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PRODUCTION IN THE NEW ZEALAND TEXTILE AND GARMENT INDUSTRY
WITH PARTICULAR REFERENCE TO SHORT RUNS

A thesis presented in partial fulfilment of the requirements
for the degree of Master of Technology in Industrial
Management and Engineering at Massey University.

David Peter Maxwell
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CHAPTER 1Acknowledgements

To carry out a research program designed as this one was requires the assistance of many people. The results and success of the study can be attributed greatly to the help and willingness with which so many people have come forth with information and assistance.

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A great deal of background data and information was obtained from industry bodies such as the Manufacturers Federation, Textile and Clothing Institutes, Massey University Market Research Centre and many personnel with a wealth of knowledge about the industry who are now not directly involved with it, to these people I extend my grateful thanks.

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CHAPTER 2

2.0 Summary

The 1974 New Zealand Textile Institute conference,⁽³⁾ the report of Commission of Inquiry into the Woollen and Associated Textile Milling Industries⁽²⁾ and the working paper for the Textile and Garment industry⁽¹⁾ all identified short run production as a problem in the New Zealand textile and garment industry. In light of the awareness of the problem in the industry this study is the beginning of a program of research looking at production in the New Zealand textile and garment industry.

The initial aims of the first programme of the study (of which this thesis forms the bulk) was; to identify the areas of the industry which require analysis, obtain data upon which further analysis could be based and look at how short run production is treated by the manufacturers in the industry.

There is very little information available upon which such a study can be based. It was decided the best means of information collection was to conduct a survey of the industry. The survey technique chosen was the questionnaire which was sent to the entire industry.

Before constructing the questionnaire a number of interviews and discussions were held with textile and garment manufacturers and other people involved with, or knowledgeable of, the industry. From the interviews and discussions the way in which production is handled and the factors which affect it were isolated.

The questionnaire was then constructed based on the information gained from the interviews and discussions. The questionnaire was distributed to all companies involved with the industry in New Zealand and of these 41% of the companies that received questionnaires returned a completed copy.

Analysis of the questionnaire was then carried out in conjunction with further discussions with people involved with the industry. The analysis of the data is divided into three main sections, the position of the company in the industry;
 the way in which production is handled;
 the factors affecting the economic performance of the manufacturer.

As the industry is composed of a number of different types of manufacturer it is divided into six major categories:

- i) woolscouring
- ii) woollen milling
- iii) other spinning and weaving mills
- iv) hosiery and other knitting mills
- v) garment manufacture
- vi) other

There were too few replies from categories (i), (ii) and (iii) upon which to base significant analysis. These three categories are treated together as are the hosiery and other knitting mills and garment manufacture categories.

Analysis of the data received from the questionnaires and opinions expressed during discussions reinforced many ideas expressed in previous studies as well as presenting many aspects of the industry previously relatively under researched.

Probably the most distinct factor in the textile and apparel industry is the relatively high number of different products produced by many manufacturers. Many manufacturers, in particular the smaller companies, produce a high number of different products for many different customers. As with the studies that have gone before one of the main recommendations resulting from this study is the rationalisation of the range of products produced by many of the companies.

The rationalisation of the number of products could be brought about in a number of ways:

- a) improved forecasting;
- b) tougher screening of new products at the sample producing stage;
- c) a greater frequency of contact with the customer.

Analysis of the data received illustrates that it is the companies with the above characteristics which produce the relatively smaller range of products. One problem encountered by the textile and apparel industry with respect to product range, is the seasonal and fashion nature of the market. The seasonal aspect presents problems in that for the majority of knitting and garment manufacturers they are required to compile two separate product ranges, this in turn leads to difficulties with production

planning and finance.

The main method of production planning employed by all divisions of the industry is "produce to order", there appears to be room for far more batching of production orders. This survey has shown by way of cost decreases and production efficiency that the situation is such in the New Zealand textile and garment industry that a greater batching of production orders would greatly increase the overall industry efficiency in terms of cost and time per final product. Up till now there has been very little work done on economic production quantities and the variables involved, thus this is one of the areas recommended for further research.

The improvement of production efficiency must be brought about by the improvement of all factors mentioned above, this can only really result from an education programme which is designed to bring the manufacturer into contact with techniques and systems which will increase his production efficiency.

The majority of textile and garment manufacturers in the New Zealand industry can be classified as small manufacturers, especially in the garment manufacture category. The size of company, it is found, has a great bearing on the techniques employed within the company. Many of the small companies rely very much on the "manager/owners knowledge" for the running of the company. The relative smallness allows the manager/owner to be able to carry out production planning and forecasting etc., with very little formal procedure involved. The shorter lines of communication and resulting increased versatility allow the manager to keep relatively good control of his production process. Analysis illustrates that there is still the capacity for further improvement and

New Zealand textile and
garment manufacturers could become recognised as highly
efficient producers of short runs.

This study was undertaken with the idea in mind of viewing short production runs not as a problem but rather as an asset and structuring the production process in such a way to make New Zealand a viable competitor in a field where many other countries, because of the size of the country, could not compete.

Analysis has shown that the short production run can be handled efficiently and economically if the correct techniques and programs are adopted.

CHAPTER 3

3.0 Introduction

"The textile and garment industry in New Zealand is a very diverse industry covering a wide variety of products and operations. The industry has the difficulty of being composed of a large number of small individual firms running independently⁽¹⁾".

The above quote is one typical of those found in three articles relating to production in the New Zealand textile and garment industry i.e.

- a) Holden Report⁽²⁾
- b) New Zealand Textile Institute conference 1974⁽³⁾
- c) Working paper for textile and garment industry research⁽¹⁾.

Short run production is an aspect of the industry in New Zealand which has been identified as one which requires further analysis.

"Greatest immediate problem in the textile industry is the production of small batches or runs⁽¹⁾".

It is felt by many people that because New Zealand is a country in which small companies are predominant, short run production could be developed to the extent where New Zealand is a country that can carry out short production runs efficiently. Therefore the initial aim of this study was to look at the textile and garment industry from the point of view, not of eliminating the so called short run but rather as structuring the industry, and techniques used in such a way that short runs could be handled economically.

Such a program of research cannot be carried out in a short space of time thus the following analysis and results were obtained with the view to forming a base for further more thorough on going research. This report is seen as a starting ground upon which further research can be based. The different aspects of production identified will require a new study in themselves to ensure maximum benefit to the industry.

Many aspects of production discussed in this study are known to manufacturers as problem areas or areas in which the New Zealand industry is deficient but as yet nothing collectively has been done to amend the situation.

The areas of production identified in this report are not peculiar to the textile and apparel industry in that many other industries in New Zealand might well experience the same situation.

The research program was funded and initiated by the Physics and Engineering Division of the D.S.I.R. as they, through their experiences, saw short run production as a characteristic of New Zealand industry. New Zealand because of the population of the country and the relatively small size of many companies is capable of dealing with short production runs relatively more easily than the larger more industrialised countries. The common philosophy not too long ago was that mass production was the answer to economic production runs, but this idea is now changing;

"What is resulting in the U.S. is an extraordinary reversal of orthodox economic theory. The need for versatility is making a strong case for small scale production and smaller corporate structures⁽⁴⁾".

Such versatility with respect to production is far more easily obtained in a smaller company⁽⁴⁾ because of the shorter lines of communication.

The textile and garment manufacturing industry was chosen as the industry upon which to base the study for a number of reasons;

- a) short production runs have previously been identified as a characteristic of the industry
- b) the base for the research, Massey University, is in the centre of a high concentration of textile and garment manufacturers
- c) the range of companies, with respect to size and personnel, is considered representative of many other industries hence the results could be projected further than just the textile and apparel industry.

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