannot move on to the next point unless it has passed the previous one. The goods are then assigned electronically to barcoded cages and despatched from the manufacturing area to the warehouse. On receipt at the warehouse the computer system will then display the products as being available for despatch to the customer and they can be allocated a sales order number.

A similar degree of control is available for goods returned to Customer Services. When a product is returned under either "complaint" or "repair" data is recorded on the system indicating when the product was returned, for what reason, the action taken and when the garment (or replacement garment) was returned to the customer. Information can then be sourced detailing the number of complaints or repairs for a product, over a certain period of time and the figure can also be calculated as a percentage of sales.

"The system allows access to historical data as well as live complaints, enabling management to pinpoint products or quality problems that require investigation, with a higher degree of accuracy than before." (Customer Services Manager October 1997)

If a fault is identified in a certain batch or consignment of goods, then if necessary a product recall (PR 0208 product Recall /Warning Plan) can be initiated.

iii) Inspector Moderation

A feature of the J.Barbour and Sons Ltd Quality Management system which may be unique to Barbour, is the "moderation" of inspectors. 100% inspections are carried out at midline and final inspection points, the results of which are recorded on the Q.A. system. To ensure that all inspectors are inspecting to the same standard "inspector moderation" is carried out.

At intervals of normally one year, inspectors from each site undertake a series of tests whereby they are given a number of jackets, each containing various faults which have to be identified.

At the end of the moderation, an exercise called facilitation is carried out where the faults are discussed and a report detailing the results is then issued to departmental management. In 1996 there were 113 successful moderations carried out. This included employees from 4 CMT sites, Barbour mid line and final inspectors from 6 sites and Quality Control staff. In 1997 there were 136 successful moderations. Of these 85 passed with an A grade, 42 passed with a B grade and the remaining four who passed with a C grade were retrained and remoderated successfully.

A "faults library" is now being set up at each site illustrating examples of

typical faults found on products in order to help train inspectors and machinists. Inspector moderation has also been extended to cover subcontractor "CMT's" who manufacture jackets for Barbour. This ensures that any jacket manufactured either inhouse or by a subcontractor is of the same standard, thereby preventing the occurrence of dual quality.

Consequently, it can be seen that the computer system and procedures implemented at J.Barbour and Sons Ltd ensure a high degree of control of the finished product. Examples of such control can be identified with respect to both the traceability of the product itself and the monitoring of individuals involved in the production process.

5.4 Total Quality Management

Barbour have not implemented what could be described as a formal Total Quality Management programme. However various activities have been implemented which can be seen to be based on the principles of T.Q.M.

One of the key factors associated with T.Q.M. is that of continuous improvement and allowing employees to take responsibility for this. Barbour's quality system and the associated activities are monitored and controlled with improvements made on an ongoing basis. The three basic principles of continuous improvement as identified by Oakland et al (1994 p603) are i) to focus on the customer, ii) understand the process and iii) involve the people.

"These three basic principles of continuous improvement will form the

core of Total Quality Management in the future." (Oakland et al 1994 p603)

Each area can be reviewed in turn with respect to Barbour. To confirm that these principles have been implemented successfully, evidence is required illustrating that they have increased the effectiveness of the organisation. Certain behavioural changes could be expected to occur i.e. an increase in both the level of task oriented work and the knowledge and skill applied to the work, plus the appropriateness of the task performance strategy applied. (Hackman and Wageman 1995 p321) For the purposes of this analysis, whereas Hackman and Wageman refer to "unit members" and quality teams, this shall be interpreted as meaning company employees and work groups.

i) Focus on the Customer - Internal/External Customer/Supplier relations

Customer and supplier relationships can be analysed with respect to internal and external relationships.

a) Internal customer/supplier relationships.

The concept of internal customer/supplier relationships has been developed through the introduction of the Q.A system and is particularly evident within the manufacturing sites. The manufacture of a jacket involves numerous steps, many of which are carried out independently of one another i.e. cutting, manufacture, inspection and rework. Each operator is responsible for manufacturing different parts of the garment (sleeves, back, collar etc)

and adjoining them to the main body of the jacket as it progresses along the line. If machinist A is marginally out of line in manufacturing armholes then machinist B will have to compensate for this whilst adjoining the sleeves to the jacket.

"The operator is aware that she is responsible for the quality of her own work and that the standard of work which she produces will have an influence on the degree of difficulty which the next operator has in meeting the required quality standard. (Line Supervisor Hebburn Site October 1997)

Should a fault be identified on inspection then the jacket is returned to the operator responsible for the rework. The Factory Manager constantly monitors the rework figures for each machine line, in order to determine where extra training or supervision may be required.

There has been an overall reduction in inspection and rework figures, with the percentage of goods rejected during the manufacturing process decreasing from 8% to 4.5% from 1994-7. If a machine line is viewed as a work group, as a result of the quality system controls, there has been an increase in the knowledge and skill applied to the task in hand.

b) External customer/supplier relationships.

Relationships with external customers i.e. the retailer and ultimately the consumer are maintained by the company's sales agents and information is regularly fed back to the sales office regarding service and product quality.

Barbour has a large purpose-built Customer Services factory which is set up

to offer a customised after-sales service to its customers, and it deals directly with both retailers and the general public. The factory offers rewaxing and repairing services plus the manufacture of special garments and modifications to existing jackets.

The existence of this Customer Services factory, employing up to fifty staff, demonstrates the importance the company places on its relationships with its customers and maintaining customer loyalty. The factory was initially set up as a non-profit making venture in the short term, with the benefits expected to be reaped in the long term as strong allegiances were formed with both individual consumers and retailers.

According to the Customer Services Manager, the main advantage of the Q.A. system is that it has brought about an improvement in defining the appropriate task to be undertaken and a reduction in the time and effort wasted through mis-direction.

"In the past, time may have been spent investigating areas where problems were "thought" to exist. Now with more accurate data analysis, the number of complaints can be calculated as a percentage of sales and a more informed decision can be made as to whether a problem does actually exist." (Customer Services Manager October 1997)

This he believes has resulted in an increase in organisational effectiveness i.e. quicker turn round of complaints, more accurate responses, increased employee morale and a more professional approach adopted during

communication with customers.

With regard to external suppliers, Barbour has three main types:

- a) Raw material suppliers
- b) "Cut, make and trim" suppliers (CMT's)
- c) Factored product suppliers

Raw material suppliers provide the raw materials which are used in the manufacture and packaging of the jacket i.e. waxed cotton, bags, checklining, zips, eyelets and corduroy.

The cut, make and trim suppliers or "CMTs" for short, are employed mainly to manufacture jackets where the production at Barbour sites cannot meet the demand in sales. Such companies are supplied with all the raw materials and cut work required.

The factored product suppliers manufacture goods such as hats, shirts, belts, bags and trousers which Barbour themselves do not produce.

The relationships and control of these suppliers are considered in depth in Chapter 7.

ii) **Understanding and Improvement of the Process**

Various activities can be identified as illustrating how Barbour attempt to understand, control and improve their process i.e. quality meetings, auditing and the planning of quality activities. The manner in which Barbour addresses these activities reflects the application of principles which are associated more with Total Quality Management than basic Quality

Assurance. They also demonstrate the effort invested in continuous improvement and meeting customer requirements.

a) Quality Assurance Meetings

Two types of Q.A. meetings are held - Bi-monthly progress meetings and an Annual Review meeting.

Bi-monthly meetings are attended by all Senior Management in order to discuss current quality issues. The Quality Manager acts in an advisory capacity, taking on a supporting role and aiming to create a positive culture within which to work. This can be contrasted with the policing role of the Q.A. Manager adopted in more basic Q.A. systems. An agenda and points for discussion would be as follows:

- i) Customer Complaints Analysis.
- ii) Analysis of Production Reports - Recuts, Intermediate and Final Inspection.
- ii) Analysis of Internal/External Quality Audit Reports.
- iii) Analysis of Quality Control Inspection Reports - CMT, Factored, Raw Material.
- iv) Training.
- v) Any other business/quality issues.

The annual Q.A. Review meeting is attended by the Managing Director, Group Quality Standards Manager and the Company Secretary with the minutes circulated to all management. A typical agenda would be as follows:

- i) Suitability of the Quality Manual i.e. changes to the organisation chart.
- ii) Quality Assurance Computer System i.e the number of users and user groups.
- iii) Quality Responsibilities - changes to responsibilities related to Quality.
- iv) Internal Quality Audits - number of internal audits, auditors and system audits.
- v) Training for Quality - New starters briefings, inspector moderation and Training Needs Analysis.
- vi) Customer complaints analysis - identification and discussion of problem areas.
- vii) Quality Assurance Meetings (bi-monthly) - number of meetings held and attenders.
- viii) Performance of Suppliers - Quality Control statistics for Raw materials and Factored Goods.
- ix) External factors affecting the Q.A system - Third party assessment.
- x) Projects undertaken by the Q.A department.
- xi) New Quality Concepts i.e. Product Development Group.
- xii) The company - aims, plans etc with respect to the Quality Policy.

b) The planning of Q.A. activities

A yearly planner (as shown in Appendix 8) is used by the Q.A department to ensure all relevant activities are undertaken at each site over the course of the year i.e. calibration, inspector moderation, quality stock audits and jig

and attachment inspections. Planning such activities in advance ensures that all activities are addressed at logical intervals throughout the course of the year and that any necessary improvements to the activity and its associated procedure can be made.

c) Auditing

All procedures are audited annually by internal auditors, normally of a supervisory or management level. Each month an average of 15-20 procedure audits are undertaken. Improvement actions are then identified, agreed with the department head and a date for completion agreed.

The activities described in a) b) and c) are key activities undertaken within the company. They are all similar in that they are initiated by management and then carried out by individuals from either management or supervisory level. None of the activities listed stems from the work of multifunctional groups made up from a cross section of areas of the company.

One example can be found within the company, whereby employees from various areas were given the opportunity to investigate certain problems and recommend solutions, which others would then be required to implement. The group was named the Ergonomics Working Group and was made up of Factory Manageresses and Work Study Engineers reporting directly to the Group Quality Standards Manager. Their remit was to consider ways of improving work stations to reduce the possibility of repetitive strain

industries.

Within a short space of time three of the five Factory Managers had contacted the Group Quality Standards Managers querying their own role. The Factory Managers were uneasy about allowing a group made up of employees from different departments, from a lower level than themselves, to make decisions which they would have to implement in their factories. They viewed it as relinquishing authority over work processes for which they were ultimately responsible. The result was that the Ergonomics Group lost confidence and over the next six months achieved little of any significance. This is a key illustration of an activity undertaken in a company where there is not a T.Q.M. culture to support it.

iii) The Involvement of, and the Training and Development of Employees

Commitment to training is demonstrated in the company's mission statement:

"The Company's mission statement is to provide products of unequalled functionality, quality and value. In order to achieve our aims in product, delivery systems, growth and profitability, the Company is committed to developing its employees to their maximum potential." (Company Mission Statement 1994)

"New starters Briefings" are given to all employees joining the company in order to introduce them to the company and the Q.A. system. As well as providing opportunities for internal training, employees are encouraged to

undertake professional qualifications. A training needs analysis is completed by each department, to help ensure that the training is both relevant and equally distributed throughout the company. Production supervisors have recently achieved an NVQ level 3 in Supervisory Management. Managers from production, purchasing and accounts have recently completed a Certificate of Management Studies from Durham University Business School. When the supervisors were questioned as to how the training had enabled them to work more effectively, one of the points raised was that:

"The training made us think of the machine line as a business unit, with inputs and outputs, and needing to make sure there was good communication between those on the line." (Supervisor, Crook site November 1997)

Relating this to the principles of T.Q.M., they were demonstrating an understanding of the internal customer/supplier relationship and the need for adequate communication to ensure that the requirements of both parties were met.

The involvement of employees in the quality system should also be considered. Their involvement is evident to a degree, since the majority of employees have responsibilities defined within it. Employees are allowed to suggest changes to their immediate scope of work, but ultimately any changes to procedures are most likely to be initiated by management.

Certain examples have been found to illustrate an increase in the effort

expended, knowledge and skill applied and appropriateness of the task performance strategies, as a result of the implementation of the quality system and T.Q.M. principles. The absence of quality teams in problem solving and of process management heuristics has meant that these are isolated examples, not necessarily indicative of behavioural changes throughout the company.

Although employees may be involved in operating the system, there is little scope i.e. through the existence of autonomous teams or work groups for them to discuss its improvement. As a result of the authoritarian and hierarchical culture, employees have a defined role within the organisation and are not permitted the organisational freedom to make changes to their own work practices without prior approval from their immediate supervisors. A gap can be seen to exist between the behavioural processes central to T.Q.M. practices and the structure and culture of the organisation which is required to accommodate them.

Barbour would seem not to be alone in this.

"Inadequate treatment of social factors results in companies adopting an overly narrow view of quality, a "quick fix" model of TQM and corresponding failure to align personnel and human resource management policies with TQM strategy." (Webb 1995 p107)

Understanding the nature of the company, its traditional background, stable product range and the fact that it has neither a personnel department nor a recognised human resource strategy, means that it is unlikely in the short

term that it could change to meet these needs. Any long term change would have to be initiated by the Managing Director or an external change agent. (Dale et al 1990(a)) The company's activities tend to err on the side of risk avoidance. Although the implementation of the Q.A. system was a change to its working practices, it did not threaten the culture or traditional values, but served mainly to tighten the controls surrounding the manufacturing process.

5.5 Conclusion

The Q.A. system can be seen to have significant benefits in terms of increased control of the production process and more accurate data for analysis on which management can base improvement actions. With respect to managers' views, the Group Quality Standards Manager highlights the following benefits:

- a) "Once the system has been developed, it is inexpensive to maintain and can be easily extended to new processes and sites."
- b) "The whole company from the Managing Director down is using the same information at the same time."
- c) "The system has become integral to the existing systems, and has become a tool to manage the company."
- d) "Revision control has been made very easy, no controlled copies of documents are available outside the Q.A. department."
- e) "More information is available at more levels within the company than ever before and thus employees feel more part of the Quality

Management System."

- f) "The Quality Management System is easier to audit due to availability of information."
- g) "Training on computer input routines has been made easier."
- h) "Quality control inspectors have been released from paperwork thus higher throughput."
- i) "Data from many sources is now available as precise meaningful information, which releases management to concentrate on proactive, positive developments."

(Group Quality Standards Manager November 1993)

To confirm whether or not certain process criteria or T.Q.M. principles have been implemented successfully, there needs to be evidence to demonstrate an increased level of organisational effectiveness and change in the behavioural processes within the organisation as a result. (Hackman and Wageman 1995 p321) Decreased levels of rework within the manufacturing sites, increased turnover at Customer Services and overall productivity would indicate that there was an increased level of efficiency within the company and that customer requirements were being met satisfactorily. However, no data is available to illustrate the cost savings derived as a result. It is also not possible to state categorically that any increase in efficiency was due solely to the implementation of the quality system and any T.Q.M. principles. More experienced workers, increased levels of supervision and control plus an increase in demand for the company's

product could also have led to any changes identified within the organisation.

What the research has shown is that in certain areas T.Q.M. principles have categorically not been adopted i.e. use of quality teams/multifunctional groups and the encouragement of individuals to use process management techniques to suggest ways of improving their own work practices. From the information gathered relating to the nature of the company, it is unlikely that any gap will be bridged, at least in the short term to accommodate such principles.

CHAPTER SIX

QUALITY MANAGEMENT AND SUPPLIER DEVELOPMENT

- A LITERATURE REVIEW

6.1 Introduction

The purpose of this chapter is to focus on the role of the supplier and to consider any principles associated with T.Q.M. which relate to suppliers.

Organisations may implement a variety of corporate or departmental strategies in order to provide a quality product or service to their customers.

Initially an organisation may choose to look inwardly at their own internal systems and procedures, but this cannot be done in isolation for long without considering the nature of the relationships which are formed with one's suppliers.

"All organisations striving for T.Q.M. will at some stage recognise that they are part of an extending chain of interconnecting resources." (Macbeth 1990 p29)

It is rarely enough for an organisation to control only the work done on their own manufacturing sites or service areas, as few organisations are so self-contained that they produce products or services which are generated purely from inputs and outputs derived from a single location. (Dale and Oakland 1992 p29) Consequently an organisation implementing a programme of continuous improvement will find it necessary to control the quality of their suppliers in order that they can then improve the quality of their own goods or services.

Louis Schweitzer, chairman of Renault and president of the European Foundation of Quality Management states that:

"If they (our suppliers) are not also committed to total quality, our products will carry the scars of the non-quality of those suppliers."

(Schweitzer 1993 p7)

This view is mirrored by one of Renault's competitors Ford, who state that:

"It is not the Ford Motor Company, which builds motor cars but Ford and its suppliers." (Dale and Oakland 1992 p129)

Evidently both Ford and Renault are aware of the reliance which they have on their suppliers and have developed appropriate strategies in order to ensure the quality of their supplies. Whether or not this has been realised by companies in other industries, and how such an issue should be addressed, is one of the considerations of this research.

6.2 The Importance of Supplier Quality

There is a general trend in today's society towards more stringent customer expectations with respect to increased product and service quality. The quality of an organisation's suppliers is therefore of paramount importance for the ultimate success and profitability of the organisation:

"The usefulness of the product (i.e. its quality) to the enduser is determined by the weakest link in the chain." (Squire 1990 p56)

Organisations by their very nature, are likely to have different numbers and types of suppliers, therefore relying on them to a greater or lesser extent. Dale and Oakland (1992 p128) believe that in most organisations at least

50% of sales revenue is spent on buying materials, components, commodities, assemblies or services. For an organisation whose product is made up of few parts from a relatively simple process, then only a small number of suppliers may be required. However for an organisation buying in a wide range of bought in parts i.e. a typical motor manufacturer then the number of suppliers will be much greater. For an automotive manufacturer it is estimated that bought in parts account for at least 70% of manufacturing costs. (Lascelles and Dale 1990 p257) Consequently the higher the percentage of purchased parts of goods or services, the more dependent an organisation is on its suppliers.

Reliance on suppliers is not confined to the motor industry alone. Cosalt Holiday Homes who describe themselves as a small to medium sized company introduced a supplier development strategy which resulted in cost savings of 750k per year. They estimate that 70% of the selling price of their holiday home is attributable to purchased components. (Flood 1995 p249) A company so dependent on their suppliers for the quality of their own product must ensure that the standard of goods purchased is acceptable.

In providing the bulk of the raw materials or services which an organisation requires, suppliers may be responsible for the quality problems which arise. An organisation can trace their quality problems back to three main sources:

- a) Weakness due to poor design.

- b) Defects due to internal manufacturing errors.
- c) Defects in parts or components supplied by vendors.

(Saunders 1994 p158)

It is the third category of problems for which suppliers could be held responsible and Crosby (1979) estimates that 50% of an organisation's quality problems are caused by defective purchased material. (Smock 1982 pp51-57) In the early 1980s when production of Jaguar cars reached its lowest point of confidence, an investigation into their quality problems found that 60% of them could be traced back to poor quality suppliers. (Saunders 1994 p158) This realisation resulted in Jaguar enlisting the support of their suppliers to help improve the quality of their vehicles and they introduced a Supplier Development programme. This encompassed activities such as Supplier of the Year Award, single sourcing strategy, supplier conferences and presentations, a reduction in the supplier base, multifunctional task forces involving suppliers and an emphasis on long term commitment to their suppliers.

In an effort to continually improve the quality of product or service, many companies are now realising what a key role their suppliers play.

"Never before in the history of man's industrial endeavour, has the value of building effective relationships with suppliers and customers been more crucial to the survival of free market enterprise today."

(Pender 1993 p13)

6.3 Traditional Attitudes Towards Suppliers

The traditional relationship between the purchasing organisation and its suppliers is normally viewed as being adversarial and authoritarian. The purchaser's best protection was thought to be by establishing several sources of supply for each bought out item in order to ensure that the competition caused each supplier to perform at their best. Symptoms of this kind of adversarial relationship included multiple sourcing, a large supplier base, frequent switching from one supplier to another and buying solely on price per piece. (Lascelles and Dale 1990 p258)

White and Wyatt (1990 p273) cite the following characteristics as representing traditional attitudes towards suppliers: emphasis on price, the checking of long and infrequent deliveries, large lot sizes, keeping suppliers at arm's length, continually renegotiating to achieve a win-lose scenario with poor performance resulting in a change of supplier. For further explanation of this type of relationship, we shall use the adversarial model and its eight characteristics as put forward by Saunders. (1994 p218) The examples and subsequent discussion are, however, those of the author.

i) Arm's length, formal communication approach.

The adversarial relationship is often characterised as being of an arm's length' nature with little personal contact between customer and supplier. Ilford Ltd for example, a company manufacturing photographic equipment, stated that when they came to examine their approach towards their

suppliers in the first year of their TQM programme in 1985, they found that:

"Traditional 'management' awareness of suppliers was the annual Christmas time round of dinners and lunches, and being called in by purchasing officers as a last resort on price, supply or quality."

(Carson 1990 p53)

Communication in such relationships is likely to be very formal, guarded, infrequent and consequently inadequate. As little information as possible is transmitted between the two parties, in the understanding that neither can then use it to their advantage at the expense of the other. Dale and Oakland (1992 p129) believe that a number of the problems encountered in the supply chain stem from poor communication between the two parties:

"It is not uncommon to find that supplier non conformances are caused by incorrect and out of date data and specifications, being communicated by the purchaser to the supplier or held by the supplier." (Dale and Oakland 1992 p129)

ii) **Adversarial attitudes**

Traditional relationships with suppliers are likely to be focused on negative issues with little praise, goodwill or understanding between the two parties. Price, who himself categorises supplier relationships into adversarial, intrusive and enhancing, suggests that in adversarial relationships:

"Purchasing officers can wreck their Company's Supplier relationships and sit amid the debris self-righteously congratulating themselves for having protected their parent company from the predations of

unscrupulous vendors." (Price 1993 p5)

In such relationships suppliers are likely to be viewed as "unscrupulous vendors" and consequently treated as such.

iii) Lack of Trust

On account of such adversarial attitudes, a climate of mistrust and uncertainty is likely to develop, with suppliers being regarded suspiciously by the purchasing organisation and vice versa. Choppin (1991 p310) suggests that most companies believe themselves to be in competition with their suppliers, viewing their supplier as a business opportunity and allowing their company to operate the "demand now pay later" policy. He believes that this attitude represents:

"....one of the fundamental rethinks necessary to achieve Total Quality."(Choppin 1991 p313)

The lack of trust may cause suppliers to refuse to supply unless payment has been made and is likely to make them less inclined to perform to the best of their ability.

iv) Aggressive, 'win-lose' approach in negotiations - price focus

An organisation with traditional supplier relationships is likely to practice "multi sourcing" and therefore have a number of suppliers which can be used to supply the same product. The balance of power will therefore be in the purchasing organisation's favour and so an aggressive approach is likely to be taken during negotiations in order to push for win - lose situations.

Ultimately the business objectives of the purchasing organisation are likely to be satisfied irrespective of any objectives which the supplier may have.

Those organisations practising multi sourcing believe there to be various advantages of such a policy. The following factors can be identified as reasons why certain organisations may prefer the more traditional methods of multi sourcing and creating competition between suppliers:

- a) Provides security in the event of strikes, natural disasters and supplier takeovers.
- b) Allows for flexibility to cater for changes in demand.
- c) Helps to offset poor planning by the purchasing organisation.
- d) Protects against a monopoly situation.

(Dale and Oakland 1992 p136)

These reasons have more credence when the product being supplied is a commodity, of low value, required on a one off basis and where the nature of the relationship formed with the supplier is not considered to be of primary importance.

v) Emphasis on individual transactions and short term contracts

In organisations where adversarial attitudes exist with suppliers, the role of the purchaser is often seen as being only to enter supply markets and to purchase supplies which conform to the specification. In such organisations where conformance to specification is considered to be adequate, the definition of quality has a very narrow scope and the purchaser is only

concerned with the immediate purchase being made. It is also probable that the product purchased is inspected upon arrival to ensure conformance.

Just as the purchasing organisation views the supplier on a short term basis, the supplier will view the purchasing organisation as not being concerned about future business prospects and very much price driven in contractual negotiation. This is typical of supplier relationships involving commodity type products.

vi) Little direct contact and involvement in design activities

Inadequate communication between the purchaser and the supplier is likely to give rise to mis-understanding of both the purchasing organisation's requirements and the supplier's manufacturing processes.

"Designers (customers) often establish specification limits without sufficient knowledge of the (suppliers) process by which the product or service is to be produced and the capability of the producing process to reproduce the design." (Dale and Cooper 1992 p4)

Hill Industries, who manufacture a range of garden and industrial sprayers were used as a case study in an investigation into improvement tools and techniques by Oakland and Porter. (1994 pp85-91) Six months after starting a T.Q.M. programme they received a spate of sprayer returns caused by an overly long tube used within the sprayer.

"After working with the supplier it was realised that the supplier did not recognise that the length of the tube would have a material effect



on the performance of the sprayer." (Oakland and Porter 1994 p87)

Hill Industries realised that the problem was primarily due to the good intentions of the supplier which were spoilt through lack of communication. This realisation encouraged them to improve their communication links and in particular the transfer of design information to their suppliers in order to prevent such problems reoccurring.

The involvement of suppliers in the design process can serve to aid product development, technical innovation and enhance long term strategic planning for the purchasing organisation. A traditional relationship with a supplier is unlikely to utilise the supplier's design expertise to the full.

vii) Reluctance to share information

In keeping with the 'arms length' tactics, which are adopted in traditional supplier relationships, suppliers are often provided with only the bare minimum of data on issues such as production schedules, financial information, future work programmes, product or service changes and their own performance ratings. In the long term this will benefit neither party and will hinder any strategies for innovation and entering new markets which the purchasing organisation may have.

"Management of the quality of bought out items calls for such sharings of information." (Saunders 1994 p152)

viii) Reliance on goods inward inspection and defect ratification

As stated in section iv), an emphasis on short term contracts is likely to be accompanied by a focus on conformance to specification and of goods inward inspection. The policy of detection rather than prevention is associated more with Quality Control than T.Q.M and indicates the degree of mistrust apportioned to the supplier. If goods are rejected there may be delays in obtaining replacements, the need for revised operating plans and the potential failure of providing adequate service to customers. Tactics by the purchaser to overcome these problems such as maintaining safety stocks only serve to add further to the cost of supply.

It can therefore be seen that there are very distinct characteristics associated with the traditional supplier relationships, none of which lead to the creation of a very amicable or successful relationship in the long term.

In addition to those characteristics listed above, in traditional relationships the purchasing organisation will often not have clearly defined responsibilities and accountability for the performance of their suppliers. In a study of 113 manufacturing companies, 79 claimed that personnel from Quality Assurance, Purchasing and Production were all involved in planning and organising incoming material control. (Duncalf and Dale 1990 p152) As a result various supplier quality problems had arisen. In one company, the Production Director was responsible for the initial quality assessment of a potential supplier. Once the supplier was approved, any employee could contact the supplier, leading to a situation whereby:

"An unsatisfactory supplier may not be brought to the notice of the Production Director who is the sole arbiter of which suppliers are placed on the company's approved list." (Duncalf and Dale 1990 p153)

Without defined interfaces and responsibilities between departments there is the possibility of breakdowns in communication, gaps in information and necessary tasks overlooked.

The characteristics listed above can be contrasted with those associated with the partnership approach and supplier development. More often than not such principles are implemented as part of a T.Q.M. initiative.

6.4 The Partnership Approach

Despite the widespread existence of traditional relationships which have been prevalent in the U.K. since the 1960s, there is now a realisation that to obtain the best from one's supplier a different approach may be required. Such an approach, based on T.Q.M. principles is known as the partnership approach and associated techniques include single sourcing, co-makership, preferred supplier status, supplier assessment and training. All of these techniques are representative of what is commonly referred to as "getting in bed with your suppliers".

The key characteristics of this approach as defined by Saunders (1994 p218) are listed below and will be used in Chapter 9 to analyse the activities carried out with suppliers in the case study organisation.

- a) A high frequency of both formal and informal communications.
- b) Cooperative attitudes.
- c) A trusting relationship.
- d) Problem solving "win-win" negotiating styles with an emphasis on managing total costs.
- e) Long term business agreements.
- f) Open sharing of information by multi-functional teams.
- g) Vendor certification and defect prevention approaches.

These characteristics are likely to require the purchaser and the supplier to adopt a radically different set of skills and techniques than they have been accustomed to. They are based on the principle that the purchasing organisation and supplier should work together in partnership for the benefits of both parties, rather than in direct opposition in an adversarial manner. A common set of objectives and a commitment from both parties to learn more about each other's business is necessary in order to cement such a relationship. The pooling of technical expertise can then lead to joint ventures in product design and development. Emphasis is also placed on the longevity of the relationship, whereby short term financial gain is seen as secondary to the aim of building more profitable relationships in the long term.

In order to determine how these principles can be implemented in organisations, we shall consider the following areas i) co-makership or

partnership sourcing, ii) single sourcing, preferred supplier status and a reduction in the supplier base, iii) communication and involvement of suppliers.

i) Co-makership or partnership sourcing

The Phillips Group identify the purchaser/supplier relationship associated with supplier development as being one of "co-makership". (Lascelles and Dale 1990 p258) It has been adopted by companies such as Rank Xerox, TI Raleigh and Lucas. (Flood 1995 p253)

"Co-makership means establishing a long term business partnership with each supplier based on common aims and aspirations, a desire by both parties to continuously improve the product and clearly understood responsibilities." (Lascelles and Dale 1990 p258)

In a study undertaken by Masson in 1986 which compared two electronic manufacturers, it was found that the company which had developed a co-makership relationship achieved significantly better performance from their suppliers than the company which had implemented a more traditional, adversarial relationship. (Lascelles and Dale 1990 pp258-9) The benefits to the former company were found to be shorter delivery lead times, lower stock levels, reliable deliveries, quicker design change implementation, fewer defect problems, stable prices and a higher priority given to their orders.

Co-makership may also be referred to as "partnership sourcing". Hornby (1992) in his introduction to "Making Partnership Sourcing Happen", states

that customers and suppliers working together can drive down total cost and improve quality, with products delivered to markets far more effectively than the same personnel working as adversaries. (Hornby 1992 p1)

ii) Single sourcing, preferred supplier status and a reduction in the supplier base

Instead of multi-sourcing there is a move towards single (or dual) sourcing and a reduction in the supplier base. This is based on the principle that by working with fewer suppliers more attention can be given to those remaining and a feeling of trust, reliance and dependency on one another can be developed more easily.

The reduction in the supplier base can result in benefits such as less variation in the supplied product or service, the opportunity to give more business to suppliers retained, an increase in the amount of time allocated to each supplier, plus improved and simplified communications. (Dale and Oakland 1992 p139) They also believe that it can result in less paperwork, transportation, handling and inspection controls, thereby reducing cost to both parties. With single or dual sourcing, suppliers are more likely to be selected on their potential ability and on their total cost i.e. price, quality and delivery (cf Deming section 4.3) not just on price. Relentlessly chasing price reductions and changing the supplier base prevents long term relationships from being established.

Ilford (U.K.) Ltd for example found that by having too many suppliers i.e. multisourcing and changing them too frequently they had little influence or

knowledge over their suppliers process or controls. (Carson 1990 p53)

Companies within the textile industry have also sought advantage by keeping their suppliers to a minimum. Marks and Spencer have two main favoured suppliers for each of their clothing ranges i.e. Dewhirst Clothing Ltd and Daks Simpson supply 80% of the men's jacket range and four other companies supply the remaining 20%. Marks and Spencer encourage companies such as Dewhirst and Daks to adopt the same policy with their suppliers and in certain cases also dictate which suppliers should be used.

iii) Communication with and involvement of suppliers

An additional advantage in reducing the number of suppliers and gaining their commitment is that it is possible to utilise their expert knowledge in the design and development of the product supplied.

"Supplier development has the advantage of reaching many involved employees and companies through participation with the supplier base. It can, via negotiation tap into a vast reservoir of knowledge and expertise." (Flood 1995 p267)

The motor companies are renowned for single sourcing or operating preferred supplier status, building long term relationships with their suppliers, assessing suppliers and carrying out any necessary training required e.g. Ford : Q101/QS900 and Nissan : Pre-Production Quality Assurance. From the outset in Europe, Nissan has set out to establish relationships with suppliers based on common aims and aspirations, mutual

trust and co-operation, long term relationships and a desire to improve the product. (Jones 1990 pp44-51) In assessing suppliers, they consider the attitude of the supplier's management towards issues such as: quality, continuous improvement and the treatment of employees. The "hard" issues such as the supplier's cost structure, quality control procedures, material stocks and purchasing policies as well as the "softer" considerations such as industrial relations and work practices, trade union structure and strike records are examined. (Oliver and Wilkinson 1988 p65) Suppliers are obliged to take full responsibility for their products, investing time and money to ensure that their products meet Nissan's predefined requirements.

Oliver and Wilkinson identified the underlying theme of the supplier relationships adopted by Japanese companies practising T.Q.M. as being that of co-operation. By this, they mean relational or obligational contracting, whereby both parties have a sense of obligation to assist each other and protect the other's interests at least to a certain degree.

Characteristics which they see as being particular to supplier development and co-operative supplier relations include close supplier collaboration, quality assured supplies, sub contracting non core activities and just in time supplies. (Oliver and Wilkinson 1988 p130)

Taking this further, The Boston Consulting Group (1985) suggest that the activities associated with such supplier development, and carried out amidst a climate of co-operation and high dependency include:

- a) Experienced based cost reductions due to the long term nature of the relationship.
- b) Raw materials purchased by the final purchaser on behalf of the supplier.
- c) Integration of planning activities.
- d) Simplification and standardisation of parts design and sharing of new technology and production methods.

(Oliver and Wilkinson 1988 p26)

As was found to be the case with T.Q.M. principles the culture prevalent in U.K. industry is unidentical to that in Japan and so exact duplication of their practices is not necessarily practical. One of the fundamental differences found to be between the Japanese and most Western approaches was that:

"In Japan, suppliers fully accept the responsibility of continually looking for cost reduction and quality process improvements." (Jones 1990 p44)

The partnership approach will not necessarily be appropriate to every purchasing organisation and similarly the supplier organisation may be more suited themselves to an approach based on more traditional lines. Discussion of which type of trading relationship may be suitable and under what circumstances, will be considered in the following section.

6.5 Developing Appropriate Supplier Relationships

The majority of supplier literature categorises the two different types of relationship which can be formed into either the traditional or partnership approach. Subsequent research by other authors has categorised them under different titles, but on a similar basis. Sako (1992 pp9-10) refers to two different types of trading relationships which may be formed with suppliers as being ACR - arm's length contractual relation or OCR - obligational contractual relation. ACR is seen to involve a specific, discrete economic transaction and with all dealings conducted at arm's length to avoid undue familiarity. At the other end of the continuum, OCR also involves an economic contract, but the trading partners entertain a sense of mutual trust and high interdependency.

The table in Fig 4 details the different types of supplier programmes and activities implemented in various companies. The majority of activities undertaken by organisations within the motor industry, which lead the way forward in supplier relations, are mainly representative of those associated with the partnership approach and implemented by Japanese companies. (Lamming 1993 p152) The common principle which runs through all the relationships which the Japanese form with their suppliers is that the supplier understands the customer's requirements and what must be achieved in order to meet them.

Although it is widely believed that the Japanese treat all their suppliers as close partners, Kamath and Liker believe that they in fact only treat a

FIG 4 SUPPLIER DEVELOPMENT PROGRAMMES

COMPANY	EXAMPLES OF KEY ACTIVITIES	SOURCE
NISSAN U.K.	Selection, development and monitoring of suppliers. Pre-production Quality Assurance and JIT. 20% Nissan stake in supplying company if possible.	Jones 1990 p48 Oliver and Wilkinson 1988 pp60-65
FORD U.K.	SPC training and presentations for suppliers at regional training centres inc. videos e.g. Ford cares about Quality. Quality System Standard Q101/QS9000 assessments. Reduced supply base. Self certification of suppliers to quality of product.	Shaw and Dale 1990 p221 Oliver and Wilkinson 1988 p111
LUCAS INDUSTRIES Ltd	Supplier rationalisation and development strategy inc. supplier assessment and rating, introduction of teamwork and supplier improvement groups and JIT supply.	White and Wyatt 1990 pp45-51
JAGUAR	Supplier conferences, multifunctional taskforces involving suppliers and single source strategy.	Flood 1995 p256
IBM	Long term and high trust relationships with suppliers. IBM policy not to take more than 15% of the suppliers total output.	Oliver and Wilkinson 1988 p75
BRITISH TELECOM	Long term performance related relationship, reduction in supplier base. JIT supply, EDI, Top Suppliers Forum - meetings with suppliers and presentations.	Pentecost 1990 pp25-28
RANK XEROX	No formal goods inward inspection. Reduction of key suppliers from 5,000 to 350.	Witcher and Butterworth 1994 p3
TOYOTA	Developed Supplier Associations (Kyoryoku kai). High dependability relationships. JIT supply	Oliver and Wilkinson 1988 p26
NATIONAL NUCLEAR CORPORATION	Establishment of technical purchasing specification. Supplier evaluation and selection including evaluation of quality capabilities. Contractor control inc. audits plus product, process and document surveillance.	Churchill 1990 pp319-324
DEWHIRST CLOTHING Ltd	Activities driven by Marks and Spencers. Dual sourcing. Supplier audits. Cost analysis. Supplier assessment criteria: delivery, cost, test results and manufac. conditions.	Montford 1997/98
SHORTS BROTHERS Plc	Reduction of supplier base. Build long term relationships with preferred suppliers. Quality improvement workshops, joint improvement teams, training courses for suppliers.	Oakland and Porter 1994 pp159-174

selected few of their first tier suppliers in this manner and assign a limited role to others.

"Only one dozen (of 100 - 200) first tier suppliers enjoy full blown partnerships with their customers." (Kamath and Liker 1994 p154)

The reason for this they believe, is that few suppliers are able to make the necessary investment for true partnership and in reality, the companies have no wish for them to do so.

"One more supplier on the list is more work, unless the supplier has value, why do it." (Kamath and Liker 1994 p164)

Whether the relationship is a full-blown partnership or conducted at arm's length, clear lines of communication and flow of information should ensure that the standards of performance required are achieved. This view is reiterated by Kanter (1994 p98) who defines 3 types of relationships i.e. mutual service consortia, joint ventures and value-chain partnerships. He argues that it is inappropriate to try and create a full blown partnership, if it is unnecessary in order to achieve the end result. Doing so could result in a one sided relationship where one party invests more than the other. If a company supplies commodity type components which are easily sourced at a low price, it may not be appropriate to establish such close links as with a company who supplies a critical part or service.

"Suppliers that make simple, routine products don't always need to be treated as partners." (Kamath and Liker 1994 p165)

Instead, smart companies reserve partnerships for suppliers that have outstanding technology, sophisticated management and global reach.

(Kamath and Liker 1994 p164) Not only are these companies more likely to achieve the required quality standard, their resources can be utilised to further develop the product supplied. To illustrate the appropriateness of different types of relations, Kamath and Liker suggested that supplier relationships could be categorised into four different types:

- i) Partner - Relationship between equals. The supplier has technology, size and global reach.
- ii) Mature - Customer has superior position, supplier takes major responsibility with close customer guidance.
- iii) Child - customer calls the shots and supplier responds to meet demands.
- iv) Contractual - supplier is used as an extension of the customer's manufacturing capability.

Within the motor industry, where the majority of research has been carried out on supplier relations, there is evidence to suggest that the concept of the partnership is now being developed to what is referred to as post Japanese model or lean supply model. The emphasis in the lean supply model is more on strategy, based on best practice for assembler supplier relations and developed for global operation. (Lamming 1993 p158) In the partnership model the roles of customer and supplier remain senior and junior i.e. supplier accreditation schemes are evidence of the senior partner helping a junior - not a collaboration of equals. The concept of lean supply goes beyond partnerships to a balanced value chain, joint analysis of

competencies and investments and avoidance of duplications, leading to a supply chain designed to compete with other supply chains. To date, most references to lean supply have been in relation to the motor industry, where supply chains involve tiers of suppliers rather than just a raw material supplier and a manufacturer, as is characteristic of supply chains within the textile industry.

Like any relationship, the relationship between buyer and supplier is dynamic and is likely to change over time. As the organisation's needs change, so will the importance they place on certain suppliers and so the relationship will evolve. It may also be appropriate to implement different styles depending upon the process being managed. An arm's length approach may be suitable for controlling basic purchasing practices such as order scheduling, whereas a more collaborative approach may be required when engaging in product design. The following variables are likely to affect the relationship and interaction between two companies.

- i) Elements and process of interaction
- ii) Participants involved in the interaction.
- iii) Environment in which interaction takes place.
- iv) Atmosphere effecting and affected by the interaction.

(IMP model Lamming 1993 p141)

An organisation seeking ways to develop products more quickly and efficiently is likely to prefer a more collaborative approach. This could vary

from specific product joint ventures to long term strategic collaboration on new product technologies which in some cases might significantly affect the organisation of the partner firms. (Lamming 1993 p63) British Telecom for example admit to having gone full circle in the relationships with their suppliers. In the 1960s they practised closed relationships, then in the 1970s and 80s competitive relationships, until the 90s when they now implement what they refer to as strategic supplier relationships. (Pentecost 1990 p25)

As was seen to be the case with the application of T.Q.M. principles, an organisation needs to determine which types of supplier relationships are most appropriate to their supplier base. With respect to such approaches as traditional/partnership or ACR/OCR, an organisation is likely to favour one approach, but in reality display characteristics associated with them both. Relationships with suppliers are dynamic and are likely to move along the continuum of ACR/OCR depending upon the factors influencing the relationship at that time. Analysis of the case study organisation will help illustrate the mix of characteristics associated with the traditional or partnership approach which have been implemented in relationships with their suppliers.

CHAPTER SEVEN

SUPPLIER DEVELOPMENT AT J.BARBOUR AND SONS LTD

7.1 Introduction

There are three groups of suppliers who provide either raw materials or finished goods to Barbour: raw material, CMTs and factored product suppliers.

a) Raw material Suppliers

The raw material suppliers, of which there is a core group of 15 plus various others, supply the raw materials necessary for the manufacturing and packaging of the product. Raw materials are issued not only to Barbour sites for use in production but also to subcontractor ("CMT") sites. Roll stock of cloth or waxed cotton for example may be precut by Barbour and then issued to CMTs, hence their name "(Cut), Make and Trim Suppliers".

b) CMTs

At present there are four CMTs manufacturing jackets for Barbour. Three of these companies have been supplying to Barbour for over ten years and are totally dependent on the work which Barbour give them. One of the three is a local worker co-operative, and Barbour are committed to providing continued work and employment for the staff, irrespective of whether their manufacturing output is necessary all year round.

The fourth CMT supplier is a larger company, whose work is typically 30%

Barbour and 70% Marks and Spencer.

c) Factored Goods Suppliers

The factored goods suppliers supply all the finished goods which Barbour do not manufacture in-house. This is the largest group of suppliers to Barbour.

Using these three groups of suppliers as the main focus of analysis (Appendix 7), this chapter will consider the activities undertaken in order to control the quality of goods supplied.

7.2 Q.A. Procedures Relating to Suppliers

i) Selection, Approval and Control of Suppliers

In order for either a supplier or subcontractor to be approved and placed on the Approved Suppliers List, the following questions are asked:

- a) Is the supplier interested in conducting business with J.Barbour and Sons Ltd?
- b) Is the supplier working to any type of Q.A system?
- c) Can the supplier supply products to meet the required quality levels, delivery periods and price?

If answers are favourable, then (dependent upon the location of the supplier's premises and type of material or product supplied), a visit to the supplier may be arranged. At a site visit the documentation used, traceability

of the product, general level of training, housekeeping, security and machinery would be reviewed. This level of assessment is similar to that undertaken by Dewhirst Clothing Ltd who consider delivery standards, cost, laboratory test results and manufacturing conditions.

In order for a CMT subcontractor to be approved a site visit is always carried out and a formal report is written (QARF 0573) as detailed in Appendix 9. Once approved, site visits to CMTs continue at intervals of two months. For raw material and finished goods suppliers site visits are only carried out when considered necessary, normally as a result of a problem identified with the product supplied.

ii) Specifications and Sealed Samples

Once a supplier is approved, before any orders can be placed, samples of the product or raw material to be supplied must be approved. If necessary, testing is carried out on the sample i.e. tensile strength, weight, durability, waterproofing qualities etc, either in-house or by an outside organisation such as the British Textile Testing Group (BTTG). Suppliers of raw materials are becoming more accustomed to having to provide test results, or at least define the nature of the test they carry in-house. These can then be incorporated into the specification.

"We have no problem with providing test results relating to material supplied and are quite happy if Barbour wish to carry out independent testing to verify these results. We have been doing it for Marks and

Spencers for years." (Yarn supplier June 1998)

If the product is a raw material then a trial sample order is placed for make up into sample garments. Details such as machinability, handling and overall quality of the sample material are all considered.

When the raw material or product sample is approved, a written specification is agreed and signed by both parties. A copy of the specification and an approved sample is then maintained at the supplier's premises and at J.Barbour and Sons Ltd. Any amendments to the specification have to be reapproved accordingly.

iii) Receipt, Inspection and Control of goods received

With regard to the receipt, inspection and control of goods received from suppliers, different controls are in place for the various types of suppliers.

a) Raw Materials

All raw material is checked for signs of damage or deterioration on receipt.

The following controls are also applied:

- i) A 10% measurement check of roll widths is carried out on all roll stock and the measurements taken must conform to minimum roll widths in the Raw Materials Specifications.
- ii) Test results of copper content for thornproof (waxed cotton) material are verified to ensure that the copper levels do not exceed a stated amount.

iii) For all raw materials, tests may be carried out at any time, using the sealed samples and specifications to assist the analysis if necessary. Testing of raw materials as and when required is characteristic of the of the textile industry. Claremont Garments carry out random tests i.e risk assessment on popper studs for the U.S. market.

If raw material is returned to the supplier a reason is given and subsequent deliveries are monitored accordingly.

Similar controls are implemented by other textile companies such as Dewhirst Clothing. Prior to accepting a delivery of roll stock they carry out tests in-house relating to the width, length and number of faults found on the material. If more than one fault per 10 metres is identified, then the roll of material is rejected and returned to the supplier.

b) Finished goods

Finished Goods include factored products or goods manufactured by one of the CMT suppliers. On receipt quantities are checked and the goods are assessed visually for any damage or deterioration. The goods are then sample inspected by Quality Control inspectors. The Q.C. system is set up in accordance with BS 6001 : 1993/ISO 2859 (1985) Sampling Procedures for inspection by attributes, Part 2 Specification for Sampling Plans (LQ) for isolated lot inspection. It is a single sampling plan with a limiting quality level of 32%. Goods are inspected for quality of workmanship and for compliance with certain measurements. The computer system automatically defines the

number of products to be inspected dependent on the quantity received. If 281 to 500 garments were received then 20 would be inspected and the acceptable quality level (AQL) i.e. the amount of defective products allowed would be 3. If the sample fails then the Chief Buyer can decide either to return the consignment to the supplier or undertake a 100% inspection.

All finished goods received are therefore subject to the same level of inspection. At Dewhirst Clothing Ltd the level is dependent upon the age, value and complexity of the product, the lifecycle and the volume involved. Men's suits are likely to be inspected on receipt due to the complexity of the product whereas shirts are not. Dewhirst also carry out audits on finished products at the supplier's site. In contrast, Barbour rarely visit the factored product suppliers to see their product being manufactured.

If finished goods are rejected by Barbour they are returned to the supplier with a Reject Stock Note (QARF 0554) detailing the reason for the return.

"The information on the reject stock note usually tells us all we need to know. We inspect all of the consignment returned and are normally able to rework any faulted goods, unless it is a material fault or dimension failure." (Polo shirt supplier February 1998)

Through the computer system the buyer can access details on the rejected goods and discuss the corrective action required with the supplier. Data can be displayed indicating the number of faults for each defective garment, the type of fault, its location on the garment (e.g. stitch fault on armhole), by whom the garment was inspected and when. It can then be used to monitor

performance and highlight problem areas.

7.3 Supplier Policies and Objectives

Barbour do not have a formal document or statement defining their policy on supplier selection, or on the number or type of suppliers which they wish to employ. As they are a limited company, there are no shareholders to report to and so Directors do not have to issue formal documents stating their plans and objectives for the forthcoming years. Although there is a notable absence of supplier policies, various norms have developed over a period of time which are reflected in the day to day treatment of suppliers.

i) Supplier Selection

Formal Q.A. procedures have been identified with regard to the process of selection, approval and control of suppliers. However, it is worth considering the principles on which these activities are based.

In order for the supplier to be placed on the Approved Suppliers list, the supplier has to meet the requirements of price, quality and delivery. In keeping with Deming philosophy, Barbour do not select suppliers solely on the basis of price (Deming 1982 p23). Various other criteria are considered including whether or not the supplier works to a Q.A. system. Of the 35 main suppliers, 9 work to a Q.A. system which is approved by an outside body, and the remaining 26 do not. It is quite common for companies within the textile industry not to have an approved Q.A. system and Barbour do not

demand it as a prerequisite for selection. What is more important is that the supplier can demonstrate the existence of adequate controls, giving rise to confidence in the quality of product supplied.

Assessment of whether the supplier can meet the required quality levels is initially based on the approval of the sealed sample. If a site visit is undertaken this can then confirm as to whether the supplier has the manufacturing capabilities to reproduce the sample on a mass production basis. The attitude of the supplier's management, in-process controls and potential for future development would all be considered at a site visit. Such data is not maintained on the Q.A. system where the majority of important company information is held. Consequently a history of the "softer" issues particular to the supplier is not built up. The only information maintained and which is sought as a minimum from all suppliers is that "yes" the supplier meets the requirements of price, quality and delivery.

ii) Analysis of Supplier Performance

The performance of suppliers is analysed in a variety of ways depending upon the type of goods supplied. Primarily, the analysis is based on quantitative data and the identification of faulted goods. The following three activities represent ways of assessing the supplier's performance a) Raw Materials Analysis b) Vendor Analysis c) Raw Materials meeting.

a) Raw material Analysis

The Raw Material Analysis details the debit notes issued to each supplier as

a percentage of their turnover for a certain period. At the bi-monthly Q.A. meeting suppliers with a high rate of returns are identified and the reasons why discussed. The corrective actions implemented are recorded and subsequent performance is monitored.

b) Vendor Analysis

The vendor analysis is compiled for the bi-monthly Q.A. meeting based on information from the Quality Control system. It details for factored goods and CMT suppliers:

- i) Quantity of goods supplied, inspected and found to be faulty.
- ii) The total number of defects found on the faulted goods.
- iii) The number of consignments received and the number returned,

The suppliers are ranked and companies with high reject rates are highlighted and the reasons why determined.

Companies which are likely to be singled out are factored goods suppliers with a reject rate of over 6% and CMT's with a rate of over 3%. These rates have developed over time as bench marks representing an acceptable level of performance within the supplier group.

Information on performance is fed back to the CMTs, but not to any other suppliers. When questioned, all of the CMTs confirmed that the feedback was useful.

"We could then see if a problem had occurred when one of our girls was on holiday." (CMT supplier August 1997)

c) Raw Materials Meeting.

The Raw Materials Meeting is held every three months and is attended by the machine line supervisors (approximately 10), the Assistant Factory Manageress from the Hebburn site and the Supplier Auditor from the Quality Assurance Department. Initially the meeting was set up as a pilot study in 1995, with the intention of extending it to all other Barbour sites if successful. As yet it still remains at the Hebburn site and an analysis is presently being undertaken to consider its success and possible implementation to other sites.

The purpose of the meeting is to discuss with those directly involved in the manufacture of garments, any problems which they have experienced with raw materials over the preceding months. The supervisors view it as:

"A platform from which they could air their views and keep them in touch with what is happening." (Machine Line Supervisor, Hebburn Site November 1997)

Each raw material is considered in turn (i.e. thornproof, check lining, thread, corduroy, bags, zips) and the feedback is used by the Purchasing and Quality Assurance departments to help improve the performance of the raw materials suppliers. From November 1995 to March 1997 7 problems with materials which were identified were resolved, 8 problems were still ongoing and 4 had disappeared of their own accord.

iii) **A Reduced Supplier Base/ Single Sourcing Policy**

The introduction of the Quality Control system, has for the first time enabled the supplier's performance to be analysed statistically. Summaries of the number of faulted goods received, the value of debit notes raised and the quantity of customer returns all provide hard quantitative data which can be used to make informed decisions. Suppliers which are considered to be performing poorly on a regular basis are eventually replaced.

The general trend as a result of the Quality Control information available has been towards fewer suppliers. In 1995 Barbour had 17 core raw material suppliers and in 1997 this had reduced to 13. Of the 13 suppliers remaining, 9 of them were from the original group. A similar situation has occurred with factored goods suppliers, which reduced in number from 28 in 1995, to 23 in 1996 and 17 in 1997.

As poorer performing suppliers are removed from the Approved Suppliers List the policy has been to retain only one supplier for each product. This is the case with suppliers of zips, bags, shirts, trousers, leather and corduroy. In certain cases, due to the volume of material required it has been necessary to dual source and retain two suppliers i.e. checked lining material. With a reduction in the supplier base, more control exists of those which remain.

In addition, Barbour have reduced their overall supplier base by taking in-house certain products which were previously manufactured externally. The trend in the U.K. in the 1990s has been towards technological

specialisation, with companies tending to use more outside suppliers in order to buy in the relevant expertise. Barbour have done the exact opposite by setting up a factory specifically to manufacture knitwear. By undertaking vertical integration the aim was to have more control of the product with respect to quality, product design, delivery dates, prioritising of orders and the use of raw materials in the manufacture of the product. As the factory is a new factory set up in 1997, there is as yet little evidence to indicate as to whether or not this will be achieved on a long term basis.

iv) A Partnership or Co-makership Approach.

Various activities at Barbour can be used to illustrate to what extent Barbour have tried to develop a partnership approach or co-makership approach with their suppliers.

a) Supplier visits are undertaken at Barbour and vice versa. At Barbour, the supplier is given a factory tour and shown the Quality Control department where incoming goods are inspected. Barbour are selective about which suppliers they visit; all CMTs, but may be one in five of the factored goods or raw material suppliers in a year.

b) Joint involvement in quality problems with the aim of working together to find suitable solutions. One example of this, is the work undertaken by the Quality Assurance department and a raw material supplier. Over a period of two years they joined forces on a technical project to determine adequate

washing instructions for jackets manufactured using the supplier's raw material. The research undertaken also involved the employment of an outside textile testing organisation - The British Textile Testing Group, the costs for which were funded jointly by Barbour and the supplier.

c) Integration of planning activities. The Purchasing and the Quality departments, determine with new suppliers the dates for approval of sealed samples and specifications, the initial production run and any requirement for "first off" inspections. A new moleskin shirt supplier was introduced into the supplier base in August 1996 and dates were set which were suitable to both parties, so that Barbour could meet their sales orders and the supplier could meet delivery dates and quality standards.

d) The purchase of raw materials by Barbour on behalf of the supplier. For all CMT suppliers, Barbour not only supply the raw materials to be used, but in some cases they prepare i.e. cut the cloth and waxed cotton for the CMT supplier prior to use. This activity was identified by the Boston Consulting Group 1995 as being illustrative of the partnership approach (Oliver and Wilkinson 1988 p26).

e) A Product Development meeting is held bi-monthly with Sales, Export, Quality and Purchasing management. Certain suppliers are given the opportunity to attend and offer advice on the design of new products, or modifications to existing specifications. This activity benefits both parties,

as the supplier is able to advise of the most suitable methods of production and of any new materials which can be used.

f) There is an emphasis on the long term nature of the relationship between Barbour and their supplier. This is particularly true of the raw material suppliers where the product supplied is not readily available i.e. checked lining material or waxed cotton.

g) With the CMT suppliers Barbour have tried to positively develop the "softer" side of the relationship with the supplier. There is less evidence to support this with the raw material and factored goods suppliers, but one example can be found as an illustration.

In August 1996, a footwear manufacturer had a large quantity of goods returned to them for rework. The supplier discussed the problem openly with management from Barbour. To help prevent the supplier from making the same mistake again, a representative from Barbour visited the supplier's premises prior to despatch. Relationships with the supplier were then reformed on a more positive basis and the quality standard required was reinforced. Barbour showed that they were willing to discuss a solution to the problem, offer their manpower to help achieve this and create a win-win situation between the two parties.

h) Financial investment in supplier companies. Barbour has a very close working relationship with its subcontractor "CMT" suppliers. They have

given assistance, by making purchases in areas which they knew realistically the CMTs would not afford to do themselves.

"Without the support of Barbour, we would not have such a tight security system on our premises and we would have not got the special lighting for our inspection tables." (CMT supplier August 1997)

This investment is in addition to the support and training Barbour give to the CMT suppliers.

Dewhirst Clothing Ltd, although not investing in their supplier companies directly, do carry out certain practices which are of financial benefit to them. They hold large quantities of commodity type stock for them, so that the supplier does not have to allocate storage space. Dewhirst then draw off and pay for stocks when required. A typical example of this would be stocks of say 130,000 buttons.

In conclusion, Barbour have not issued a formal policy on the nature of the relationships which should be developed with their suppliers. The activities discussed do indicate that the trend is towards developing closer relationships and working together towards a common aim. This will be illustrated more clearly, by reviewing the relationships which have been developed particular to each supplier group: "CMT", factored or raw material.

7.4 Supplier Development Activities

Fig 5 summarises for each supplier group the activities undertaken and attempts to provide an indication of their success. The information given is based mainly on quantitative measures i.e. the percentage of goods rejected. Reference to the more qualitative measures, such as the supplier's ability to co-operate and level of communication are discussed in the text.

i) CMTs

From the data displayed in Fig 5, it is evident that over the period 1995-7 the CMT group has shown the most improvement in the number of faulted goods received. Their reject rate as a group reduced from 10.2% in 1995 to 2.7% in 1997.

With the introduction of the Quality Control system at Barbour, jackets supplied by subcontractors were for the first time inspected on receipt. Reject rates and other statistical information could be used as a base, from which further improvements could be made. The figures were tabulated or graphed and discussed with suppliers, enabling targets to be set and performance standards measured. (Appendices 10 and 11)

"The setting of targets was a bit scary at first, but made us work harder when the average figure for the CMT group was compared with ours." (CMT supplier August 1997)

Progress was also made through site visits, advising on technical matters, calibration of equipment, training of staff and financial investment in the CMT itself. Inspection controls similar to those implemented in Barbour

FIG 5 SUMMARY OF SUPPLIER DEVELOPMENT ACTIVITIES PER SUPPLIER GROUP

TYPE	PRODUCT	POLICIES/ACTIVITIES IMPLEMENTED	RESULT
RAW MATERIAL	Wax Cotton, Zips, Checklining, Studs, Eyelets, Labels, Threads, Moleskin, Bags, Tins Of Wax, Leather, Care Leaflets	<p>Minimum inspection controls on receipt. Reduction in the supplier base and single sourcing policy. Poorer suppliers removed and replaced by better performing suppliers.</p> <p>Long term nature of the relationship for core group of raw material suppliers due to the specialist nature of the product supplied i.e. wax cotton. Relationships good and relatively informal. Both parties aware of the other's requirements. Few supplier visits but adequate levels of communication.</p>	<p>In 1995 there were 17 suppliers, by 1997 this had reduced to 13, with 9 of the original suppliers retained plus 4 new ones.</p> <p>Reduction in supplier base of 24% from 1995-7. For the raw material suppliers overall, in 1995 the debit note % was 1.45% compared to 0.95% in 1997. The change in the supplier base contributed to the reduction in debit notes issued.</p>
FACTORED GOODS	Bags, Belts, Hats, Shoes, Waistcoats, Quilted jackets, Waistcoats, Scarves, Sweatshirts, Gloves, Handkerchiefs, Socks	<p>Q.C. sampling plan/inspection controls on receipt. Results of Q.C. inspections and conformance to specification main basis of communication between Barbour and the supplier. Removal of poorer performing suppliers on the Approved List. Minimum help given re production and quality problems. Few supplier visits. Emphasis now on the long term nature of the relationship and single sourcing now evident. Plans to work more closely with existing suppliers in the future.</p>	<p>The overall percentage of faulted goods received has remained around the 4% mark and the faults per faulted garment around 1 for 1995-7.</p> <p>In 1995, the number of suppliers was 28. By 1996 this had reduced to 23 and by 1997 further reduced to 17.</p>
CMT	Various waxed cotton jackets	<p>Q.C. sampling plan/inspection controls on receipt. Very close relationship developed between Barbour and CMT. Financial investment, training, regular site visits, Q.C. targets set and progress discussed, open channels of communication, advice given on process controls. Long term nature of the relationship stressed with no reduction in the number of suppliers to date.</p>	<p>In 1995 the percentage of faulted goods received was 10.2%. By 1997 this had reduced to 2.7%.</p> <p>In 1995 faults per faulted garment was 1.2 and by 1997 this had reduced to 1.1</p> <p>CMT suppliers responded to and worked positively with Barbour to achieve the figures above.</p>

factories were introduced to the CMT sites. They then worked to reduce the number of faulted garments identified at various inspection points, with the aim of improving the standard of garments manufactured. By initiating preventative measures within the CMT sites, the companies learnt to reduce their own reject rates in-house, rather than allowing on the Barbour Quality Control system to identify rejected goods on receipt. The amount of effort applied to the CMT group has resulted in and been proportional to the benefits accrued.

ii) Raw Material Suppliers

Responsibility is placed on the raw material supplier to ensure their own product quality and if faulty goods are supplied, Barbour have to rely on their identification by operatives during the manufacturing process. Most of the raw material suppliers have been supplying to Barbour for many years and the majority of them are either the market leader or one of a select number of companies supplying the product. A core group of suppliers providing critical materials have developed, with a sound understanding of Barbour's requirements.

"We have been supplying to Barbour for years and know exactly what they will or won't accept." (Waxed Cotton supplier May 1998)

Relationships with these suppliers are relatively stable and joint problem solving initiatives i.e developing wash instructions with the supplier for jackets manufactured using their material have been undertaken with relative success. Such experiences should be capitalised on, by extending the

channels of communication and working at improving the quality of raw material supplied.

There is also a minority of raw material suppliers who provide commodity type products for the trimmings of the jacket i.e. studs, eyelets and buttons. These relationships have a lower level of dependency, there are more suppliers in the market and products have comparatively low value per unit. Such suppliers are unlikely to have been audited and communication will normally be confined to the placing of orders against approved specifications.

iii) Factored Goods Suppliers

The overall performance of factored goods suppliers has remained relatively stable over the past three years with an average reject rate of 4%. Within this group, the performance of the suppliers is varied as products differ in their complexity. Certain suppliers have regularly had reject rates of over 15% (i.e. manufacturers of moleskin trousers), whereas others consistently achieve a 0% reject rate.

Barbour have little or no expertise in the manufacture of products supplied by the factored goods suppliers. Unlike the CMTs, the factored goods suppliers manufacture for more than one company and are accountable to the controls of companies other than Barbour. Consequently Barbour have not become so involved in the in-process controls and activities which are undertaken by these suppliers. When a problem arises, the supplier is

informed and reasons why this has occurred are discussed. Details of the corrective action taken are then forwarded to Barbour and monitored accordingly.

The Product Development meeting recently introduced at Barbour has been attended by factored goods suppliers, allowing them the opportunity to provide product knowledge and design information at an early stage in the decision making process. The number of suppliers in this group has decreased as poorer performing suppliers have been removed. This should enable Barbour to stress the long term nature of the relationship with those remaining and to work towards improvements rather than "conformance to a specification" and acceptance of goods on receipt.

7.5 Conclusion

It can be concluded that Barbour have implemented various Q.A. procedures which offer a high degree of control of the quality of goods supplied. In addition to the procedures which ensure a satisfactory control of the product supplied, activities have also been implemented which are more open and indicate a certain degree of trust between Barbour and the supplier. These activities have not been implemented in the same manner and to the same extent within all three supplier groups. The relationships formed with CMTs are more similar to those associated with the partnership or non-adversarial approach i.e. high frequency of communication, trusting relationship, problem solving win-win negotiating styles, long term business agreements

and co-operative attitudes.

The CMTs would perhaps represent an ideal example of "getting in bed with your suppliers", and the results discussed indicate that the work undertaken with the CMTs has proven to be highly successful.

Whether or not such relationships are applicable to suppliers in the factored product and raw material group will be discussed in light of the findings of the research.

CHAPTER EIGHT

QUALITY MANAGEMENT AT J.BARBOUR AND SONS LTD ANALYSIS AND RECOMMENDATIONS

8.1 Introduction

The review of the quality system at Barbour, carried out in Chapter 5 gave examples of various activities which to a greater or lesser degree were in keeping with the principles of T.Q.M. Such activities included understanding of internal/external customer/supplier relationships, quality planning and organisation, employee training and development. A more detailed investigation suggested that various policies or activities which had been adopted, conflicted with, or differed from principles typically associated with T.Q.M. Quality systems implemented in companies should be specific to their own needs and it is inappropriate to adopt the ideas of only one guru, or the systems of another company. It is not surprising then, that Barbour and other companies as demonstrated in the literature research, have not attempted to adopt all the associated ideas of T.Q.M. Instead they have adopted those principles which they feel fit in with the general culture and style of the organisation.

8.2 Analysis of Findings

In order to determine in which areas there may be differences the principles as stated by Flood (1995 p48) and listed below will be used as the framework for analysis. Flood refers to them as being "drawn out from the

philosophy in place" (Flood 1995 p48) in that they combine the thinking of the gurus and more up-to-date T.Q.M. research. They are also in keeping with key features identified by others as being essential to the implementation of T.Q.M. eg Hackman and Wageman 1995 p320.

i) Agreed requirements set for both internal and external customers.

The importance of setting and meeting customer requirements is vital, both between two separate organisations and within the same organisation.

"If every person is satisfying their own impending customer needs then there is a much greater chance that the final product and or service will meet customers' expectations." (Dale and Oakland 1992 p11)

Evidence to support that Barbour have an adequate understanding of their customer requirements include:

- Defining key tasks and responsibilities of internal customers and suppliers.
- Agreed specifications and supplier understanding of the required quality level.
- A Customer Services facility for carrying out repairs, reproofing and requests with customers notified throughout of work carried out.
- Product development meetings designed to action feedback from customers re product design and usage.

There is little evidence to suggest that they are continually assessing customer requirements and measuring their performance against them. With the introduction of high performance fabrics, the outdoor clothing market has become increasingly competitive over the past five years. In order to remain competitive, it is important that Barbour assess the needs of their customers and develop products which can compete with companies such as Berghaus, who have already claimed a large share of the market.

ii) Quality improvements can only result from planned management action and should aim to reduce waste and quality costs.

We shall look at the two areas, "planned management action" and "quality costs". Barbour do undertake some planned management action which aims to bring about quality improvements i.e. audits of procedures and meetings (quality, raw material, product development and annual review) all of which are programmed at regular intervals. However, there is a notable absence of formal programmes, policy setting or objectives. Kodak Ltd who implemented a programme of T.Q.M. in 1994 developed a mission statement of aiming to be world leaders in the quality of its product and services. In order to achieve this objective they purposefully undertook the following activities:

"Trained employees in statistical techniques, held annual world wide quality conferences, involved top management in quality programmes, disseminated reports of quality improvement exercises throughout the company and required managers to formulate improvement projects."

(Grant et al 1994 p25)

The Quality policy (Appendix 5) and mission statement (Section 5.4) at Barbour are not supported by any defined actions in order to support their objectives. The lack of planned management action at Barbour has also been demonstrated when considering the absence of formal policies related to Supplier Development.

The planned activities which are actually initiated by management, could also be improved. Deming estimates that Senior Management are responsible for 94% of quality problems (1982). Audits of procedures for example have only a minimal effect in determining any process improvements. Process audits following a product through its life-cycle from start to finish would give a more useful understanding of where quality improvements could be made.

With respect to the latter part of this principle, that any planning should "aim to reduce waste and costs", there is little evidence at Barbour to support this statement. Activities implemented at the company as a result of planned management action, will, by their very nature be aimed at reducing waste and total costs and increasing organisational effectiveness. However, no analysis is carried out in order to determine whether such activities actually do so.

Quality costs are normally divided up into prevention, appraisal and failure

costs. At Barbour there is appropriate data relating to all of the above i.e.

- a) Prevention Costs - the number of inspectors employed at each machine line and site.
- b) Appraisal Costs - the number of audits carried out, by whom, where and with what results.
- c) Failure Costs - The percentage of rejected goods either manufactured in-house or by suppliers i.e. factored, CMT or raw material.

The data is not used in such a manner that a monetary value is apportioned.

The only quality data which is given a monetary value includes the value of debit notes issued to raw material suppliers, wages to quality personnel and credits issued as a result of customer returns. This is unusual for a company who, in other areas such as information technology are relatively advanced. Dewhirst Clothing Ltd are in contrast very cost orientated and carry out a weekly analysis dividing costs into preventive, appraisal and failure. These are then allocated to machinery, workmanship or material etc. Dewhirst then feed the information back to suppliers if costs have been incurred as a result of sub standard raw materials supplied.

The question then arises, as to why Barbour do not pay adequate attention to the calculation and control of quality costs. Possible explanations could include:

- a) There is little, or no, understanding of the concept or application of Quality Costing within the company.
- b) The cost of quality is not a major consideration in the decision to

undertake prevention or appraisal activities. The company are committed to undertaking the necessary action in order to achieve the required quality, irrespective of the costs incurred as a result.

- c) Other indicators are used instead to provide a quantifiable means of measuring activities undertaken i.e. performance ratings of machinists, number of non-conformances raised during auditing, percentage of rejected goods received.

Barbour have not based their ethos on short term financial gain, they have implemented prevention and appraisal controls to reduce failure costs. It is the number of faulted garments and potentially dissatisfied customers that is the company's primary concern. The use of non-financial measures such as these, as a means of process control and performance improvement is recommended by Oakland and Porter.

"Traditional performance measures based on cost accounting information provides little to support T.Q.M. because they do not map process performance and improvements seen by the customer."
(Oakland and Porter 1994 pxiii)

One can conclude that Barbour do not implement planned activities with the intention of reducing costs and waste. The primary aim is that the customers receive a product which meets their requirements, it is a secondary consideration that, in doing so, failure costs are reduced. Such an attitude represents the adoption of a long term perspective without the

expectations of an early pay back.

iii) Customer requirements should be met right first time every time.

The "right first time" approach was originally adopted by Crosby (1979), and is normally used in conjunction with the performance standard of zero defects. Although in theory, Barbour would advocate "right first time" and "zero defects", in practice they undertake activities which are based on an acceptance of the fact that defects will occur. To control the quality of goods manufactured in-house, Barbour implement 100% inspections to identify faulted garments. This is clearly an indication that they do not expect all garments to be produced "right first time", otherwise they would not feel it necessary to inspect every jacket..

With respect to goods received from outside suppliers the sampling plan determines the level of inspection required. It is based on the principle that there is an AQL (acceptable quality level). This conflicts with the zero defects theory, for consignments are accepted into stock within which faulted garments have been identified, provided that the total number identified is lower than the AQL.

With respect to meeting external customer requirements, Barbour as a manufacturer are accountable to two types of customers, the retailer and the enduser. Customer requirements are not based solely on the quality of the product supplied at a certain price. The retailers require orders which are

of excellent quality, are reliably delivered on time, with no billing errors and which provide value for money. The end user requires products which not only meet the specification, but which as an overall package go some way to helping to achieve customer delight. No analysis is undertaken to assess the level of satisfaction experienced by either the end user or the retailer.

- iv) **Focus should be on the prevention of problems rather than on acceptance of them and trying to cope in a fire-fighting manner.**

T.Q.M. is concerned chiefly with changing behaviour, attitudes and skills. The aim is that the culture of the organisation becomes one of preventing failure and the norm is of operating correctly first time. (Dale and Oakland 1992 p12)

It can be seen that on the surface Barbour do have controls in place which are designed to ensure control of product quality and service. There is complete traceability of the product from receipt of raw materials, to final packaging and despatch. Inspection controls are in place to prevent (as far as possible) the occurrence of problems. Should problems arise, then controls are in place to initiate corrective action and prevent re-occurrence. Taking a closer look at certain areas i.e. suppliers, there is evidence to suggest that although some preventative measures may exist, much of the communication with suppliers is initiated once problems have been identified. This represents a fire fighting approach as the system in place cannot always cater for, or prevent, problems occurring.

Increased communication with suppliers prior to a problem occurring and a greater understanding of their processes would help reduce the occurrence of supplier quality problems.

v) All employees should be involved from all levels across all functions.

The involvement of employees in the management of quality was identified by Mortiboys (1990 p39) as being the single most important factor in the distinction between quality assurance and Total Quality Management.

Employees at Barbour are "involved" in the system, but only at a superficial level. Through the hierarchical structure which exists at the company, responsibilities and authorities are very clearly defined via the Q.A. system. Individuals are given no opportunity to discuss, question or improve their role within the company or to act interdependently as teams, across traditional organisational functions. Real involvement of employees in the system and the improvement process could be encouraged by the introduction of teams or work groups. Process management heuristics i.e. brain storming, quality circles, flow charts, cause and effect diagram could then be used to enhance problem solving and decision making. The isolated use of such techniques on their own, will be of little benefit without the overall structure which actively supports and encourages employee involvement at all levels.

vi) A culture of continuous improvement should be established with an emphasis on promoting creativity.

Continuous improvement is widely accepted as being the cornerstone of T.Q.M. Barbour's activities aimed at identifying areas where improvements could be made, are limited to auditing procedures and issues discussed at the bi-monthly Q.A. meeting. Most of the activities then implemented are management led i.e. inspector moderation, auditing, product development. The initiative comes from management and in most cases the activity is undertaken by management. There are exceptions to the rule, such as the Raw Materials meeting, which is attended by those at supervisory level. Below this level there is little opportunity for employees to contribute to the improvement process and so ultimately a "culture" of continuous improvement has not been created throughout the company.

Process improvement could be tackled through teamwork since it allows:

- a) Exposure of problems to a wider school of expertise.
- b) Increased morale due to increased employee participation.
- c) Erosion of interdepartmental barriers. (Dale and Oakland 1992 p13)

The Ergonomics Group is probably the closest example of such a group at Barbour. Difficulties arose for this group as it challenged the hierarchical structure of the company, eventually resulting in its discontinuation. In the absence of the necessary culture to support such initiatives, it is unlikely that any group will be allowed to make any changes to working practices without the involvement of their immediate supervisor or manager.

With regard to suppliers, the concept of continuous improvement is identified as being a fundamental difference between the Japanese and

Western approach. In the West meeting the specification is seen to be sufficient, whereas in Japan suppliers fully accept the responsibility of continually looking for cost reduction and quality process improvements. (Jones 1990 p44) Barbour display a similar attitude to what is identified as being the Western approach, for conformance to specification as determined by the Quality Control inspectors is considered to be the principle factor in gauging supplier performance.

vii) Emphasis should be placed on measurement in order to help assess and meet requirements.

Statistical Process Control has been advocated by several of the quality gurus as a means through which the process can be measured and controlled. Statistical and scientific reasoning can be used to formulate and test hypotheses about work processes and strategies for performance improvement.

Barbour carry out a wide variety of statistical analyses and measurement of their processes, much of which is done by the computer software and is then accessed by users e.g. number of jackets passed at Quality Control, quantity of jumpers returned to Customer Services, number of jackets returned for reproofing. The data generated can be used to help support or implement any policies or aims e.g. target reject rate for CMT suppliers. The four most popular quantifiable measures of product service and quality are:

a) Customer feedback e.g. discussions with customers, customer

questionnaires and surveys, workshops and independent market surveys.

- b) Quality system registration and passing customer quality audits.
- c) Field failures, customer returns and complaints, product reliability performance.
- d) On time delivery of product.

(Dale and Oakland 1992 pp125-8)

With respect to points a) and c), Barbour do receive input via either the field salesmen or the customer services department regarding the customer's perception of the quality of the product. This represents an informal and primarily reactive measure and there is no proactive action taken in the form of surveys, questionnaires or customer workshops in order to determine where improvements can be made. Planned management action would be of benefit in this area in order to gather a more structured data base on the views of the customer with regard to the quality of product and service supplied.

With respect to point b), Barbour has a quality system which has been both approved by a registration body and has successfully passed second party audits from organisations such as the Ministry of Defence. The fourth point identified is on time delivery of the product. Barbour do not carry out any analysis of the percentage of orders delivered on time, or to the number of complaints received as a result of delayed deliveries or outstanding orders.

Barbour do then carry out a degree of statistical analysis from data maintained on the Q.A. system, but there is scope for improvement in measuring some of the key areas of the business such as customer satisfaction.

Our analysis has considered which of the key features of T.Q.M. are evident at J.Barbour and Sons Ltd and how they may have contributed to a change in the behavioural processes and the organisation's effectiveness. The question which it now raises, is why some practices have been overlooked and for what reasons.

8.3 Barriers to T.Q.M. implementation and Recommendations

As a result of not formally implementing a T.Q.M. system certain key principles are found to be absent i.e. employee involvement, participation and a teamwork approach to dealing with improvement activities. Section 4.5 suggested various barriers which made it difficult for an organisation to implement T.Q.M. and these can be considered with respect to Barbour.

- a) Traditional, hierarchical management structure.
- b) Authoritarian management style.
- c) Unsuitable timescale of implementation.
- d) Inadequate resources - training, manpower, time.
- e) Inability to form work groups and teams.
- f) Inadequate measure of process - quantitative or qualitative.

There is no evidence to indicate that either the timescale of implementation or financial pressures are likely to have acted as a constraint. Barbour did not need to assume a rushed or "blitz" approach and there were no pressures from parties, either internal or external to the company, for short term results.

The system was introduced with the help of the Project Steering Committee over a two year period, during which there were no significant problems. The company did not view the implementation of the system as a one-off programme with a defined beginning and end, nor was it drawn out in a protracted manner as various companies in the U.K. have been criticised for doing. (Brooke 1992 pp268-273) Instead, the system has continued to evolve since its initial introduction, with improvements made to reflect the changing needs of the organisation.

Similarly, there were no noticeable financial constraints. The relevant manpower was allocated to the project, with the appointment of a Quality Standards Manager, and his Deputy. A great investment was made in the computer software for the system, demonstrating the long term commitment of the company to quality.

With respect to the use of quantitative and qualitative measures, there is evidence to indicate that Barbour have a basic understanding of the use of quantitative measures, mainly as a result of the analysis allowed by the Q.A. system. There is less evidence to indicate any qualitative analysis and this

will be addressed further in Section 9.2 on supplier development, where the "softer" aspects of the relationships formed with suppliers are considered.

The formation of work groups and teams, is not readily apparent within the company, and they have been identified as being more suited to a flatter management structure, which Barbour do not have. Various management led groups across different functions may meet periodically, but there is no opportunity for employees to form their own work groups or teams.

Employee involvement in the improvement process is therefore minimal and only under a formal structure as defined by company management.

This leads to the primary barrier which can be identified as preventing the implementation of T.Q.M. at Barbour i.e. the organisational structure and the culture of the organisation. Barbour has a very hierarchical structure and decisions are made higher up the organisation and passed down. This is not in keeping with the flatter management structures associated with T.Q.M. This top down approach has worked for Barbour in that policies of "Best Practice" are decided by company management and those at a lower level are then given the authority and resources necessary to carry them out. Individuals are allowed very little autonomy or responsibility for their own actions.

As a result, the culture which has developed is not one of "empowerment", a feature which is usually considered to be one of the key characteristics of

T.Q.M. organisations. Barbour are not unique in failing to provide an organisational culture and structure which can support the behavioural processes associated with T.Q.M. In the literature review in Chapter 4, the traditional structure of organisations in the U.K. was identified as being a key barrier to T.Q.M. implementation and for preventing the holistic adoption of T.Q.M.

The quality gurus, on whose principles some companies have based their T.Q.M. programmes, have their background in operational research and S.P.C. As a result they have given less consideration to the softer process of introducing the philosophy of continuous improvement and gaining commitment to T.Q.M. (Wilkinson and Willmott 1995 p8)

"The gurus commonly declare their interest in managing people in their philosophies, but an analysis offers few tangible principles and virtually no useable methods." (Flood 1995 p38)

Little consideration is given to the political or coercive character of the organisation or of the internal politics present. Barbour and other U.K. companies have little knowledge of the culture change required in order to introduce a culture based on empowering employees.

This has given rise to a situation whereby there is a lack of consistency between the behavioural relationships expected within T.Q.M. companies and those which actually exist.

"The continuing hierarchical relationship between management and employee acts to restrict the scope and distribution of the benefits

derived from quality initiatives." (Wilkinson and Willmott 1995 p12)

The failings of existing systems are, according to Wilkinson and Willmott, symptomatic of more fundamental divisions and contradictions in the organisation of work within capitalist economies. (1995 p12) Recent critical research into T.Q.M. suggests that T.Q.M. and the flatter organisation structure actually renews legitimacy of the capitalist and that instead of extending worker's rights it allows management to shift responsibility away from themselves and practice "management by stress". (Kerfoot and Knights 1995 pp219-239, McArdle et al 1995 pp156-173) Middle managers may themselves feel threatened by the implied revisions in their role. Wilkinson et al (1990 pp1-2) found that rather than uniting managers, it became a source of conflict between competing interest groups. This implies that T.Q.M. principles actually serve to reinforce the divisions between management and workers which already exist.

Barbour may not then, be so very different from those companies who appear on the surface to have adopted T.Q.M. principles, since both will have management/ worker divisions with management retaining overall control. At Barbour these hierarchical divisions have not been challenged in any way, not even on a superficial basis. In some companies it would be unrealistic to even attempt to challenge them.

Barbour have chosen those aspects of current modern management techniques which they feel are most suited to themselves. In doing so they have chosen to retain their authoritarian and hierarchical management

structure. What is ironic is that companies who believe they have adopted strategies based on employee involvement and empowerment may actually be reinforcing the hierarchical divisions already present within the organisation.

8.4 Conclusion

The research has shown that for certain companies, including Barbour, there are problems associated with implementing T.Q.M. principles.

"Changing the lifelong behaviour, customs and prejudices of an organisation is not easy." (Dale et al 1990 p11)

Grant et al (1994 p26) has identified that T.Q.M. inevitably conflicts with established Western practices and that it will not succeed in a firm unless conventional practices are transformed.

"T.Q.M. can't be grafted onto existing management structures and systems. If its benefits are to be realised companies need to prepare themselves for organisational change including top management relinquishing power." (Grant et al 1994 p26)

Barbour at present have the necessary controls of their manufacturing process. But they lack a culture of continuous improvement in order to make the most of the systems in place and to draw on the expertise and resources of the employees within the company. Organisations in many cases are intended to be stable and unchanging and a strong change agent is often

necessary to precipitate the process. (Dale et al 1990 p12)

Changes to the culture and structure at Barbour would need to be initiated by the Managing Director, as much of the transforming of conventional practices relates to the devolving of responsibilities and authorities within the company.

"Many writers on the subject of quality are agreed that unless the chief executive takes the lead to improve quality within an organisation attempts by individuals and departments will be shortlived." (Dale et al 1990 p13)

The two aspects of management style which need to be balanced include flexibility and discipline. Empowerment implies and requires flexibility, but traditionally it is in the interests of managers to exercise control over the system of which they are in charge via controls, procedures, specifications and standards.

"Companies need control systems and procedures which are sophisticated enough to control a system, yet still permit flexibility and which can fuel the culture of continuous improvement." (Price and Chen 1993 pp102-5)

The correct balance is needed between control of employees and empowering them to make their own decisions and contributions.

"Excessive empowerment leads to loss of control and a potential negative effect on business performance. Excess control inhibits the T.Q.M. process." (Price and Chen 1993 pp102-105)

The absence of critical evaluation in this area to date has only served to play down the problems associated with T.Q.M. and employee involvement. It is not surprising then that companies such as Barbour either tend to ignore the issue of hierarchy and culture, or to tackle it purely on a superficial level. More research will need to be done in this area, for when T.Q.M. initiatives fail, management cannot be blamed indefinitely for poor implementation techniques.

CHAPTER NINE

SUPPLIER DEVELOPMENT AT J.BARBOUR AND SONS Ltd ANALYSIS AND RECOMMENDATIONS

9.1 Introduction

Previous chapters of the thesis considered the different types of relationships which organisations may develop with their suppliers i.e. the traditional/adversarial approach or one more associated with partnership/collaborative relationship. A review of the supplier base at J.Barbour and Sons Ltd showed that it can be divided up into three distinct categories CMT, factored and raw material suppliers and that different activities and relationships were evident within each supplier group. In the light of the research undertaken, it is now possible to analyse the different types of relationships formed at J,Barbour and Sons Ltd, to develop an understanding of the factors which may affect them and to provide recommendations.

9.2 Analysis of Findings

It is the partnership approach which is more associated with T.Q.M. principles and supplier development. In order to assess their implementation, the principles put forward by Saunders (1994 p218) will be analysed with respect to the case study organisation.

- i) A High frequency of both formal and informal communications.**

A partnership approach requires a high degree of communication between the supplier and the purchaser.

"The new relationship (also) demands a greater and faster exchange of information between supplier and customer." (Dale and Oakland 1992 p139)

Within Barbour, initial communication with the supplier is relatively frequent as samples and specifications are passed from one party to the other for approving and signing. At this stage the supplier company is being introduced to the Barbour systems with regard to the quality standard required, and the documentation and methods to be used for processing orders. After the initial "honeymoon" period, communication with the majority of suppliers of raw material and factored products becomes more infrequent. Such suppliers may be contacted formally to confirm delivery dates or for purposes of payment, but other than that communication is irregular. Most of the communication which does arise is initiated by Barbour and is a result of some sort of problem i.e defective stock, insufficient order quantities or delayed deliveries.

"In T.Q.M. terms, many relationships are still failure driven rather than prevention driven." (Macbeth 1990 p31)

With increased communication between Barbour and the supplier they could work together to pre-empt such problems arising.

A different situation is identified with CMT subcontractors to Barbour.

Communication throughout the relationship remains constant, with regular formal site visits and a two way flow of informal communication. This has contributed to an improvement in the supplier's performance over the period 1995-7.

ii) Co-operative attitudes

Co-operative attitudes are identified as being significant in developing relationships with suppliers. (Lascelles and Dale 1990 p258) Purchasers need to be able to make informed decisions on what suppliers can supply, and suppliers have to be prepared to accommodate the purchaser's needs.

No evidence was found to indicate that suppliers to Barbour displayed unco-operative attitudes in trying to meet what they believed to be the company's requirements. Two reasons may account for this. Firstly, the majority of the CMT suppliers plus some raw material suppliers (i.e. checklining and waxed cotton of which Barbour purchase large quantities) are almost totally dependent on the work which Barbour give them. Naturally, they are as co-operative as possible. With respect to factored product suppliers and suppliers of other raw materials, Barbour are not a major customer, purchasing only small quantities on an infrequent basis. The motivation to accommodate Barbour's requirements is instead due to the marketing advantages sought by supplying to a well known company.

"Barbour buy in very low volumes compared to companies like Next, who we also supply to. The problem of this is that we often have

difficulties sourcing the leather in such small quantities. This is off set by the advantage of saying to potential customers that we supply to Barbour." (Footwear supplier August 1997)

As a result, suppliers display reasonably co-operative attitudes to Barbour. Whether this is on account of the purchasing power which Barbour have, or because Barbour themselves have adopted co-operative attitudes towards their suppliers, varies from one group to another.

iii) A trusting relationship

As a company reduces their supplier base more trusting relationships are likely to develop with those which remain (Macbeth 1990 p30). Barbour have reduced the number of suppliers of raw materials and factored products over the past three years. By doing so they are starting to emphasis the long term nature of the relationship with those remaining. A trusting relationship including financial investment in the supplier company is already seen to exist with the CMT subcontractors.

iv) Problem solving, "win-win" negotiating styles, with an emphasis on managing total costs.

The principle of joint problem solving and win-win negotiating styles follows on from the requirement that for a partnership approach to exist, there needs to be co-operative attitudes between the customer and the supplier.

"In negotiation, open and honest attitudes from both sides is essential." (Choppin 1991 p320)

Examples can be cited at Barbour of joint problem solving ventures such as the raw material supplier who joined forces with Barbour in determining adequate washing instructions for the jacket manufactured using their cloth. This could be developed further with the setting up of work groups or teams with representatives from Barbour and the supplier base. Meeting at regular intervals, objectives could be set and progress monitored. Advantages could be sought in bringing different suppliers together. The supplier of studs could benefit from working with the zip supplier to ensure consistency of appearance in the trimmings on the jacket.

v) Long term business agreements.

Many of Barbour's suppliers, especially those supplying raw materials have been trading with them for many years. Barbour have also invested financially in their CMT suppliers, which is indicative of a long term relationship based on loyalty and trust (Choppin 1991 p317). Other than entering into a formal long term business agreement, Barbour can continue to demonstrate commitment to the supplier company in other ways i.e. single sourcing, offering training and support, introducing joint improvement groups and ensuring close liaison and frequent communication.

vi) Open sharing of information by multi-functional teams.

Other than the Product Development meeting which may be attended by factored goods suppliers, little evidence can be found at Barbour to demonstrate the existence of multi-functional improvement teams, either in-

house or involving suppliers.

The absence of teamwork at Barbour has already been highlighted in the analysis of Barbour's quality system, hence it is not surprising that such teams have not been developed involving suppliers.

vii) Vendor certification and defect prevention approaches.

A survey of manufacturing companies in 1985 found that although most of the companies had laid down requirements which suppliers must meet, less than half of these operated any sort of vendor rating scheme to assess whether they were actually being achieved. (Duncalf and Dale 1990 pp144-161) Supplier capability at J.Barbour and Sons Ltd is initially judged on the three variables of price, quality and delivery. Technical information which Barbour could request from their suppliers could include SPC charts and information on procedures and techniques to achieve reduction in variation from delivery to delivery.

For CMTs (and sometimes other suppliers) a site visit is carried out, to determine basic company details. (Appendix 9) Other information to be sought could include company structure, resources, communication, work environment and preventative maintenance. In addition the supplier's delivery and service capabilities could be reviewed, including their scheduling and delivery, order entry, financial stability, customer satisfaction, packaging, handling and shipping processes. Whether or not they have the ability and capacity to do the work required and how easy they are to deal with could also form part of the initial supplier appraisal.

Once approved, the Vendor or Raw material Analysis is used to monitor and rank suppliers dependent upon the number of defective goods received. Analysis of other measures of performance could also be undertaken i.e. meeting of delivery dates, agreed improvements in product design, or an increased level of efficiency of the supplier.

The use of vendor rating schemes including the ranking of suppliers can require a considerable amount of subjective judgement and can be time consuming. If Barbour do decide to carry out further analysis of the supplier's performance care should be taken to ensure that suppliers are not penalised for Barbour's own inefficiencies. At Barbour, if goods are incorrectly booked in, the inspectors at Quality Control are instructed to reject the goods in order that they can be booked in again correctly. Unless the Q.A. department is notified of this, and can make the relevant changes to the Vendor Analysis then incorrect figures are displayed.

Barbour does have formal procedures for the selection and control of suppliers, but they need to ensure that the measures of selection and performance monitoring which they use are adequate. The procedures for supplier approval and the subsequent means of assessment need to provide appropriate information to enable informed decisions to be made.

It can be seen that many of the points (i to vii) which have been identified are interlinked. Effective communication (i) leads to an open sharing of

information (vi); and a long term relationship (v) is likely to be accompanied by a trusting relationship (iii) with co-operatives attitudes (ii). Consequently (as is the case with Barbour) evidence of each of them is found within the supplier base, but to a lesser or greater degree depending upon the type of supplier (CMT, factored or raw material.)

Areas where traditional adversarial approaches exist include the superficial assessment of the supplier solely on price, cost and delivery; infrequent communication with suppliers after the initial introductions (CMTs excepted); problem solving with suppliers on a corrective action rather than preventative action basis; and emphasis on the percentage of rejected stock received from the supplier rather than on the supplier's capability for future performance.

9.3 Factors Affecting Supplier Relations and Recommendations

Analysis of the supplier relationships formed at Barbour has identified a mixture of different trading relationships. The nature of the product supplied and by whom will be a determining factor in the type of relationship formed. Using the four different categories identified by Kamath and Liker (1994 p158) the suppliers to Barbour can be categorised as shown below. For the purpose of analysis the raw material suppliers can be divided into two groups - those supplying critical parts and those supplying commodity type ones.

a) **Raw Material (critical) - Partner**

The supplier acts as an arm of the customer and participates from the

concept stage onward. This would include suppliers of fleece and waxed cotton. These suppliers are leaders in their field, have a monopoly position in the market and provide raw materials which are of a critical nature to the product.

b) Factored Products - Mature

The customer provides specifications. The supplier then develops the product on its own and may suggest alternatives. i.e. suppliers of bags, shoes and polo shirts.

c) Raw Material (commodity) - Child

Simple assembly, with the customer specifying design requirements and the supplier executing them. This would include suppliers of thread, buttons and studs. There are numerous suppliers of these commodity products in the market, all providing a product which is of a similar standard.

d) CMT - Contractual

Customer gives detailed blue prints or orders from a catalogue and supplier builds.

Whether or not Barbour develops full-blown partnerships with certain suppliers or maintains a very contractual relationship keeping the supplier at arm's length would appear, to date, to have been dependent upon the capabilities of the supplier. In order to achieve the standards which Barbour require, they have provided a great deal of support and assistance to the CMT suppliers. Similarly, in order to utilise the expertise of critical raw

material suppliers in areas such as product design, there has been a high level of interaction and communication with them.

As a result, the relationships developed with both the CMT and critical raw material suppliers are characteristic of the partnership approach. Less interaction was found to be necessary with the factored goods suppliers and suppliers of raw materials of a commodity nature, in order to meet Barbour's requirements. However there still need to exist certain parameters which ensure that Barbour's requirements are met. Whether the relationship is an arm's length or collaborative approach, certain key principles need to be adopted. Barbour should ensure that they address the factors listed below as they will influence the success of any relationship formed with their suppliers. (Lascelles and Dale pp259-263)

i) Poor communication and feedback

Communication with factored and raw material suppliers at Barbour is satisfactory, but there is room for improvement. Informal communication is likely to increase as more long term and co-operative relationships are developed between the supplier and purchaser. Formal communication could be improved by the introduction of electronic data interchange. The Management Services Manager at Barbour confirms that this is a possibility in the long term.

"It would aid the control of stock by allowing suppliers access to information regarding stock levels of their products. By centralising data systems formal communication links with suppliers would be

greatly improved." (Management Services Manager October 1997)

ii) Supplier Complacency

There is little evidence to suggest that any of Barbour's suppliers are complacent. Those who have taken the decision to supply to Barbour have a high regard for the company and are genuinely committed to doing business with them.

If any supplier has adopted a complacent attitude unbeknown to Barbour, it is because Barbour have allowed them to do so, as minimal information is fed back to them on their performance. Provided goods meet the specification, the supplier is under little pressure from Barbour to improve the product, reduce lead time and reduce cost of the product or, (CMTs excepted) to change any of their internal procedures. Any supplier complacency is therefore brought about through Barbour's lack of attention to the supplier's overall performance and consequent failure to maximise the supplier's potential.

The Group Quality Standards Manager at Barbour is presently considering implementing some sort of induction programme for suppliers:

"Suppliers should undergo an induction into being a Barbour supplier.

This has been raised by some buying staff and could play a role in developing a partnership with new suppliers and re-enforcing the message to the old ones." (Group Quality Standards Manager Sept. 1997)

Such an activity would help to reinforce Barbour's expectations of their suppliers and reduce any potential or existing "supplier complacency".

iii) Misguided Supplier Improvement Objectives

Three key areas of Barbour's quality system can be identified where attention needs to be paid to ensure that they are treated correctly.

a) Q.A. Computer System.

Barbour's Q.A. system is heavily computerised. In practice this means that any information which does not fit into the standard format of the Q.A. computer system, either cannot be maintained, or is maintained elsewhere and is accessible only to certain individuals. When suppliers are approved, the software does not allow additional information to be input other than "yes" the supplier meets our requirements of price, quality and delivery.

For any changes to be made to the format of the Q.A. system parts of the software will have to be rewritten. The Group Quality Standards Manager at Barbour believes that the system could be improved to more readily measure the performance of suppliers.

"The supplier monitoring system could be extended to provide valid information on the following parameters on an on-going basis and used where necessary to improve supplier performance: delivery dates met, quantities correct, quality achieved, returns after receipt and price paid." (Group Quality Standards Manager August 1997)

The benefits he believes would be two-fold, to have up-to-date information on the buying process and to provide objective information which could be used for improvement. The implementation of any such change will not be immediate, as it will require revisions to the existing software.

b) Assessment, monitoring and control of Suppliers.

Barbour initially approve suppliers on the basis of price, quality and delivery. They need to define these requirements and communicate any objectives to the supplier in order to later confirm whether they have been met. These standard criteria may be adequate for suppliers of commodity type products but are unlikely to be sufficient for assessing and selecting suppliers as long term partners. (Spekman 1988 p75-81)

Factors which are less tangible such as potential for innovation and improvement, commitment, openness, trust and future capabilities also need to be addressed for relationships with critical raw material suppliers or CMTs where highly interdependent relationships are required. This data should then be stored on the Q.A. computer system in the relevant supplier file so it can be accessed by production, purchasing and quality assurance personnel.

c) The imposition of the customer's procedures on the supplier.

In requesting supplier companies to implement in-process controls the customer has to be clear what benefits they will bring. Barbour have implemented in-house methods of control within their CMT suppliers. It is not necessarily appropriate to implement the same procedures on other

suppliers. Marks and Spencer have found it necessary to request evidence of qualifications for machinists, engineers and mechanics working for supplier's based in countries such as Romania, whereas evidence is not required for those employed in the U.K.

Imposition of a particular management technique on their suppliers as a condition of purchase is not the same as supplier development. When Barbour imposed various controls on their CMTs they worked with them in order to help ensure a long term change in their attitude and behaviour. These controls have proved to be successful since the companies mainly manufacture solely for Barbour. Requesting similar requirements of factored or raw material suppliers would not necessarily be appropriate as they manufacture for customers other than Barbour. Too many different suppliers' systems could actually reduce the efficiency and quality of the product rather than improve it.

iv) Credibility of the Customer as viewed by the supplier

"One clear principle for success is that the purchaser must be a good role model himself." (Dale and Plunkett 1990 p352)

Barbour need to be as honest and consistent with their suppliers as possible. Occasionally when goods are identified as borderline by Barbour Quality Control inspectors, they are accepted as they are needed for outstanding orders. This demonstrates an inconsistency in the standard required and can lead to the supplier to becoming frustrated and knowingly submitting sub-standard products, with the hope that they will be accepted. Barbour must

set the standard which they require, abide by it, and be open in discussion with their suppliers.

v) Misconceptions regarding Purchasing Power

Purchasing power can be a major influence in the relationship developed between the customer and its suppliers and lack of purchasing power is often given as a reason for lack of success in improving supplier performance. (Lascelles and Dale 1990 p262)

In the majority of cases Barbour are a larger and more powerful company than their suppliers, and suppliers are keen to maintain Barbour as a customer. Barbour therefore have adequate purchasing power. The exception to this may be the raw material suppliers who supply critical parts and are market leaders in their field. For these suppliers a different approach based more on negotiation is required. Larger organisations (such as Barbour) are able to implement controls in smaller companies on account of their economic power.

Japanese companies including Nissan have purchasing power over their suppliers as the supplier companies have a high degree of dependency on them. With this knowledge, some companies exert unnecessary controls on their suppliers.

"The Japanese tend to camp out on your doorstep. We've got English firms that we see once or twice a yearits nothing for the Japanese to turn up 2,3 or 4 times a day." (Oliver and Wilkinson 1988 p131)

The companies with the purchasing power, need to be clear as to why they are asking suppliers to adopt certain practices and if it is really beneficial to the supplier. Marks and Spencer are renowned in the textile industry for imposing certain controls on their suppliers. It was through pressure from them that Dewhirst Clothing Ltd implemented a system called "FORCE" which was designed to give increased controls in product quality. Marks and Spencer also play a key role in the design of the supplier's product i.e. a named Italian Tweed supplier will be used to supply 60% of the fabric in the men's suit range. There is nothing to be gained as a result of Barbour using their purchasing power to change suppliers if they do not want to change, since any changes made will be superficial and short-lived. The suppliers must want to change, so the initial selection and assessment of companies in the first place is very important. Ultimately the aim should be to reach a point on the learning curve where suppliers are implementing performance improvements of their own accord.

Irrespective of the nature of the trading relationships developed between Barbour and its supplier base, an understanding of the other party's requirements has to be an essential feature of any relationship. The key factor must be that the supplier is aware of the customer's objectives and his role in helping the customer achieve them. This would apply to all situations:

- a) The setting of delivery dates for a thread supplier who supplies commodity type parts and with whom a contractual relationship

based on short term objectives exists.

- b) The monitoring of design input received from a factored product supplier regarding the possible implications of a design change on the overall performance of the product.

Throughout this analysis I have suggested means by which improvements could be made e.g. E.D.I. to help improve formal communication and the analysis of supplier data other than that initiated by Barbour Quality Control inspectors to help assess performance. In order to implement improvements such as these, a formal policy and objectives are required, The objectives and associated activities for CMT, factored and raw material suppliers of both critical and commodity type products then need to be formally communicated both within Barbour and to the supplier. If objectives are not set failure to meet or surpass them cannot be measured. Barbour cannot in the short term change their supplier base but they can ensure that when suppliers are selected in the future, consideration is given to their long term potential especially if the supplier is responsible for critical parts. They should also ensure that their own systems used for dealing with suppliers are exemplary i.e. no documentation errors, consistency in their own requirements and planning of activities to meet deadlines.

9.4 Conclusion

Prior to the 1990s there was little or no formal control of suppliers at Barbour, now suppliers are subject to selection, assessment and monitoring

controls. Throughout the research we have made distinction between three groups of suppliers.

Within the CMTs, Babour's purchasing power is greater, appropriate in-house controls have been implemented, communication and feedback is more open and trusting relationships have developed. As a result there has been significant improvement in the overall performance of this group. The activities undertaken reflect those described as the collaborative, partnership or OCR approach (Saunders 1994 p218, Lascelles and Dale 1990 p258, Jones 1990 p44-51, Sako 1992 p9-10) However, this relationship can never be a "partnership" in the true sense, as the relationship is not one based on equals. The CMTs have a high level of dependency on Barbour and are inferior in terms of economic strength, size, technical expertise and financial stability. The relationship formed has however proved to be acceptable and of benefit to both parties.

With the raw material suppliers who supply critical parts and who themselves have unrivalled expertise in the field which they supply, then a full partnership could be achieved. Many of the raw material suppliers of critical parts have been supplying to Barbour for many years and are the sole supplier of that product within Barbour's supplier base. The potential exists with these suppliers for relationships to be developed, in a similar manner as the Japanese have developed with a chosen few first tier suppliers in the automotive industry. (Kamath and Liker 1994 p154) For other suppliers

within the raw material group then it would appear that a contractual relationship, conducted at arm's length is satisfactory. The products supplied are not of a critical nature, little communication and investment is required to ensure that a specific quantity is delivered by a set date, to the standard required. For these suppliers it would be effort misplaced to try and develop the relationship further.

It is with the factored product suppliers where a grey area exists. Earlier they were categorised as "mature" under the Kamath and Liker categories. (Kamath and Liker 1994 p158) The relationship is beyond purely contractual and has the scope for joint product development and improvement, but little attempt has as yet been made to utilise this group of suppliers to the best of their ability. The Q.C. system is the vehicle for the means of their control, with any feedback resulting from the identification of defective goods. Communication is infrequent and reactive and Barbour have little knowledge of their in-process controls. The inadequacies in the initial selection process may also have resulted in the approval of some suppliers who themselves do not have the ability to move forward and develop more effective relationships. For this group of suppliers it may be appropriate to retain an arm's length approach for more standard tasks such as delivery scheduling. A collaborative approach could be adopted in areas where greater benefits are sought such as product design and development, quality improvements and long term strategic planning.

Relationships with suppliers within each supplier group have evolved over a period of time with few thought out policies or objectives. They have therefore developed to suit Barbour and to meet the expectations which they have of each supplier group. The Q.C. system and procedures in place have, for now, provided a satisfactory way of identifying defective goods and providing feedback to the supplier on their performance. Barbour now need to further progress the initial work done with their suppliers (which was made possible through access to statistical data from the Q.C. system), and look to improve the overall performance of the supplier.

Although in certain areas the relationships developed have been successful (CMTs) without defined objectives and measures of performance for each type of supplier, then the outcome is left more to chance than quality planning. Whether the appropriate relationship is one of arm's length contractual or a highly interdependent partnership, supplier objectives and priorities should be set. In the long term this could be to achieve better quality supplies or lower material costs and in the short term to have on a day to day basis the right products, at the right quality, delivered at the right time. The relationships formed with suppliers are dynamic and will change over time. Irrespective of the type of relationship developed, five key principles can be singled out as relevant to all relationships formed:

- a) Effective Communication. The level of formal and informal communication should ensure that the purchaser's requirements are adequately understood by the supplier and vice versa.
- b) Prevention rather than detection. Ensure that suppliers own in-process

controls are adequate and reinforce Barbour's own requirements, to ensure faulted goods are not supplied.

- c) **Supplier Involvement.** Utilise the expertise of suppliers and if appropriate involve them in product design. Discuss supplier's requirements in terms of order quantities, delivery dates, production scheduling and if appropriate involve them in customer-supplier work-groups.
- d) **Measurement, both qualitative and quantitative.** Extend the analysis of price, cost and delivery to include the softer issues. Conformance to specification is not an adequate measure of performance.
- e) **Teamwork.** Barbour should work with suppliers to develop quality improvement activities.

These basic principles are necessary in order to ensure that Barbour's requirements as a customer are met. Whether or not the relationship is developed further, will be dependent upon Barbour's aspirations and expectations of the supplier on a long term basis.

CHAPTER 10

CONCLUSION

10.1 Introduction

The objectives of the research were to increase understanding of Supplier Development through case study analysis and in so doing:

- a) Identify the role of suppliers within a Total Quality Management framework.
- b) To analyse and suggest means by which organisations can work with their suppliers in order to improve the quality of the goods and services supplied.

In order to meet the objectives of the research, conclusions will be drawn with regard to i) the implementation of T.Q.M. principles and ii) supplier relations. The research findings at J.Barbour and Sons Ltd will be considered in light of the literature discussed. Finally the success of the research methodology and identification of areas where further research may be required will be determined.

10.2 The Role of Suppliers within a T.Q.M. Framework

One of the objectives of the research was to determine the role of suppliers within a T.Q.M. framework. Without doubt, the research has shown that suppliers play a key role in contributing to the overall success of an organisation and the quality of the product or service which it supplies.

(Flood 1995, Saunders 1994, Lamming 1993, Oakland and Porter 1994)

The principles relating to suppliers which stem from a T.Q.M. framework and have been addressed in the research include: single or dual sourcing, co-operative attitudes, reduced supplier base, long term business agreements, open sharings of information and a high frequency of formal/informal communication. Activities which companies had implemented as part of supplier development programmes were detailed in Fig 4. These activities based on T.Q.M. methodology, form what we have referred to throughout the research as the partnership approach. External suppliers are treated in a similar manner as one would expect to treat internal customers and suppliers i.e. with trust, loyalty, co-operation, commitment and encouragement of their involvement throughout.

However, the research has shown that developing a full blown partnership based on these T.Q.M. principles is not always appropriate. (Kamath and Liker 1994, Kanter 1994) In cases where commodity type products are supplied which are not of a critical nature, then it is unnecessary to develop a partnership approach. In such instances the T.Q.M. principles associated with supplier development are not relevant. It does not make good business sense for a company to invest money in an area where little benefit will be recouped, either on a short or long term basis and by doing so adds little value to the product supplied.

The essence of T.Q.M. is that it should represent a management style

reflecting good business practice. In order to achieve this, T.Q.M. needs to keep aligned with current business practice and to reflect the research undertaken of those in specialist areas, whether it be purchasing, production or human resource management. Recognition that a relationship conducted at arm's length may also make good business sense needs to be reflected in the activities recommended in a T.Q.M. programme.

Although principles associated with developing one's suppliers may not always be appropriate, some of the more basic principles of T.Q.M. are relevant to all areas of work including supplier relationships. These include effective communication, prevention rather than detection, involvement, measurement and teamwork. (Section 9.4) Such principles may initially be implemented in-house as part of a T.Q.M. programme, but can also be extended to apply to the external customer/supplier relationship. They represent the minimum level of application of T.Q.M. principles with respect to suppliers. If appropriate, further activities can then be implemented to build on existing good practice.

10.3 Total Quality Management

An analysis of the Quality Management System at J.Barbour and Sons Ltd showed that although a comprehensive Quality Assurance system was in place, a formal T.Q.M. programme had not been adopted. Barbour have implemented activities which they believe are the most appropriate to the company. Some, but not all, are found to reflect principles associated with

T.Q.M. i.e. agreed customer requirements, process control, quantitative analysis and preventative action. There is a lack of employee involvement, flexibility, teamwork and continuous improvement in the running of the system. The culture at the company remains traditional, with a hierarchical structure. Operating within an industry where defect identification and the occurrence of seconds is the norm, there is a great reliance on in-house inspection of goods manufactured both within the company and externally.

The findings of the research at J.Barbour and Sons Ltd can be compared with those of other researchers. In the literature review, various reasons were given as to why organisations may be inhibited in adopting T.Q.M. The hierarchical structure and traditional culture, industrial relations background and the manager/worker divide in the U.K. were highlighted as conflicting with the behavioural processes associated with T.Q.M. (Wilkinson and Witcher 1990, Flood 1995) As a result it was suggested that only partially implemented T.Q.M. existed in the U.K., as problems arising during implementation were not readily solved. Any examples of programmes which had failed were criticised by the quality advocates as being the result of poor implementation by senior management. (Oakland et al 1994) However, such blame should not be apportioned lightly. Much of the literature on T.Q.M. implementation does not address how to overcome difficulties encountered when the organisational structure and culture is not suited to support such activities.

"The absence of critical evaluation has served to down-play the

contextual communication issues and cultural divisions, while simultaneously emphasising the centrality of total employee involvement." (Dawson 1995 p173)

The structure and culture of companies in the U.K., are not the same as those in Japan on which much of the T.Q.M. principles were based. As a result of the research undertaken, I would suggest that an organisation implementing T.Q.M. can be placed in one of three categories:

- a) The organisation implements isolated T.Q.M. principles of its choice.
- b) The organisation tries to implement all T.Q.M. principles, including changing the culture and structure of the organisation. Difficulties are experienced and as a result only a proportion are implemented successfully i.e. the controls surrounding the manufacturing process.
- c) The organisation implements all T.Q.M. principles, including changing the structure and culture of the organisation to support the behavioural processes associated with T.Q.M.

Barbour are typical of those organisations described in category (a). They have not attempted to change any of the values within the company, or to challenge the traditional culture and management/worker relationship.

" In this case implementation is easy, but the old organisation structure and systems remain untouched and continue to generate the same behavioural dynamics as before." (Hackman and Wageman 1995 p336)

The organisations in category b) have tried to implement all the T.Q.M. principles but have failed in certain areas and so are ultimately in the same situation as Barbour. The difference is that they have invested time and money in attempting to change all areas of the organisation, but ultimately still only achieve partially implemented T.Q.M.

Those in the third category, have changed their culture, created a flatter management structure, introduced multi-functional work groups and teams and involved employees in the improvement process. In reality, such activities in the U.K. can be seen not to give employees autonomy, but to reinforce the divisions between managers and workers which already exist. (Kerfoot and Knights 1995, McArdle et al 1995)

Whether or not companies try or fail to introduce all the principles of T.Q.M., owing to the historical background of worker relations in the U.K. in reality the end result is the same i.e. the existence of a T.Q.M. system which only partially meets the philosophies on which it was based. The advantage for Barbour is that they have not invested time and effort in trying to achieve something, which in reality may not have been possible.

Unless there is more guidance on the social factors of T.Q.M. then it is likely that a partially implemented T.Q.M. will prevail. Areas to be considered should include:

- a) How to motivate employees to continuous improvement.
- b) How gains brought about by improvements in the process should be allocated.

- c) How opportunities for learning are apportioned.
- d) How authority is distributed. (Hackman and Wageman 1995 p136)

Throughout the literature reviewed, examples were found of companies who had achieved significant benefits through implementing T.Q.M. principles. (Berry 1991, Oakland et al 1994, Oakland and Porter 1994) In a minority of cases, cost savings were calculated i.e. Shortbrothers £46million. (Oakland and Porter 1994) In the majority of examples a statement was simply made that it had led to positive business results. (Oakland et al 1994) This raises two questions.

- a) Have these benefits actually been measured in terms of cost savings, or an increase in organisational effectiveness?
- b) Can it be proved that these benefits are a direct result of the T.Q.M. programme?

With respect to Barbour, benefits cannot be identified in terms of monetary savings as little cost analysis is undertaken. Certain examples can be found which have resulted in an increase in organisational effectiveness (i.e. an increase in effort, knowledge and skill applied and appropriateness of task performance strategy. Hackman and Wageman 1995 p321) These include, decreased levels of rework, customer returns and faulted goods received from suppliers; and an increase in the overall performance of CMT suppliers. It is difficult to determine whether or not these were as a result of quality activities implemented. The CMTs may have improved their performance due to the trend in the textile industry of companies subcontracting work

abroad. More competition for the work apportioned to garment subcontractors in the U.K. will have meant that the CMTs wanted to guarantee their business with Barbour. Outside influences, time lag of implementation and difficulty in finding appropriate methods of measuring an organisation's standard of performance, make it very difficult to pinpoint the reason for an increase in organisational effectiveness.

To conclude, there is little concrete evidence to suggest that for U.K. companies, changing their organisational structure and values in order to implement a T.Q.M. culture is a worthwhile investment. Until more research is carried out in this area, then the behavioural processes associated with T.Q.M. will not find the necessary structure to support them and the correct balance between flexibility and discipline will not be found. As a result true T.Q.M. in the U.K. will continue to be a rarity.

10.4 Supplier Development

The literature review on supplier development served to illustrate the different types of trading relationships which could be formed between the organisation and its supplier base:

- a) Traditional/Partnership (Saunders 1994)
- b) ACR-OCR (Sako 1992)
- c) Partner, Mature, Child, Contractual (Kamath and Liker 1994)
- d) Mutual service consortia, joint ventures, value partnership (Kanter 1994)

Although differing in name, they all depict the varying degrees of control and involvement which can be expended towards suppliers. In reality an organisation is likely to display characteristics from more than one category i.e. ACR and OCR. They should be viewed as a continuum rather than two mutually exclusive categories. Relationships with suppliers are dynamic and will be dependent upon internal and external influencing factors.

At the onset of the research, the researcher was of the belief that ideally an organisation should strive to achieve a partnership approach with all its suppliers. However, on further investigation, it became apparent that such a relationship was not always appropriate or necessary, depending upon the nature of the product being supplied. (Kamath and Liker 1994 p164, Kanter 1994 p98) For suppliers of commodity type products who make simple, routine products which are sourced at a low value and in a low volume, it is unnecessary to develop a long term partnership. Close links with the supplier are not required in order to ensure that the products supplied are of a satisfactory standard. Investing time and money in this relationship is unnecessary, as it does not add value to the product supplied.

Like any relationship, the needs of one party may change over time and so organisations should be prepared to alter the relationship with their suppliers when required. Analysis of the supplier relationships at Barbour, confirmed the need for different trading relationships to be identified within one organisation's supplier base.

Three distinct groups of suppliers were identified at Barbour, raw material, factored and Cut Make and Trim suppliers (CMTs). Within the CMT group of suppliers, relationships were extended beyond the practices detailed in the Q.A. procedures and activities associated with the partnership approach were implemented. As a result the CMTs have adopted a more positive and pro-active attitude towards quality and their performance has improved. The relationship with the CMT suppliers can never be a true partnership as Barbour will always be the senior partner holding the balance of power.

A core group of raw material suppliers providing critical materials was identified within Barbour's supplier base. For these companies, it would be worthwhile developing relationships further. They are experts in their field and Barbour would benefit from adopting a more collaborative approach with them and utilising their expertise in product design. Relationships with the raw material suppliers of commodity type products, have been maintained at arm's length. To date, such an approach has proved satisfactory and little benefit would be derived from developing closer relationships. The key factor is to ensure that the supplier is aware of Barbour's requirements and that they are being met.

The relationships with the factored product suppliers are probably somewhere inbetween the traditional and partnership approach and could be improved. The companies are not dependent on Barbour like the CMTs or the raw material suppliers of critical parts. The volume of goods purchased by Barbour is likely to be of a low volume compared with other customers.

Although they may be keen to continue their business with Barbour, it is possible that they may have neither the motivation or ability to progress the relationship any further.

Barbour have drifted into the relationships formed with their suppliers, (CMTs) excepted. The setting of supplier policies and objectives would help to ensure that each supplier group is treated in the manner in which it deserves and its subsequent performance can be managed accordingly. Finally, Barbour need to ensure that if they are intending to develop a partnership approach with a supplier, this will be reciprocated. Improved methods of supplier selection should enable any expectations which they have to be fulfilled at a later date.

10.5 The Research

The research has enabled conclusions on supplier development and T.Q.M. to be drawn. It is possible to review the validity of these conclusions. The methodology and the frameworks of analysis used, will have had an influence on the final conclusions. The research focused on data drawn from the case study of the organisation where the researcher was employed. Being aware of any potential problems as a result of this enabled the researcher to ensure that the outcome of the research remained valid. The following difficulties were still encountered:

a) The nature of the data gathered, (from which conclusions were drawn), was dependent on the areas of work with which the researcher was

involved. Where gaps in information were evident, care had to be taken in order to ensure that assumptions were not made as to what one thought may have occurred.

b) Difficulties were also encountered due to the loyalty which the researcher had for the company. As impartial a stance as possible had to be adopted and criticisms made of working practices where appropriate.

c) The names of individual suppliers were kept confidential during the research. This meant that a profile was not built up of individual suppliers and the reader could not follow through the method of selection, monitoring and control for one particular supplier. In order to overcome this, suppliers were identified as being either CMT, factored, raw material. Conclusions were then drawn as a result of the characteristics exhibited by each supplier group, as each group was found to be distinct from the other.

A further limitation of the research was identified with respect to the information sought from the two other clothing companies Dewhirst Clothing Ltd and Claremont Garments. It was not possible to gain access to the companies and source the data first hand, but the information gathered was sufficient for general benchmarking.

The two main frameworks of analysis used during the research were:

a) Flood's eight principles of T.Q.M. (Flood 1995 p48)

b) Saunder's characteristics of traditional and partnership supplier relationships. (Saunders 1994 p218)

For the purposes of using them as a benchmark by which to review the activities undertaken at Barbour, they were adequate in allowing general conclusions to be drawn. For more specific areas of discussion, the research was supported by the work of more specialised authors such as Hackman and Wageman (1995), Wilkinson and Willmott (1995), Kamath and Liker (1994) Kanter (1994) and Lamming (1993).

There was a lack of frameworks for analysis which had been derived from research within the textile industry, thereby demonstrating the need for studies in such areas to be undertaken. The research undertaken here, represents a starting point in understanding supplier relationships within an industry other than the automotive industry. Additional data from other textile companies such as Dewhirst Clothing Ltd and Claremont Garments helped provide a wider frame of analysis. The conclusions drawn add to existing knowledge as to how supplier development should be approached, using data derived from companies other than automotive suppliers and customers.

For practitioners, I have highlighted the weaknesses in T.Q.M. with regard to the relationship between an organisation's structure and culture and the behavioural processes associated with T.Q.M. With respect to supplier development, I have highlighted the need for different types of supplier

relationships to be formed within the supplier base.

For researchers, I have shown that adequate material can be gathered from case study analysis, allowing conclusions to be drawn. If research of a similar nature was to be undertaken in the future, then the methodology used in this case study research would be of use.

Should additional research be undertaken at J.Barbour and Sons Ltd, it would be beneficial to focus on the cost implications of T.Q.M. and supplier development. By putting a monetary value on the activities implemented and the cost savings derived as a result, the economic value can be determined. Further research into supplier development within the textile industry particularly within companies where a formal T.Q.M. programme has not been adopted, would be of benefit to support or disprove conclusions drawn here.

10.6 Conclusion

In the early 1990s, a clear objective was set by the Managing Director at Barbour, that the Q.A. system implemented should be a management tool, used to provide a high degree of control of the activities undertaken within the company. The system has to this extent met the original objectives. It initiated various changes within the manufacturing process, but did not challenge the status quo of the organisation as a whole.

Traditionally, "a bad workman blames his tools". In this case, there was nothing wrong with the "tool" i.e. the Q.A. system. What will prevent any

further changes within the company, is the environment within which the tool is used. The culture and structure of Barbour, as with many other U.K. companies, including those within the textile industry, are not suited to accommodating all the principles of T.Q.M. As the Barbour system was not implemented under the banner of T.Q.M. then it cannot be criticised for not having met these criteria. Research shows that even if it had been, then it is unlikely that the resultant controls and work processes would have differed greatly.

The research has shown that the basic principles of T.Q.M. can be extended to the supplier base. If appropriate, relationships with certain suppliers can then be developed further, but only to the extent that it continues to be financially beneficial. Suppliers play a significant role within the T.Q.M. framework and should be treated as such. With this in mind, T.Q.M. practices must be flexible, in order to adapt and incorporate current thought relating to all areas of the business.

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12.0 APPENDICES

1. Introduction to J.Barbour and Sons Ltd
2. Example of the Product range
3. Organisation Chart
4. E0106 Method Sheet Sewing Inspection of a Jacket
5. Quality Policy
6. Overview of the Quality Management System
7. Chart showing J.Barbour and Sons Ltd and its suppliers.
8. Quality Assurance year planner
9. QARF 0573 CMT/Subcontractor site visit report form
10. Table to show CMT fault analysis by location and fault type
11. Graph to show CMT targets against actual

In 1870, John Barbour left the family farm in Galloway, Scotland, moving south east across the border to Newcastle. Twenty four years later, ten miles down the River Tyne in the port of South Shields, he established J Barbour & Sons, making protective weatherwear which was to become renowned throughout the world.

Barbour clothing became an integral part of British life, worn wherever conditions required throughout the British Empire by farmers, sailors, motorcyclists, sportsmen, servicemen and anyone, man or woman who needed the best possible protection against weather and rough terrain.



Picture Post, 1951.

Over a century later, the unique qualities of Barbour clothing remain just as relevant. So long as it continues to rain and blow and people still have to rub shoulders with nature, there is still nothing better, more versatile or more reliable than a Barbour.

Barbour ORIGINAL BRITISH COUNTRY CLOTHING™

Barbour clothing has always been made in the north east of England and the borders of Scotland.

Quality has never been compromised. Purpose never forgotten by the generations of weavers, tailors and seamstresses that make each garment.

Whilst there are many things which make a Barbour jacket unique - over two hundred separate components, 15,000 stitches, only the finest long-staple cotton, solid brass two-way zips, Barbour's original waterproof Thornproof formula, the cut and the style - its outstanding attribute and the sum of all these parts is, 'fitness for purpose'.

It is this uncompromising commitment to practicality that has become increasingly appreciated by people throughout the world, who really know what they need and who recognise when a thing is functional - and right.



Gamefair Jacket

Item No	Colour	Lining
A 123	Sage	Dress Gordon
A 125	Rustic	Brown Check

Features

- Corduroy collar, studded for optional hoods.
- Press-studded throat flap.
- Press-studded storm fly front.
- Raglan sleeves with underarm ventilation eyelets.
- Adjustable storm cuffs.
- Brass finish two-way metal zip.
- Two large bellow pockets with press-studded storm flaps.
- Two moleskin lined handwarmer pockets.
- Washable inside game pocket.
- Pure cotton tartan or check lining.
- Studs for optional Warm Pile Lining.



Chest size	34 - 52 ins	86 - 132 cm
Length	34 - 36 ins	86 - 91 cm

Accessories

A127	Hood, Standard - Sage
A128	Hood, Large - Sage
A199	Hood, Large - Rustic
A295	Stud-in, Warm Pile Lining
D270	Thornproof Dressing

Usage Recommendations

Introduced in 1960 at the Game Fair, this is the classic Mediumweight Barbour jacket. Its simple, traditional cut and quality ensure it can be worn anywhere and never look out of place from the paddocks of Cheltenham to Brands Hatch, fishing the Tweed or an open-air concert.



Border Jacket

Item No	Colour	Lining
A 200	Sage	Dress Gordon
A 205	Navy	Blue Check

Features

- Corduroy collar, studded for optional hoods.
- Press-studded throat flap.
- Press-studded storm fly front.
- Set-in sleeves with underarm ventilation eyelets.
- Adjustable storm cuffs.
- Brass finish two-way metal zip.
- Two large bellow pockets with press-studded storm flaps.
- Two moleskin lined handwarmer pockets.
- Concealed zip-up wallet pocket, inside breast pocket.
- Two washable, detachable, inside game pockets.
- Pure cotton tartan or check lining.
- Internal drip strip.
- Studs for optional Warm Pile Lining.



Chest size	34 - 52 ins	86 - 132 cm
Length	36 - 39 ins	91 - 99 cm

Accessories

A106	Hood, Standard - Navy
A107	Hood, Large - Navy
A127	Hood, Standard - Sage
A128	Hood, Large - Sage
A295	Stud-in, Warm Pile Lining
D270	Thornproof Dressing

Usage Recommendations

The Border is a genuine all-rounder. Longer than other Barbour Mediumweight jackets, it provides that extra coverage and comfort which, combined with a long list of features, explains why it is amongst Barbour's most popular Thornproofs. Perfect for casual, out and about, everyday wear.



Beaufort Jacket

Item No	Colour	Lining
A 150	Sage	Dress Gordon
A 155	Navy	Blue Check
A 190	Rustic	Brown Check

Features

- Corduroy collar, studded for optional hoods.
- Press-studded throat flap.
- Press-studded storm fly front.
- Raglan sleeves with underarm ventilation eyelets.
- Adjustable storm cuffs.
- Brass finish two-way metal zip.
- Two large bellow pockets with press-studded storm flaps.
- Two moleskin lined handwarmer pockets.
- Concealed zip-up wallet pocket.
- Full width, non lined, rear game or cartridge pocket with side zips.
- Pure cotton tartan or check lining.
- Studs for optional Warm Pile Lining.



Chest size	34 - 52 ins	86 - 132 cm
Length	31 - 34 ins	79 - 86 cm

Accessories

A106	Hood, Standard - Navy
A107	Hood, Large - Navy
A127	Hood, Standard - Sage
A128	Hood, Large - Sage
A199	Hood, Large - Rustic
A297	Stud-in, Warm Pile Lining
D270	Thornproof Dressing

Usage Recommendations

The Beaufort was primarily designed for shooting out, as many travellers have discovered, this handsome easy-to-wear jacket is far more versatile, it's full width, zipped rear 'game' pocket is really handy for magazines, extra hand baggage and cumbersome duty frees.

See page 2:7 for matching Mediumweight Thornproof overtrousers and leggings in sage and rustic.

J. BARBOUR AND SONS LIMITED - QUALITY ASSURANCE SYSTEM

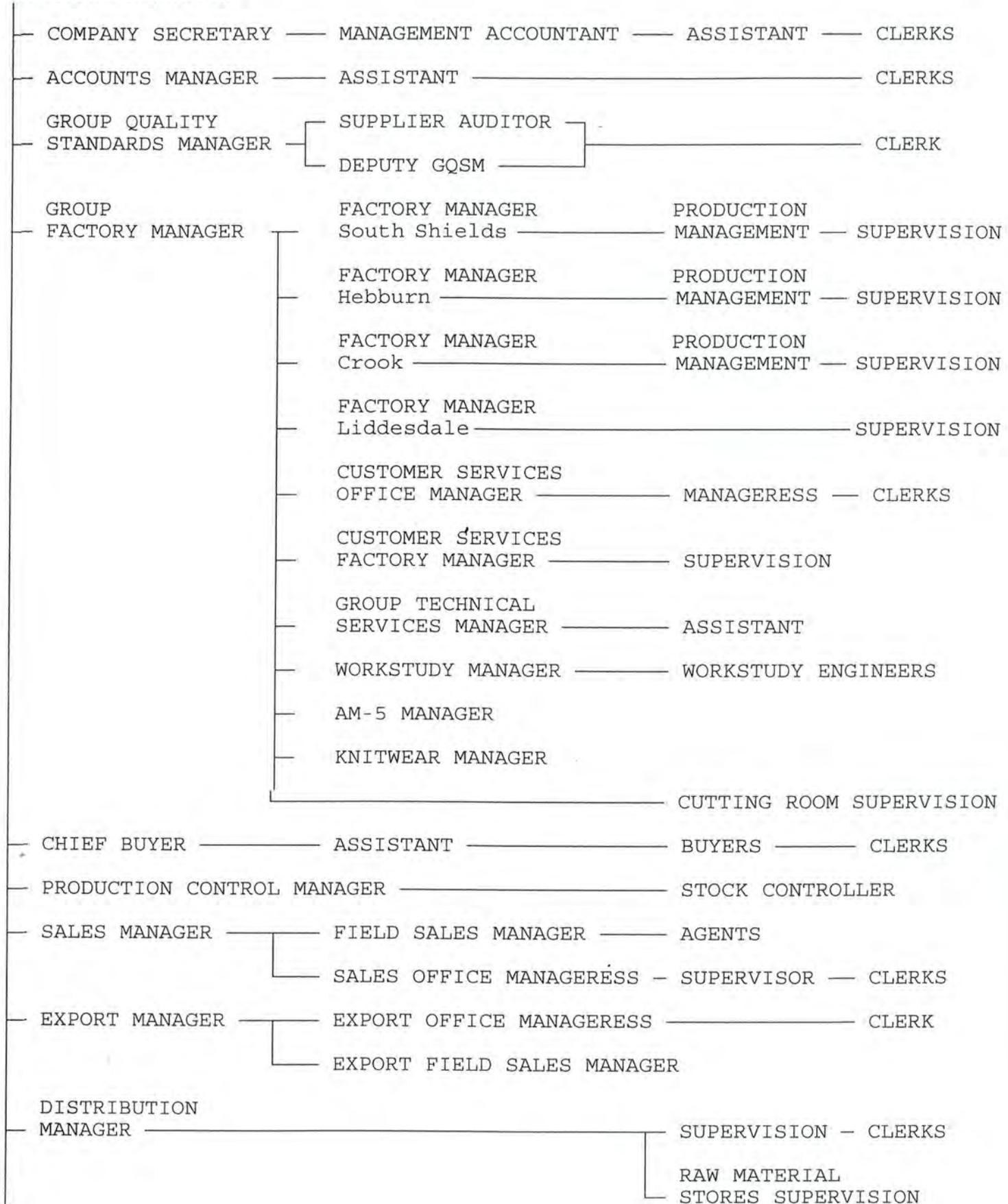
Reference: QM-05.00 Issue: 011 Authorised: SPR Sheet 1 of 2

Dated : 21-JAN-1997 Eff. From: 21-JAN-1997 Eff. To: 16-MAR-1997

***** UNCONTROLLED BEYOND EFFECTIVE-TO DATE *****

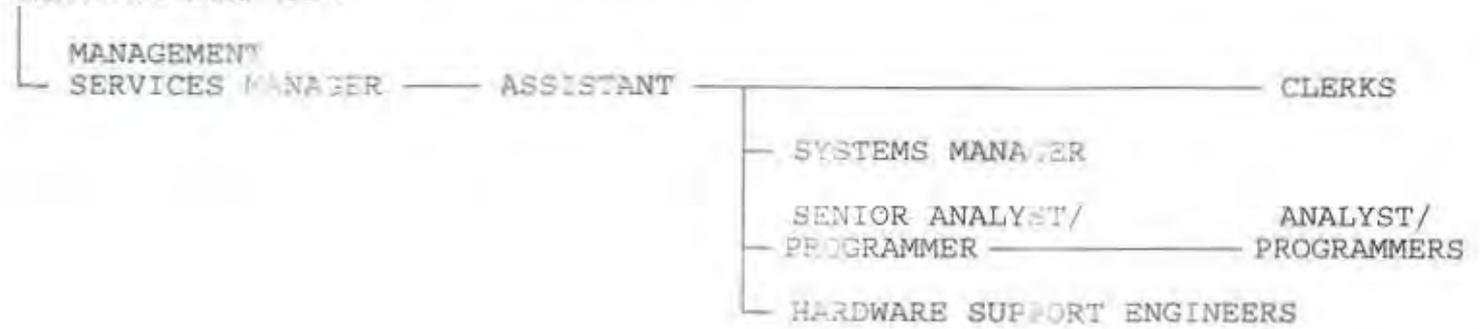
Section: ORGANISATION CHART

MANAGING DIRECTOR



***** CONTINUED FROM FIRST PAGE *****

MANAGING DIRECTOR



[END]

J. BARBOUR AND SONS LIMITED - QUALITY ASSURANCE SYSTEM

Reference: E 0106 Issue: 002 Authorised: SPR Sheet 1 of 2

Dated : 05-SEP-1995 Eff. From: 05-SEP-1995 Eff. To: 11-MAR-1997

***** UNCONTROLLED BEYOND EFFECTIVE-TO DATE *****

Method Sheets: SEWING INSPECTION

FLOOR SECTION METHOD SHEET

P.S.M.V. : 4.812 EST.
100 PERFORMANCE : 13/HR
STYLE(S) APPLICABLE : A100 BEDALE JACKET SAGE
A105 BEDALE JACKET NAVY
WORK AIDS : BARCODE READER
SUITABLE SCISSORS/CLIPPERS
DENNISON GUN
OIL & OIL CLOTH
PEN/PENCIL

ELEMENT ELEMENT DESCRIPTION AND BREAK POINT

1. Pick up jacket and position jacket to table (vertically, with collar at top of table). Ensure that Tasha tags are in both front zip tapes, showing they have been mid-line inspected. Open out foreparts. Pick up barcode reader, barcode back of woven label and aside barcode reader. Pick up pen/pencil, initial woven label and aside pen/pencil.
2. Turn through sleeves and reposition jacket on table.
3. Pick up clippers and inspect inside back lining of jacket in the following order:-
 - i) Barbour, woven and care labels.
 - ii) inspect back check lining for fabric faults.
 - iii) back nylon drip strip seam.
 - iv) back vents.
4. Open out foreparts (left and right) so that lining is visible and inspect right hand forepart lining in the following order:-
 - i) right hand join up.
 - ii) sleeve insertion.
 - iii) sleeve seam.
 - iv) knitted/nylon cuff.
5. Reposition back on table to display left hand forepart. Inspect left hand forepart lining in the following order:-
 - i) left hand join up.
 - ii) sleeve insertion.
 - iii) sleeve seam.
 - iv) knitted/nylon cuff.
 - v) full hem inside and out.
6. Pick up jacket and turn through sleeves. Position jacket to table (horizontally, with collar on left hand side of operator).

7. Pick up clippers and inspect right hand Thornproof forepart in the following order:-
 - i) right hand join up.
 - ii) sleeve insertion.
 - iii) sleeve seam.
 - iv) cuff.
8. Reposition jacket so that left hand Thornproof forepart can be inspected in the following order:-
 - i) left hand join up.
 - ii) sleeve insertion.
 - iii) sleeve seam.
 - iv) cuff.
9. Reposition jacket (vertically, with collar at top of table), fold back bottom of jacket and inspect outside of back vents.
10. Inspect collar (inside and out) and collar tab (construction and attachment).
11. Remove and discard both Tasha tags from front zip tapes.
12. Unfold jacket, zip up jacket and inspect for wavy zips.
13. When jacket is inspected and deemed to be perfect, pick up oiled cloth and rub off all chalk marks. Pick up Dennison gun and thread on the "Choosing Your Barbour" ticket to hang cord. Aside Dennison gun.
14. Pick up barcode reader, barcode 'pass' on inspection control code list and aside barcode reader.
15. Aside garment to finished area.

N.B. In the event of a fault occurring upon the garment the following non-standard Method Descriptions should be followed as required :-

E132 - OBSERVE FAULT
E134 - REPRESENT FAULT

E133 - OBSERVE REFERRED FAULT
E135 - REPRESENT REFERRED FAULT (1st)
E136 - REPRESENT REFERRED FAULT (2nd)

[END]

QUALITY POLICY STATEMENT

J. Barbour & Sons is recognised as the world's leading manufacturing and marketing company in the field of outdoor weatherwear and country clothing.

The Company's mission is to provide products of unequalled functionality, quality and value.

The Company believes that the pursuit of Total Quality in product, delivery systems and after sales service will help achieve growth and build profitability in an environment which provides secure and rewarding employment to all members of staff and management.

In order to achieve and sustain the high standards sought, the Company will operate to BS EN ISO 9002 : 1994 requirements in supplying all its manufactured and factored products.

The achievement and maintenance of this registration is a key objective of the Company, and enjoys the full support of the directors and management. Their overall objective is to ensure that the trust which our customers have in our commitment to quality is fully justified and sustained.

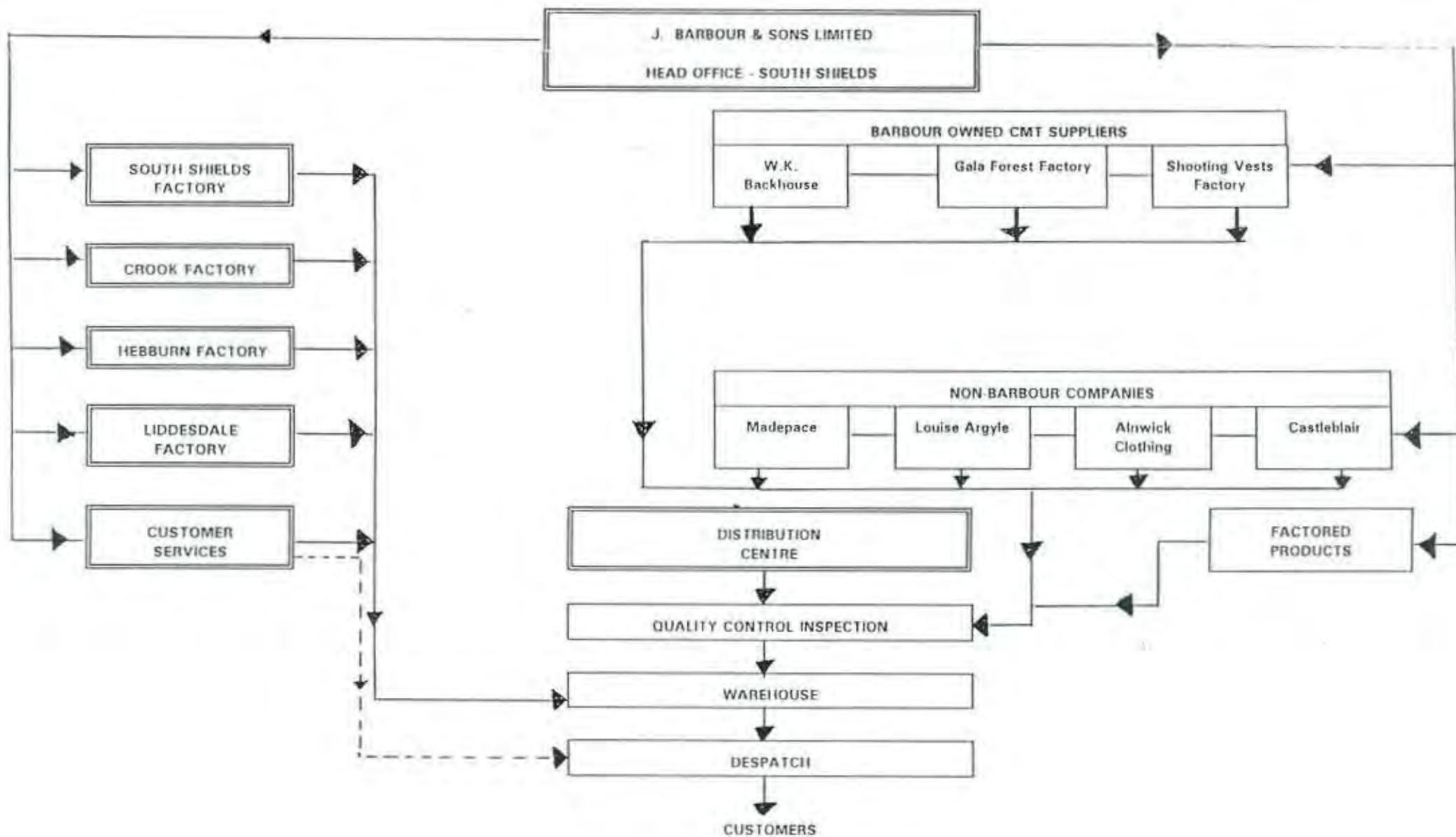
Responsibility for quality rests with all employees of the Company, and every individual contributes toward the implementation of the Company's Quality Policy.

I totally endorse this Quality Policy statement, and the Quality system on which it is built.

Signed: M D Sutherland
(Managing Director)

Date: 16.08.94

[end]



QUALITY ASSURANCE 1996 YEARLY PLANNER

1996 PLANNER	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC
PRODUCT DEVELOPMENT MEETING	YES			YES			YES			YES		
MEASURING EQUIPMENT CALIBRATION	DC	CROOK		LIDD	HEBBURN	SS/CS/QC	DC	CROOK		LIDD	HEBBURN	SS/CS/QC
JIG & ATTACHMENT INSPECTION			ALL						ALL			
SEWING MARKER TEMPLATES & FINISHING MARKER TEMPLATES CALIBRATION						ALL						
RECUT PATTERN CALIBRATION		CROOK LIDD							CS	SS	HEBBURN	
QUALITY STOCK AUDITS				SS/DC/CS LI/CR HEBBURN						SS/DC/CS LI/CR HEBBURN		
TRAINING NEEDS ANALYSIS	ALL SITES											
LRQA SURVEILLANCE VISITS				SS/DC/CS LI/CR HEBBURN						SS/DC/CS LI/CR HEBBURN		
QUALITY SYSTEM (MANAGEMENT) REVIEW									Q.A.DEPT			
QUALITY MEETINGS		YES		YES		YES		YES		YES		YES
INSPECTOR MODERATION FINAL	C.BLAIR			L.ARGYLE	SS	QC	HEBBURN	CS	CROOK	LI	SCARBRO' ALNWICK	M.PACE
INSPECTOR MODERATION MID-LINE								SS	CROOK	HEBBURN LI		
INSPECTOR MODERATION FACTORED PRODUCTS							QC					

CR = CROOK

CS = CUSTOMER SERVICES

LI = LIDDESDALE

QC = QUALITY CONTROL

SS = SOUTH SHIELDS

CMT SUBCONTRACTORS SITE VISIT REPORT (QARF.0573 - ISSUE 1)

Company Name :

Address :

Date of Visit :

Date of Last Visit :

Carried Out By :

Carried Out By :

Meeting With :

Meeting With :

AREAS REVIEWED

Outstanding Action From Previous Visits :

Quality Control Reports.

Period :

Amount Supplied :

Number Inspected :

Number Failed :

Percentage :

**Comments/
Corrective Actions :**

Quality Reports (CMT):

**New Production
Techniques :**

Training :

Raw Materials :

Machinery :

Housekeeping :

Security :

Other Details :

Signed :

Approved :

Date :

Castleblair Ltd.

A150 Analysis of Faults by Type May - Oct 1995

Number of Faults - Type

		Component	Studs	Weaving	S/Runoff	Shading	Eyelet	Crease	Needle Holes	Appearance	Linings	Stitching	Total	%	
Number of Faults - Location	Lower Pkt			1									Lower Pkt	1	1.0
	Wallet/Zip Pkt											1	Zip Pkt	1	1.0
	Back											1	Back	1	1.0
	Cuff										1	3	Cuff	4	3.8
	Labels	1			1						1	2	Labels	5	4.8
	Game Pkt								2	1		2	G/Pkt	5	4.8
	Hand Warmer									2		4	H/Warmer	6	5.8
	Front						3	1			3	1	Front	8	7.7
	Sleeve			1		2			1	1		3	Sleeve	8	7.7
	Side Seam								2	2	2	4	S/Seam	10	9.6
Hem								1	2		7	Hem	10	9.6	
Collar		1						2	6		9	Collar	18	17.3	
Armhole				1	1			3	3		15	4	Armhole	27	26.0
		Component	Studs	Weaving	S/Runoff	Shading	Eyelet	Crease	Needle Hole	Appearance	Linings	Stitching			
	Total	1	1	2	2	3	3	4	11	14	22	41		104	
	%	1.0	1.0	1.9	1.9	2.9	2.9	3.8	10.6	13.5	21.1	39.4			

