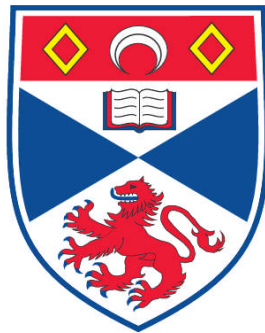


**INTERNATIONAL COMPETITION AND STRATEGIC RESPONSE  
IN THE DUNDEE JUTE INDUSTRY DURING THE INTER-WAR  
(1919-1939) AND POST-WAR (1945-1960S) PERIOD : THE  
CASE OF JUTE INDUSTRIES, BUIST SPINNING, CRAIKS AND  
SCOTT & FYFE**

**Swapnesh Masrani**

**A Thesis Submitted for the Degree of PhD  
at the  
University of St. Andrews**



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International Competition and Strategic Response in  
the Dundee Jute Industry during the  
Inter-war (1919-1939) and Post-war (1945-1960s)  
Period:  
The Case of Jute Industries, Buist Spinning, Craiks  
and Scott & Fyfe

By: Swapnesh K Masrani

Submitted for the requirements for the degree of  
Doctor of Philosophy

In

Management

At

University of St-Andrews, Scotland

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## Declarations

I, Swapnesh K Masrani, hereby certify that this thesis, which is approximately 91,500 words in length, has been written by me, that it is the record of work carried out by me and that it has not been submitted in any previous application for a previous degree.

Date                                      Signature of Candidate

I was admitted as a research student in April 2001, and as a candidate for the degree of Doctor of Philosophy in Management, the higher study for which this is a record was carried out in the University of St Andrews between 2001 and 2007.

Date                                      Signature of Candidate

I hereby certify that the candidate has fulfilled the conditions of the Resolution and Regulations appropriate for the degree of Doctor of Philosophy in the University of St Andrews and that the candidate is qualified to submit this thesis in application for that degree.

Date                                      Signature of Supervisor

In submitting this thesis to the University of St Andrews I understand that I am giving permission for it to be made available for use in accordance with the regulations of the University Library for the time being in force, subject to any copyright vested in the work not being affected thereby. I also understand that the title and abstract will be published, and that a copy of the work may be made and supplied to any *bona fide* library research worker.

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## **Abstract**

This thesis uses the ‘demand-side thesis’ to examine the decline of the Dundee jute industry. In particular, it examines the effect of international competition and the strategic response of the industry during the inter-war (1919-1939) and the post-war (1945-1960s) period to counter this challenge. The strategic response is studied by examining strategies employed at the firm and the industry level. Strategy at the firm level is studied in the form of capability development using the capabilities approach. The thesis also makes an attempt to redress the issue of determinism in the capabilities approach which suggests that the pattern of capability development is governed by path-dependency. By drawing on the techniques employed in the history literature, this research identifies strategic options that were being considered by firms at the time of capability development and examine why certain alternatives were not pursued. This will bring to light aspects other than those associated with path-dependency that played a role in the pattern of capability development. The capabilities developed by firms during the two periods are compared and contrasted in order to understand the pattern over this period. These findings are juxtaposed with the British cotton textile industry, a related sector, to examine the effectiveness of the demand-side thesis in explaining the decline of the jute industry in particular and the textile industry in general.

This thesis makes contribution to three areas of literature: First, the thesis helps to further develop the demand-side framework by introducing a new case (Dundee jute industry) and developing a better understanding of strategic response within the jute and textile industry in general. Second, this thesis contributes to the theoretical development of capabilities approach in two specific areas: a) it helps to address the issue of determinism inherent in the capabilities approach through the notion of path-dependency. This was done by also examining the strategic options that were available to firms while developing their capabilities and underlining the reasons for not pursuing them. b) the analysis sheds new light on the nature of branching of capabilities in an industry over a long period. Third, this research makes significant contribution to the existing literature on the business history of the Dundee jute industry, which is sparse. The contributions can be categorised into four key aspects which have not been examined in the current literature: a) period (inter-war and post-war), b) issue (systematic examination of the Dundee jute industry’s decline, strategic response and role of collective strategies), c) method (detailed study of individual firm’s strategies), and d) cross comparison of industry’s experience with related sectors (for example, the cotton industry). Focusing on these issues has helped to throw new light on the challenges, especially technological, facing the industry in developing its strategic response.

## Acknowledgements

A major requirement for successful completion of a doctoral degree is that the thesis should be candidate's own work. Of course, the words and ideas expressed here are my own and I also take the responsibility for any errors of omission and/or commission. At the same time I cannot emphasize enough the decisive role played by a number of people in the making all this possible. Yet, I feel that by just acknowledging and thanking very generous help and support that I received is definitely an understatement. I hope someday I can get an opportunity to return the favour in a meaningful way.

I would like to begin by extending my deepest gratitude to my parents for not losing their faith through the entire journey. They matched their belief in me with very generous funding, without which this project would have never materialised. Although I am aware that I did my best to test their limits, they have shown tremendous patience throughout this time. I will forever remain in their debt.

This thesis talks about options that firms, and people, have before making their choices. Looking back to the time when I had to take the decision on where to pursue my doctoral degree, I wonder how the whole experience would have been had I not pursued it with Peter McKiernan. Although I had formulated this view very early on, even after 6 years I can confidently say this was one of the smartest (or perhaps luckiest) decision I may ever make in my life. And I don't say this from my 'hindsight bias'. Because of the apprenticeship nature of PhD in the UK, a supervisor's role is very important. Of course, they can help you get the degree i.e. give you the fish. But the real learning is when you are given an opportunity to learn the trade i.e. show you how to fish. Peter was very kind and generous in providing me with a number of invaluable opportunities to take responsibility and explore my potential beyond the normal realms. I know I could have done much better, but I hope I was not disappointing. I must say that Peter's breadth and depth of knowledge of many subjects never failed to amaze me and always kept me on my toes. A believer in possibilities, there is so much to learn from him in all spheres of life. Besides this, Peter was also very supportive in personal life whenever needed. It is always a privilege to work with a leading personality. But to have this opportunity at this 'young' age was priceless.

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management theories. With Brad MacKay this has taken a step further. Brad and I have worked on a number of projects together. These have been a tremendous learning experience for me and also great fun. Lately I have also very much enjoyed the company Ryan Parks and Gary Bowman. Their enthusiasm and sharp sense of humour can lift anyone on days when nothing seem to work. Although I have not been able to join them as often as I would have liked at the local taverns, I hope I can set my priorities right in future. Ditto for Daniel Clark, from whom I have learned so much and whose company was a joy. It is tribute to the high quality doctoral programme run at the School of Management which has attracted such high calibre students. I also thank Liz Brodie, Gail Gillespie and Barbara Lessels. Without their help I would never have managed to navigate the local bureaucracy.

Having surrounded myself with professional, supporting and generous superstars, I had the little chance of failure!

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The last 6 years have also been eventful in my personal life. Having arrived here a bachelor, I am now looking forward to life with Jagdish! Throughout this period Jagdish has been a constant inspiration. She has remained very supportive during difficult times. This journey would not have the same meaning without her!

## **Chapter 1 Introduction**

### **1.1 The British Industrial Decline**

Traditionally, the 'supply-side thesis' has been the dominant framework in explaining the decline of British industries that occurred between the late nineteenth century and the post-war period. This framework has drawn extensively from the studies of Alfred Chandler Jr (1956; 1959; 1962; 1977). Therefore, it is useful to first get an overview of Chandler's major contributions, which can be categorised into two areas: First, a major contribution was in research approach. Business historians have generally relied on writing company histories and entrepreneurial biographies as their major research approach. Chandler had a significant effect in redirecting this strategy by introducing an analytic approach through comparative analysis of individual firms, as opposed to the traditional approach of company histories and deriving generalisations from the analysis. Second, using the 'analytic' approach, Chandler analysed the rise of the big business in North America since the end of nineteenth century and created a set of generalisations. These have been widely termed as the 'Chandlerian thesis'. It suggested that the rise of big businesses was led by the formation of integrated and divisionalised structures which were administered by professional managers. Chandler argued that this was a rational development in response to expanding markets and increasing complexity in operations during this period.

Chandler's contribution has influenced the debates in British business history significantly. For example, his suggestion to induce a thematic direction has been used by researchers to develop the research issue on the 'decline of British industries' that has occurred since the late nineteenth century'. On the other hand, Chandler's generalisation has been used as a supply-side framework to analyse this decline. Drawing on the 'Chandlerian thesis', Lazonick (1983), Elbaum and Lazonick (1984), Elbaum and Lazonick (1986) and Mass and Lazonick (1990), examined the decline of the British cotton industry. They concluded that industrial decline since the late nineteenth century can be attributed to 'personal capitalism' practiced by the owner-managers. As a result, firms failed to invest in three key areas: a) better technology to increase productivity, b) horizontal integration to overcome the limitations of fragmented

industry structure, and c) a professional management to manage the firm's operation. The major implication of this is that it questions the quality of entrepreneurship displayed within the British industries during the period of decline. It charges the owner-managers with short-sightedness and failing to make any long-term investments in the firm.

Although the supply-side thesis provides an interesting insight into the state of the industry during this period, researchers have argued that the using the Chandlerian thesis, which developed from the historical experience of North American firms in late nineteenth century, as a framework to examine the British industrial decline is not an appropriate strategy. It is less an examination of the intrinsic character of British enterprise than an 'assessment of the comparative implications' of large-scale firms that first emerged in the United States before the First World War (Supple 1991: 512). For this reason, the supply-side explanation has been termed as a counterfactual argument (Broadberry and Marrison 2002: 51). Hence, researchers have questioned the appropriateness of applying the framework in the British context.

Furthermore, researchers have also challenged the conclusions derived from the supply-side thesis. The alternative explanation has been generally termed within the literature as the 'demand-side' thesis. Proponents of this framework have questioned the central tenet of Lazonick's argument that productivity in British industries was lagging far behind that of their counterparts in North America since the late nineteenth century. For example, Broadberry (1997), while examining the productivity in the UK economy from late nineteenth century to the 1970s concluded that the level of productivity during this period 'has not been as disastrous as it is sometimes thought' (p. 15). Broadberry found that there was considerable variation in the performance between different industries. According to him, Britain did well in three types of industries: first, craft based industries where production methods were flexible, for example textiles. Despite the extensive use of ring-spinning and automatic looms in America, Britain continued to perform well in niche areas. Second, Britain's performance was competitive in industries where mass production could not be applied, such as shipbuilding. And third, industries where there was no lag in adoption of throughput techniques owing to absence of demand constraints also showed strong performance. For instance in seed-crushing, coke, sugar and tobacco industries. However, in industries which required mass-production techniques, Britain's productivity did lag behind that of North America, for example in the

motor-car industry. Broadberry attributed the variation in performance of different industries to the difference in conditions prevailing in the UK and North America. The abundance of land and natural resources combined with the lack of skilled labour in America led to development of mass-production systems (p. 395). Europe on the other hand had to economise on land and natural resources and utilise its skilled labour. As a result, developments in Britain were related to 'flexible production methods producing customised outputs with skilled shop-floor labour' (p. 395).

A major contribution of the demand-side proponents, especially with regard to the cotton industry, has been the suggestion of specialisation as a strategic response and barriers in the form of loss of major global markets due to restricted access to major global markets. Researchers have argued that instead of problems associated to increasing productivity through mass production and integration, growth of industries in countries which were previously major markets and the resultant decline in market share there played a major part in the industrial decline (Sandberg 1974; Singleton 1991). According to them, these factors had greater implications for the industry than the problems posed by the fragmented structure and relative 'technological backwardness'. Although researchers have not examined the issue in detail, they have indicated that the strategic response of the industry to the international competition involved specialising in higher quality goods, while leaving the 'standard' goods to their international competitors (Broadberry and Marrison 2002). However, because the pretext is that of general decline, it is convenient to emphasize the causes of decline and overlook cases of successful strategic responses of individual firms. Within both the supply-side and the demand-side thesis, very few studies have conducted detailed case-studies of individual firms to examine strategies adopted by them during this period (Dintenfass 1992). As a result, there is scope to develop greater understanding of strategies employed by individual firms along with examining the causes of decline. In addition to strategic response at the individual level, collective strategies (e.g. short time working, price agreements) in the industry also formed a major part of the industry's overall strategy. Hence, it becomes important to also examine the effect of collective strategies in countering international competition and in shaping the strategic response of individual firms.



The major implication of the demand side thesis is that it has been sympathetic to the quality of entrepreneurship displayed by owner-managers during this difficult period. Researchers have argued that the major problem faced by the industry (i.e. international competition and closing of markets) was beyond their individual control. As a result, it is not appropriate to hold them accountable for being unable to influence events which were not under their control.

The limitations associated with the supply-side thesis makes the demand-side thesis a more attractive model to examine the British industrial decline. Unlike the supply-side thesis, the emphasis here is not on examining the industry against generalisations derived from the North American experience during the late nineteenth century. As a result, in the demand-side framework the causes of decline are likely to reflect greater contextual relatedness. In addition, it also offers a more robust model. By examining the causes of decline and also the strategic response of firms individually and collectively, the demand-side thesis offers a more rounded framework within which to examine the decline of British industries.

## **1.2 Capabilities Approach**

Business historians have particularly underlined the potential of the greater use of strategy literature to gain new insights into strategies employed by firms while examining the British industrial decline (Jeremy 2001). The capabilities approach with its focus on firm level analysis can be useful in providing greater understanding on the strategic response of individual firms- a key element of the demand-side framework.

The capabilities approach has attracted significant interest among strategy researchers during the last twenty years. However, this growing interest has also led to a number of definitions of capabilities, which makes it difficult to operationalise the notion (Collis 1994: 144- 145; Dosi, Nelson and Winter 2000: 3). In order to overcome this difficulty, an attempt has been made to group capabilities hierarchically. Understanding the capabilities in this way helps to clearly identify the different types of capabilities without diluting their inherent characteristics. The capabilities have been grouped into two sets:

a) capabilities that represent the highest order of manifestation in terms of an organisation's function (e.g. Wal-Mart's capability in distribution) and key processes (e.g. Cannon's

capability in 'optics, imaging, and microprocessors, Sony's capability in 'minituarisation', and Motorola's capabilities in 'printed circuits, ceramic materials, design of rugged circuits') that feed into products and which are easily identifiable.

b) capabilities that represent coordinating processes and routines that provide the building blocks for higher order easily identifiable capabilities identified in the first set (e.g. the process to 'harmonize' the 'know-how' in relevant technologies and ensure that there was a 'shared understanding' among its 'technologists, engineers and marketers while building Sony's capability in 'miniaturisation'; process such as product innovation, strategic decision making, alliancing).

Considering that the purpose of this research is not to explore the micro processes used by jute firms to develop their capabilities, the second set of capabilities which mainly focus on micro-level co-ordinating processes and routines would not be appropriate. Since the aim of this study is to examine the capabilities that firms developed in their attempt to strategically reposition themselves, it is important that these capabilities are identifiable. Therefore, when examining the cases of individual firms, this research will use the capabilities that are categorised in the first set.

A major feature of capabilities is that they can be leveraged to develop other products and services for the firm. For instance, Honda's capability in engines was used to develop its cars, motorcycle, lawn mower, and generator businesses. Similarly, Cannon's capabilities were instrumental in developing its diverse business portfolio, which included copier, laser printers, cameras, and image scanners (Prahalad and Hamel 1990). Similarly, Holbrook and Cohen (2000) described how individual firms leveraged their initial technological capabilities in the transistor industry to establish themselves in the emerging semiconductors industry. The leveraging of capabilities can take multiple forms. Helfat and Peteraf (2003) have suggested six forms (see Figure 7) in which capabilities leveraging can occur, driven by internal (firm based) and/or external (market based) factors. These are: retirement, retrenchment, replication, recombination, redeployment and renewal. This categorisation provides a useful framework within which to understand a firm's strategic response. As a result, this thesis uses these six categorises as a guiding framework to examine the capabilities developed by selected case-studies as part of their strategic response in the Dundee jute industry during the inter-war and post-war period.

Another major feature of the capabilities approach is the emphasis on path-dependency. The capabilities approach has especially emphasized its 'serious' engagement with history through the use of path-dependency as an element of its theoretical framework (Teece et al 1997; Helfat 2003). Consequently, in both theoretical and empirical analysis the focus has been on examining the effects of path-dependency on capabilities. Although the 'probabilistic and stochastic' nature of processes involved in creating path-dependency has generally been acknowledged by researchers (David 1985), at its core the notion of path-dependency remains a deterministic approach (Booth 2003; Clark and Rowlinson 2004). Moreover, the parallel drawn in equating the study of path-dependency as a serious engagement with history is erroneous.

A possible way to overcome this determinacy, and develop greater engagement with history, is to give greater attention to the historical context and underline the multiple options that were available before a particular alternative was decided upon. It is seldom the case that a firm has considered only one capability development option. Often, a firm considers more than one type of capability before it chooses a particular capability development option. For example, taking the case of Helfat and Peteraf's (2003) categories of capability development, when deciding on developing their capabilities further, a firm could critically examine its choices among the six categories. Greater attention to strategic options has also been argued for by historians. For example, both Carr (1964) and Elton (1967), their differences on post-modern and traditionalist approach to history apart, have acknowledged the significance of understanding the range of alternatives available in a historical period as a means to counter the issue of determinacy in history. Of course, it is possible that a capability developed by a firm may reflect path-dependency. However, by identifying strategic options that were being considered by the firm before developing a particular capability allows a researcher to acknowledge various options that were available to the firm. It also gives an opportunity to examine why a particular capability was developed over the other, thus enabling us to identify any problems/barriers faced in pursuing other options. This process helps to gain greater understanding of the historical context and, instead of attributing it to path-dependency, also helps to develop deeper insight as to why a particular set of capabilities were developed rather than another. Therefore, in this thesis, while examining the actual capabilities developed by selected case-studies in the

Dundee jute industry during the inter-war and post-war period, attention is also given to identifying strategic options that were being considered by firms while developing their capabilities and barriers that led to choosing particular set of capabilities over another. Apart from redressing the issue of determinism in the capabilities approach, it will also help to develop greater insight into the strategies that were pursued by the firms and into the decline of the Dundee jute industry.

### **1.3 The Dundee Jute Industry**

#### **1.3.1 Growth**

Jute, like cotton, is a natural fibre. It is grown primarily in the Indian sub-continent, especially in the eastern Indian state of Bengal and Bangladesh. Combined, this region had traditionally supplied the majority of the world's demand for raw jute to this day. Its cultivation is confined to this region owing to the climatic conditions that are particularly suitable for growing this crop. Although jute was spun and woven by hand-looms in India for over two thousand years, it was in Dundee, in Scotland, where modern production techniques were first introduced that enabled the industry to achieve a world wide reputation.

Historically, firms in Dundee had used flax, supplied from Russia, as the primary fibre. Jute was first introduced in Dundee in the 1820s and 1830s. Initially, the flax manufacturers were not keen to use jute because it was considered a cheaper, and thus perceived as an inferior, option to flax (Woodhouse and Brand 1934). However, the sudden cessation in the supply of flax from Russia during the Crimean War (1854-1856) left little room for this resistance. Jute provided a cheaper option to flax and the customers also accepted it. Thus the modern jute industry using modern production techniques was born. With little international competition, Dundee soon emerged as the leading global supplier of jute goods. The industry continued its growth over the second part of the nineteenth century, owing to a large demand for sand bags during the American Civil War (1861-65) (Carrie 1953) and for the fact that jute was not manufactured in any other part of the world. The quantity of imported raw jute gives an indication of the rapid growth of the industry during this period (see Figure 1).

Correspondingly, the number of spindles, looms and people employed in the industry also expanded significantly (see Table 1).



Figure 1: Source: Howe (1982)

**Table 1 Number of Spindles, Looms and Employed between 1870-1890**

	Spindles	Looms	Employed
1870	94,520	3774	14911
1890	268,165	14107	43366

Source: Jute Working Party Report (1946)

### 1.3.2 Industrial Decline

Like cotton, the jute industry too witnessed a dramatic decline since the late nineteenth century. By 1944, raw jute imports into the UK had collapsed to less than 25% of their 1896 levels (See Figure 2) and the sector's size ranking had fallen to third in the world. How do the traditional supply and demand-side frameworks, which have been used widely in the UK cotton industry, help to understand the jute industry's decline? The decline of the Dundee jute industry has yet to receive the close scrutiny that has been awarded to other British textile industries, notably the cotton industry. Consequently, there is very little systematic analysis on the issues related to the decline of the industry. Nonetheless, the existing literature on the Dundee jute industry does indicate the greater relevance of the demand-side over the supply-side thesis, as described in the following two sections.

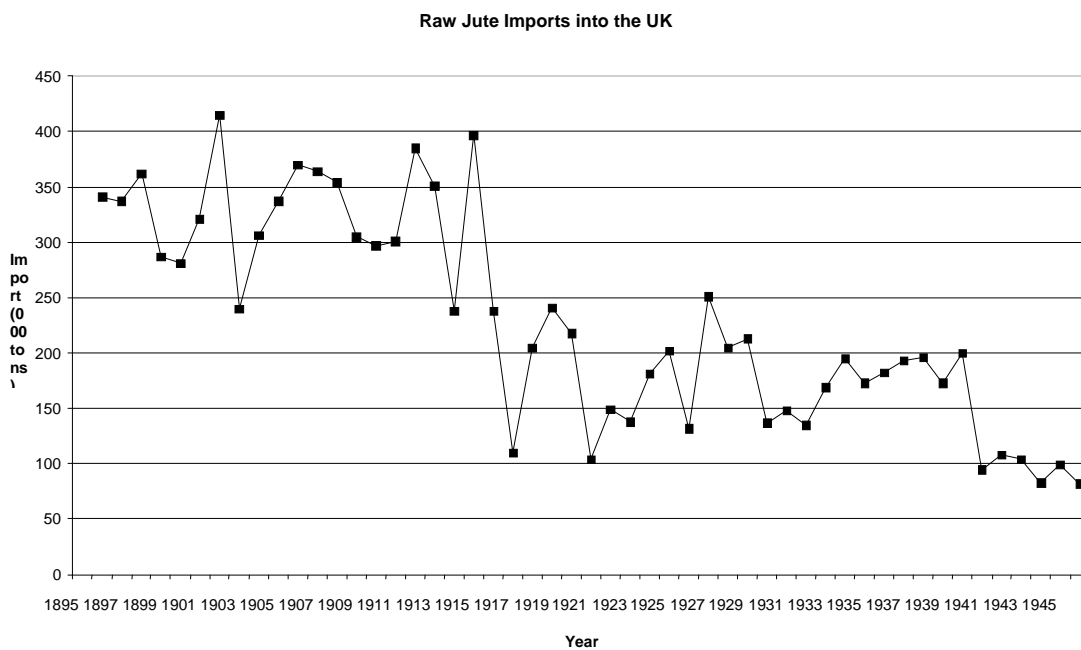


Figure 2: Source: Jute Working Party Report (1946)

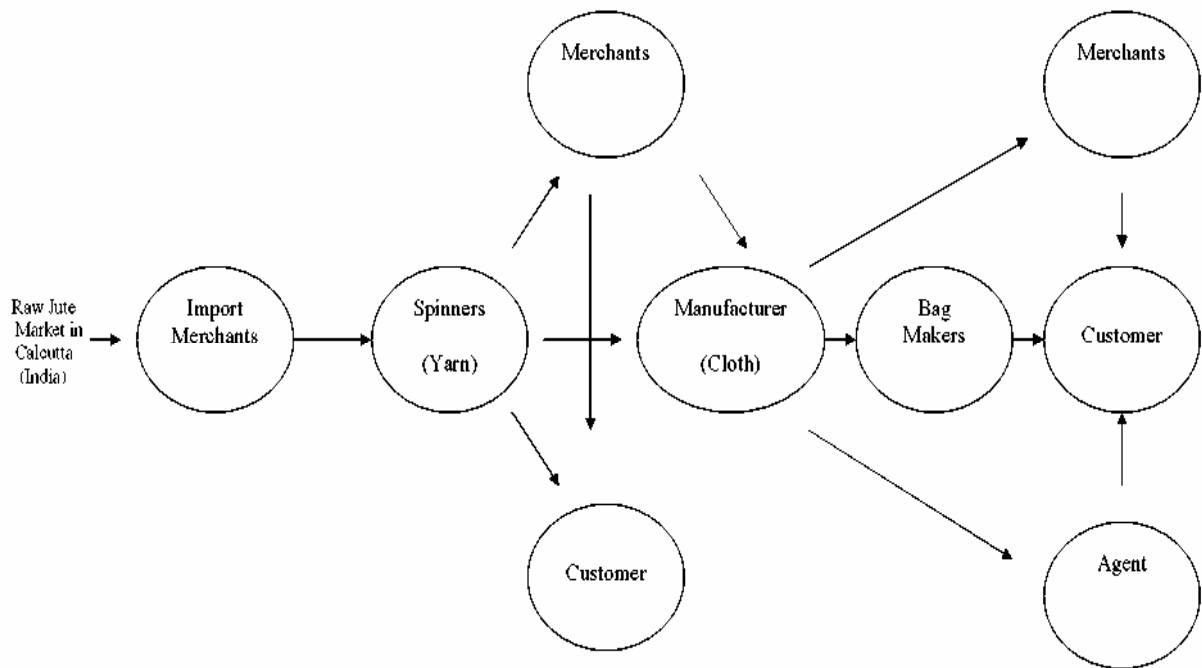
### 1.3.2.1 The Supply-side Thesis

As there is a dearth of business history studies on the decline of the Dundee jute industry, it is difficult to comment with any certainty on the role supply-side thesis factors, i.e. industry's structure, manufacturing technology in spinning and weaving and professionalisation of management, as a cause industry's decline.

Nonetheless, the literature on the Dundee jute industry does indicate that the jute industry's structure resembled that of other industries within the UK, in that it was fragmented (see Figure 3). The fragmentation was a distinct feature in the industry since the early formative years when flax was the dominant fibre, as Peter Carmichael (engineer, mill manager and later Director of Baxter Brothers) in his memoirs had recounted (Gauldie 1969). He observed that the linen trade during 1833 consisted of four major players: a) flax merchants, who imported raw flax, b) spinners (yarn manufacturer), c) manufacturers (made cloth), and d) merchants, who bleached the cloth / yarn and sold it. The fragmented structure persisted until after the end of the Second World War. In their report to the Government, the Jute Working Party (1946) estimated that, out of the total 44 firms, 8 (18%) specialized in spinning, 18 (41%) specialized in weaving and 18 (41%) were vertically integrated (p. 23).

However, lack of large integrated firms was not found to be a constraint on productivity. For example, Menzies and Chapman (1946) provide an interesting insight into the industry's position during the inter-war period. They analyzed the productivity of firms based on their size, the basis for the Chandlerian thesis on 'scale and scope', by comparing the firm's out-put with number of people employed by it (Table 2). Menzies and Chapman acknowledged that a comparison through the size of labour force may not provide an accurate picture because 'a firm which has modern equipment may have more spindles and a greater output than a firm with more employees but older equipment' (p. 242). However, they argued that with little data available on the number of spindles and looms in individual firms, this analysis gave some insight into industry's position during this period. Their findings clearly indicate a superior ratio of 'net out-put' in favour of small sized firms, therefore signalling against perceived benefits of a large integrated structure. Therefore, the fragmented structure of the industry was not regarded as the major factor behind the jute industry's decline.

**Figure 3 Typical Dundee Jute Industry Structure**





**Table 2: Size and Output of Firms during the Inter-war Period**

Size of firm (Avg No Employed)	Number of Firms		Net Output (£000)		Average Number of Persons Employed		Net Output per- Person Employed (£)	
	1930	1935	1930	1935	1930	1935	1930	1935
11-24	-	3	-	11	-	59	-	193
25-49	7	5	33	27	299	187	110	144
50-99	7	10	52	85	421	739	123	115
100-199	18	21	181	398	2640	3331	68	120
200-299	18	17	458	529	4615	4286	99	123
300-399	13	16	410	699	4605	5715	89	122
400-499	7	4	355	236	3170	1808	112	131
500-749	6	3	223	239	3608	2039	62	117
750 and over	8	6	928	682	9369	6026	99	113
Total	84	85	2,640	2,906	28,727	24,190	92	120

Source: Menzies and Chapman (1946)

### **1.3.2.2 The Demand-side Thesis**

There is sufficient indication within the literature on the Dundee jute industry on the effects of growing international competition and loss of traditional markets on the industry. For example, Lenman, Lythe, and Gauldie (1969) found that by 1876 the Dundee jute industry began to lose its traditional markets in San Francisco, Australia and Egypt to the Indian industry (p. 32). This trend continued over the next century. The industry, which had up-to the second half of the nineteenth century thrived on free access to world markets, by the end of the Second World War found itself on the defensive even in the domestic market. The Jute Working Party, commissioned by the industry in association with the BoT to suggest measures to strengthen the jute industry, in its report offered a grim prognosis for the Dundee jute industry if the international competition continued to grow as it did before the war:

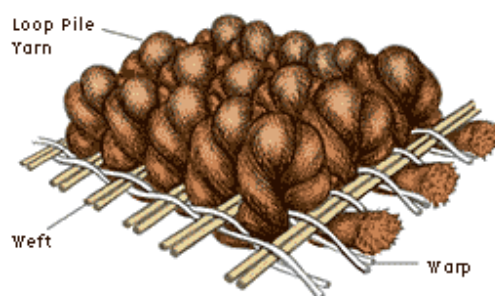
“there would be no alternative but a gradual decline in its overall output, and an industry with a declining output, faced with ever increasing competition from without, is bound to experience intensive competition from within. The result must inevitably be high costs, little if any profits, and no reserve available for improvement and development”. (JWPR 1946: 114).

### **1.3.3 Major Products and Markets**

Jute, like any other textile, produces two major basic products, yarn and cloth. As Table 3 shows, jute yarn and cloth has over one hundred applications in different markets. As the table also indicates, in both yarn and cloth, the majority of its application was in industrial markets. Within the host of industrial applications, not all markets were of equal importance. The dominance of jute in these markets was largely due to the cheapness of the fibre compared to other fibres (Stewart 1998: 50-54). The major markets of jute are described below.

*Woven Carpet Yarn:* A major individual end-use of jute yarn was in woven carpets. Figure 4 illustrates various yarns, weft, warp and pile, used in a woven carpet. The weft yarn runs from end to end at right angles to the warp in the woven fabric. It is the widthways threads in a woven fabric. The warp yarns are the longitudinal yarns. Together, their purpose is to control the dimensional stability of the carpet. However, the weft yarns are particularly required to be strong and less extendable. The warp yarns, on the other hand, can be extendable up to a limited extent. The pile yarns are those that stand up from the body of the fabric and form all or part of the surface. For this purpose, they are required to be soft in feel. The jute yarn, owing to its coarseness, was used mainly as a weft yarn. Their dominance in this market continued throughout the post-war period, with 96% of the weft yarns being made from jute in 1971 (McDowell and Draper 1978: 13).

**Figure 4 Yarns in Carpet Construction**



*Bags and Sacks:* This was the first major application of jute cloth when trials were being made in the early nineteenth century. Since the mid-nineteenth century jute was the primary packaging material of the world until the 1950s when alternatives were developed. The bags and sacks are used in a wide range of purposes e.g. packing agricultural produce, coal, meat etc. The Indian industry's growth up to the Second World War was centred largely in this area, resulting in loss of overseas markets for Dundee. In addition to the loss of international markets, during the post-war period, the market for jute sacks and bags as a packaging material also declined owing to the development of alternative packaging methods. The use of paper sacks, the growth in bulk-handling and harvesting methods of major crops such as wheat, maize, flour and sugar, and widespread pre-packaging of groceries for retail had significantly reduced the need for jute sacks and bags (McDowell and Draper 1978: 16; Howe 1982: 28).

*Backing Cloth:* A backing cloth is a reinforcing layer of fabric adhered to the reverse side of the floor-covering. It is used primarily in linoleum and tufted carpets. In linoleum, the backing cloth is used to reinforce the unique paste of linseed oil, pine resin, ground cork and wood flour to form sheets. In tufted carpets, the backing cloth is used as primary and secondary backing. The primary backing is the fabric through which the pile yarn is carried by needles to form tuft. The secondary backing is a fabric that is laminated to the back of the carpet to reinforce, increase dimensional stability and provide extra body. Being lower in cost, linoleum and tufted carpets are part of the cheaper floor-covering market. Before the surge in the use of tufted carpets in the 1950s, linoleum was widely used as a cheaper alternative, since the 1860s to the expensive woven carpets. As will be described in Chapter 5, the phenomenal growth in tufted carpet during the post-war period provided jute with a major market. Jute held its leadership in the primary backing market during the majority of the post-war period (1950s-68) with 71% market share in 1968, although this declined dramatically to 5% by 1971. On the other hand, jute continued its hold in secondary backing cloth with 75% of market share in 1971 (McDowell and Draper 1978: 15-16).

**Table 3 Major Markets and Applications for Jute**

<b>Building</b>	<b>Agricultural and Horticultural</b>
Damp Course Foundation	Bags and Sacks
Gaskins	Bagging
Plasters' Scrim	Cattle Bedding
Roofing Felt Foundation	Hessian Screen
Satchels	Hop Pockets and Bin Bagging
Toolkits	Onion Bagging
	Stack, Binder and Tractor Covers
<b>General Industry</b>	
Boot and Shoe Linings and Plaited Soles	<b>Packaging</b>
Brattice Cloth	Bags and Sacks
Buckram	Bailing Cloth for Packaging
Concrete Cleavage Fabric	Cargo Separation Cloth
Coal Bags	Electric Cable Wrapping
Dyed Camouflage Strips and Sheets	Fish Barrel Covers
Electric Cable Braidings and Fillings	Meat Wrappers
Filter Cloths	Paper Lined Hessian
Hessian for Cement Curing	Patent Packaging Foundation
Horse Covers and Nosebags	Steel and Iron Tube Wrapping
Hospital Tows	Tarpaulins
Imitation Leather Foundation	Tyre Wrapping
Interlinings	Wire Coil Wrappers
Motor Car Body Linings	Woolpacks and Sheets
Oakum	Wrappers for Bacon
Prefabricated Bituminous Surfacing for Air Runways	
Roller Cloth for Machinery	<b>Household</b>
Sludge Cloth	
Sandbags	Aprons
Tailor's Padding	Bedding Foundations
Twills	Carpets, Rugs
	Carpet Underfelt Foundation
<b>Yarns, Ropes and Twines</b>	Chair Canvas
Twines for all purposes	Decorative Fabrics
Hay Cord	Linoleum Backing
Plaited Cords	Mattress Shields and Covers
Ropes	Rug Backing
Roves	Wall Coverings
Sash Cords	Webbings and Carpet Bindings
Woollenised Yarns	Upholstrey Foundations
Wire Rope Cores	
Fuse Yarns	
Hessian Yarns	
Sacking Yarns	
Carpet Yarns	

Therefore, the demand-side thesis, which focuses on the growth of international competition and loss of traditional markets as a prominent factor in the decline of the industry, offers a more relevant framework within which to examine the decline of the Dundee jute industry.

In spite of the decline during much of the twentieth century, the jute industry, after the cotton, was one of the largest textile industry in the world until the 1960s (see Table 4). Considering the economic significance of the jute industry in east-Scotland for providing a major source of employment and as a vital raw material provider in industries, such as carpet, linoleum, and packaging etc., literature on its business history is considerably sparse. By focusing on the jute industry in this study, this research will not only contribute to a better understanding of the decline of this once dominant industry, but also to the general decline of the textile industry in the UK.

**Table 4 World Textile Fibre Production (1957-60)** (Individual figures are percentages of total)

	Average	1957-58	1958-59	1959-60
Cotton	57.2	47.6	48.5	49.3
Jute and allied fibres	16.5	16.2	18.1	15.6
Wool (apparel)	7.4	7.0	7.2	7.1
Wool (carpet)	1.5	1.3	1.3	1.3
Rayon (filament)	4.8	7.2	6.2	6.7
Rayon (staple)	2.2	9.0	7.8	8.2
Other man-made fibres	----	3.0	3.0	3.9
Silk	0.5	0.2	0.2	0.2
Flax	1.0	0.8	0.7	0.6
Hemp	8.9	7.6	7.2	7.1
Total (million lb)	20,219	28,482	29,326	30,901

Source: Atkinson (1964)

## 1.4 Research Issues

This study uses the demand-side framework to examine the decline of the Dundee jute industry during the inter-war (1919-1939) and post-war (1945-1960s) period. In order to do this, the study specifically examines:

1. International competition and strategic response leading up to the First World War.
  - What was the effect of international competition between the 1860s and 1900s?
  - What strategic responses were being considered within the industry between 1860s and 1900s?
2. What was the effect of international competition during the inter-war (1914-1939) and post-war (1945-1960s) period?
3. What was the strategic response and what technological capabilities were developed by selected case studies during inter-war (1919-1939) and post-war (1945-1960s) periods?
  - What constraints were faced in the process?
4. What was the role of collective strategies during the inter-war (1919-1939) and post-war (1945-1960s) period?
  - What constraints were faced in the process?
  - How did collective strategies influence selected case-studies' strategic response and capabilities?

## **1.5 Research Method**

This section is divided into two parts and gives an outline of the overall research strategy employed in this study. The first part discusses and addresses epistemological issues arising from the use of theory in a historical research. The second part explains the case study method and identifies the method used in analyzing case studies. It also discusses the guidelines followed in conducting interviews.

### **1.5.1 Research Approach**

This thesis makes an attempt to use strategic management theory in business history literature. This is in line with the suggestions made for a greater engagement between the two (Hannah 1984; Hendry 1992; Jeremy 2001). In particular, this study employs the lens of capabilities approach to examine the strategic response of individual firms in the DJI. This section discusses the broader epistemological issues arising from the use of theory in historical research.

Traditionally, business history research, especially on the British industrial decline, has assumed a high degree of objectivity in its analysis. Researchers have seldom acknowledged an element of subjectivity that is associated with the application of theoretical lens and interpretation of archival material. This has probably occurred because much of literature has drawn their analytical frameworks from Economics, where a positivistic approach is dominant. For example, the crux of debate between Lazonick (1983) and Sandberg (1974) with regards to the performance of cotton industry is how institutional framework can help to overcome the limitations of neoclassical economics in the examination of British industrial decline (Lazonick 1983: 582-583). This section discusses the epistemological issues that are associated with conducting a historical research, especially those arising from the application of theory in history and interpretation of archival material. These two issues and their implications for this research are discussed in turn below:

a) *Application of theory in history.* In management, Zald (1988; 1996) has extensively discussed problems arising out of the unrelenting emphasis on building universal theories. Turning his attention to the significance of history, Zald (1988) argues that management



theories 'do not explain the transformation of organizations in a historical context' (p. 82). Underlining the significance of historical context, Zald argues that although it is commonly acknowledged that a number of public institutions today differ from the ones in nineteenth or eighteenth century, very few studies have actually made an attempt to understand 'how we got from there to here' (p. 83). In other words, modern theories have often promoted the 'dogma of universality'. Therefore, Zald makes an argument examining the implication of 'time and place' on organizations. As an illustration of this approach, Zald cites Chandler's (1962) study which examines the 'transformation of organisations in a historical context'. Similarly for Kieser (1994), teasing out the subtleties in wider socio-cultural and economic context in history is central in understanding the organizations in different countries (p. 609).

However, Zald (1996) acknowledges the analytic independence of examining organisation's history without examining it within its wider external context. Therefore, on the one hand there is a need to understand the change in societal context on organisations, Zald also accepts that 'organisations *have* histories' (p. 257). The primary concern of the latter is to examine 'processes or change in particular organizations or particular events in organisations' (p. 257). He further acknowledges that scholars may have to 'inevitably limit their attention' and pursue them independently. However this does not lead to their conceptual independence. Thus he argues that in so far as organizations are historical entities, 'pathways of particular organizations are shaped by their larger context' (p. 257).

In both instances, Zald (1988) warns against treatment of historical context as mere background. Therefore he is not satisfied with Chandler's assumption that the introduction of divisional form of operating as a 'necessary and efficient' outcome and calls for even greater attention to the context through a 'complex and historically contingent' account (p. 83). The emphasis should thus be on teasing out the 'complexity, uniqueness, and contingency' that are embedded in historical context (Zald 1996: 343).

Hence, teasing out the impact of events that are specific to 'time and place' on organizations is an important aspect which should be considered when using theory in a historical study. Although Zald (1988), Kieser (1994) Jeremy (2001) and Usdiken and Kieser (2004) have suggested different approaches to apply theory in history, in the spirit of simplification, these can be summarised and grouped under two major categories i.e. those falling within broader

positivistic social science program, albeit with some variants, and those proposing a radical reorientation towards humanistic tradition.

i) This approach remains within the broader 'social scientific' tradition, although with either strong or weak purpose to enforcing theoretical ideology. In the *first*<sup>1</sup> method the primary aim is to the focus on theory building. The use of history is principally to confirm or refine highly generalised theories. History also acts as a testing ground for general concepts. Alternatively, ideal types of model are juxtaposed with cases in history and any similarities or differences are identified and seen to contributing to the understanding of theory. Although theory can be used to explain past events, the final goal is to contribute to further development of abstract theories. Such application of theory could lead to 'arbitrariness' in selection of historical events because the focus tends to be on fitting them to the theoretical models. The *second*<sup>2</sup> method is different from the first method in that universal theory building is not the primary objective. The aim is to make greater effort to engage with the historical analysis. It recognises that current organisation forms are shaped by past and heavily influenced by wider societal context. Instead of treating current structures and forms as inevitable, it recognises the multiplicity of options in history by combining a weak form of conjectural analysis and explicit generalisations. In particular, it engages with issues such as 'process of organisational change, development of organisational forms and varieties across societal settings, path dependencies and continuities in organisations'. The final generalisations can take two forms: it can either lead to 'historical theories of organisation' or the explanations can be limited in time. Although contemporary theoretical tools can be used, the main objective is to gain deeper understanding of historical events.

ii) This approach moves away from the 'scientific' tradition of management studies and calls for its fundamental redirection.<sup>3</sup> It challenges the social scientist framing of discipline and seek to tackle the epistemological concern about how past is researched. There are two major strands in this approach. The first strand is a narrative approach. It recognises that the 'fictional' element is intrinsically tied in examination of historical events and processes.

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<sup>1</sup> Usdiken and Kieser (2004) terms this 'Supplementarist' approach.

<sup>2</sup> Usdiken and Kieser (2004) terms this 'Integrationist' approach.

<sup>3</sup> Usdiken and Kieser (2004) terms this 'Reorientationist' approach

Hence, it proposes a closer association with the linguistic traditions in the study of organisational issues (Rowlinson 2004; Clark and Rowlinson 2004). The second strand draws on studies of Foucault. The crux of this approach assumes knowledge and power to be behind the much popularised notions such as efficiency, equity or humanity (McKinlay and Starkey 1997: 2). As a result, it aims to trace the ‘emergence and constitution’ of modern practices and tease out the complex interplay of power and knowledge in the process (p. 2).

In keeping with the research objectives, this thesis takes the first approach and remains rooted within the broader social science tradition. Although a theoretical framework (capabilities approach) is used to examine historical events and process (strategic response during decline of the DJI), there is an element of ‘supplementarist’ approach. However, the aim is not to test this theory in a historical context. The main purpose is to attain better insight into historical debates concerning the decline of DJI in particular and British textile industry in general. It also engages with the notion of path-dependency by identifying problems associated with it and attempting to address them by using strategies proposed by historians.<sup>4</sup> This study also recognises the role of conjunctural factors in shaping historical phenomena. As a result, in order to understand the strategic response of firms, this study: i) explores factors other than those normally associated in path dependencies and ii) also investigates the role of collective strategies in shaping the strategic response of individual firms and industry in general. The final generalisations derived from this study are both limited in time and also contribute to theory development. They are limited in time in that explanation on the nature of strategic response and factors that influenced them hold significance only for the period under study. Contribution to theoretical development comes from the use of capabilities approach to examine the cases, especially to the Helfat and Peteraf’s (2003) model. Therefore, by cross-fertilising research ideas between business history, strategic management and history, the approach of this thesis leans more towards the ‘integrationist’ approach.

b) *Objectivity and interpretation in history.* The issue of objectivity and interpretation are perennial topics in historical debates. They also gain importance with the application management theory in historical analysis.

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<sup>4</sup> The issue of path-dependency is examined in detail in Chapter 2, Section 2.4.4

According to Rowlinson (2004), management researchers who make an attempt to engage with history by remaining in the broader social scientist tradition tend to regard history as 'repository of facts' (p. 10). These 'facts' are often used to refute or approve particular theoretical positions as long as the researcher interprets them correctly. However, this line of reasoning typifies a post-modernist critique of a 'half-hearted' attempt to engage with history. Interestingly, this debate is inter-twined with the longstanding debate on the significance of objectivity and interpretation in history.

Renke (1983) exemplifies the traditionalist approach where objectivity is central to historical pursuit. For him, a historian's principal task is to 'present actually what happened' (p. 5). Therefore, history is both science and an art; science is in 'collecting, finding and penetrating' and the art is in 'portraying what is found' (p. 33). As a result, the researcher should investigate 'genuine information' and strive to find the 'real motives' behind events (p. 41). Although Renke acknowledges the possibility that objectivity may be influenced by the historian's personal ideology, he argues that historians should strive to maintain their 'impartiality' at all times (p. 42). For Renke, a historian's sole purpose is to examine the facts and 'penetrate to the bottom of their existence to portray them with complete objectivity' (p. 42). A similar position is adopted by Elton (1969). For Elton, a study of history is a 'search for truth' (p. 70). Elton recognises the problems with this connotation. He acknowledges that an exercise in search for truth appears to resemble the method of natural scientists. While scientists can verify their reconstructions by repeating an experiment, thus lending them objectivity, historians are unable to recreate the past (p. 72). Furthermore, he acknowledges that it is possible that a researcher may select a problem that suits him and include himself in the final interpretation (p. 72-3). However, Elton argues that objectivity in history stems from the fact that the subject matter is independent of an individual and is a 'dead reality' (p. 73). Although a researcher may not be able to develop an exhaustive knowledge of history, it does not alter the fact that 'it is the knowledge of a reality, of what did occur' and not some imagery event that the historian is concerned with (p. 73). Hence, even though the past cannot be recreated completely, it does not mean that there is no historical truth (p. 74). The purpose of historians is therefore to immerse themselves in search for this truth.

On the other hand, Carr (1964) proclaims as a matter of factly that 'history is interpretation' (p. 18). He argues that history can seldom claim to be 'pure' (p. 17). A historian examines his subject after carefully selecting from available facts. Using the metaphor of fish in a 'vast and sometimes inaccessible ocean', Carr argues what historian will catch will depend partly on chance and partly on what ocean he chooses fish' (p. 18). As a result, history largely becomes an interpretation of the historian. This interpretation is also subject to difficulty because the researcher is required to understand the minds of the subjects under study who lived in periods where completely different sets of rules, values and customs existed (p. 18). It becomes hard for a historian to completely relate to different situations. As a result, whatever insight is attained of the past, it is only made possible through the 'eyes of present' (p.19). This idea is stretched further by White (1998). White argues that historians are forever faced with reminding their readers that their characterisations are only tentative owing to the incomplete nature of historical records (p. 16). A historian therefore is never able to completely recreate the past and thus has to resort to a dose of 'verbal fiction', akin to the practice followed in literary writings (p. 16). Furthermore, how a given historical situation is to be portrayed depends on how a historian constructs it's 'plot structure' and endows it with meanings that he wishes the story to convey (p. 19). As a result, history becomes a product of an 'unholy union between history and poetry' (p. 17).

Clearly, the positions discussed above represent a polarised view on the subject. Evans (1997) makes an attempt to reconcile these debates. Evans acknowledges that the selection of materials by historians do get influenced by certain beliefs and theories with which they associate themselves (p. 249). Consequently any reconstructions of past is only partial, but he asserts that it is nonetheless true (p. 249). He argues that any element of poetry and imagination that enters the historical characterisation is 'disciplined by facts' (p. 251). Nonetheless, he thanks post-modernists for bringing the issue of subjectivity to the forefront and force historians to be self-critical and aware of the limitations of their methods (p. 248). Although, he cautions against conflating objectivity with neutrality and acknowledges that objectivity does not tantamount to neutrality (p. 252). In an effort to practice a credible history, Evans suggests that all historians need to 'develop a detached mode of cognition, a faculty of self criticism' and an ability to understand differing view points. (p. 252). His position is summarised by the following:

“...I will look humbly at the past and say despite them all: it really happened, and we really can, if we are very scrupulous and careful and self-critical, find out how it happened and reach some tenable though always less than final conclusions about what it all meant.” (p. 253).

Keeping in line with the broadly social scientist approach adopted in this thesis (as discussed above in first point), this thesis adopts the position articulated by Evans. This research expresses belief in the reality of past and the possibility of reconstructing it through patterns, albeit with a light dose of imagination, through linkages to the available facts. The reality of past is in the form of the threat of international competition, strategic responses of individual firms and collective strategies. The reconstruction in this research takes the form of case-studies (discussed in the next section). The facts are sourced from archival material and interviews. However, it acknowledges that the selection of archival material was driven by the research question, availability of records and the choice of theoretical framework. Hence, the final analysis and conclusions are subject to these assumptions.

### **1.5.2 Case Analysis**

The case study method is a widely accepted method of analysis in social sciences. Stake (2000: 437) has identified three major approaches based on the primary research objective: a) Intrinsic case study. In this approach, the ‘first and last’ objective is to develop greater understanding of the selected case. The case does not necessarily represent other cases. However, owing to its novelty, the case lends itself as an interesting study. b) Instrumental case study. Here, a specific case is examined to throw light on a larger issue or draw a generalisation. The case itself is not of primary interest and acts as a ‘supporting role’. c) Collective case study. This approach entails use of multiple cases. The purpose, like in ‘instrumental case study’, is to study wider phenomenon and not the case per se. The selected cases could be similar or dissimilar. They are selected in order to gain better understanding of larger group of cases and or a wider phenomenon.

In order to address the research questions identified above, this study uses a ‘collective case study’ (or comparative) approach to examine the capabilities developed by four firms during the inter-war and post-war period. The primary criteria that governed the selection of cases was the availability of relevant archival data. Nonetheless, the selected case studies represent the cross-section of the industry during this period, in terms of size (small and large), and focus (specialised and generalised). These details are summarised in Table 5. Hence, this will both help to gain greater understanding of the strategic response and barriers faced within the selected firms and in the DJI and the British textile industry in general.

**Table 5 Summary of Selected Case-Studies and Sources of Data**

<b>Firms</b>	<b>Period of Study</b>	<b>Focus</b>	<b>Type of Data</b>	<b>Source of Data</b>
Buist Spinning	Inter-war	Spinning	Minute Book; Accounts	Dundee University Archive
Jute Industries	Inter-war	Integrated (Spinning, Weaving and Merchanting)	Personal Letter Book; Minute Book; Newspaper cuttings	Dundee University Archive
Craiks	Post-war	Weaving	Minute Book; Accounts	Dundee University Archive
Scott & Fyfe	Post-war	Weaving	Interview (3hr 5 minutes)	Interview with Mr Hamish Tough (grandson of the founder and in charge of company since the early 1950s).

**Figure 5 Summary of Case Analysis**

**Data Collection**

- Used multiple sources for triangulation.
- Created database of case studies for further reference.
- Maintained ‘chain of evidence’ through proper referencing of archival sources.

**Data Presentation**

- Followed a general strategy consistent with multiple case analysis.
- Data presented in case reports in separate chapters (Chapter 4 and Chapter 5)

**Data Analysis**

- Used theoretical framework, the demand-side thesis and capabilities approach, to examine selected cases.
- Preliminary Analysis: The demand-side thesis is used to identify cause of decline and effect of collective strategies. The capabilities approach is used to identify capabilities developed by individual firms.
- Cross-case Analysis:
  - Used cases as unit of analysis to underline capabilities developed by individual firms, with an aim to identify similarity between capabilities developed.
  - Conclusions derived from:
    - Comparing and contrasting capabilities (Chapter 4, Chapter 5 and Chapter 6)
    - Identifying relations between capabilities (Chapter 6 in particular)
    - Identifying patterns of capabilities developed (Chapter 6 in particular)



There are three major aspects that must be considered when conducting a comparative case-study: data collection, data presentation and data analysis (Yin 1994; Miles and Huberman 1994). The following section describes these issues and outlines how each of them are addressed in this research (see Figure 5 for summary).

a) Data collection: This phase involves collecting data. There are three principles which must be followed in the process. The underlying reason behind them is to strengthen the reliability of data (Yin 1994).

First, the use of multiple sources, in other words the triangulation of data. This helps to overcome the over-dependence on any single source for data (p. 90-94). As with any historical research, this study has relied extensively on the archival data to analyse the selected cases. With regards to Craiks, Buist Spinning and Jute Industries an effort was made to triangulate the data by using multiple sources from archival records. Because the period under study is very old and the firms have been dissolved, it was difficult to corroborate the information from other sources, such as personal interviews for Craiks and Buist. However, interviews were conducted for Jute Industries for the post-war period (interview with Mr Sandy McKay). On the other hand, information on Scott & Fyfe was collected exclusively through an interview. Use of archival records was not possible with this firm because an accidental fire in the firm in 1954 had destroyed all written records. As a result, the case on Scott & Fyfe is built on the interview with Hamish Tough. Mr Tough has been closely involved with the running of the firm from the 1950s until the present day. As he was among the first in Dundee to spearhead the introduction of polypropylene in the mid-1960s, the interview provided a valuable source of information on this important aspect. It was also important, as there are very few archival records on Scott & Fyfe, thus generating a new set of data.

However, a greater amount of triangulation was possible for data collected on the collective strategies and general industry context. Information was collected from multiple archival sources and interviews (see Table 6). The issues pertaining to the interview process are discussed separately in the following section.

**Table 6 Summary of Interviews**

<b>Person</b>	<b>Specialisation</b> (post-war period)	<b>Purpose</b>	<b>Time</b>
Mr R.R Atkinson	In-charge of research at British Jute Trade Research Association and Jute Industries	Research and technological developments.	1hr 16 minutes
Mr David Fullerton	Owner of a merchanting firm.	General industry context.	1hr 8 minutes
Mr Frank Barker	Factory manager during post-war period	Technological developments.	2hr 12 minutes
Mr Bob Middleton	Company secretary in Low & Bonar.	Low & Bonar's activities and general industry context.	1hr 6 minutes
Mr Douglas Brewer	Linoleum industry and owner of a spinning firm.	General industry context.	3hr 6 minutes
Mr Ian Hutchian	Production manager at Jute Industries and Low & Bonar.	Low & Bonar's activities and general technological developments.	1hr 36 minutes
Mr Sandy McKay	In-charge of Research and Development at Jute Industries, Low & Bonar and Scott & Fyfe	Jute Industry's activities and general technological developments.	3hr 29 minutes
Ms Joanne Taylor	In-charge of Research and Development at Low & Bonar	Low & Bonar's activities and general technological developments.	1hr 56 minutes

Mr Christopher Bonar	Executive director of Low & Bonar	Low & Bonar's activities.	38 minutes
Mr Duncan Petrie	Associate Director of Lows of Dundee, formerly at Jute Industries	General industry context.	1hr 3mins
Mr Jim Balfour	Jute machine engineer	General technological developments.	1hr 14 minutes

Second, the creation of a case study database. This involves creating a record of the 'actual database'. Besides increasing the reliability of data, it also allows the 'critical reader' to refer back to the source to examine the conclusions derived from the analysis (p. 94-98). The archival data and transcribed interviews cover around four hundred pages. It was therefore not practical to include it in the thesis. Nonetheless, a copy of all the records is available with the author for further reference.

Third, the maintenance of a chain of evidence. This can be done by making appropriate references to the sources when presenting the data. It allows the reader to refer back to the original evidence to corroborate a specific issue or conclusion made in the final report (p. 98-99). This research has addressed this aspect by adding a footnote that gives the complete reference of the source, both archival and interview, in all chapters of this thesis.

Once the data collection process has been completed, the next phase is to build the case and present.

b) Data Presentation: A written report is the most common method used to present the data (Yin 1994: 134; Miles and Huberman 1994). In a multiple case analysis, three major strategies are used to present the case in the written format (Yin 1984: 134-135). 1) Multiple case reports. These contain multiple narratives that are usually presented in separate sections or chapters. It is followed by separate chapters on cross-case analysis and conclusions. In this form, the majority of the report consists case presentation and cross-case analysis. 2) Question and

answer format. In this method, instead of narrative, the report takes the form of question and answer style. 3) Thematic presentation. In this style, the cases are presented in the form of broad themes that are pre-identified. Each theme consists of data from different cases. The themes can be either presented in separate sections or chapters.

Considering that the aim of this thesis is to do a comparative study on the strategies of individual firms, the 'multiple case report' is the most appropriate format. As the cases are examined in the inter-war and post-war period, separate chapters (Chapter 4 and Chapter 5) are used to examine them in detail. Furthermore, within each period, separate sections are used to present data on individual cases. The next phase after presenting the case is analysing them.

c) Data Analysis: The analysis of case is the central part in the comparative study. The analysis can be conducted based on two broad strategies. The first strategy is to use a theoretical framework. This framework guides the literature review, determines the research question and steers the data collection process. It also helps to organise the case study and to examine alternative explanations (p. 103-104). The second strategy is to develop a case description. In contrast to the first strategy, a guiding framework is not used in the case description.

The broad strategy used in this study is to use a theoretical framework to analyse the case studies. This follows from the aim of the research, which is to use the 'demand-side' thesis to examine the cause of decline and capabilities approach to examine the capabilities developed by individual firms. The literature review and the data-collection process are guided by this framework. In order to bring consistency to the analysis, this theoretical framework is also used in examining the case.

Whichever strategy is chosen, the first phase after determining the broad strategy is to conduct a preliminary analysis (Miles and Huberman 1994). The initial analysis serves two main objectives: first, it helps to highlight the emerging themes. The main themes are identified using the 'coding' process, whereby the key themes are highlighted within the data (p. 56). The themes are identified either by the conceptual framework used in the study or inductively through an open-ended process.

In this research, the codification was done using the demand-side thesis and the capabilities approach. As only a few studies have been conducted on the strategic repositioning efforts within the jute industry, the process of codification and data collection was pursued simultaneously. Consequently, the data collection process took a long time, with a number of trips made to the archives over the period of three years. As themes were being identified from the initial set of data, further data collection became more specific. Although it was very tedious, the continuous process of codification and data collection was very useful.

The second phase entails a detailed cross-examination of the cases. There are two major approaches to analyse the cases (Miles and Huberman 1994). 1) Variable oriented analysis. In this method the themes that were identified through the coding process from different cases are given the main focus (p. 175). 2) Case-oriented analysis. Here, different cases are used as the unit of analysis. The cases are assembled based on the main variables identified from the coding process. Based on the purpose of the research, cases are grouped together to underline similarities or contrasts among them (p. 174). Both these strategies can be oriented towards either dependent variable or rival explanations (Yin 1994: 106-109). The dependent variables are the initial outcomes from the first phase of analysis. However, in studies where the outcomes are known, the focus is on examining which rival theories are most potent in explaining the outcomes. In this context, rival propositions are developed which are mutually exclusive. The analysis consists of identifying the proposition that is valid. The conclusions derived from analysis should underline three key aspects: i) they should compare and contrast the findings, ii) they should note relationships between different variables, and iii) they should note the patterns among variables (Miles and Huberman 1994: 190).

Following from the aim of the study, which is to examine the strategic response in the form of capabilities developed by selected case studies, this research employs the case-oriented analysis. In order to create focus, the cases are written using the key themes that were identified in the codification process. The purpose of this research is not to 'justify' either similarity or contrasts among cases. Rather, the aim is to 'identify' whether there are similarities or contrasts among the cases. As a result, this aspect did not play a major part in grouping of the cases. The actual analysis among the cases was conducted using the dependent variables. The dependent variables were in the form of capabilities developed by selected case-

studies. Therefore, the cross-analysis was aimed at underlining the different types of capabilities developed by individual firms. The conclusion is derived by comparing and contrasting capabilities developed by firms (in Chapters 4 and 5), highlighting the relations between different capabilities (in Chapters 4, 5 and 6), and noting patterns of capabilities developed by the firms during the inter-war and post-war period (in Chapter 6).

Investigating these issues in the jute industry will help to juxtapose it with other textile industries in the UK, especially the cotton textile industry. It will especially help to understand two central aspects of the debate on the British industrial decline a) the major cause of industry's decline and b) the industry's strategic response. Both these issues will in turn throw light on the quality of entrepreneurship displayed by individual firms during this difficult period in the jute industry. It will show whether firms were passive in their approach when dealing with the challenge in hand, in that there was an extensive dependence on collective strategies, or were they able to craft successful strategies on their own.

#### **Section 1.5.2.1 Interview Guidelines**

The main purpose behind conducting these interviews was to triangulate data collected from archival sources. However, the historical nature of the subject induces an element of oral history into the exercise. The Oral History Society describes Oral History as recording 'the living memories and feelings of all kinds of people, many otherwise hidden from history, and creates a more vivid picture of our past.' In so far as teasing out experience that would 'otherwise remain hidden from history' (in this case, archival sources), this exercise resembles oral history. Beyond that, however, the approach employed was that of standard interviews, a technique that is employed widely in management research.

Kvale (1996) suggested ten key criteria that should be followed by a researcher when conducting an interview. These are described in turn below along with how each of them are addressed in this research.

a) Knowledgeable: The researcher should be thoroughly familiar with the subject of interview. As mentioned above, the purpose of the interviews was to triangulate information collected

from archival sources. Therefore, an extensive understanding of the industry's history and background knowledge of specific issues to be discussed during the interview had already been gained. This information played a vital role in conducting successful interviews.

b) Structuring: Here the aim is to give purpose to the interview, round it off and ask whether the interviewee has any questions at the end. Initial contact (normally using email, telephone or letters) with each interviewee was made prior to the actual interview. Its purpose was to explain the general purpose of research and specific issues to be discussed during the interview. Hence, before the interview began, the participant was fully aware of the research background. This advance knowledge also helped them to recollect their memories and, in some cases, find textual materials that would supplement the discussions.

c) Clear: The use of jargons should be avoided and the questions should be simple and easy to understand. This was suggestion was followed rigorously.

d) and e): Gentle and Sensitive: the interviewer should allow the interviewee to finish talking and give them enough time to think. The interviewer should also be attentive listener and empathetic with the interviewee.

f) Steering: the researcher should be clear in what they want to find out during the course of the interview. A similar issue was also emphasised by Easterby-Smith, Thorpe and Lowe (2002), albeit with a note of caution. They suggest that although an interview that is free without any interruptions is desirable, it does not always prove to be fruitful. The exercise is likely to be more successful if researcher is clear at the outset about the exact nature of their interest (p. 88). As mentioned above, the purpose of research and interview were made known to the interviewees beforehand. This helped to bring greater focus to the interviews. However, at certain times, certain participants did go beyond the immediate subject matter. But in each instance, the 'additional' information was helpful in that it gave information that was not readily available from the archival sources.

g) Critical: In the case where the interviewee contradicts earlier claims, the interviewer should be prepared to challenge and aim to arrive at a satisfactory conclusion. Although certain

guiding questions were prepared for each interview, the general approach taken during the interview was 'conversational' rather than a one-way flow of comments. As a result it was possible to enter into a dialogue on key issues, thus helping to identify the underlying assumptions behind their positions and intervening if the interviewee contradicted their own ideas.

h) Remembering: Previous discussions/comments can be recollected and related when necessary. When the opportunity arose, certain issues from the ongoing interview, archival records and other interviews were used as cross references. This proved to be helpful in three ways: First, it was useful in corroborating key ideas put forward by the interviewee. Second, it helped to identify an aspect that the participant may have wanted to discuss but overlooked during the course of interview. And third, it also helped to seek the interviewee's opinion on interpretations derived from archival sources and from other interviewees.

i) Interpreting: The interviewer should strive to clarify and extend meanings to comments without imposing on them. The significance of seeking clarification of understanding has been underlined by Easterby-Smith, Thorpe and Lowe (2002). They note that as the researcher begins to observe patterns from the interview, it is useful to verify whether the interpretations correctly reflect the interviewee's position (p. 89). This aspect is also important because individuals often provide answers 'between complex truths, rather than providing the whole truth' (p. 90). After the interview was completed, the recorded conversations were transcribed and sent to interviewees for checking and confirmation. Interviewees were also sent copies of the Chapter 6, the Discussion chapter, as this section puts forward key interpretations arising out of analysis of data from archives and interviews.



## 1.6 Thesis Structure

This section outlines the structure of the thesis by briefly describing the issues addressed in each chapter.

*Chapter 2: Literature Review:* The second chapter critically reviews the literatures in business history and strategic management associated with the central theme of the thesis. It begins by underling Alfred Chandler's major contributions in business history. As British business history has drawn extensively from Chandler's research, this review sets the stage for a detailed review the literature on British industrial decline. The chapter then reviews the dominant supply-side thesis, using the case of the cotton industry, in order to describe the framework in detail. It then describes the demand-side framework. This helps to contrast the two approaches and underline the limitations of the supply-side framework. The chapter then describes the capabilities approach. It reviews in detail two major aspects: a) the potential of a capability to leverage into new capability, and b) the path-dependent nature of capability development. The review in this chapter is used to develop the main and the sub research questions for the purpose of this thesis.

*Chapter 3: The Dundee Jute Industry Context:* This chapter addresses the first research question i.e. effects of international competition and strategic response leading up to the First World War. This chapter also helps to develop understanding of the major capabilities in jute manufacturing, the rise of international competition and the strategic responses being considered in the Dundee jute industry, all of which are the subject of detailed examination in the following two chapters. The chapter begins by describing the jute manufacturing process in detail. This is used to categorise key technological capabilities that firms can potentially develop. Identification of major capabilities will be useful when examining the capabilities developed by selected case studies in Chapters 4 and 5. The chapter then describes the factors leading to the growth of the industry and, more importantly, the factors leading to the rise of international competition and its effect on the industry. The chapter also identifies major strategic responses in the form of capability development that were being considered within the industry by late nineteenth century to counter the growing international competition. Thus, the chapter will help to develop greater understanding of the origins and nature of international

competition and the type of strategic responses and capabilities deployed during inter-war and post-war periods.

*Chapter 4: The Inter-war Period (1919-1939):* This chapter will address research questions pertaining to the inter-war period. In particular, it will examine the effect of international competition and strategic response of the industry. The effect of international competition will be examined mainly by identifying the major product-markets that were affected. The rise in imports in domestic market will also be considered. The strategic response at the firm level will be studied by examining the capabilities in selected case studies. The two firms examined in this chapter are Buist Spinning and Jute Industries. Buist was a medium-sized firm specialising in manufacturing jute yarn. On the other hand, Jute Industries was the largest firm in the Dundee jute industry since its inception through to the post-war period. It was a fully integrated firm with its own jute spinning, weaving and marketing department. The contrasting focus of the two firms will throw light on capabilities developed in both jute spinning and jute weaving. The chapter will also examine collective strategies employed by the industry to counter growing international competition. It will help to understand the strategic response at the industry level. The chapter will conclude by identifying the effect of international competition in specific markets, comparing and contrasting the nature of capabilities developed by the selected case-studies (drawing from strategies for analysis identified in the Case Analysis section) and identifying the effect of collective strategies in countering international competition and capabilities of selected case-studies.

*Chapter 5: The Post-war Period (1945-1960s):* This chapter will address research questions relating to the post-war period. After the end of the Second World War, the Dundee jute industry received extensive protection from imports, particularly in the sack and bag market, in the domestic market. Hence, the direct effect of international competition will not be examined during this period. Nonetheless, firms in the industry were aware of the temporary nature of protection and so were actively engaged in repositioning themselves. As a result, the major focus of this chapter will be on examining the strategic response. At the individual level, the response will be studied by examining selected case studies. The firms selected in this chapter are Craiks and Scott & Fyfe. Both Craiks and Scott & Fyfe were medium-sized firms specialising in weaving. Although they are similar in their focus (weaving) and size (medium),

both firms developed different types of capabilities and so will offer an interesting contrast. The strategic response at the industry level is studied by examining collective strategies employed during this period. Following from the strategies identified in the Case Analysis section, the chapter will conclude by comparing and contrasting capabilities developed by examining case studies taken from this period.

*Chapter 6: Discussion:* This chapter will draw together the findings from Chapter 4 and Chapter 5 and juxtapose them with the business history and capabilities literature. The discussion will underline the implications for the wider literature in both areas.

In business history, it will discuss the potency of the demand-side thesis in explaining the decline of the Dundee jute industry in particular and the UK textile industry in general. This will be done by discussing the effect of international competition and strategic response at firm level (through findings from the examination of selected case studies) and industry level (through findings from collective strategies).

The effect of international competition in the Dundee jute industry will be compared with that of the UK cotton industry and will tease out similarities and differences in effects on the two industries. It will also help to determine role of international competition as a major cause of decline in the textile industry in the UK.

Based on the research methods discussed above in the Case Analysis section, this chapter also attempts to draw a conclusion on the strategic response developed by firms examined in this thesis. In order to do so, this chapter compares and contrasts capabilities developed within and between the inter-war and post-war period. Comparing within the period will throw light on nature of the capabilities developed in that phase. Comparing between the two periods will help to identify the pattern of capabilities development in the Dundee jute industry during this critical phase. The chapter also identifies the relationship between different capabilities and discuss its consequences and significance in the overall development capabilities. These findings will then be contrasted with the strategic response of firms in the cotton industry. This will help to tease out the similarities and differences in strategies employed within the two

industries, thus helping to throw light on the general strategy adopted within the UK textile industry during this period.

The collective strategies employed in the Dundee jute industry in order to counter international competition will also be discussed. The strategies employed in both the jute and cotton industries will be contrasted to highlight the approaches followed in the two industries. The findings from this study, particularly the effect of capability development and its role in countering international competition, will also be contrasted with that of the cotton industry in order to underline the similarities and differences.

This chapter will conclude by discussing the implications for the capabilities approach. In particular, it will discuss whether the pattern of capabilities formulation followed Helfat and Peteraf's (2003) six categories. The pattern will be compared with patterns examined in other industries within the strategic management literature using the capabilities approach. The issue of path-dependency will also be discussed, with particular reference to the usefulness of identifying various options available to the firm.

*Chapter 7: Conclusion.* This is the concluding chapter. It will clearly identify contributions made by this thesis to the existing literature in three areas used in this research: business history, strategic management (in particular the capabilities approach), and the literature on the Dundee jute industry. The chapter will also identify limitations, both theoretical and empirical, associated with this research. Finally, the chapter will make some recommendations for further research.

## Chapter 2 Literature Review

### 2.1 Introduction

The aim of this chapter is to critically review the literature in business history and strategic management associated with the central theme of the thesis. This examination will help to throw light on the state of debate in this area and help to identify specific research questions for the purpose of this thesis.

The chapter is divided into three major sections.

The first section briefly reviews Alfred Chandler's contribution to the business history literature. In reviewing Chandler's contribution, the aim is not to conduct a thorough critical review of his work but to underline his key contributions, especially his willingness to generalise and his research approach. Reviewing these issues here will help to understand the original context in which his theories and research approach were applied, before examining in the next section the British industrial decline literature where his work has been used extensively.

The second section critically reviews the dominant approaches, in terms of theoretical framework and research approach, employed in examining the British industrial decline within the business history literature. As jute is a textile industry, attention is given to a sector that had similar features- the cotton industry. This section is divided into two parts.

The *first* part begins by examining the 'dominant supply-side thesis' which underlined the role of the fragmented industry structure and technological backwardness as a major cause of British industrial decline. As Lazonick has been the leading proponent of the supply-side thesis, particular attention is given to his studies in outlining this framework. This part then introduces the demand-side thesis (led by Sandberg 1969; 1984; Singleton 1991). Particular attention is given to underline the role of growing international competition as a major cause of

cotton industry's decline and the industry's strategic response. The strategic response at individual firm level and industry level, in the form of collective strategies, are reviewed. While describing the demand-side framework, major challenges to the dominant supply-side thesis are also underlined.

The *second* part examines the research approach used in the supply and demand-side thesis. Researchers, particularly the supply-side proponents, have referenced Chandler's research approach extensively, which involved doing a comparative analysis of individual firms. This part identifies to what extent researchers have actually used the comparative approach to examine strategies of individual firms while studying the decline of the sector. The conclusion from both parts is used to design the research question of this thesis.

The third section outlines the capabilities approach in order to apply it to this research. With the preceding section underlining the need to give greater emphasis to examining the strategies of individual firms, the capabilities approach provides a framework within which to examine them. This section is divided into two parts. The first part categorizes the different types of capabilities and identifies the type used in this research. The second part addresses the issue of determinacy in path-dependency (a central tenet of the capabilities approach). The capabilities approach has made an explicit attempt to engage with history. This 'engagement' has been mainly through the notion of path-dependency. Although it has helped to highlight a unique characteristic of capability, the notion of path-dependency has been charged with inducing an element of determinacy in capability development. This part reviews how this issue has been addressed by historians, with a view to incorporating the suggestion made in this research.

## **2.2 Business History: Chandler's Contribution**

Alfred Chandler Jr's work has contributed to research across different disciplines. For example, the further development of the transaction cost approach by Williamson (1975) and the institutional approach by North (1990) are particularly noted. More importantly, his research has made a significant contribution to the business history. This section reviews

Chandler's major contribution within business history literature. It is categorized into two areas: research approach and theoretical contributions.

### **2.2.1 Research Approach**

Chandler's studies have had an overarching influence in shaping the nature of debate within business history. In particular, the contributions can be categorized into two major areas.

First, a major contribution has been the introduction of generalization and its synthesis into the literature. This was in stark contrast to the prevailing emphasis on writing company histories and entrepreneurial biographies as a research approach. The significance of generalization within business history has been summarized by McCraw (1988) as follows:

“Historians, as a rule, are not theorists, and Chandler represents no exception. Yet he is far readier than are most of his colleagues to make use of theoretical frameworks. He has always been interested, as he once put it, in “how historian can take what he needs from the concepts of the other disciplines without in any sense being captured by them”. Above all, he has been willing to *generalize*.” (p. 1).

While acknowledging the efforts to write company histories and biographies, Chandler (1984) argued that these were ‘clearly not enough’ and urged for ‘more synthesis and more analysis’ (p. 7). For Chandler, a synthesis was central to the further development of business history as a discipline. He argued that although the traditional approach provided ‘essential information’ on which some generalizations could be based, such history in itself did not generate productive debate:

“...the major issue at that time was whether businessmen were robber barons or industrial statesmen, that is whether they were bad guys or good guys. The debate generated much heat but little light. Indeed, what could be less likely to produce useful generalizations than a debate over vaguely defined moral issues

based on unexamined ideological assumptions and presuppositions? (Chandler 1984: 7)

Second, following on from his suggestion for generalisation, Chandler laid great emphasis on comparative analysis. In particular, he argued for a comparison of a broad range of institutions including 'individual enterprises, factors, regulatory commissions, railroad leaders, legal cases' and so on (p. 10). According to him, comparative analysis was central to arriving at generalizations (p. 10). Furthermore, he suggested that the comparative analysis could be conducted at three levels: among different firms, among different firms within different industries, and within different national economies (p. 10-11).

Chandler's approach reflected the growing realization among researchers during the 1950s for a move away from writing individual company histories and biographies. He acknowledged Redlich's influence in 'dragooning' him into his 'campaign against empiricism' in business history (Chandler 1962: vii). The changing mood was reflected in the special conference organised in 1962 to consider future research initiatives. Redlich (1962) and Cole (1962), in particular, identified three areas that would lead the way: examining business within the wider social context as opposed to individually; synthesis through analysis as opposed to company histories; and use of specific themes for analysis. Redlich (1962) made a strong argument for a greater role of analysis in business history. He identified three major approaches: empiricist, focused, and analytic (p. 66). He argued that the empiricist approach is concerned primarily with 'what has happened and when', whereas a focus approach encompasses the objectives of the empiricist and makes them 'pivot around a particular problem (p. 66). On the other hand, the 'analytic approach' goes beyond finding 'what has happened and when', and attempts to 'comprehend and understand' the given situation by also asking the question 'why' (p. 66). However, this does not mean there is an attempt to 'distort' the phenomenon, as an attempt to 'fit them to pre-given theory' would be 'objectionable' (p. 66). Cole (1962), on the other hand, provided a framework for the analytic approach. He argued that traditionally business historians had viewed businesses as independent units. However, organisations did not operate in isolation, but were part of a broader economic system that consisted of a variety of institutions, including competing firms, supporting industries, and the wider society (p. 100). This characterization of a firm's environment went beyond an economist's traditional



construct, which was limited to categorizing different 'industries'. Therefore, firm's activities should be examined within this 'wider social setting'. Hence, these ideas were instrumental in shaping Chandler's research approach.

### **2.2.2 The Rise of the Modern Business Enterprise**

Making use of the research approach discussed above, Chandler examined the rise of big business in North America. In particular, he examined the significance of complex administrative structures that were introduced by large firms to manage their operations.

Chandler's (1956) initial attempt was to examine the origins of 'decentralized' organisational structures whose importance was growing among American businesses (p. 111). In order to trace their history, Chandler investigated 'when, how and why' firms began to decentralize (p. 112). He cross-examined the structures of the fifty largest firms operating since the First World War. He found that growing complexities in the operations was the major factor which led firms to adopt a suitable organisational structure to control and administer their diverse activities. The kind of decentralized structure employed by firms depended on the extent to which they operated in diversified markets. Those operating in different markets adopted product based decentralization; whereas firms that limited their activities to a single industry were decentralized on a functional or geographic basis; and the market oriented firms whose operations spanned different regions were decentralized on geographic basis.

In a later study, Chandler (1959) examined the initial conditions prior to the First World War that had led to the subsequent growing complexities of business operations. He argued that five major trends could be identified easily in the American economy between 1815 and 1920: the expansion of population, rapid building of railroads; development of urban markets; growing use of electricity and internal combustion as new sources of power; and the institutionalization of research and development (p. 1-2). With rapid changes in the market and growing uncertainties, firms began to internalize many of their activities through vertical integration to ensure a smooth flow of raw materials and horizontal expansion to control the distribution networks necessary to distribute products over a large geographical region. Firms also

diversified and introduced new lines of products to meet the demands generated by the opening of new markets. With the growing complexity of operations, they were unable to coordinate their activities through their existing administrative mechanisms. Therefore by the beginning of the twentieth century these firms had large centralized organisational structures to manage their diverse activities.

Chandler (1965) argued that railroad companies were among the first to introduce the modern centralized administrative structures. It was not because they were 'more perceptive, energetic or imaginative' than the rest; rather it was because they were the first to face the administrative challenge of managing increasing complexity in their operations in terms of handling 'large amounts of men, money and material' within a single business unit which resulted from the expansion just after 1850s (p. 16). With the emergence of divisionalised organisational structures, came the need for specialized people to administer the units. Therefore, along with the adoption of the new structure, it also saw, for the first time, the introduction of salaried managers who had clearly defined roles and responsibilities (Chandler 1977).

Chandler (1962) argued that this transformation occurred in four stages. *First*, the initial strategy was for expansion and accumulation of resources (p. 386). The American economy witnessed an exponential growth in its market after the 1850s, which was triggered by the development of railroads that helped to connect the dispersed geographic regions. Railroads themselves were also large customers for the iron, steel and machinery industries. By the 1880s, firms were able to reach far flung areas which generated a huge demand for goods. In order to meet these demands firms began to expand their operations by increasing production and employing a larger work force. In order to reach the farther areas it became necessary to develop their own distribution networks which included warehouse facilities, transport and even retail outlets (p. 387). Consequently, it created a steady demand for raw and ancillary materials and in order to ensure a secured flow, many firms either acquired or built their own vertically integrated facility (p. 387).

*Second*, this phase was directed towards the rationalization of the accumulated resources (p. 387). As a result of the strategy of continued expansion, the turn of the century saw the emergence of large vertically integrated firms. In the majority of instances, their capacity often

exceeded the actual demand in the market (p. 388). Therefore, in order to ensure continued profitability, firms were faced with two 'pressing tasks' : a) a lowering of unit costs through rationalization of functional activities. This led to the reorganisation of the various lines of authorities in the existing administrative structure along with the streamlining of manufacturing operations and processes and b) a closer integration of the functional activities with the end-markets in order to gauge the fluctuations in demand. Consequently, the further allocation of resources to these units got tied to the 'estimates of the market' in the immediate future, whereas some 'entrepreneurial' firms attempted to tie them to the 'forecasts in long-term changes' (p. 390). Therefore, by the end of the second chapter, firms had reorganised their structures significantly in order to instil efficiency in their utilization of resources.

*Third*, rationalization was followed by the expansion into new markets and products (p. 390). As consequence of the strategy of rationalization and internal efficiency, there was a narrowing of cost differentials among firms. This in turn resulted in a reduced profit margin (p. 391). In order to sustain their profit levels, firms started to pursue aggressive marketing strategies in order to increase their volumes of their existing products. However, with markets becoming increasingly saturated, firms started to diversify by exploring other markets or leveraging their know-how to develop new products (p. 391).

*Fourth*, in this phase the emphasis was again on introducing a new structure (p. 393). The adoption of the diversification strategy led to new challenges for the efficient allocation of resources that could not be met by the existing structure, which was geared towards meeting the challenges of a limited product range (p. 393). With firms now operating in different markets, there was growing dissimilarity in operations such as procurement and production, and the corresponding trends in its input and output market. Consequently, separate managers were appointed who were given responsibility for the administration of autonomous units, divided along the lines of product or the geographic region served.

This generalization of the birth and development of the modern organisation has been widely termed as the 'Chandlerian thesis'. However, it is apparent that such a wide-ranging framework would attract critical scrutiny. The following section discusses the counter arguments that were put forward to explain the growth of modern business enterprise in North America.

### 2.2.3 Some Considerations

While Chandler's contribution to the research approach, i.e. generalization and comparative analysis, has been hailed widely by the majority of business historians, not all have been content with Chandler's interpretations on the rise of modern business enterprise. In particular, they have provided contesting accounts of the introduction of modern management and organisation techniques in North America.

For example, Smith (1985) challenged Chandler's argument that professional managers appeared first on the American economic scene owing to the introduction of new administrative structures by the railroads after the 1880s. Smith underlines the significance of the Army Ordinance Department Act of 1815 in introducing the 'American system of uniform manufacturing'. Primarily resulting from the ambiguities in law in allocating corresponding duties, the creation of separate departments in the form of the Quartermasters Department, the Commissary General of Purchases, and the Ordinance Department, for army supplies had resulted in a number of problems (p. 43). With the end of the 1812 war, a new law was introduced in 1815 that streamlined their roles with the aim of bringing 'uniformity' to the manufacturing of arms and repairing of relevant apparatus (p. 44). Consequently, it led to the introduction of officer-inspectors who, together with the chief accounts clerk in the Ordnance Department, formed 'a bureaucratic team of middle managers' (p. 69). O'Connell (1985) also questioned one of Chandler's contentions that railroads were the first to introduce modern administrative structures. In an empirical study, O'Connell brought to light the 'formative influence' of the U.S Army Corp Engineers which played a pivotal role in building a large part of the railroads and introduced complex management techniques to manage the increasingly intricate network of activities. Over the years as the railroads continued to develop, they successfully adopted the management techniques introduced initially by the Army engineers.

More importantly, Cochran (1983) explored the role of 'cultural and geographical' characteristics in creating a climate for fostering an innovative management system, as opposed to Chandler's singular emphasis on the expansion of the economic system. For Cochran, it was more interesting to study the cultural aspects surrounding the advent of the

American industrial revolution rather than focus on the variety of technological innovations per-se (for example, jennies in a textile spinning mill), because such innovations are ‘but only manifestations of deeper social forces’ (p. 6). In an attempt to understand the rise of the American business system in the nineteenth century, Cochran tried to understand the culture and practices that persisted before that period. He characterized America as predominantly a nation of migrants where people brought with them an inherently positive attitude towards risk taking (p.11). With an urge to begin a new living, there was little social stigma attached to any aspect of social life. This played a vital role in creating an ‘open class structure’ within society (p. 12). It also resulted in people learning more than one kind of trade, as opposed to the practice of specialization in European countries (p. 13). Cochran further argued that cultural traits were ‘limited or augmented by the geographical terrain’ (p. 4). Therefore, abundance of natural resources in terms of wood and waterpower played a vital role in fostering mechanization. Thus, it was the flexible culture, which was conducive to the introduction of new ideas, coupled with a geographic terrain filled with natural resources, that laid the solid foundation for a dynamic economy to take-off and produced the unique and ‘highly pragmatic, make-do-and-get-the-goods-out character of American production’ (p. 145). Hence, Cochran argued that the introduction of the modern organisation a forms should be viewed within this unique ‘culture-geography-resources’ triangle.

Hence, even within the North American context Chandler’s generalizations have received considerable challenge.

#### **2.2.4 Summary**

The brief review in this section has underlined Chandler’s contribution to the business history literature. Two areas have been identified in particular:

First, business historians have traditionally relied on writing company histories and entrepreneurial biographies as their major research approach. Chandler had significant influence in redirecting this research approach through: a) introducing an analytic approach through comparative analysis of individual firms. b) creating generalizations from the analysis.

Second, by analyzing the activities of individual firms and creating generalizations, Chandler's conclusions on the development of modern business enterprise in North America have given business historians a thematic direction. Chandler argued that the formation of large integrated and divisionalised firm structures, administered by professional managers, was a rational development in response to expanding markets and increasing complexity in operations during the late nineteenth century. This broad generalization has been widely regarded as the 'Chandlerian thesis'.

Although this generalization was based on the North American context, it has been applied by researchers as a benchmark to examine the historical development of businesses within different national contexts. The next section critically examines Chandler's influence, especially the generalization and research approach, in the context of British industrial decline.

### **2.3 British Industrial Decline: Critical Examination of Debates**

The aim of this section is to critically review the dominant approach employed in examining the decline of British industries within British Business History literature. The section is divided into three parts: the first part reviews the literature and argues for a greater use of the 'analytic approach'. The second part examines the literature on the 'decline of British industries'. This section first examines the dominant 'supply-side thesis' which is modelled on the Chandlerian thesis reviewed in the preceding section. The section underlines the major tenants of this approach. The third part describes the demand-side thesis. In particular, it underlines the role of international competition as a cause of decline and industry's strategic response to this challenge.

#### **2.3.1 Company Histories and Beyond**

British business historians, like their colleagues in North America, have raised concern with regard to the limiting of research in business history to writing company histories. In the US, the narrowing of scope in research occurred as a result of a combination of factors including, professional rivalries and financial constraints within research institutions (Johnson 1962: 12). In the UK, two distinct issues dominated the scene:

a) Hannah (1983), pointed towards the ‘fragmented structure’ of research units within the Universities. He argued that this division ‘legitimized’ the separation of business history from related disciplines, resulting in little cross-fertilization of research among them (p. 166-167).

b) Coleman (1987) argued that a lack of archival records in the public domain made business historians dependent on firms to commission projects. When a project was commissioned, the firm was mainly interested in writing its corporate history, rather than conducting a thorough analysis of its operations. Therefore, the dependence on firms for access to archival data put researchers into a ‘catch twenty-two’ like situation (p. 142).

Consequently, the research agenda was the ‘preservation and listing of records’ (Coleman 1987: 143). In these projects, the ‘storyline was tedious chronological sequence, displaying little broad historical understanding or concern for theory’ (Jeremy 2001: 440). A great deal of effort was devoted to ‘setting the records straight, telling the story as it was’ (Hannah 1984: 219). This approach to business history had one obvious benefit as Lee (1990) pointed out, that this exercise played an important role in cataloguing the ‘factual’ knowledge on some of the leading firms in the UK (p. 164).

However, there was a growing realization among British business historians that they must move beyond charting company histories and entrepreneurial biographies. Hannah (1983) argued that the traditional approach to business history promoted ‘the tendency to insularity and antiquarianism’ in research. (p. 167). In particular, there was recognition to supplement detailed histories with analysis and generalizations. Laying an agenda for future research, Hannah (1984) urged researchers to move beyond the traditional approach and engage with wider issues facing organisations through thematic focus. Supporting the argument, Coleman (1987) suggested a possible normative implication for this approach. He argued that, considering that there had been a general decline in the British industry, particularly in manufacturing, since the late nineteenth century, such analysis could have far reaching implications in terms of providing significant insights into underlying reasons behind the successes and failures of firms over this period (p. 149). Thus, besides providing greater insight into the historical context, the analytic approach to business history also offers an opportunity for greater understanding of contemporary issues.

### **2.3.2 The Chandlerian and the Supply-side Thesis**

The decline of British industries has been one of the major research programs within British business history. Within this literature, a large part of the effort in the last twenty years has been devoted to studying the cotton industry as its case and productivity as a thematic focus (Bowden and Higgins 1999: 21).

Inspired by suggestions to go beyond the traditional approach and synthesize, researchers drew on different frameworks to understand the industrial decline (Lee 1990a; 1990b). Their dependence on economics is summarised by Lee (1990) as follows:

“...economic theory does provide a coherent framework within which to investigate business problems, raises important issues and suggests avenues for exploration. It therefore fills a function which business biography, by its nature, was never able to attempt and for which entrepreneurial history proved to be inadequate” (p. 173)

However, the use of an economic framework has also generated a debate on the appropriateness of applying particular frameworks (i.e. neo-classical or institutional). These arguments are evident in the analysis of the decline of the British cotton industry. At the centre of debate is the quality of decisions made by entrepreneurs on investment and strategies (i.e. was the investment and strategy directed at right area?) beginning from the late nineteenth century up to the post-war period.

The UK cotton industry was faced with intense competition from Japan after the end of World War 1. However, the industry failed to respond to this growing international challenge. A large part of the attention within the literature is devoted to examining the choice of production technology in the industry. Researchers have argued that, the introduction of ring-based technology in yarn spinning has arguably been one of the most significant technological developments in the cotton spinning in the 20<sup>th</sup> century, as it had the capability to significantly enhance productivity. The ring technology was invented in 1828, and by the 1870s was widely adopted by the majority of firms in North America, with around 87% of installed capacity using this technology. However, British firms did not display a similar enthusiasm for ring



spinning, with only 18% of the total installed capacity using this technology. By 1954, this had increased to just 40%, the lowest proportion compared to other countries across Europe, America and Asia (Robson 1957: 355). The industry's failure to change over to the ring technology has been regarded as the key factor affecting its international competitiveness. The reasons driving the continued preference of mule spinning, over ring spinning, by British firms has been the source of contention among business historians.

According to Sandberg (1969), the continued investment in the mule-spinning technology was a rational decision on the part of entrepreneurs. Sandberg found that majority of investment in the ring spinning technology was below the count of 40 and suggested three issues which governed this decision:

- a) Cost such as labour, capital, fuel, and transportation, in the Britain made it economically attractive for firms to continue their investment in ring-based technology over the count of 40.
- b) The mule spinners, unlike ring spinners, had a strong trade union which resisted any attempt to introduce ring spinning.
- c) Ring spinning required long lengths of raw cotton, whereas mule required shorter lengths. The price of long lengths, however, was higher than that of short lengths. The length of cotton required increased for ring spinning as the count increased, hence also increasing the relative cost when compared to mule on a similar count. Combined, these factors made the ring spinning above the count of 40 more expensive than mule spinning (p.30).

Therefore, considering these aspects and applying the 'neo-classical' lens, which argues for 'economic rationality' on the part of entrepreneurs while making investment decisions, Sandberg argued that the continuing preference for mule technology was a 'rational' judgment on the part of entrepreneurs:

“When these results are compared with the actual behavior of British manufacturers, they appear to have behaved in a rational manner. At the very least, these results throw the burden of proof onto those who maintain that the British were irrational in their choice between ring and mule” (p. 43).

However, Lazonick (1983) pointed out that Sandberg (1969) and McCloskey and Sandberg (1971) had conflated the notion of 'entrepreneurs' and 'managers' (p. 236). Lazonick argued

that although they fared well as ‘neoclassical managers’, by surviving under the prevailing socioeconomic constraints and seeking short-term profits in a rationalistic manner, they failed as ‘entrepreneurs’ because they were unable to alter the status-quo and introduce fundamental changes to the socioeconomic context, as did their counterparts in North America (p. 236).

Lazonick (1981a, b) provided an alternative account of the technological backwardness. He argued that the fragmented structure of the industry, created by overspecialization and resulting in a lack of integration between spinning and weaving, was the major constraint in the introduction of the advanced ring spinning technology. The lack of integration meant that spinners were uncertain as to the demand of yarns spun from ring technology. Therefore, they continued using the inferior ‘mule’ technology rather than investing in the ring technology.

Lazonick (1983), however, acknowledged that the industry’s structure had oscillated since its formative years. During the early years, the geographical concentration of the industry in Lancashire created significant ‘external economies’ that induced many small-sized specialized firms to enter the industry. The trend was reversed between 1820 and 1840, when the power-loom was introduced which enabled large scale production and favored integration. However, in the following decades increasing demand for yarn in Asia by the local weaving firms made it attractive to build specialized spinning concerns (p. 200). From here onwards, the industry retained its fragmented structure over the next century (p. 200). It was not just limited to spinning and weaving. More importantly, there was a lack of integration between the distribution and production (p. 210). This crucial separation meant that ‘weavers could never be sure of long runs and both spinners and weavers rarely produced to stock’ (p. 210). As a result, the lack of integrated structure affected its ability to introduce better technology and was a major hindrance in building a large capacity to gain the benefits of economies of scale.

Therefore, Lazonick (1983) challenged Sandberg’s interpretations and questioned the appropriateness of employing the neo-classical framework. According to him, the neo-classical approach failed to consider three major aspects which were responsible for the decline of the cotton industry. Firstly, it legitimized short-term advantage seeking behaviour over long term investments. With firms opting in and out of alliances to ‘seek short-term demand and supply advantages’, integration of technology between different operations and creating an integrated unit took a lower priority. Correspondingly, such an attitude ‘exemplified the failure to develop modern enterprise’ (p. 224). Secondly, the approach failed to consider the significance of a

firm's marketing infrastructure. Owing to its importance in providing a channel for selling goods, the need to establish a relevant marketing infrastructure precedes that of the building of a large-scale manufacturing capacity. And thirdly, it failed to appreciate the importance of introducing professional management. As majority of firms within the industry were privately owned, the 'owner-managers' were unwilling to let go of their tight control. Consequently, when a firm amalgamated, necessary professional management structures required to manage a multi-divisional set-up could not be introduced. In the case of firms that did not amalgamate and continued to remain small in size, it meant that owner-managers had little interest in making long-term investment in newer technologies (p. 227-229).

Therefore, Elbaum and Lazonick (1984) advocated the use of institutional and Schumpeterian entrepreneurial approaches in order to understand the British industrial malaise. According to them, it allowed researchers to examine the wider socioeconomic constraints that the firms faced in the form of industry structure, education system, financial system, international trade, and state-firm relations. In addition, they avoid examining the manager's ability to provide an entrepreneurial response which can radically shape these constraints have gained the center stage. For them, the neoclassical approach with its 'microfoundations' failed to capture this complex phenomena (p. 582-583).

However, Elbaum and Lazonick's argument for using the institutional approach appeared to be a guise for introducing the Chandlerian thesis as a framework to examine decline in the British context:

"In such countries as the United States, Germany, and Japan, successful twentieth-century economic development has been based on mass production methods and corporate forms of managerial coordination. But in Britain adoption of these modern technological and organizational innovations was impeded by inherited socioeconomic constraints at the levels of the enterprise, industry, and society. Entrenched institutional structures- including, the structures of industrial relations, industrial organization, education system, financial intermediation, international trade and state-enterprise relations- constrained the ability of individuals, groups, or corporate entities to transform the productive system." (p. 568).

Therefore, as Supple (1991) had observed, although the use of an institutional framework had been proposed, Lazonick et al continued to draw on Chandlerian thesis in their analysis of the British industrial decline (p. 512).

### **2.3.3 The Demand-side Thesis**

The demand-side framework has been used to challenge the dominant supply-side thesis on the decline of the British industries. This section outlines the demand-side framework in detail with particular emphasis on the role of international competition and industry's strategic response.

#### **2.3.3.1 The Challenge of International Competition**

The appropriateness of using the Chandlerian thesis as a benchmark to examine the decline of British industries has been questioned by many researchers. For example, Supple (1991) argued that the application of Chandler's thesis as a benchmark was less an examination of the 'intrinsic character of British enterprise' than an 'assessment of the comparative implications' of large-scale firms that first emerged in the United States before the First World War (p. 512). In other words, there was a contextual difference between the situation in North America and the UK between late nineteenth century and post-Second World War period which needed to be appreciated. However, this dissimilarity in prevailing context has been overlooked. In fact, Elbaum and Lazonick (1986) have gone further than this. They have justified their personal interest, as North American researchers, in the decline of British industries by suggesting that they hope that insights from analyzing the decline of British industries since nineteenth century using the framework developed from the North American context can help to understand the decline of North American industries in the 1970s and 80s (p. i). Hence, the significance of the prevailing wider social/political/economic context in shaping the strategies of firms within that geographical context has been overlooked.

On the other hand, the demand-side proponents have focused on challenges that were specific to the UK context. Examining the case of the cotton industry, researchers have argued that the major threat facing the industry was from the growing intensity in international competition and closure of traditional markets. The industry's heavy dependence on the export market made this threat particularly significant. The textile industry, in particular cotton, was at the forefront of the industrial revolution in the UK. It was also among the first of the modern industrialized sectors to operate at a global scale. By the later half of the 19<sup>th</sup> century, approximately 80% of the total value of output in UK was marked for exports (Marrison 1996: 239). Consequently, throughout the nineteenth century the important export market was 'heavily dependent on commercial policies' of the importing countries (Sandberg 1974: 172). In the early part of the century, the exports were affected by French prohibition and American tariffs in 1816, 1824 and 1828. In the second half of the nineteenth century tariffs were imposed in Germany, France, Italy, Brazil and the US, thus making it difficult to export to these countries. Simultaneously, the domestic industries in these countries also began to develop rapidly (p. 172). As a result, countries that were major markets had turned into rival production centers.

This trend continued to challenge the British cotton industry during the inter-war period (Sandberg 1974). Although the industry had faced competition from production centers around Europe and North America before the First World War, the most serious challenge came during the inter-war years from Japan and India. The continued increase in output by the Japanese industry led to a problem of excess capacity and resulted in a period of intense competition (p. 202-206). The Lancashire industry needed a major reorganisation, particularly through reducing its capacity. However, such a move was made difficult because of the banks' willingness to extend credit lines to weaker firms, which prevented these firms from liquidating and eased the pressure on excess capacity (Dupree 1996: 280). Initially the growth in the Indian market helped to offset competition from Japan. However, loss of the Indian market owing to growth of competition was disastrous for the British cotton industry as 'nothing could offset the loss of Indian market' (Sandberg 1974: 203). The Indian market was also proving difficult for the British industry as the independence movement perceived manufactured cotton goods to be a symbol of Empire and made a public call to boycott the use of British made goods (Dupree 1996: 283). Therefore, the inter-war period came to symbolize

the 'end of the sellers market' (p. 117). The industry faced a peculiar situation where the increased international competition was joined with a serious loss in its major market.

The situation was not much different following the Second World War. Although the War itself did provide a temporary reprieve to the industry struggling in the face of international competition (Singleton 1991; 1996). The industry feared the revival of Japanese competition and this seriously affected its re-equipment policy during the post-war period (Singleton 1991: 45). In the 1950s and 60s, the industry's reinvestment was 'defensive' in nature as it was mainly used to protect the current level of production and profits rather than to increase them (p. 166-7). The situation became critical when, in the 1970s, the UK became the net importer of cotton goods. It meant that, besides facing competition in the international markets, the industry also faced severe competition in its domestic market.

Hence, according to the demand-side thesis, the growth of international competition and loss of markets as a barrier played a decisive role in cotton industry's decline and deserves greater attention (Rose 1990: 1).

### **2.3.3.2 Strategic Repositioning**

Researchers have not given as much detailed attention to the examination of the strategic repositioning efforts of individual firms as they have given to the causes of the international competition (discussed above). Nonetheless, researchers have indirectly indicated that repositioning by British firms entailed specializing in 'higher quality' goods which required skilled workers, whereas their international competitors relied on 'coarse goods' which did not require higher skilled workers (Sandberg 1974: 212). In particular, the loss in market was in 'standard' qualities such as basic grey cloth (Broadberry and Marrison 2002: 71). The British industry, on the other hand, retained its position in specialized products such as dhotis, saris and scarves which required higher skills to produce (p. 71). Similarly, in competition with Japan, British firms lost their market in relatively standard goods such as long cloth and shirtings, sheetings, drills and jeans, and retained strong positions in jaconets, madapollam, mulls, and cambrics (p. 71-72).

### 2.3.3.3 Collective Strategies

Besides individual strategies, the industry also employed collective strategies to counter the growing international competition in the cotton industry during the inter-war and post-war period. Since international competition was an industry-wide problem, firms pursued several collectivist strategies to counter this threat, an aspect overlooked by Lazonick in the supply-side thesis (Dupree 1990: 106).

During the interwar years, the industry crafted a new relationship with the Government by engaging in a frequent dialogue to influence the regulations in overseas markets (Dupree 1990). The Manchester Chamber of Commerce, with its long history as a major representative body within the industry, played a prominent role in these proceedings. The industry and trade unions viewed the loss in the export market as an ‘exogenous issue’ about which they could do little without the Government’s assistance (Bowden and Higgins 1998: 323). However, success in the collective efforts of the industry to negotiate trade regulations in Japan and India were ‘often long in coming and complicated to achieve’ (Rose 2000: 248). With little maneuverability in labour wages, owing to fear of trade union’s action, with fluctuating raw material prices and falling price of goods, there was not much the industry could do to control the costs. The industry thus turned its attention to avoiding the ‘ruinous price competition’ through some form of price agreement and short-time working, which would help in curtailing the out-put and stabilize the prices (Bowden and Higgins 1998: 324-332). However, as firms used different kinds of raw cotton (i.e. Egyptian for finer qualities, American for coarse and medium qualities) and were thus not affected equally, any lasting agreement on price was difficult to maintain and, by 1933, all efforts towards achieving this were discarded (p. 339). The industry also made an attempt to increase its productivity through ‘more loom per weaver scheme’ (Bowden and Higgins 1999). The aim of this scheme was to increase the number of looms tended by workers. Traditionally, a weaver looked after four looms. The experiment would have increased that to eight looms per weaver. However, it would also have also resulted in alternation of the wage structure, which was set on industry bases. Therefore, in order for the scheme to be successful, it was important to receive an industry wide support. However, this could not be achieved because of two major reasons. First, firms specialized in

different areas. The experiment was mainly aimed at the bulk market which was affected by the international competition. Firms which specialized in higher-end goods were not set to gain by it. Second, the conditions set by unions in return for implementing the scheme were also very stringent, especially with regards to wages, and the firms were unwilling to alter their existing wage arrangements.

Nonetheless, collective strategies continued to play a major role in meeting the challenge of rising imports and declining markets after the Second World War. In the post-War period, the Cotton Board, established in 1940 during the War, played a significant role in representing the industry's collective concerns (Dupree 1990). The Board played a vital role in liaising between the industry and the Government on important issues; including charting the industry's post-war trade (export) policy and representing its interest during the GATT negotiations. Yet, its 'ambiguous dual role', in representing both the industry and the Board of Trade, often proved to be a major handicap. This was evident when the Government failed to consult the Board during the negotiation of the crucial 'Anglo-Japanese Payments and Trade Agreement' (p. 120). Even at a broader level, the industry failed to receive much help from the Government in negotiating favourable trade agreements in important export markets such as Japan and India. More importantly, the industry had lost its 'bargaining power' and 'many aspects of the Government's policy were diametrically opposed to the interests' of the industry (Rose 2000: 292). To an extent, the Government's inability to assist was also due to its diminished political influence at an international level in the post-war era (p. 293). Another form of collective strategy employed by the industry during the post-war period was in the form of price agreements. In 1939 the Cotton Industry (Reorganisation) Act was passed with an aim to stabilize prices which had been destabilized since the end of the First World War. However, the act could not be implemented fully as the war broke out during that year. After the end of the Second World War, the Labour government, owing to inflationary pressures, was not keen to give official support to price schemes and withdrew the statutory price support mechanism in 1949, leaving the responsibility of formulating similar schemes to the industry. In response to this, the spinning section of the industry established the Yarn Spinners Association to formulate and oversee the minimum prices for yarns. However, this scheme was controversial right from its inception (Singleton 1991). The bone of contention was the negative effect of the yarn price agreements on the weaving section (p. 197). With a relatively high price level



maintained by the spinning and finishing section, the majority of weaving firms, who did not have their own spinning facility, felt their margins being squeezed. The yarn price agreements, however, were dismantled in 1958 under the Restrictive Practices Act which was introduced in 1956. Similar price agreements were not introduced in the weaving section of the industry. The main reason for this was the presence of a large number of small-sized firms in the weaving section (p. 202). While seven of the largest firms in the spinning section controlled 38% of spinning capacity, the seven largest firms in the weaving section controlled only one tenth of the total weaving capacity (p. 202).

Hence, collective strategies formed a crucial part of the cotton industry's strategic response during the inter-war and post-war period, although implementing them was not always as straight forward owing to conflicting interests within the industry. As a result, they were not highly successful in helping the industry counter the growing international competition.

#### **2.2.3.4 Industry Fragmentation and Financial Performance**

Researchers have also challenged the fundamental tenet of the Chandlerian thesis that large integrated structures were a prerequisite for a superior economic performance. According to Toms (1994), between 1885 and 1914, a large part of the spinning section of the industry generated a relatively higher rate of return on the capital compared to other firms within the industry (p.305). In a further study, Higgins and Toms (1997) examined the rate of return on capital of the spinning section over a longer period, from 1884 to 1960, and reached a similar conclusion. This indicates that the emphasis on specialization and higher quality products produced increased profits using the existing mule technology.

Higgins and Toms (1997) argued that the seeds of decline, however, were in the aspects that governed distribution and reinvestment of profits. Three issues were particularly significant:

a) The 'private ownership structure' favoured 'personal capital accumulation' rather than 'corporate capital accumulation' (p. 380). Therefore, a major part of the profits were

continually redistributed in the form of dividends to the shareholders, rather than reinvested in the business for future growth.

b) After the First World War the 're-flotation boom' of 1919-20 and the slump that followed in 1921 crippled firms with large financial debts (Higgins and Toms 2003). Firms took the improvement in margins and demand during 1920 as a long-term recovery and embarked on a massive financial re-flotation (p. 214). However, this surge was driven mainly by short-term shortages in the world markets, and with the fall in demand in 1921, firms were stuck with a large amount of financial debt and fixed cost in the form of interest (p. 214-16). Therefore, it was this 'financial' constraint, as opposed to the inflexible industrial structure, that restricted the industry's ability to make any substantial reinvestment in technology during this 'decisive moment' in the industry's history (p. 225).

c) In the post-Second World War period the industry faced a different kind of financial constraint which limited its ability to make any significant investments in new technology. Higgins and Toms (2000) argued that, during the 1950s and 1960s, the industry's investment decisions were driven by Government policies. An inconsistent tax policy, that gave incentives to new investments in machineries but not in buildings, was not particularly helpful in inducing firms to commit investment in new technology during the period when the industry was facing an uncertain future in terms of a declining market (p. 68).

#### **2.3.4 Research Approach**

The review in the above sections indicated that generalizations derived from Chandler's studies have been widely employed in examining the decline of the UK cotton industry. This section aims to examine the treatment of Chandler's research approach within the literature.

As discussed earlier in this chapter, Chandler had particularly underlined the importance of comparative studies by examining the strategies of individual firms as a major research approach. However, the primary focus of analysis within British business history literature, on the contrary, has been at the industry level. Yet, it has not restricted researchers in making broad-based judgments on the performance of individual firms. In order to overcome this problem, researchers have emphasised the need to closely examine strategies of individual

firms (for example, Payne 1974; Kennedy and Payne 1976). But this research approach has not received due attention. Dintenfass (1992a), in particular, observed the conspicuous absence in the analysis of individual firms within the literature:

“The practitioners of this approach, however, have made less of Chandler’s research methods than they have of his findings. They have not systematically compared the strategies and structures elaborated by individual firms in cotton textile, iron and steel or the other of Britain’s declining trades. Indeed particular companies rarely appear in their studies.” (p. 2-3).

In addition Dintenfass (1992a) also pointed that there is little insight in the ‘range of opportunities available’ to individual firms and the ‘constraints conditioning their responses to changing market conditions’ (p. 3). Dintenfass (1992b) suggested that in order to achieve this, greater attention should be given to examining ‘these decisions and those who have made them’, instead of focusing too much on the ‘British attitude’ and ‘British institutions’ (p. 71).

Following his own lead, Dintenfass (1992a) cross-examined the strategies employed by four firms (Ashlington, Thorckley, Briggs and Waterloo Main) in the British coal industry during the inter-war period: a phase when the industry was going through a severe economic downturn. In particular, he examined the strategies employed in managing their ‘works’ (collieries) and labour relations. He found that there was little change in the management of these firms with the composition of ‘top personnel’ remaining unchanged (p. 218). Similarly, there was no major change in the organisational structure (p. 218). This finding was consistent with the argument put forward by Lazonick, in the cotton industry, that the management and organisational structures of the firms remained largely unchanged.

However, and more importantly, Dintenfass found that the ‘continuity in corporate culture did not invariably entail conservatism and inflexibility in the conduct of colliery business’ (p.218). In particular, three firms (Ashlington, Briggs and Waterloo Main) carried out a number of innovations in their collieries and selling administration. It included the mechanization of production, rationalization of production lines, extension of production facilities, revised approach to sales practices, and the introduction of new customer services. Briggs was

particularly active in acquiring new firms and took 'significant' steps in reorganizing its marketing and sales activities. Dintenfass argued that these innovative strategies were largely responsible for the firm's superior financial performance. On the other hand, at Thorckley, there was little innovation in any direction. Although some effort was made to introduce 'new appliances', the 'works remained inefficient, and the marketing problem became even more acute' (p. 219). Similarly, there was little novelty in its traditional approach to labour management. As a result, its relations with workers continued to remain strenuous.

Therefore, by closely examining the strategies of individual firms that led to their differential performance, Dintenfass showed that continuation of the private ownership and 'traditional' organisational structures were not a major constraint in introducing innovative practices for those who wanted to employ them. Yet, a majority of firms failed to introduce similar initiatives. Hence, Dintenfass argued for a closer examination of individual firms and the external environment that conditioned their behaviours (p. 227-228).

Researchers have begun to acknowledge the importance of examining the strategies of individual firms. For example, taking a cue from Dintenfass, Fleming, McKinstry and Wallace (2000), examined the decline of the North British Locomotive Company between 1940 and 1962. However, few studies have cross analyzed the strategies of individual firms in the textile sector using supply and demand-side framework to examine the decline of this vital industry.

### **2.3.5 Summary**

Within British business history literature, the thematic focus on examining the decline of industries has been instrumental in guiding researchers beyond the traditional approach of writing company histories. This has been illustrated through the research on the cotton industry. Clearly, Chandler's influence has been prominent within this literature. In particular, the Chandlerian thesis has provided researchers with a guiding framework to analyze the decline of British industries. Using this as a benchmark, researchers have argued that a major cause of decline in British industries, beginning from the late nineteenth century and into the twentieth century, was the inability of firms to build large integrated operations run by professional managers. Instead, the industries continued to remain fragmented. The small-

sized, family-owned firms demonstrated little interest in making long-term investments and continued to rely on old technologies.

However, researchers have challenged the application of the Chandlerian supply-side thesis and research approach adopted to examine the decline of British industries. In particular three major issues have been underlined, especially with regard to the cotton industry. *First*, a major challenge for the industry was that of international competition and the closure of traditional markets. The industry's efforts were therefore geared towards meeting this challenge. At the individual level, firms responded by repositioning themselves into specialized markets. At the industry level, firms also used employed collective strategies to counter the growing international competition. *Second*, researchers have challenged the fundamental tenant of the Chandlerian thesis, that large integrated structures were a prerequisite to meet the challenge of international competition. They have found that specialization and higher quality products were key components of superior economic performance. It also helped firms to move away from markets where the international competition was growing. *Third*, while Chandler's thesis has been extensively used within the literature, there has been little attempt to employ his research approach. The majority of studies have based their analysis at industry level. Very few have cross-examined the strategies of individual firms.

As Blackford (2001) noted, researchers have been better at refuting the Chandlerian claims rather than providing original insights into the performance of British industries:

“I would like to urge British scholars to stop beating the dead horse of Chandlerism. British historians have amply shown that Chandlerian models and paradigms, for all their value, have flaws when extended to British business developments. It is time to move beyond decrying Chandler's baleful influence on the study of British business history. (p. 10-11).

The demand-side thesis with focus on loss of global markets as a barrier and specialisation as a strategy of strategic response, on the other hand, offers a more relevant framework to examine a textile industry within the UK context. By also examining collective strategies employed at industry level, it offers a rounded approach to examine the decline of the Dundee jute industry.

The next section examines the capabilities approach as a potential framework in gaining greater understanding into strategies adopted by individual firms.

## **2.4 The Capabilities Approach**

The potential of strategic management to contribute to the debates within business history has been particularly underlined by business history scholars (Pearson 1997: 2). The capabilities approach with its focus on firm-level analysis provides a tool to address the need underlined in the business history literature to examine and cross-compare strategies of individual firms. However, as Jeremy (2001) observed, ‘as yet, business historians have produced no major studies intensively utilising this resources and capabilities framework’ (p. 437).

The notion of organisational capability has made a significant impact within the strategic management literature since late the 1980s. The capabilities approach has underlined the importance of firm-based aspects, as opposed to industry-based, that are responsible for a firm’s competitive success. With this focus at firm-level, it provides a tool to address the need underlined in business history literature to put greater emphasis on understanding the individual firm’s strategy.

The aim of this section is to outline the capabilities approach in order to apply it within this research. The capabilities approach is part of the broader resource-based view. Therefore, the section begins by outlining the notion of resources as defined within the strategy literature.

### **2.4.1 Resources**

Wernerfelt’s (1984) study has been recognised widely as regenerating interest in the resource-based approach. He argued for an alternative method of analyzing a firm’s behaviour, as opposed to the dominant market-based industrial organisation approach. Wernerfelt suggested that the logic of using resources for analysing a firm follows from the idea that ‘resources and products are the two sides of the same coin’ (p. 171). He argued that, most products required the services of several resources and most resources could be used in several products. Therefore, ‘by specifying the size of the firm’s activity in different product markets, it is possible to infer the minimum necessary resource commitments. Conversely, by specifying a resource profile for a firm, it was possible to find the optimal product-market activities’ (p

171). Wernerfelt termed resources as ‘those tangible and intangible assets which are tied semi-permanently to the firm’ (p. 172). These included, ‘brand name, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc’ (p. 172). Barney (1991), on the other hand, characterized resources as ‘all assets, capabilities, organisational processes, firm attributes, information, knowledge, etc controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness’ (p.101).

#### **2.4.2 Reconciling the Problem of Terminology**

Among organisational resources, capabilities have attracted significant research interest. The burgeoning interest has also led to a number of definitions of capabilities, which makes it difficult to operationalise the notion. As Collis (1994) observed, ‘there are almost as many definitions on organisation capabilities as there are authors on the subject’ (p. 144- 145). This view is echoed by Dosi, Nelson and Winter (2000) who use a more poetic approach to underline this issue:

‘The term ‘capabilities’ floats in the literature like an iceberg in a foggy Arctic sea, one iceberg among many, not easily recognized as different from several icebergs near by.’ (p. 3)

A major area of contention in terminology has been between the notion of ‘competence’, ‘core-competence’ and ‘capability’. For example, Amit and Schoemaker (1993) defined *capabilities* as a ‘firm’s capacity to deploy resources, usually in combination, using organisation processes, to affect a desired end’ (p. 35). On the other hand, Sanchez, Heene and Thomas (1996) define *competence* as ‘an ability to sustain the coordinated deployment of assets in a way that helps a firm achieve its goal’ (p. 8). These definitions are similar to Prahalad and Hamel’s (1990) idea of *core-competence*, which they define as ‘collective learning in organisation, especially how to co-ordinate diverse production skills and integrate multiple streams of technologies’ (p. 82).

It can be observed that the seemingly different definitions of competence and capability have revolved around similar notions. On the other hand, some researchers have used the terms interchangeably (for example Grant 1991; Dosi, Nelson and Winter 2000).

In order to reconcile the problem of 'terminology' between the use of the term competence and capability, this research also employs the term capabilities and competency interchangeably and refers to it as 'capability' throughout this study.

However, it is also important not to dilute the ideas that lay behind the notion of competence and capability as employed within the strategic management literature. In order to identify and underline these, capabilities have been categorized into two hierarchical sets: first, key processes and functional attributes that are easily identifiable and second, co-coordinative organisational processes and routine, that provide the building blocks for capabilities described in the first set, which are not easily identifiable.

The first set of capabilities represents the highest order of manifestation in the form of key processes, which feed into final products, and functional attributes. These capabilities can be easily identified within a firm. Researchers approaching it from a competency and capability-based approach have attempted to operationalise it in a similar vein.

Within the competency-based approach, Prahalad and Hamel's (1990) study of Cannon and Sony give useful illustrations in this regard. In particular, they point towards Cannon's capability in 'optics, imaging, and microprocessor', whereas Sony's capability could be found in 'minituarisation'. Researchers using the capabilities approach have also examined key higher-order processes and higher-order product based characteristics. For example, Holbrook and Cohen (2000) studied the capabilities of four firms in the semiconductor industry. Although all firms were in the same industry, they possessed different technological capabilities. For example, Motorola had capabilities in 'printed circuits, ceramic materials, design of rugged circuits', Shockley in 'four layered diode' and Fairchild in silicon technology. On the other hand, Raff (2000) examined capabilities at the firm-level in the service industry. He studied the case of two major book-stores, Borders and Barnes and Noble's. He found that Borders were primarily geared towards meeting the particular needs of its community which were highly specialized, therefore it sought to build an extensive collection of book titles and sought to build its capability in 'assortment' (p. 1054). With large stocks, it relied heavily on the software which helped to keep track of large collections. The growing sophistication of the



software further enabled it to build a range of services. Barnes and Noble's on the other hand were geared towards providing low-cost and high volumes business. Therefore its capabilities were in 'infrastructure and practices' that would promote volume. Langlois and Steinmueller (2000), on the other hand, examined capabilities at the industry and national level. They identified distinct technological capabilities within the semiconductor industry in the United States and Japan. The difference in capabilities was a result of differing industry structure and patterns of demand in both countries. While firms in the United States specialized in the DRAM technology between 1K and 4K memory, the Japanese firms specialized in memory of 16K and over.

The higher-order identifiable capabilities also include those which reside in the organisation's functional areas (Collis 1994: 145; Dosi, Nelson and Winter 2000: 6). For example, Stalk, Evans and Shulman (1992) underlined the significance of Wal-Mart's distribution capabilities. They argued that its logistic capabilities played a central role in enabling it to deliver the goods to the stores. More importantly, it led to goods spending minimum time at its warehouse in the inventory, thus resulting in large savings and enabling it to sell goods at lower prices (p. 58). However, as Grant (1991) had suggested, functional capabilities can reside and be identified within any of an organisation's standard functional activities, such as production, marketing, branding and so on (p. 120).

The second set of capabilities represents the coordinating processes and routines that provide the building blocks for higher-order easily identifiable manifestations of capabilities discussed above in the first set. Although some processes are identifiable, other processes, such as routines, are not easily identifiable.

Although researchers have positioned themselves on either side of the capability and competency-based approaches, all refer to the coordinating mechanisms as building blocks of higher-order, easily identifiable capabilities. For example, Amit and Schoemaker (1993) have suggested that these mechanisms help to 'deploy resources, usually in combination, using organisational processes, to effect a desired end' (p. 35). Similarly, Grant (1991) suggested that these mechanisms involve 'complex coordination between people and between people and other resources' (p. 122). This is echoed by Prahalad and Hamel (1990), who refer to it as 'core-competence'. Using an illustration, they argued that for Sony to build its capability in 'miniaturisation' (the identifiable aspect of capability, as discussed above), it needed to

‘harmonize’ its ‘know-how’ in relevant technologies and ensure that there was a ‘shared understanding’ among its ‘technologists, engineers and marketers’ (p. 82).

Grant (1991) equated the coordinative mechanisms to an organisation’s ‘routines’. For Grant, it included all activities from ‘acquiring raw material, production process, top management routines to monitor business performance, capital budgeting’ and so forth (p. 122). Winter (2000), however, clarified that these routines differed from normal routines in two major aspects: a) whereas routines can be in any ‘size or shape’, co-coordinative capabilities are ‘reflected in a large chunk of activities that clearly matter to the organisation’s survival and prosperity’; b) routines are often ‘invisible and unknown’ whereas coordinating capabilities can be identified and act as a ‘control lever’ and its intended effects are known (p. 983). Therefore, coordinating mechanisms denoted ‘high-level routines or collection of routines’ (p. 983).

Furthermore, researchers have suggested that these coordinating mechanisms are subject to constant change. As Teece, Pisano and Shuen (1997) have argued, that since the external environment of a firm was dynamic, it was important to constantly reconfigure the integrative mechanisms. Thus, they proposed the notion of ‘dynamic capabilities’ i.e. the ability and mechanisms which allow constant retuning of the existing organisational processes and configurations (p. 516). Eisenhardt and Martin (2000) went further to suggest that these were ‘antecedent organisational routines and processes’ that helped to realise ‘new resource configurations’ in the context of a changing external environment (p. 1107). Furthermore, Eisenhardt and Martin pointed that it consisted of ‘identifiable’ processes, such as product innovation, strategic decision-making, alliancing etc (p. 1107).

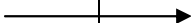
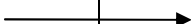


To conclude, grouping the capabilities hierarchically has helped to overcome the problem of terminology between competence and capability. It has also helped to identify clearly the different types of capabilities without losing their inherent characteristics. In particular, the capabilities have been grouped within two sets: a) capabilities that represent the highest order of manifestation in terms of an organisation’s function and the key processes that feed into products and which are easily identifiable b) capabilities that represent coordinating processes and routines that provide the building blocks for higher-order, easily identifiable capabilities outlined in the first set.

Considering that the aim of this research is not to explore the micro processes used by jute firms to develop their capabilities, the second set of capabilities that mainly focus on micro-level processes and routines would not be appropriate. Since the aim of this study is to identify capabilities that firms developed in their attempt to strategically reposition themselves, it is important that these capabilities are easily identifiable. Therefore, when examining the cases of individual firms, this research will use the capabilities that are categorised in the first set.

### 2.4.3 Capability Leveraging

A major feature of capabilities is that they can be leveraged to produce new products and services. This distinct attribute had been underlined by Penrose (1959). Penrose suggested that the ‘unused productive services’ of a resource could be used to grow and expand first activities (p. 67-68). Leveraging can also enable a firm to enter new markets, as Wernerfelt (1984) pointed out. Figure 6, a simplified and modified adaptation from Wernerfelt’s model on ‘sequential entry’ (p.177), illustrates how capabilities used in one product can be used to enter new markets.

**Figure 6 Capability Leveraging Matrix**

	Market		
<b>Resource / Capability</b>	A	B	C...(etc)
X			
Y	 		
Z...(etc)			

Source: Author

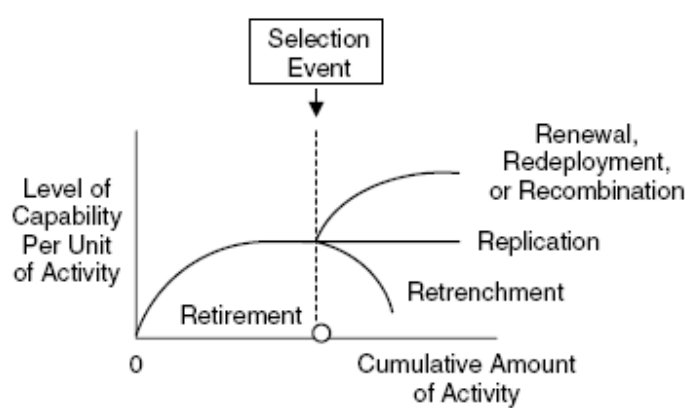
For instance, Honda's capability in engines is central to developing its cars, motorcycle, lawn mover, and generator businesses. Similarly, Cannon's capabilities were instrumental in developing diverse business including copier, laser printers, cameras, and image scanners. Similarly, Holbrook and Cohen (2000) described how individual firms leveraged their initial technological capabilities in the transistor industry to establish themselves in the emerging semiconductors industry.

However, over time a firm may develop several new products and services and enter multiple markets. This results in transformation of their existing capabilities (Helfat and Peteraf (2003). According to Helfat and Peteraf, both internal factors, such as management decisions, and external factors, such as change in demand, technology, raw material and government policy, can act as an inducement for capability to branch out (p. 1004). The branching out of capability can take six major forms, as illustrated in Figure 7.

- a) Retirement of capability leads to that capability 'dying'. For example if a government directive orders production of certain products to close, the firm stops the production, leading to the capability associated with that product not being used (p. 1005).
- b) Retrenchment entails the capability to decline gradually (p.1005).
- c) Renewal of capability involves improving the existing level of capability to raise efficiency (p. 1006).
- d) Replication involves transferring existing capability to new markets. Taking the example of the government restricting the production of certain products, if a firm chooses to replicate their capability, it may involve them transferring their capability to a new geographical market using the same products and services (p. 1006).
- e) Redeployment of capability involves developing new products and services while entering new markets. It may also involve developing some new capabilities. Redeployment may involve sharing existing capabilities between old and new markets or shifting existing capability entirely to the new market (p. 1006).
- f) Recombination involves combining existing capability with new capabilities to enter new markets (p. 1006-7).

While ‘renewal’, ‘redeployment’ and ‘recombination’ would result in an alternation of existing capability, ‘retirement’, ‘replication’ and ‘retrenchment’ do not involve any significant change to existing capability (p. 1008). The branching of existing capability occurs ‘when a selection event intervenes’, as shown in Figure 7 (p. 1005). However, branching does not follow a set sequence. After the ‘selection event’, a firm may choose to take any one of the six paths or pursue them in a combination (p. 1008).

**Figure 7 Branches of Capability Lifecycle**



Source: Helfat and Peteraf (2003: 1005)

#### **2.4.4 Path-dependency and the Issue of Determinism**

The capabilities approach has made an explicit attempt to engage with ‘history’. Helfat (2000) went as far as to cite the American philosopher George Santayana to caution researchers that, ‘those who ignore history are doomed to repeat it’ (p. 955). Similarly, Teece et al (1997) emphasized that ‘history matters’ (p. 522). However, the use of history has been mainly through the notion of path-dependency. Although it has helped to underline an important characteristic of capabilities, it has also induced an element of determinism in the analysis. The aim of this section is to address this issue. This section explains the notion of path-dependency and highlights how it has played a central part in the analysis of capabilities. It then reviews

how the issue of determinacy has been addressed by historians with a view to incorporate those elements in the capabilities approach.

The significance of path-dependency was underlined first by David (1985) and Arthur (1989). David argued that in order to understand the 'logic or illogic or world around us', it is necessary to understand 'how it got that way' (p. 332). David examined the case of the continued preference of the 'QWERT' over the 'DSK' format for setting keys on typewriters and computers when it was demonstrated that the latter form was more efficient than the former. He identified that the combination of three conditions led to this preference: first, the technical interrelatedness of system components, such as typists and keyboards; second, increasing returns, as in the greater value of keyboard systems with larger market shares; and third, quasi-irreversibility of investment, as in the costs of switching from one keyboard system to another owing to 'learning and habituation' (p. 336). Building on this framework, Arthur emphasized the importance of increasing returns of scale that developed over time. Arthur suggested that the increasing returns can be derived from both the demand and supply-side. On the supply side the result of learning effects (learning by doing or learning by using), in other words 'learning and habituation', which lower the cost or improve the quality of a product. On the demand side, increasing returns can occur owing to positive network externalities, which raise the value of a product or technique for each user as the total number of user increases.

In the resource-based view, the notion of path-dependency has been intrinsically tied with its theoretical construct.

Lippman and Rumelt (1982) argued that the central issues within the resource-based view are uncertainty, non-imitability and causal ambiguity in productive processes. Outlining the aims of a theory addressing the variations of firm performance, Lippman and Rumelt suggested that it should account for the origins of such differences, as well as the mechanisms that hamper their elimination via competition and entry (p. 419). They challenged the conventional understanding, that competition and free entry into industry would eliminate any differences in performance among firms. On the contrary, they argued that that uncertainty is inherent in any new or ongoing business ventures, which acts as a restrictive mechanism. Additionally, bounded rationality on the part of actors created causal ambiguity between actions and results.

Under such circumstances, it became difficult to identify the factors leading to performance differentials among firms, and hence uncertain imitability and inter-firm heterogeneity (p. 418). Therefore, 'the assumption of uncertainty in the creation of new cost functions explains the origins of efficiency differences (p. 420). And, 'ambiguity as to what factors are responsible for superior (or inferior) performance acts as a powerful block on both imitation and factor mobility' (p. 420). Underlining the importance of their interrelatedness, they caution that 'in the absence of uncertainty, the creation of a unique resource could be repeated and its uniqueness destroyed' (p. 420).

This leads to another important aspect in the theory, the notion of the Strategic Factor Market. It is defined by Barney (1986a), as a 'market where resources necessary to implement strategies are acquired' (p 1231). Such markets, according to Lippman and Rumlet (1982), 'will be imperfect under conditions of uniqueness, ambiguity, or enforceable property rights to special factors' (p. 420). Building on the strategy-conduct-performance model, derived from Mason (1939) and Bain (1956), Barney (1986a) suggested, 'firms can only obtain greater than normal returns from implementing their product market strategies when the cost of resources to implement those strategies is significantly less than their economic values i.e. when firms create or exploit competitive imperfections in strategic factor markets' (p. 1232). He suggested that in order to achieve this, firms must be 'consistently better informed concerning the future value of those strategies than other firms acting in the same strategic factor market' (p. 1232). Firms can keep better informed by analyzing their competitive environment and/or analyzing their organisational skills. However, Barney further argued, it was normally difficult for firms to conduct a thorough analysis of its external environment. Whereas, firms could take stock of their own asset and skill sets relatively easily. Moreover, as they enjoy an information advantage over other firms in their own pool of assets and skills, it puts them in an advantageous position (p 1239).

Drawing on these ideas, Barney (1991) discussed the full implications of the RBV on a firm's competitive advantage. He positioned it squarely opposite the industrial organisation paradigm, by distinguishing between the underlying assumptions of both approaches. He argued that, unlike the Mason-Bain paradigm, which assumed that firms in an industry were similar in terms of their resources/strategies and thus any heterogeneity was short lived, the resource-based view of the firm was built on the following: a) That firms were heterogeneous in terms

of their resources and strategies and b) That resources would not be perfectly mobile across firms, thus heterogeneity is longer lasting. Having laid this foundation, he identified the conditions under which resources could be a source of sustained competitive advantage. He argued that a firm's resources must have the following four characteristics: i) it must be valuable, in the sense that it exploits opportunities and/or neutralizes threats in a firm's environment, ii) it must be rare among a firm's current and potential competition, iii) it must be imperfectly imitable, and iv) there cannot be strategically equivalent substitutes for this resource that are valuable but neither rare or imperfectly imitable (p. 105-106).

Barney (1991) gave 'history' a central role in this framework. Distinguishing the RBV approach from that of the IO led perspectives, Barney pointed out that the proponents of IO approach examined a firm's performance independent of its history (Barney 1991: 107). In contrast to this, the RBV framework gave due importance to the role of history in its analysis. In particular, it played an important role in ensuring the 'imperfect inimitability' of resources through 'path-dependency':

“..this approach asserts that not only are firms intrinsically historical and social entities, but their ability to acquire and exploit some resources depends upon their place in time and space. Once this particular unique time in history passes, firms that do not have space- and time- dependent resources cannot obtain them, and thus these resources are imperfectly imitable” (p. 107-108).

Barney (1986b) used the case of 'organisational culture' to illustrate this point. He argued that an organisation's culture could act as a major source of competitive advantage owing to its distinct firm specific characteristics. It was difficult to imitate it because cultures were 'intrinsically bound up with a firm's unique history and heritage- and history defies easy imitation' (p. 661). Similarly, Mata, Fuerst and Barney (1995), gave the example of information technology management skills in providing the advantage. According to them, firms were 'not disadvantaged in imitating technology by history, causal ambiguity or social complexity' (p. 497). However, the same was not true with the skills that were required to manage the technology, because they reflected the 'unique histories of individual firms' (p.



500). Therefore, by making it difficult to imitate and preserving the distinctiveness of a firm's resources, history, through its role in creating unique path-dependency, was a central element in the theoretical framework.

The role of history in creating path-dependency has been important for researchers examining capabilities. As Teece, Pisano and Shuen (1997) noted, 'the notion of path-dependency recognizes that history matters' (p. 522). The path-dependency played an important role in determining the nature of the capabilities that a firm is able to develop, thus limiting what it can do and where it can go in the future. As Teece et al argued, a firm's 'previous investments and repertoire of routines (its history) constrain its future behavior' (p. 523).

Hence, the role of history has been embedded within the theoretical construct of the capabilities approach in the form of path-dependency. Consequently, the focus within the empirical studies, when historical analysis is conducted, is primarily towards establishing the path-dependent nature of capabilities.

For example Klepper and Simons (2000), focusing at the industry level, study the American television receiver industry from 1945-1989 using a statistically sophisticated model of industry evolution. They find that greater experience in the radio industry acted positively on their entry and sustaining of advantage in the television industry, thus indicating that existing capabilities determine the entry in new markets. Similarly, Langlois and Steinmuller (2000) studied the history of the American semiconductor industry from 1980-1995. They examined the industry's general response to the Japanese challenge during this period. They find that although some new capabilities were developed, the industry to a large extent relied on the capabilities that it had developed in the earlier periods, thereby underlining the central role of path-dependency in determining the nature of capability evolution in the face of international competition.

Studies at firm level, on the other hand, gave relatively greater emphasis on the examination of the historical context, even though their primary aim was to establish path dependency. For example, Tripsas and Gauetti (2000) examined the company history of Polaroid from its inception in 1937 to 1990, with particular attention to the period from 1980-90, in order to study relationship between capabilities, cognition and leadership. They found that investment in developing particular capability was closely related to the dominant belief pattern of its leadership. With the change in leadership came a change in the leader's cognitive beliefs,

which in turn led the direction for developing a particular capability. Similarly, Holbrook, Cohen, Hounshell and Klepper (2000) used a case-study approach to examine the company histories of four firms within the American semiconductor industry. They found that each individual firm's commitment to technology and the ability to integrate research and manufacturing were the two major aspects in determining heterogeneity and developing unique path-dependency. Consequently, it played an instrumental role in the way capabilities were developed in these firms.

Nonetheless, over-emphasis on the notion of path-dependency has come under criticism. In particular, Booth (2003) and Clark and Rowlinson (2004) and have pointed out that a major limitation of path-dependency in the resource-based view is its deterministic characteristic. Although the notion of path-dependency acknowledges the 'probabilistic and stochastic' nature of processes (David 1985), at its core it remains a deterministic approach (Clark and Rowlinson 2004: 341; Booth 2003: 98-99). The determinism is a result of the 'lock-in' effect, which is one of the key pillars of path dependency. The lock in effect implies that the current capabilities are considered a result of past investments and future capability developments are a result of current investments. As a result, the focus, especially within empirical literature, has been on factors that lead to the 'lock in', such as technological interrelatedness, dominant logic and so on, and the resultant single successful strategy implemented by the firm. Hence, determinism here refers to the lack of attention given to examining the significance of strategic *alternatives* that are available in history, present and in future. The next section examines how this can be addressed by drawing on the history literature.

#### **2.4.4.1 Redressing Path-dependency's Determinism: Attention to Historical Context and Strategic Options**

One way to counter the determinism in path-dependency is to give greater attention to the historical context and highlight the multiplicity of choices that were available before a particular course of action had been decided. A distinct theoretical contribution of resource/capabilities approach has been to recognise and underline the importance of management's ability to leverage their existing resource/capabilities into multiple strategic possibilities (Penrose 1959; Hamel and Prahalad 1994). This is also reflected in practice, where

managers often consider more than one option before committing to any particular strategy. Hence, attention should therefore also be given to identifying the strategies that were under consideration and underline why they were not pursued. This tactic has been used by the historians belonging to both the 'traditional' (e.g. Elton 1967) and 'postmodern' (e.g. Carr 1964) schools of thought.

For Elton (1967), history is an examination of events in the past that have left deposits in the present. It deals with the happenings, changes and particulars of the events that occurred in the past (p. 24). Following from this, the study of history amounts to a 'search for truth' concerning these incidents (p. 70). In this endeavour, a 'professional' historian's aim is to get closer to the past and understand the characters 'until one knows what they are going to say next' (p. 30). While recreating this past, the determinist tendencies, which arise from a researcher's aim to justify a researcher's preconceived theories, must be avoided (p. 64-65). Elton argued that although some form of 'pattern making' may be necessary to put forward an explanation, the aim should be to highlight 'multifarious and particular' nature of events (p. 128).

On the other hand, for Carr (1964) the essence of history is in the interpretation, as opposed to the pursuit of truth, of the past. Carr questioned the over dependence on the documents as a source through which to give accurate accounts of historical events. He argued that the content recorded in documents often depended on what the recorder thought had happened, or what he wanted others to think had happened (p. 13). As a result, the interpretation that the historian derives from the records carries greater weight. In order to arrive at a plausible interpretation, the historian is required to gain 'contact with the mind of those about whom he is writing' (p. 19), or in other words, to give greater attention to the prevailing context. Carr also suggested that history is about general as opposed to particular (p. 62). He argued that history is in fact concerned with 'relation' between the unique and the general, rather than the precedence of one over the other (p. 65). Carr acknowledged that in the quest for generalisation, the historian may be faced with the charge of being deterministic (p. 85). However, he questioned the notion that there were limitless possibilities at one's disposal (p. 87). According to him, every human action is both free and determined to a certain extent (p. 89). Carr quelled the charge of determinism by suggesting that researchers sometimes use rhetorical language to label an event

as an inevitable when they actually want to underline the point that a set of factors would make the likelihood of occurrence of ‘overwhelmingly strong’ (p. 90). Yet, Carr acknowledged that in practice, historians are aware of fluxes created by the alternative course of actions that were being considered by the actors:

“In practice, historians do not assume that events are inevitable before they have taken place. They frequently discuss alternative courses available to the actors in the story on the assumption that the option was open, though they go on quite correctly to explain why one course was eventually chosen over the other” (p. 90).

Although, Carr did not consider it a high priority to underline the range of options that were under consideration and left this job to ‘poets and metaphysicians’ (p. 90). Nevertheless, it has been pointed out here that the importance of recognizing the presence of the multiple options that were available prior to selecting a course of action, has been recognized by historians from both ‘traditional’ and ‘post-modern’ schools of thoughts as a means to redress the problem of determinism in historical analysis.

Examination of multiple options has received greater attention by historians practicing counterfactual analysis. In underlining the need to examine the various alternatives that were available, Trevor-Roper (1981) argued:

“At any given moment in history there are real alternatives...How can we *explain* what happened and *why* if we only look at what happened and never consider the alternatives, the total pattern of forces whose pressure created the event?” (p. 363)

However, traditionally historians have not been receptive to the idea of counterfactual analysis. For instance, Carr (1964) termed the method as being akin to a ‘parlor game’ (p. 91). A major objection has been that counterfactual analysis relies on ‘facts which concededly never existed’ (Ferguson 1997: 86). In order to counter this, Ferguson suggested that researchers should consider plausible options as ‘those alternatives which can be shown on the basis of contemporary evidence that contemporaries actually considered’ (p. 86).

Although not for the purpose of counterfactual analysis, the issue of examining the range of alternatives available to firms has also been underlined by business historians pressing for greater understanding of the British industrial decline (Dintenfass 1992). Dintenfass argued that there is little insight on the 'range of opportunities available' to individual firms and the 'constraints conditioning their responses to changing market conditions' in the British context (p. 3). Dintenfass justified the greater emphasis on examining the prevailing opportunities within the industry by arguing that:

“...entrepreneurs are no better than the opportunities available to them, and it is only by grasping the full range of accomplishments in an industry at a particular point in history that the historian can begin to define the actual opportunities of the moment” (p. 228).

To conclude, the use of history to establish path-dependency only as an element within its theoretical construct would leave it short of fulfilling the potential that researchers have expected from its use. For example, when Helfat (2000) cautioned researchers by arguing, 'those who ignore history are doomed to repeat it' and Teece et al (1997) argued that 'history matters', an implicit assumption appears to be a greater attention to the prevailing historical context and the available alternatives. Because, even theoretically, in order to avoid repeating history (assuming that events and lessons indicate issues that are not worth repeating) the first step would be a closer examination of various alternatives that were available during the historical context, so as to be able to make a judgment on exactly what to avoid.

At this juncture it needs to be underlined that this research does not aim to conduct a detailed counterfactual analysis of strategies that were under consideration within the industry. It will only identify various alternatives, in terms of capability development, that were available and underline why they were not pursued, while examining in detail the capability that was developed by the firms. This will help to juxtapose the capability alternatives with those capabilities that were actually developed, thus helping to develop a greater understanding of the decline of the Dundee jute industry.

## 2.5 Conclusion

In understanding the decline of British industries, the dominant 'supply-side' thesis fashioned on experience of North American firms in the late twentieth century, has been challenged by the proponents of the 'demand-side' thesis. This argument has gained prominence for underlining the 'British experience' and offering new perspective on the causes of the British industrial decline, especially in the textile sector.

According to this argument, the industry's major challenge was growing international competition. Although researchers have not made this their central focus, the demand side perspective is also valuable as it gives importance to understanding the strategies adopted by the firms to counter international competition. The supply side thesis, on the other hand, focused mainly on a counterfactual argument i.e. if the industry have adopted the 'modern' technology of ring spinning, automatic looms and had integrated horizontally, than it would have been able to compete more efficiently. Therefore, it puts greater emphasis on what should have been done, while little attention is given to the strategies actually implemented by firms in order to meet international competition. Whereas, the demand-side proponents have shown that firms responded at two levels: first, individually by using the strategy of specialisation, and second, through industry-wide collective strategies. As a result, by focusing on the causes of decline and the strategic response, the demand-side perspective offers a more rounded insight into the British industrial decline.

This research therefore uses the demand-side perspective to examine the decline of the Dundee jute industry. Correspondingly, the research questions of this study focus on three major areas: first, examining the effect of international competition; second, strategic repositioning at the firm level through capabilities developed; and third, strategic response at industry level in the form of collective strategies in countering international competition.

The review in this chapter also indicated that researchers, including the demand-side proponents, have examined the decline by focusing on industry as a whole. Consequently, as Dintenfass had indicated, very little attention has been given to examine and cross-compare the

strategic responses of individual firms. This research therefore incorporates this issue in its objective and examines cases of individual firms.

The capability-based approach offers an opportunity to redress the lack of firm-based analysis in business history and presents new insight into strategies employed by individual firms. Furthermore, business history and strategic management have long shared a common history through the studies of Chandler. Yet, this association had not been explored further in other research programs. The application of the capabilities approach provides an opportunity to further this association.

The capabilities approach has particularly underlined its 'serious' engagement with history. This association has mainly been by employing the notion of path-dependency as an element of its theoretical framework. As a result, researchers have primarily focused on examining the effects of path-dependency on capabilities. However, this approach has been described as deterministic in nature. Although the 'probabilistic and stochastic' nature of processes involved in creating path-dependency has generally been acknowledged, at its core the notion of path-dependency remains a deterministic approach. However, the determinacy can be redressed by identifying strategic options and examining why some of those were not explored further by the firms. Therefore, this research examines strategic options in terms of possible capabilities that were being considered by firms in the Dundee jute industry before the First World War, inter-war and post-war period. It is particularly underlined that the aim of this research is not to conduct an extensive counterfactual analysis of capabilities that were under consideration by the industry, but only to identify the various alternatives available and why they were not pursued further, while examining in detail the capabilities that were actually employed by the firms.

## **Chapter 3 The Dundee Jute Industry Context**

### **3.1 Introduction**

The aim of this chapter is two fold: first, to describe the jute manufacturing process and underline major capabilities and second, to address the first research question i.e. the effects of international competition up to the end of nineteenth century and the industry's strategic responses during this period. This will help to understand the context prevailing in the Dundee jute industry leading up to the inter-war and post-war period, which is the focus of the following chapters. This chapter is divided into two sections.

The first section is divided into two parts. The first part outlines the jute manufacturing process and underlines the major technological advances during the period under study. This understanding is used in the next part to underline the major capabilities in jute manufacturing.

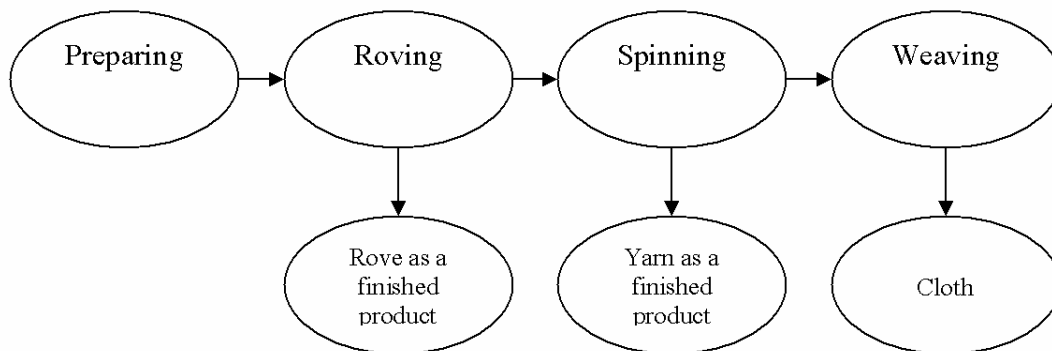
The second section is divided into three parts. The first part gives an account of the establishment of the jute industry in the Dundee area. It describes the conditions which led to the introduction of jute as a raw material used to replace flax, the dominant fibre used by the local textile firms. The second part examines the rise of international competition, particularly in the period between the 1860s and 1890s. This period represents the beginning of the competition from Continental countries and from India. It will help to understand the nature of this long-term threat that continued during the inter-war and the post-war period, discussed in the following chapters. The third part identifies the strategic responses considered by the industry to counter the growing international competition. This will provide better understanding into the strategic responses revealed in the selected case-studies in the face of international competition during the inter-war and the post-war period.



### 3.2 Jute Manufacturing Process and Major Developments in Technology during the Inter-War and the Post-War Period

This section describes major developments that were introduced in jute manufacturing during the inter-war and the post-war years. Of course, these were not the only developments within the industry and both engineering and manufacturing firms introduced many minor alterations. As discussed in Chapter 1, a large part of the industry operated under a fragmented structure consisting of merchants, spinners and weavers. The fragmentation also extended to the engineering firms who made machineries used by the manufacturing firms. Some firms, however, had their own engineering departments and built machines (mainly looms), related parts and carried out alterations on them. However, the majority of developments came from engineering firms such as James Mackie, Fair Brain and Lawson, and Urquhart Lindsay. This section focuses only on major developments that had the potential to significantly affect productivity and the cost of manufacturing. It outlines the developments in three key aspects of the jute manufacturing process (see Figure 8): preparing, spinning and weaving.

**Figure 8 Key Processes in Jute Manufacturing**



#### 3.2.1 Preparing

This is the first phase in converting raw jute to yarn. It consists of two processes: carding and drawing. The primary function of carding is to convert raw jute into a uniform supply of fibrous material that can then be further processed (Atkinson 1964: 85). The machine used for

the purpose is called the breaker card and finisher card. By the time jute passes through the cards, its length is reduced / appropriated and transformed into long continuous ribbons of 5 or 6 inches in width called sliver. The sliver then passes through the drawing process, which has three key functions: a) to adjust sliver into the appropriate weight which will achieve the required final count of the yarn, b) to appropriate the weight and irregularities in the sliver and c) to strengthen the fibre suitable to be turned into yarn (p. 104). The preparing section is the most important process in determining the final quality of yarn (p. 85). Two major developments took place in this section.

The first improvement was in drawing frames. Traditionally, the machine used for the drawing purpose had a spiral frame, which was replaced by the push-bar drawing frame, patented by the Dundee-based engineering firm Fairbairn Taylor MacPherson just before the end of the 1890s. The basic principle of the push-bar machine was similar to that of the spiral frame, except that in the push-bar the bars were pushed and in spiral the bars were pulled. In addition, and more importantly, the push-bar machine had partly circular motion at the entry and exit of the pins. This enabled it to run at more than twice the speed of spiral frames, thus greatly increasing the productivity (Woodhouse and Brand 1934: 61). However, a comparison between the two does not point to either machines being a clear favourite. As Table 7 shows, both have their advantages. While productivity could be increased with the push-bar, the machine is also prone to lapses with light slivers which are mainly used to produce finer qualities of yarn. Moreover, the push-bar also tended to get clogged with dirt. With raw jute containing considerable amount of dirt in it, this problem was significant.

**Table 7 Comparison of Push-bar and Spiral Machines**

<b>Push-bar</b>	<b>Spiral</b>
Faller drops up to 850/min	Double screw up to 400 drops /min, Triple screw up to 650 drops / min
Faller-bar lead over retaining rollers 4-10 percent	Faller-bar lead 1 ½ - 4 ½ per cent
Quiet running	Noisy
Tends to clog with dirt	Self-cleaning because of the jerk at each drop

Pinning good with modern types	Pinning excellent
Laps occasionally, especially with light slivers	Seldom lapses

Source: Atkinson (1964: 118)

The second development was the mechanisation in the handling of sliver after it was delivered from the drawing frames. There were two innovations in this area:

a) Traditionally, after the carding process, sliver was rolled into balls by hands and packed into cans to be ready for spinning. An important development in this area was automatic rolling of the balls, introduced by Dundee-based Mr J.G. Macintyre (Woodhouse and Brand 1934). The machine was placed at the delivery side of the breaker card which helped to deliver the sliver ‘in the form of measured cylindrical roll’. It had three key advantages: first, it helped to reduce cost by minimising the need for additional labour required to make balls; second, it reduced the number of joining in a roll of sliver and third, it ensured that sliver was packed into the can more effectively than was possible by using hands. Yet in spite of these advantages, the machine was not adopted widely during the inter-war period because of its high cost (p. 54).

b) A more far reaching development was the sliver roll former, introduced during the 1930s (Woodhouse and Brand 1934: 57; JWPR 1946). With this machine, the sliver was wound directly on the roll after it left the carding machine. It had three major advantages: a) it allowed a large amount of sliver to be compressed on a small roller, thus making economical use of space b) the rolls could be transferred directly to the drawing frame and further on to the spinning frame for further processing which resulted in a high level of flexibility and c) by doing away with the need for cans, the roll former reduced the cost of buying and maintaining the cans.

### 3.2.2 Spinning

This is the final phase in the manufacture of jute yarn. It consists of two processes:

The first process was called roving. It consist of adding a slight twist into the sliver after it has been treated on the second or third drawing and winding it on to the bobbin (Atkinson 1964: 127). The amount of twist put depends on whether the rove is to be used as a rove yarn or as a pre-spinning rove. If it is to be used as a rove yarn, sufficient twist is required to give the yarn a reasonable strength. But if it is used as a pre-spinning yarn, only a slight twist was required to give the yarn enough strength for it to withstand the inter-fibre friction when it is being spun on the spinning frame (p. 127).

The second process is called spinning. The spinning process consists of drafting, twisting and winding the yarn (Atkinson 1964: 139). This process witnessed two significant technological innovations in the form of high-speed and sliver spinning. These were regarded as having the greatest impact on the production process compared to any other innovations within jute manufacturing (JWPR 1946). The two developments are discussed in turn below.

The first major development was the introduction of high-speed spinning frames. Traditionally, when the bobbins on the spinning frames were empty, they had to be replaced by hand. This process was known within the industry as ‘hand-doffing’. The changing of bobbins on the frames required constant attention, leading to a permanent need for an army of attendants. In addition, the process slowed the speed of spinning thus restricting the overall level of production per spindle (Woodhouse and Brand 1934: 85). The mechanical or the ‘self-doffing’, process was introduced in 1925 (JWPR 1946). It had a significant impact on the speed by increasing it up to at least 50% (Woodhouse and Brand 1934: 90). The result was a ‘considerable increase’ in production per spindle (p. 90). While the traditional spinning machine consisted of about 128 spindles per frame with 2700 rotations per minute (RPM), the high-speed automatic machine had 200 spindles per frame with 4200 RPMs.<sup>5</sup> Besides increasing the production capacity, the high-speed frames resulted in a significant amount of savings in labour cost, as this observation from FCLB illustrates:

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<sup>5</sup> Fairbairn Lawson Combe Barbour

“...it was found that one girl could look after, doff, and restart as many spindles in less time than previously required by ten operatives.”<sup>6</sup>

The second major development was the introduction of sliver spinning. The traditional process of spinning was termed within the industry as ‘rove spinning’. In this method, as mentioned above, after the sliver leaves the preparing section it is processed in the roving machine and turned into rove, before being finally spun on the spinning frame to turn it into yarn. In the sliver spinning, the process of turning sliver into rove was eliminated. After the second or third drawing, the sliver could be used directly for spinning. The elimination of the roving process was made possible because of advances in the spinning frame which enabled the spinning frame to also perform the function of the roving machine i.e. imparting a slight twist on the sliver before being spun into the final yarn. This was made possible by introducing special pins on the spinning frame (Atkinson 1964: 140-143).

The sliver spinning process was introduced around 1931. It was developed by the Belfast-based James Mackie in conjunction with Ludlow Ltd, an American jute manufacturing firm based in India.<sup>7</sup> Mackie were also responsible for the marketing of this technology. With the elimination of the roving process, the major benefit of sliver spinning was greater economy and reduction in cost. In addition, using crimped sliver increased the capacity to hold greater amount of raw material on roll formers and cans. The cans could hold about 25 to 30 hours supply of material as compared to 5 hours supply of rove on bobbins. As a result, less labour was required for handling the material (Atkinson 1964: 139). However, an important aspect of spinning directly from sliver is that it was not suitable to spinning finer counts of 5lbs and below. For making these counts, the rove spinning method was still the preferred choice (p. 139).

Both high-speed and sliver spinning were introduced during the later part of the inter-war years. With the onset of the Second World War in 1939, these developments were only partially adopted by the industry. An estimate by the Jute Working Part Report in 1946

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<sup>6</sup> *ibid*

<sup>7</sup> MS/89/11/3: Opinion of the Lord President, Lord Carmont, and Lord Keith, 18<sup>th</sup> November 1952

indicated that prior to war 39% of spindles were on modern spinning methods, with 38% on high-speed and 1% on sliver spinning (See Table 8). The adoption of high-speed and sliver spinning systems gathered pace during the immediate post-war reconstruction years. By 1946, an estimated 56% of the spindles were on the modern method, with 39% on high speed and 19% on sliver spinning. It is interesting to note that the greatest rise was in sliver spinning, from 1% of spindles before the war to 19% immediately after the end of war. Therefore, the post-war years saw no radical developments in the spinning section.

**Table 8 Number and Type of Spindles at the end of the Second World War**

	At Outbreak of War		Expected position when all new spindles on order (May 1946) have been installed and displacement caused thereby effected.	
	Number	Percentage	Number	Percentage
Old type	112,562	61	64,300	39
Rove for use as such				3
High speed	71,184	38	4,374	39
Sliver	2,008	1	65,640	19
	185,754	100	166,094	100
Total yarn spindles excluding those for production of Rove for use as such	Separate figures not available		161,720	-

Source: Jute Working Party Report 1946

### 3.2.3 Weaving

This is the final phase in converting raw jute to cloth. There are two processes in this phase, beaming and weaving.

After spinning, the yarns are wound into the form required - spools for warp yarn and cops for weft yarn - for subsequent processing. Jute yarn is processed much like other textile fibers, the yarn itself being dressed (i.e, sized or starched), before being passed on to the warp beam ready for weaving. The beam is a long cylinder with flanges and around 600 threads are wound on to it side-by-side. Traditionally, the machine is watched over by a special attendant, 'beamer'. The full beam is very heavy. Traditionally, the beaming was done in the weaving mill, however, in some cases, it was also transferred to the spinning mill which would send the full beams to the weavers.

As noted in Chapter 1 (and will be discussed in detail in following sections in this chapter), jute, when it was first introduced, was primarily a substitute fibre for flax. Therefore, during the early years of transition, the loom used for the manufacture of jute was a modified version used for flax manufacturing, in particular flax canvas (Woodhouse and Brand 1934: 130). The fabric for canvas required to be of a particularly hard weave to withstand the wear and tear resulting from the harsh climatic conditions in which it was to be used. As a result, the looms used in the manufacture of these fabrics were of particularly heavy build and very bulky. Although jute was a coarse fibre and some of the fabrics woven from it were considerably thick, the industry was also weaving lighter qualities of fabrics. Therefore developments during the second half of the nineteenth century were focused on reducing the weight of the looms (p. 130).

However, the major development came with the introduction of automation. Traditionally, the looms used within the industry were of the 'shuttle' type. A major disadvantage of the shuttle looms was that the cop had to be manually replaced when the yarn in it was used-up. As a result, it put limitations on the number of looms a weaver could look after; one weaver would normally look after one loom and in some cases a maximum of two looms (JWPR 1946: 32).

To introduce automation in this mechanism was therefore the logical alternative in order to increase efficiency and productivity. Although automatic looms had been introduced in the UK cotton industry by the 1890s, its use in the jute industry was a little belated. The exact date when the automatic loom was first introduced is unclear, however during the 1920s they were being used by some firms within the industry (Woodhouse and 1934: 133). There were two types of automated looms in use in the jute industry: fully automatic and semi-automatic. The specially constructed fully automatic looms had automatic prin changing action along with warp and weft stop motion, and semi-automatic looms which were fitted with only warp and weft stop motions.

After the Second World War, more devices for automation were introduced in Dundee. These included the 'Ecco-loader', developed by the Dundee-based engineering firm TC Kay. It was an automatic loader for shuttles, which meant that the looms did not have to be stopped to remove empty insert full shuttles. As a result, the device enabled weavers to attend more looms per weaver. Traditionally, a weaver attended one or two looms. However, the Ecco-loader allowed a weaver to attend upto six looms. After war, jute firms began to also source their supply of machines from a wider base of engineering firms. Earlier, the majority of looms were ordered from local engineering firms such as Urquhart Lindsay, James Mackie, James Low etc. However, with the growing significance of automatic looms after the war, the jute manufacturers were now also looking to the British and European firms such as Northrop, Sultzer (Switzerland), Dornier (Germany) and SMIT (Italy) who were able to supply more modern automatic looms.

However, the benefit from the use of automatic looms for productivity was limited. This is because there was a limit to the maximum number of looms a weaver could attend, because beyond a point the use of automated looms began to affect the quality of cloth. This limitation became evident very early when an experiment was conducted by the British Jute Trade Research during 1949.<sup>8</sup>

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<sup>8</sup> D 31167, British Jute Trade Research Association, Third Annual Report, 1949



### 3.2.3.1 Influence of the Linoleum Industry on Jute Weaving

The growing importance of the linoleum industry as a major market for jute manufacturers also led to innovations in looms (Woodhouse and Brand 1934: 118) Linoleum was part of the cheap floor covering market. It required a backing cloth for its construction. With cost being the major determining factor in choosing materials, jute, which was itself positioned as a cheap fibre, offered an economical backing cloth alternative. However the linoleum manufacturers were using wide width looms and preferred to have a backing cloth suitable for that width. With the majority of firms in the Dundee jute industry making cloth for sacks and bags, their looms were of narrow widths ranging from 30” to 50”, with 40” being the standard size. Firms with wide-looms therefore had an advantage in securing the linoleum backing market.

During the inter-war years, engineering firms such as Urquhart Lindsay started to manufacture looms especially suitable to make linoleum backing cloth (p. 121). However, jute manufacturing firms who had the engineering skills could adapt their looms to extend their widths and avoid making investment in specialised looms (examined in Chapter 4). However, there were two major problems in producing the wide-width cloth in the traditional looms.

The first problem was technical in nature. In particular, there was considerable difficulty in managing the ‘beaming’ process. Traditionally, the industry concentrated on narrow-width cloth, correspondingly the beaming machines also tended to be narrow in size. Therefore, in order to match the size of beams with the wider width looms, two narrow beams had to be fitted together with a differential in the centre to hold them together. Ensuring that the differentials were properly maintained played an important role in producing cloth on the wide looms. The technical problems also extended to handling of wide-width looms, especially the loom’s crankshaft.<sup>9</sup> With the looms being so wide, the crankshaft needed a support at the centre in order to keep it from breaking. In addition, the two beams had to be prepared in uniform tension, equal diameter over the yarns and beam. Failing to do so would lead to problems in the weaving process and result in defective cloth being produced (Woodhouse and Brand 1934: 123).

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<sup>9</sup> Interview with Mr Frank Barker

Second, firms were also faced with constraints imposed by the physical space.<sup>10</sup> With the large part of the industry consisting of small-sized firms, their manufacturing facilities were also small in size. Although the ‘weaving shed’ was suitable to accommodate narrow-width looms, it was unable to accommodate the wider width looms and the ancillary machines, especially the beams, which came with it. This was in part because firms rarely carried out major alternations to the existing building structures or built new factories to replace the existing ones. In his exhaustive study of building structures of Dundee jute firms, Watson (1992) found that no new factory was built in the industry between 1914 and 1986 (p. 21). Majority of small and medium sized firms were built in three periods: 1833-1835, 1864-1867, and 1871-1874 (p. 21). Whereas the larger units were built in five periods: 1850-1851, 1855-1857, 1883-1885, 1887-1891, and 1905-1908 (p. 21).

In jute weaving, the wide-width looms did not represent a radical innovation in terms of increasing productivity. However, as will be described in the following chapters, with their ability to make wide-width cloth, the wide looms were instrumental in helping firms to move away from the traditional sack and bag market, to the growing linoleum, and later the carpet-backing, market which required wide width cloth.

Another major aspect in the weaving of cloth is the weight of the cloth. Traditionally, the cloth made for sacks was heavy in weight in order to be able to withstand the wear and tear in transportation. But this type of cloth, which was to be used for other products, required to be of lighter weight. The lighter weight was achieved mainly by using lighter qualities yarns. However, because jute machines are of heavy built, it is difficult to process light-weight cloth on it. Hence, the ability to process lighter cloth also constitutes an important aspect in weaving jute (Whitley 1992: 199-201).

### **3.3 Capabilities in Jute Manufacturing**

Having described the jute manufacturing process in the earlier section, this section identifies key capabilities in jute manufacturing. As is discussed in Chapter 2, the notion of capabilities used in this research are those that represent the highest order of manifestation in the form of

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<sup>10</sup> Interview with Mr Frank Barker

key processes, which feed into final products, and functional attributes. These capabilities can be easily identified within a firm. Based on this description this section identifies capabilities in jute spinning and weaving.

Tables 9, 10, 11 and 12 below illustrate the different combination of widths and weights required to manufacture a certain type of yarn and cloth. For example, narrower width and relatively heavier cloth was suitable for the traditional sacking and bagging. On the other hand, lighter weight and narrow-width cloth was suitable for scrim cloth which can be used in the building industry. However, a wider-width and light-weight cloth is required for linoleum, wall coverings and carpet backing. In yarn, the weight was the major determinant. While the heavier counts went into making sacks and bags, the lighter qualities were required for woven carpet yarns. Therefore, the variation in the width and weights in cloth and yarns also helped a firm's entry into new markets.

**Table 9 Yarn Categories**

<b>Yarns</b>	<b>Lbs</b>
Fine	Upto 6
Medium	7 – 16
Heavy	16 – 48
Rove	46 – 1000

**Table 10 Major Yarn Types by Products**

<b>Yarns</b>	<b>Lbs</b>
Fine	1.75 to 3
Carpet Warp	3.5 to 6
Hessian Warp	7 – 9
Sacking Warp	8 – 10
Hessian Weft	7 – 12
Carpet Weft	14 – 24
Sacking Weft	20 – 40

**Table 11 Cloth Categories**

Narrow	Upto 56
Medium	57 – 68
Wide	69 and above

**Table 12 Major Cloth Types with Corresponding Width and Weight**

<b>Cloth and their markets</b>	<b>Width (Inch)</b>	<b>Weight (Oz-Ounce)</b>
Sacking	22 to 30	11 to 24
Tarpaulin and Canvas	36 to 45	14 to 20
Hessian	22 to 80	5 to 14
Scrim	28 to 80	5 to 20
Linoleum Backing	72 to 84	5 to 9
Carpet Backing	150 to 210	5 to 9
Wall Covering	40 to 145	8 to 10.5

However, as discussed in the earlier section, manufacturing cloth of wider widths and yarn of finer qualities required slightly different process than that required for traditional narrow width cloth and heavy yarns. As a result, very few firms within the industry were able to manufacture them. Hence, the ability to make certain widths and weights can be regarded as a major capability during the period under study in this research.

The Figure 9 illustrates capabilities in the spinning and manufacturing section. In spinning, the capability takes the form of ‘counts’, which are broadly categorised into fine, medium and heavy. In weaving, the capability takes two major forms: first, width, broadly categorised as narrow, medium and wide, and second weight, broadly categorised as light and heavy.

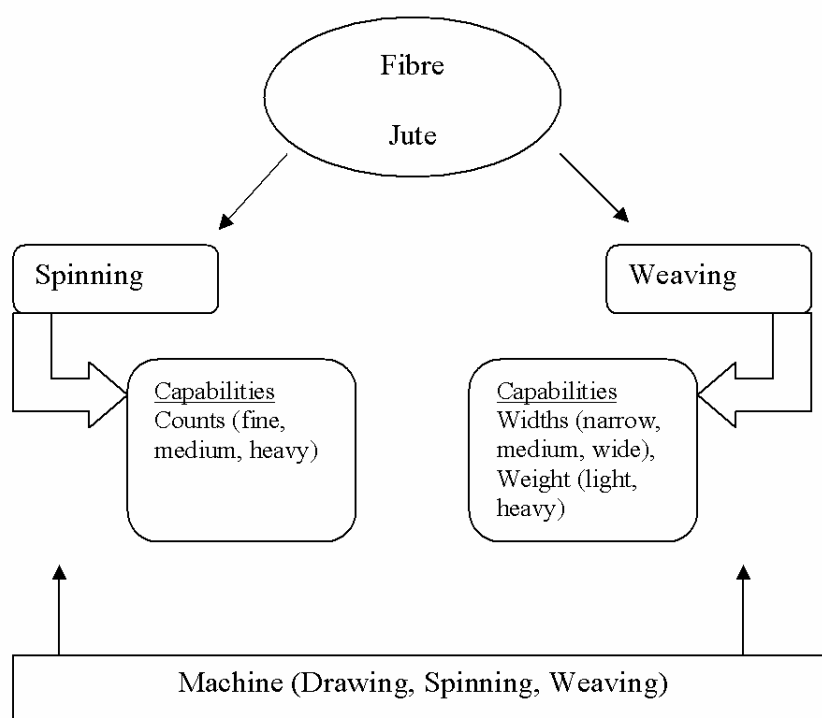
As discussed in the earlier section, traditionally the machineries for jute manufacturing, including the drawing machine, spinning frames, looms and ancillary parts, were provided by

the specialised engineering firms. However, engineering knowledge of machines can be useful when textile firms want to make alterations on their own in order to develop new products. Therefore, possession of this skill could also act as a capability in order to make yarn and cloth of particular weight and width. Therefore, this functional activity can also act as a potential capability. As will be described in the following chapters, firms who possessed these skills were able to develop new products, especially when the technology was not widely available through the specialised engineering firms.

The following two chapters study the case of selected firms to examine how they used these capabilities to reposition themselves against the growing international competition during the inter-war and post-war period.

**Figure 9**

Deconstruction of Jute Manufacturing Capabilities



### **3.4 Background to the Establishment and the Growth of the Dundee Jute Industry**

As Gauldie (1987) suggested, ‘the introduction of a fibre from so distant a source as Bengal into what was then a small and unimportant port in eastern Scotland require some further explanation’ (p. 112). This section provides a background to the establishment and growth of the jute industry in Dundee.

#### **3.4.1 Jute, a Substitute for Flax**

Dundee had long been a textile centre and was involved in manufacturing flax, cotton, and woolen textiles. Prior to the introduction of jute, Dundee was a thriving centre for flax manufacturing. Flax and other textile manufacturers in Dundee specialized in making coarse fabrics and heavy yarns. As Warden (1867) observed:

“The class of goods made in the town, even in the early times, was chiefly confined to coarse fabrics, and although the description has often changed to suit demands of the markets for which they were intended, their prevailing character is still the same” (p. 596).

Within the flax industry the coarse nature of the fabric was, however, a result of the quality of flax used, which in-turn was dependent on the source of supply. Manufacturers in Dundee secured their supply primarily from Russia. The Russian flax was particularly known for its coarse nature. As Warden (1867) again observed:

“It will not be denied that of all Flax the Riga and Petersburg is the coarsest; that of all Linens the fabric of the Dundee Linens is the poorest and meanest..” (p. 583).

Correspondingly, the industry acquired its capability in manufacturing coarse fabrics. In particular, it specialized in manufacturing fabrics such as Osanaburg (a traditional coarse fabric woven with uneven yarns and often incorporating waste) and cloth for sacks and bags. Jute,

being a coarse hardwearing fibre, was therefore found particularly useful for manufacturing existing flax products:

“..jute, has, however, been a more important fibre here, as its products are cheap yet slightly, and they have afforded a ready means for supplying the extraordinary demand for low class Linens” (Warden 1867: 632).

### **3.4.2 Early Trials and Growth**

Although jute had properties that were suited to the manufacture of coarse textiles made in Dundee, its introduction was not a smooth affair. The prevailing institutional policies and entrepreneurial determination has been identified as playing a central role in this process.

Gauldie (1987) argued that the circumstances leading to the introduction of jute can be found in institutional policies prevailing since the late eighteenth century, and not during the 1830s, when jute was beginning to be known widely (p. 112). The Napoleonic Wars heightened the demand for canvas and sacks and bags by the army and navy. The Board of Trade (BoT), on the other hand, had put out tenders at the lowest possible prices. Consequently, the Dundee merchants, who were anxious to secure these large orders, were in search of sources where they could secure cheap supplies. However, the conditions imposed by the BoT that identified which fibres could be supplied restricted the merchants' efforts to search for alternative fibres. (p. 115). Simultaneously, the East India Company was searching for an outlet for a new fibre that it had come across. A letter written by its representative on the 11<sup>th</sup> March 1791 gives an insight into their endeavours:

“We are continuing our searches for new Article for Export to Great Britain....We sent a Number in the Packet, Samples of clean Hemp of this country, one of rough Hemp and one of *Jute* (we know no English name for this) the material of which Gunnies and the Ropes used in cording Bales is made” (as cited in Gauldie 1987: 115)

More importantly, by 1822 there were talks of removing the bounty offered for manufacturing flax. With protests from manufacturers, the bounty was extended to 1832 (p. 120). At the same time, stringent inspection rules imposed by the Linen inspectors at the Dundee harbour, to ensure that goods manufactured were from flax, were also being relaxed (p. 120). This meant that merchants and manufactures were now 'free to experiment' with new fibres (p. 120). With the immanent threat of removal of the bounty, merchants were induced to trying alternate fibres. Therefore, the changes in the institutional policies were significant in paving the way for the introduction of jute.

However, the substitution was not an easy process. Warden (1867) has given detailed accounts of the entrepreneurial initiatives by local merchants. He noted that during the initial period, the introduction of jute to the local flax manufacturing industry was a story of determined struggle by local merchants, Mr Thomas Neish and Mr Rowan. When attempts were made by Mr Neish in 1822 to sell jute to local flax spinners and weavers, not many were willing to try the new raw material. Warden suggested that the resistance to introduction was caused mainly by misconceptions among people about the properties of jute. People erroneously associated its properties with a fibre called Sunn, also being sold by the East India Company, which lost its strength when it was wet and made it difficult to process on existing machines (p. 68). Therefore, manufacturers were not confident as to whether jute was also strong enough to withstand the spinning and weaving process on the existing flax machines. Hence, although some attempts were made to spin it into yarn in 1825 or 1826, they were largely unsuccessful because people were unwilling to make persistent trials to manufacture it (p. 68). A major advance in its processing came through the treatment of the fibre with whale oil. Jute as a fibre was very brittle and so it was difficult to manufacture it on heavy machines. The whale oil, which was readily available in Dundee, acted as a softening agent and made it possible to withstand the strain of heavy flax machineries. Attempts were also made to mix jute with flax and spin a mixed yarn. However, this too did not meet a favorable reception and Warden's comment summarizes the situation during this period:

"The yarn spun from the mixture was not liked, and did not find a ready market. Most people shook their head at it, declared the process a fraud and declined to use the mixed yarn. It will thus be seen that the introduction of jute was uphill



work to all those who tried it, and for a time, from the bad odour of mixed yarn, it was generally unprofitable to those who first began to spin it” (p. 71-72).

Warden (1867) noted that the samples of the first fully manufactured yarn and cloth were infact brought from Abingdon, a small town in the county of Oxfordshire in England, by Mr Rowan in 1833. Therefore, ironically, it was in Abingdon where the first satisfactory yarn and cloth were made from jute (p. 72-73). Mr Rowan induced local spinners to make yarns based on the sample that he had got. In particular, he requested a ‘twist yarn’, a type of yarn especially used in making carpets (p. 72).

The entrepreneurial spirit of the Dundee merchants was rewarded when in 1838 Mr Rowan was successful in persuading the Dutch Government to substitute jute instead of flax in the making of coffee bags, and secured this order. This was regarded as a major breakthrough as it was the first time when jute was manufactured in a sizable quantity.

Thus, it was a combination of factors that led to the establishment of jute in the existing flax industry. These included the enterprise of local merchants, changes in institutional regulations, the availability of whale oil as a softener and the characteristics of jute which allowed it be added to the coarse fabrics being made in Dundee. They made it possible to manufacture jute successfully in a sizable quantity on the existing machinery and be in a position to take advantage of any major demand.

Just as there were a number of attempts to introduce jute, its growth came in a similarly phased manner. In particular, two events have been identified as being major turning points in its wide-spread manufacturing. The first major event was the stoppage of the flax supply from Russia during the Crimean War (1854-1856) (Gauldie 1969: xxxvi). The war had generated a large demand for sandbags. However, the hostilities had hampered the smooth supply of flax from Russia to Britain and this resulted in soaring prices. With flax at a high price and difficult to obtain, jute suddenly became a sought after commodity. The experiments of the previous two decades had given enough confidence to the manufacturers of its ability to substitute flax in making sandbags. It was under these circumstances that jute had its first wide-spread introduction. As Gauldie noted:

“It was at this stage, because of uncertainty and high prices of flax supplies that many Dundee manufacturers switched to jute production.” (p 153)

The second significant impetus came a few years later during the American Civil War (1861-1865). The industry had made significant expansion during the Crimean War. The demand for sandbags was enough to sustain the expansion during the war. However, with peace returning, the industry faced a sudden loss in demand and found it difficult to find other outlets for its products. In addition, the imposition of 15 to 20% duties through the Merrill Tariffs on imported goods in America made it difficult to access that important market. The industry was thus going through a very depressed state (Carrie 1953: 12). However, things were about to take a decisive turn with the beginning of the American Civil War. It generated a very large demand for Dundee's goods. The reasons for this demand were two fold. First, the conflict created the demand for sandbags, camouflages and other such materials to be used in a war. Second, and perhaps more importantly, the supply of cotton from the south of ports of America were restricted due to various blockades. Normally, the sandbags were made using cotton. But with cotton in short supply, jute was again found to be in great demand (p. 12-13). This period has been considered as very significant in the industry's history because it led to its biggest ever expansion. It led to the reopening of all the mills that were previously closed during the depression and expansion of the existing ones. However, such 'unprecedented activity' led to a severe shortage of workforce (p. 14). In order to meet the growing demand, many established firms went in for vertical integration to ensure control over its activities. Firms such as Cox Brothers and Gilroy & Sons also bought ships to ensure a smooth flow of raw jute from India. On the technological side there were also advances with a sharp rise in power-loom weaving (p. 23).

It is difficult to show the rise in the number of firms for this period due to the lack of data. However, the rise in import of raw jute gives an indication as to the rapid expansion within the industry. However, the industry was soon to have a serious challenge from the growing international competition.

### **3.5 International Competition and its Implications for Dundee between 1860s-1890s**

The preceding section concluded that between the 1850s and 1860s the Dundee jute industry witnessed a rapid growth. However, during this period the industry also witnessed, for the first time, a growth in international competition in the form of competition in the overseas market that led to loss in markets and challenged its dominant position in the following decades. As Lenman, Lythe and Gauldie (1969) have found, by the 1880s the ‘continental tariffs and Calcutta competition were cutting into Dundee’s traditional markets’ (p. 33). With the industry heavily dependent on export markets, this new competition had serious implications for the Dundee industry. In the short term, the tariffs across Europe, described in detail below, resulted in a loss of major markets within Europe, whereas the growth in the Indian industry resulted in competition in other major markets such as North America, Australia and South America. However, the growing intensity of the competition by the end of the nineteenth century turned into a long-term threat for the industry which intensified further during the inter-war and the post-Second World War period. This section aims to describe this growth, the nature and the effects of international competition between the 1860s and 1910s.

#### **3.5.1 Continental Tariffs**

One of the first tariffs to be imposed in Europe was by France. The French import duties appear to have been in place prior to 1836 on linen (flax) goods. Their reduction in that year played a major role in ‘rapidly increasing’ exports to that country<sup>11</sup>. However, the tariff was re-imposed in 1842. It was estimated that up-to 50% of the UK’s linen exports to France were from Dundee. Between 1839 and 1848 inclusive, the UK exported to France 46,318,158 yards of linen cloth and 112,684,280 lbs of linen yarns, of which not less than 22,570,130 yards of linen cloth and 59,352,160 lbs of linen yarns were exported direct from Dundee<sup>12</sup>. Therefore the re-imposition of the import tariffs seriously affected the local industry. More importantly,

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<sup>11</sup> Dundee Archive and Record Centre, DCC/GD/CC Dundee Chamber of Commerce (DCC) Minute Book 7<sup>th</sup> Feb 1853

<sup>12</sup> Ibid

in the treaty of 1860, a tariff was also imposed on jute goods<sup>13</sup>. The extent to which the tariffs affected the export of goods to France is reflected in a resolution adopted by the Directors of the Dundee Chamber of Commerce when they were asked to represent the industry in a trade exhibition in Paris:

“The Directors have to report that no yarns or textile fabrics will be sent to Paris, the manufacturers declining to make an exhibition of their goods solely for curiosity of communication, when there is little or no probability of actual business taking place so long as high import duties are charged in France. The only manufactures represented from Dundee are those of machine and ale”<sup>14</sup>

To add to the industry’s distress, there was little restriction on the import of yarns and cloths into the UK<sup>15</sup>. The present treaty was to be renegotiated in 1870 and so the industry initiated efforts to influence the outcome of a favorable treaty. Before the negotiations began, the French Government had set up a Commission to review existing tariffs and its implications on the French industry. Sensing an opportunity to make its case through this Commission, the Chamber of Commerce forwarded a document to the Board of Trade showing a comparison of cost of production in both countries that was a disadvantageous to Dundee manufacturers, and thus made a strong case against imposing tariffs on the import of jute goods into France<sup>16</sup>. However, this did little to influence a reduction in tariffs. On the contrary, the French were considering a policy whereby they would impose an import duty of 20% on raw jute into France and give back an equivalent amount in rebate on exports which would further strengthen the French industry’s position vis-à-vis Dundee.<sup>17</sup> The industry reckoned that the French Finance Minister, who was himself a large textile manufacturer in France, would not be willing to reduce tariffs on textile goods.<sup>18</sup> However, the French were unable to pass this law through their parliament and the tariffs continued under the old treaty of 1860. Nonetheless, the existing tariffs provided enough support to the French manufacturers which allowed them to

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<sup>13</sup> DCC Minute Book 12<sup>th</sup> Nov 1866

<sup>14</sup> DCC Minute Book 27<sup>th</sup> March 1867

<sup>15</sup> DCC Minute Book 31<sup>st</sup> March 1869

<sup>16</sup> DCC Minute Book 29<sup>th</sup> March 1871

<sup>17</sup> Ibid

<sup>18</sup> Ibid

export to Dundee and undersell local manufacturers.<sup>19</sup> This treaty was again due for renegotiation in 1877. The French commission appointed to negotiate the tariffs was being put under pressure by the manufacturers who wanted to include one of their members in the team.<sup>20</sup> On their part, Dundee again presented statistics showing the advantages that French manufactures enjoyed and which therefore did not justify the imposition of high tariffs.<sup>21</sup> However, there was a feeling that the French were far from serious in their attempt to ease restriction on imports. It was reckoned that the tariffs were being prepared by people who were very knowledgeable about the trade:

“...in fact it would appear that men well up in the trade had been appointed by the French Commissioners with a view of arranging the new tariffs, so as to entirely put a stop to the limited business which was still possible under the existing arrangements”<sup>22</sup>

However, the treaty could not be concluded and the original tariffs of 1860 were still in place in 1882.<sup>23</sup>

Tariffs were also being imposed in Germany, which the Dundee industry considered was more important than the French market owing to its large agricultural market.<sup>24</sup> Under the existing treaty with Germany, Dundee was able to conduct a ‘great deal of good trade’; however, this was under threat with the renegotiating of the treaty<sup>25</sup>. Under the new treaty, there was a move by German manufacturers to increase tariffs from the current 2s to proposed 12s per cwt. Instead of requesting a raise in the duty, they asked for a ‘different interpretation of jute goods’ to the German ‘Bundesrath’ (Government). However, change was opposed by the German merchants who saw their own interests threatened by higher import tariffs. In order to make their case, they formed an Association in Hamburg and were liaising with the German Chamber of Commerce, who they thought did not hold a protectionist view. However, the

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<sup>19</sup> DCC Minute Book November 1875

<sup>20</sup> DCC Minute Book 28<sup>th</sup> March 1877

<sup>21</sup> DCC Minute Book 25<sup>th</sup> May 1881

<sup>22</sup> Ibid

<sup>23</sup> DCC Minute Book 29<sup>th</sup> March 1882

<sup>24</sup> DCC Minute Book 20<sup>th</sup> June 1877

<sup>25</sup> Ibid

government of the day was more inclined towards a protectionist stance, making it difficult to restrict a further rise in tariffs<sup>26</sup>. The effect of the increased tariff was felt immediately. An estimate indicated that export of cloth to Germany in 1882 was about 46,000,000 yards but in 1884 it stood at 27,000,000 yards; while the jute yarns exported in 1882 were about 4,800,000 lbs and in 1884 only about 2,000,000 lbs.<sup>27</sup> The tariffs were having an effect on two fronts. Besides reducing Dundee's export, it was also assisting in the growth of the German jute industry which was capable of supplying its domestic market. An observation by the President of the Chamber of Commerce summarizes Dundee's position after the imposition of tariffs:

“Germany, formerly one of our largest outlets, four years ago imposed a duty of about 21 percent, and is busy erecting mills, so that in a short time that country will be entirely lost to us as an outlet for goods”<sup>28</sup>

Similarly, tariffs were also being increased in Austria and Hungary. Earlier Austria had set low duties, but it went on to increase them to protect a couple of spinning firms that had been established in recent years. The imposition of tariffs in these countries was particularly significant for Dundee as they were large agricultural markets and sourced their supplies of sacks and bags from Dundee.<sup>29</sup> The increase in duties had a negative effect on Dundee's exportation to these countries, as this observation at a meeting in Chamber of Commerce suggests:

“The increase represents 22 percent on the value of jute Hessians at the present price, which I suppose may be regarded as a particularly prohibitory tariff.”<sup>30</sup>

Spain was another large market for Dundee's goods. When, in 1869, a new decree was passed by Spain to review the existing duties of 20%, there was hope in Dundee that these would be reduced, even though they knew that this reduction was not enough to warrant a sizable jump in the trade<sup>31</sup>. The industry, through the Chamber of Commerce wrote to the House of

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<sup>26</sup> DCC Minute Book 28<sup>th</sup> March 1877

<sup>27</sup> DCC Minute Book 25<sup>th</sup> March 1885

<sup>28</sup> DCC Minute Book 26<sup>th</sup> March 1883

<sup>29</sup> DCC Minute Book 29<sup>th</sup> December 1875

<sup>30</sup> DCC Minute Book 21<sup>st</sup> June 1882

<sup>31</sup> DCC Minute Book 8<sup>th</sup> April 1869

Commons to negotiate a treaty which would place the industry on a 'more advantageous footing'<sup>32</sup>. The issue was also taken up at the annual meeting of the Associated Chamber of Commerce (an umbrella organisation comprising of member of Chambers of Commerce from across the country)<sup>33</sup>. However, it soon emerged that any further alteration in the import tariff was directly related to the UK's existing import tariff on Spanish wines:

“The importance of the trade with Spain and Portugal has had attention of your Directors and specially as it is understood that the Government of these countries would admit British manufacturers on more favorable terms than at present were the duties on Spanish and Portuguese wines considerably reduced”<sup>34</sup>

The subject of wine duties was also a major issue in tariff negotiations with other countries. The need to urgently resolve the issue of wine duties was all the more felt considering that it was acting as a restricting force in accessing the large European market. This point was expressly discussed in a meeting after the President of the Chamber of Commerce returned from his visit to the Foreign Office:

“At the foreign office, he (President) learned that that not only had the French Government been complaining of the wine duties, but that complaints had also come from the Spanish, Italian, and Austro-Hungarian Governments. Taking the populations of these countries they had 120 millions of people- three times the population of the United States- and it seemed undesirable that there should be anything in the fiscal regulations of Britain hampering her intercourse with such an immense population as that”<sup>35</sup>

The duties on wines appear to have been part of reforms initiated by Mr Gladstone from 1860-61<sup>36</sup>. Although Gladstone appeared to be against the continuation of tariffs, he pursued it on the advice of the Customs and Excise officials.<sup>37</sup> The duties were determined based on the

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<sup>32</sup> DCC Minute Book 7<sup>th</sup> April 1869

<sup>33</sup> DCC Minute Book 29<sup>th</sup> March 1871

<sup>34</sup> DCC Minute Book 26<sup>th</sup> March 1873

<sup>35</sup> DCC Minute Book 26<sup>th</sup> December 1877

<sup>36</sup> DCC Minute Book 28<sup>th</sup> March 1878

<sup>37</sup> Ibid

alcoholic strength of wines, with a tariff of 1s per gallon on wines with less than 26 degrees of strength and 2s 6d per gallon for those with more than 26 degrees. The countries most affected with these duties were Spain, Portugal, Austria and Italy, as their wines were generally of higher alcoholic strength. Whereas French wines, with its lower alcoholic strength, fell under the lower band of tariffs.<sup>38</sup> The Spanish producers found themselves in a particularly disadvantageous position as they did not possess the skills to reduce the alcoholic strength. However, it was generally known that they overcame this difficulty by sending the wines for further processing in France to be re-exported into the UK, thus avoiding the high tariffs:

“At present the Spaniards, not knowing how to treat his Wine in order to reduce its strength, is obliged to send it to France, where it is doctored and re-shipped to England as “French Claret”, the French manipulator thus keeping for himself the profits that should be divided between the Spanish grower and the English consumer of Wine.”<sup>39</sup>

For Dundee, however, the treaty in which the UK imposed tariffs on Spanish wines and Spain imposed tariffs on relatively higher-valued manufactured goods, did not appear to be a profitable bargain. In his letter to the Chancellor of the Exchequer, Sir Stafford Northcote, the President courteously brought out this issue:

“The directors are aware that such a modification of the wine duties is alleged to be incompatible with the present Excise duty on British spirits. They do not presume to offer any opinion on this point, if need be, to modify fiscal regulations which appear so seriously to impede the expansion of the foreign trade of this country.”<sup>40</sup>

However, by 1881 the industry had given up any hopes of reduction in tariffs on jute goods. It was requesting the Government to secure a ‘Most Favoured Nation’ clause with Spain and Portugal whereby it would have tariffs at the same level as were given to other nations, thus

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<sup>38</sup> DCC Minute Book 28<sup>th</sup> March 1878

<sup>39</sup> DCC Minute Book 7<sup>th</sup> September 1882

<sup>40</sup> DCC Minute Book 26<sup>th</sup> December 1877



giving Dundee manufacturers a level playing field in competition with other countries.<sup>41</sup> After much deliberation on the both sides, a treaty appeared to be in the making. However with a change in Government in Spain, it failed to keep its side of bargain, thus bringing in the old ‘prohibitive’ duties.<sup>42</sup>

By 1883, tariffs had been imposed in all major markets across Europe on jute goods (see Table 13). Its serious impact on the industry can be adjudged by the amount of time devoted to resolving this issue in the Chamber of Commerce, as the President noted:

“During the past six or seven years we have seen tariffs passed almost prohibitory, so far as regards the manufacturers of this district, in the countries of Germany, Austria, Italy, Russia; while France has duties so excessive that they prevent trade of any extent between that country and Britain, and, indeed, when its own markets are glutted, often cut us out in our contracts at home. I have gone more minutely into the subject of foreign tariffs than may be considered necessary, but very few except those immediately connected with our trade seem to fully realize the disastrous effects which the imposition of such tariffs much ere long produce on the trade of this country.”<sup>43</sup>

**Table 13 Percentage of Tariffs on Dundee Jute goods as of 1885**

	Austria	Germany	France	Italy	Spain	Russia	USA
Yarns	10	16	14	28	21	-	30-40
Cloth	27	27	19	36	NA	NA	
Bagging	NA	38	NA	NA	NA	112	
Tarpauling	54	NA	NA	NA	NA	100	

Source: Dundee Chamber of Commerce<sup>44</sup>

<sup>41</sup> DCC Minute Book 31<sup>st</sup> March 1881

<sup>42</sup> DCC Minute Book 1<sup>st</sup> July 1885

<sup>43</sup> DCC Minute Book 26<sup>th</sup> September 1883

<sup>44</sup> DCC Minute Book 24<sup>th</sup> Sept 1885, reply to the Royal Commission on Trade and Industry

The immediate effect of an increase in tariffs was the loss of major markets in Europe, which in turn led to surplus production of jute goods during the 1880s. When in 1885 the 'Royal Commission on the Depression of Trade and Industry' was set-up to inquire into the 'state of the trade' within the UK, the industry was quick to underline the effects of increasing tariffs. In their reply to a question on 'special circumstances' responsible for the depression in the jute trade, the Chamber of Commerce identified four major factors<sup>45</sup>:

The *first* was the increase in the tariffs across Europe, whereas the *second* was the establishment of new production centres in Germany, Spain, Austria, Italy and Russia, especially after 1880 as a result of tariffs which created a protective environment for industries to prosper. In a discussion that followed among the Chamber's members on the proposed answers to the Commission's questions, the Secretary's reply to a query gives an insight into its significance:

“A Member- What is the answer to overproduction? The Secretary- It is over production because the consumption has been taken away. If we had not been affected by the high tariffs we would not have had an over production.”<sup>46</sup>

Mr Weinberg, the Chairman of the Committee, appointed to reply to the Commission, added that the position had been made worse by the ongoing establishment of new firms and expansions by existing firms which led to an overproduction.<sup>47</sup>

The *third* cause was identified as the policy which allowed free import of raw jute from 'British India' to European countries. However, this appeared more as a feeling of 'unfairness' rather than a direct cause affecting the state of trade. There was a feeling among members that with Continental countries unwilling to reduce their tariffs, it would only be just that raw material being imported from a British territory into these countries would carry a similar tariff burden, thus placing Dundee on an equal footing. The *fourth* was attributed to the introduction

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<sup>45</sup> Ibid, Answer Number 10.

<sup>46</sup> Ibid

<sup>47</sup> Ibid

of the Factory Act of 1875, which restricted their production to 56 hours, while allowing the European countries to operate for 76 hours. However, the restrictive implication of the Factory's Act was used to contain the Indian competition, as will be discussed in the following section.

There was a feeling of frustration within the industry that the Government was not doing enough to negotiate favorable treaties that would give them relatively easy access to major European markets. They laid the blame on the lack of consideration given by the Foreign Office to trade related negotiations. In the Annual Meeting of the Chamber of Commerce, Mr Weinberg brought out this issue expressly:

“So long as the Foreign Office would not give that attention to commercial subjects which they were entitled to, they could not expect to get tariffs adjusted with foreign countries in the way they ought to be..”<sup>48</sup>

In particular, they were puzzled by the lack of a dedicated department to attend to trade related issues, especially considering that the UK was the ‘first commercial country in the world’.<sup>49</sup> The issue of creating a separate department to take control of trade negotiations was also raised at a meeting of the Associated Chamber of Commerce, but not put into effect.<sup>50</sup> Lack of proper institutional support for trade related issues also resulted in unreliable communications from overseas consulates when important tariff negotiations were underway or key changes in tariffs had taken effect. There was a feeling that information on such important matters could be obtained faster through newspapers and merchants who had trade connections in those countries, then through the Foreign Office.<sup>51</sup> Recalling such instances, Mr J.H. Walker, the President of the Chamber of Commerce, noted the case when Italian and Austrian tariffs were imposed. In this instance an inquiry was made to The Foreign Office about the news that they had heard regarding the tariffs in these countries, but The Foreign Office was unable to give any confirmation of these reports.<sup>52</sup> Expressing his annoyance, Mr Weinberg suggested:

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<sup>48</sup> DCC Minute Book 28<sup>th</sup> March 1878

<sup>49</sup> DCC Minute Book November 1875

<sup>50</sup> DCC Minute Book 28<sup>th</sup> March 1878

<sup>51</sup> DCC Minute Book 23<sup>rd</sup> January 1879

<sup>52</sup> DCC Minute Book 31<sup>st</sup> March 1886

“We ought not to be told when we ask a question of the greatest importance to us here – ‘We cannot give you any information, but we will inquire’. They ought not to have to inquire- the information ought to be there; and they ought to have people abroad, with whom they are in direct correspondence, to keep them *au fait* to what is going on.”<sup>53</sup>

A comparison was made with the proactive attitude taken by the German government, which encouraged their overseas counsel offices to create a brand image of ‘Made in Germany’ products as well as to negotiate favourable treaties.<sup>54</sup>

By 1892, the existing treaties with Romania, Bulgaria, France, Italy, Montenegro, Portugal, and Spain were due for renegotiation. Whereas treaties with Austria, Belgium, Denmark, Russia, Sweden, Norway, Switzerland, the Netherlands and Zollverein were also terminable at a year’s notice, and the treaty with Greece was terminable in 1897. Although the Government had appointed committees to renegotiate them, the industry was not pinning its hope on them to secure a favorable treaty. By this time there was a sense of acceptance among them that import tariffs were there to stay, as the President remarked:

“I myself am not very hopeful that the next treaties will be more favourable. I believe they will be, generally, speaking, less favourable to this country. We have fought these things before, and I suppose we will have to fight them again. There is plenty of energy in Dundee, and if we cannot get one market we get another.”<sup>55</sup>

For an industry established in the 1850s, it was the first time that they experienced import tariffs and their effect in the form of loss in market share. However, by this time the industry was also facing another, and more serious, competition, from India.

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<sup>53</sup> DCC Minute Book 27<sup>th</sup> December 1878

<sup>54</sup> Newspaper cutting, 1<sup>st</sup> April 1897

<sup>55</sup> DCC Minute Book 26<sup>th</sup> March 1891

### 3.5.2 Indian Competition between 1880s and 1890s

As with the case of continental countries, tariffs were also imposed by India on the import of jute goods. By 1869, a duty of 7 ½ % was imposed on the imports.<sup>56</sup> There was a feeling that this was less to do with collection of revenue for the state government and more to do with protecting the growing industry in India.<sup>57</sup> As a result, attempts were made to repeal them by making representations to the Indian government directly<sup>58</sup> and later to the Select Committee of the House of Commons on the Indian finances.<sup>59</sup> The industry's petition appeared to have been heard as the tariffs were soon removed.<sup>60</sup>

Nonetheless, by the 1890s the Indian industry had expanded rapidly. By 1882 it had 21 mills, with a total of 5655 looms and 91,000 spindles. And by 1892, the number of mills had increased to 26, with 8101 looms and 162,000 spindles.<sup>61</sup> Although the Dundee industry also continued to grow during this period, as shown described in Chapter 1, the Indian industry was catching-up rapidly with Dundee in terms of overall capacity.

The dramatic growth of the Indian industry was owing to the cost advantage that it enjoyed over the Dundee industry. This advantage was a result of three major aspects: a) the Indian industry enjoyed a lower cost of raw material as it was closer to the jute growing region. This closeness eliminated the shipping cost that Dundee had to incur to import jute; b) the Indian industry also enjoyed the benefit of longer working hours. The extended working hours meant increased production and reduced cost of production owing to economies of scale. While average working time in Dundee was 56 hours per week, the Indian industry clocked upto 84 hours a week, with an average of 72 hours a week<sup>62</sup>; c) the third major advantage stemmed from the lower exchange rate. The monetary instability in the world markets resulting from the

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<sup>56</sup> DCC Minute Book 31<sup>st</sup> March 1869

<sup>57</sup> Ibid

<sup>58</sup> DCC Minute Book 30<sup>th</sup> March 1870

<sup>59</sup> 29<sup>th</sup> March 1871

<sup>60</sup> 3<sup>rd</sup> September 1874

<sup>61</sup> DYB 1892, pp 87

<sup>62</sup> DYB 1894, pp 96

demonetisation of silver had significantly devalued the Indian currency. For example, an estimate by the Secretary of the Dundee Chamber of Commerce in 1894 indicated that ‘with the Rupee at 16d, a Calcutta mill could earn a profit of 20 rupees per ton where a Dundee mill would simply pay expenses, and with the rupee at 12d the profit to the Indian mill would increase to about 53 Rupees, or some 50 per cent’.<sup>63</sup>

The growth in competition from the Indian industry coincided with a decline in markets that had resulted from the increased tariffs in European countries. By the mid-1870s, the industry in Dundee found itself squeezed between two sides: first, the growth in the Indian industry, which challenged it in major markets such as United States, South America, Asia, and Australia; and second, the European tariffs which made it difficult to access major European markets and also gave rise to industries within these countries. Combined, these led to an increased capacity and also loss in market for Dundee manufacturers, thus leading to excess supplies. In order to meet the growing international competition, the industry was focusing on controlling its costs. However, there was a perception within the industry that the introduction of the Factory Act in 1875, which restricted working hours to 56 per week from the 60 hours allowed previously, was acting as a constraint in meeting this challenge by increasing the cost of production. The President noted:

“The production is in the excess of demand, aggravated by competition from Continent, America and India- that products of the latter now being sent to markets formerly supplied by Dundee. The circumstances should teach consideration and forbearance from various quarters. First, on the part of our legislators, how far they have been right in their late restrictions of female adult labour, alike affecting this particular class and increasing the cost of production, whilst we have the prospect in the meantime of a less amount of labour being required.”<sup>64</sup>

Although India was part of the Empire, the Factory Act was not applicable there. Thus the industry there had longer working hours, with mills (for making yarn) working at 72 hours per

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<sup>63</sup> DCC Minute Book 27<sup>th</sup> September 1894

<sup>64</sup> DCC Minute Book 29<sup>th</sup> September 1875

week and factories (for making cloth) working 60 hours per week.<sup>65</sup> As a result, there was a feeling among the Dundee manufactures that they were being unfairly asked to abide by a restrictive law while the Indian manufacturers were given a free hand. Moreover, by the 1890s, the Indian industry was also using the shift system whereby production could be run during day and night. Attempts were therefore made by Dundee to extend the factory legislation to jute manufacturers in India by making regular petitions to the Secretary of State for India and through local Member of Parliament.<sup>66</sup> In their appeals, Dundee raised concerns about the impact of long hours on the health of children and women working in the Indian factories.<sup>67</sup> However, the representatives of the Indian industry refuted the claims made by Dundee of prolonged working hours in their factories. They argued that the shift system was something which was suggested by workers themselves, rather than something which was imposed by them.<sup>68</sup> In turn, they questioned the real motive behind Dundee's insistence on the enforcement of the Factories Act in India, as an address by a member of the Indian Jute Mills Association Mr Lyell pointed out:

“Pressure is to be put on the Secretary of State for India to ignore the interests of the people of this country committed to his charge and to order a Factory Act for India which will prevent our mills competing with those at home in what our Dundee friends consider an unfair manner- the alleged unfairness arising from our system which entirely suits the people of this country, but which is not suitable to the conditions of factory labour at home.”<sup>69</sup>

Unfazed by these instances, the Indian industry continued its rapid growth and made inroads into foreign markets, particularly the US, South America, and Australia which were traditionally catered by Dundee. On the other hand, the rise of tariffs by European countries was making it difficult for Dundee to export to there. As a result, by the 1880s the Dundee jute industry, which had enjoyed global dominance just a decade before, was beginning to feel the squeeze, as the President's comments on the state of trade in 1885 reflected:

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<sup>65</sup> DCC Minute Book 22<sup>nd</sup> June 1877

<sup>66</sup> DCC Minute Book 27<sup>th</sup> December 1894, 16<sup>th</sup> January 1895

<sup>67</sup> DCC Minute Book 28<sup>th</sup> March 1895

<sup>68</sup> DCC Minute Book 27<sup>th</sup> March 1895, Dundee Advertiser Report on Proceedings of Indian Jute Mills Association.

<sup>69</sup> Ibid

“Our Jute trade has passed through one of the most difficult years it has had to contend with since its introduction to this quarter half century ago. The causes which have led to the depression may be summed up thus- To the great depression of the trade throughout the whole commercial world; to the fierce competition on the part of Indian in our home as well as in foreign markets; to the hostile tariffs which have been raised against us in those European markets which in former years we had almost exclusive to ourselves, but which are now in great measure supplied by manufactories in their own countries fostered by the high tariffs imposed during the past 7 or 8 years.”

### **3.6 Strategic Repositioning**

The preceding sections have outlined the growth in international competition, its implication for Dundee in terms of reducing market share and Dundee’s attempts to contain the growth of this competition. With European tariffs, there was an attempt to liaise with the government to negotiate favourable treaties. In the case of growth of industry in India, there was an attempt to extend the Factories Act to cover the Indian industry in order to contain its growth by restricting working hours. However, these initiatives failed to yield any substantial dividends, as the tariffs in the Continental countries persisted and Indian industry continued its rapid expansion. For Dundee it led to a loss of market.

In order to meet the challenge of growing international competition, the industry tried to reposition. It was guided by the idea of competing in areas where the Indian manufacturers would not be able to challenge them.<sup>70</sup> This strategy had two major components:

First, there was a move to develop capabilities where the Indian industry could not compete. The basis of this argument was that workers in Dundee possessed superior skills in the spinning of yarn and the manufacturing of cloth which the Indian workers were not capable of developing. By leveraging their skills, the Dundee manufacturers could develop specialized and higher class goods which would fetch them better margins. Particular attention was given

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<sup>70</sup> DCC Minute Book 22<sup>nd</sup> June 1877



to the development of products for the linoleum and carpet industries. In addition, it was also felt that closer contacts with the customers were needed in order to develop ‘specialty’ products. These fine and specialty products were soon giving advantage to Dundee firms. For instance, although the trade was bad during 1892, the specialty products recorded particularly a good turnover over normal types.<sup>71</sup>

The efforts to focus on developing specialized products culminated in the establishment of a Technical School in 1888. It was hoped that besides teaching essential engineering skills for operating spinning and weaving machines, the institute would help in developing valuable skills in textile designs.<sup>72</sup> The suggestion for a technical institute appears to have first emerged in the mid-1880s. When a question was asked by the Royal Commission about Dundee’s efforts to deal with growing international competition, the committee could offer no suggestions except point towards the fact that a ‘great deal of money was invested in machinery in Dundee, and that it was difficult to alter it’.<sup>73</sup> Suggestion was made to diversify from jute by giving an example of how the ribbon industry in Coventry went into making bicycles after the tariff on French ribbons was repealed in 1860. However, not all were prepared to make a ‘jump of that sort’.<sup>74</sup> A technical institute, on the other hand, would help the industry to cultivate skills that were necessary in developing capabilities to meet the growing competition.<sup>75</sup>

Therefore, there was a general acceptance within the industry that it was important to develop capabilities in areas where the Indian industry could not compete. Yet, there was always a lingering threat that, considering the relative technological simplicity in jute manufacturing, the Indian manufacturers would soon catch-up with Dundee in whatever superior capabilities it developed. A letter by an anonymous observer in the local press summarises the feeling within the industry:

“I have also heard it remarked that Calcutta has taken our heavy goods trade from us, but cannot compete with us in finer goods. Now, sir, the fact is they have

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<sup>71</sup> Dundee Year Book, 1892

<sup>72</sup> DCC Minute Book 31<sup>st</sup> March 1886

<sup>73</sup> Ibid

<sup>74</sup> Ibid

<sup>75</sup> Ibid

never tried; but should they do so, I would say farewell to that branch of trade also; the unpacked fibre is much better and stronger then when received in Dundee. The Hindoo is especially fine in manipulation; the native spinners, boys from 10 to 16 years of age, are very smart; and surely the fingers that manipulate our Indian silks and muslins can spin wave a Hessian, however fine.”<sup>76</sup>

Second, attempts were made to introduce new fibres to replace jute. This was driven by the realization that any development within jute would soon be adopted by the Indian industry. New fibres were routinely sent by people who would think that it would be of use to the industry.<sup>77</sup> However, by the 1890s the industry had become proactive in their search for alternate fibres. In his address to the industry, the local MP Sir John Leng acknowledged that if manufacturers ‘develop the utmost finer class of goods, and aim at supplying the specialties which the markets of the world continually require’, they could meet the challenge of international competition.<sup>78</sup> He also urged them to be on a constant search for ‘new varieties and new combination of materials, patterns, and finish.’<sup>79</sup> Suggesting the possibility of exploring Rhea, a fibre which he had come across on his visit to Asia, he had the following suggestion for the industry:

“....the manipulation of Rhea, which has great possibilities, and which, I believe within a few years will occupy a great position in the world of commerce and manufactures. Where I went in the East I found it was engaging the attention of the most intelligent and far-seeing men, and I saw and heard so much that if I were the head of a great manufacturing firm I would at once set aside 50,000 to 100,000 yards to thoroughly test the capabilities both of the Eastern production and British manufacture of their most promising fibre.”<sup>80</sup>

Trials were also going on within the industry to process the Ramie fibre. However, it soon emerged that it was not adaptable to existing equipment and required new machinery and

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<sup>76</sup> Dundee Advertiser, 22 June 1877

<sup>77</sup> DCC Minute Book 9<sup>th</sup> January 1874; 5<sup>th</sup> January 1882

<sup>78</sup> Dundee Advertiser, 8<sup>th</sup> April 1896

<sup>79</sup> Ibid

<sup>80</sup> Ibid

processing techniques. More importantly, it was found that the cost of manufacturing this fibre was higher than jute.<sup>81</sup>

It is important to appreciate the industry's concern for price sensitivity when introducing new fibres. As discussed earlier in this chapter, the cheapness of jute was one of the major factors in its substitution of flax. Therefore, the matter of cost would be a major issue if a fibre was to replace jute. Furthermore, jute had been able to maintain its dominance in the world markets due to its cheapness.

### **3.7 Conclusion**

This chapter described the 'state of play' in the Dundee jute industry by the end of the nineteenth century. It focused on the growth of international competition, its implication on the industry and strategic responses considered.

The international competition came primarily from European countries and later from India. The growth of rival production centres in Europe came in tandem with the rise in tariffs by European countries. However, the imposition of tariffs on jute products between the 1860s-1890s was not directed specifically at the Dundee jute industry. Rather, they were part of the wider efforts to establish a free trade network across Europe (Marsh 1999). The network of free trade grew from a British initiative in 1860s, initially from a treaty with France which later expanded to include Western and Eastern European countries. However, during the economic depression of the 1870s these treaties came under threat as countries began to revert to protectionist measures. For Dundee, the import restrictions made it difficult to export to major European agricultural markets. In addition, the tariffs led to the growth of local industries in these countries. These industries were capable of supplying their domestic markets, thus making it more difficult to export there. Efforts were made by the Dundee industry, through The Chamber of Commerce, to liaise with the Government of the day to negotiate a treaty that would be favourable to them. However, these initiatives were met with little success and by the

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<sup>81</sup> DCC Minute Book 27<sup>th</sup> December 1895

end of the nineteenth century tariffs had become a norm in trade among countries in the Continent.

On the other hand, the dramatic growth of the Indian industry was led by a combination of three factors which gave it an advantage in cost that Dundee manufacturers could not match. These were: a) the lower cost of raw materials due to its closeness to the source; b) longer working hours; c) a lower exchange rate. The Indian manufacturers built on these advantages and started penetrating into major markets such as the US, South America and Australia. Initially, the Dundee industry made attempts to contain the growth of Indian industry by trying to extend the Factories Act of 1875 to include the Indian industry. Its intention was to limit the working hours of the Indian industry, thus reducing the total output and the ability to further penetrate Dundee's traditional markets. However, these efforts were opposed by the industry in India who pressured the Indian Government against implementing them. The Indian industry continued on the path of expansion and posed a serious threat to the manufacturers in Dundee.

Having exhausted its means to contain the growing competition from India and negotiate a favourable tariff structure with Continental countries, the Dundee industry thus made attempts to re-position itself strategically in the competition. The underlying idea behind the re-positioning was to move away from the markets where the Indian industry had concentrated; therefore, Dundee would not be in direct competition with India. Two major strategies were under consideration in the industry by the end of the nineteenth century.

The first strategy involved developing capabilities in goods that were specialized. There was particular emphasis on focusing on the floor-covering industry by catering to markets for linoleum and carpet. It also led to the establishment of the Technical Institute which, it was hoped, would help to build capability in textile designing. However, owing to the structural advantages that India continued to enjoy, there was always a lingering threat that when the Indian manufacturers caught-up with capabilities developed in Dundee, the competitive threat that the industry had experienced would return again.

The second strategy involved introducing a new fibre. The limitations associated in sustaining the advantage of technological capability within jute appeared to be the driving force for the

industry's search in the late nineteenth century. Although some experiments were made, it was found that they would require investment in new machinery and, more importantly, were not found to be cheaper than jute.

**Figure 10 Strategic Options in the Dundee Jute Industry at the end of the Nineteenth Century**

	Market	
<b>Fibre</b>	<i>Sack and Bag</i>	<i>Specialised</i>
<i>Jute</i>		
<i>Other fibre</i>		

Source: Author

However, much of the industry's attention was being devoted to the first strategy. Attempts to introduce new fibers had not yielded many results. This was partly because the industry could not find fibre cheaper than jute and partly because it has become accustomed to jute which showed in the lack of any sustained and coordinated effort to experiment with different fibres.

The next chapters describe the growth in Indian competition in the inter-war and post-war period and examine the industry's response at the firm level, in the form of capability development, and industry level, in the form of collective strategies.

## **Chapter 4 – The Inter-war Period (1919-1939)**

### **4.1 Introduction**

The purpose of this chapter is to examine the effect of international competition, the role of collective strategies, strategic response and capabilities developed by individual firms in order to counter international competition during the inter-war years. The chapter is divided into three main sections.

The first section outlines the growth in international competition during the inter-war period. It underlines the implication for the industry by identifying the markets that were most affected. This section addresses the first research question i.e. implications of international competition for the Dundee jute industry.

The second section examines collective strategies that were employed by the industry. The chapter also underlines the problems that were faced in the process. It addresses the third major research question i.e. the role of collective strategies in countering international competition during the inter-war period. Examining collective strategies will help understand to what extent they assisted the industry in meeting the challenge of international competition. It will also help to understand what role they played in shaping the strategic response and capabilities developed by firms in the inter-war period. This section helps to also provide a general background of the industry during this period, which will contextualize the cases examined in the next section.

The third section examines the strategic response and capabilities developed by individual firms. It addresses the second major research question i.e. the strategic response and capabilities during inter-war period. This section then investigates the case of two firms: Buist Spinning and Jute Industries. A medium sized firm, Buist specialised in spinning yarns. The case of Buist will shed light onto the strategic response and capabilities developed in the spinning section of the industry. On the other hand, Jute Industries (JI) was the largest firm in the Dundee jute industry. It was established in 1921 by a merger of seven of the oldest firms in

the industry. JI was a fully integrated firm with spinning, weaving, sack and bag and carpet making operations. Owing to the availability of records, only weaving side of JI's business is examined in this study. With around 2133 looms during the inter-war years, the weaving section was clearly a major part of JI's operation. The case of JI will throw light into the strategic response and capabilities developed in the weaving section of the industry (in order to meet the growing international competition) during the inter-war years.

The chapter will conclude by underlying the effect of international competition on the specific markets of the Dundee jute industry. It will also compare and contrast (based on the strategies identified in Case Analysis in Chapter 1) the types of capabilities developed by the selected case-studies. With regards to collective strategies, their effect on the capabilities of selected case-studies and in countering the growing international competition will be underlined.

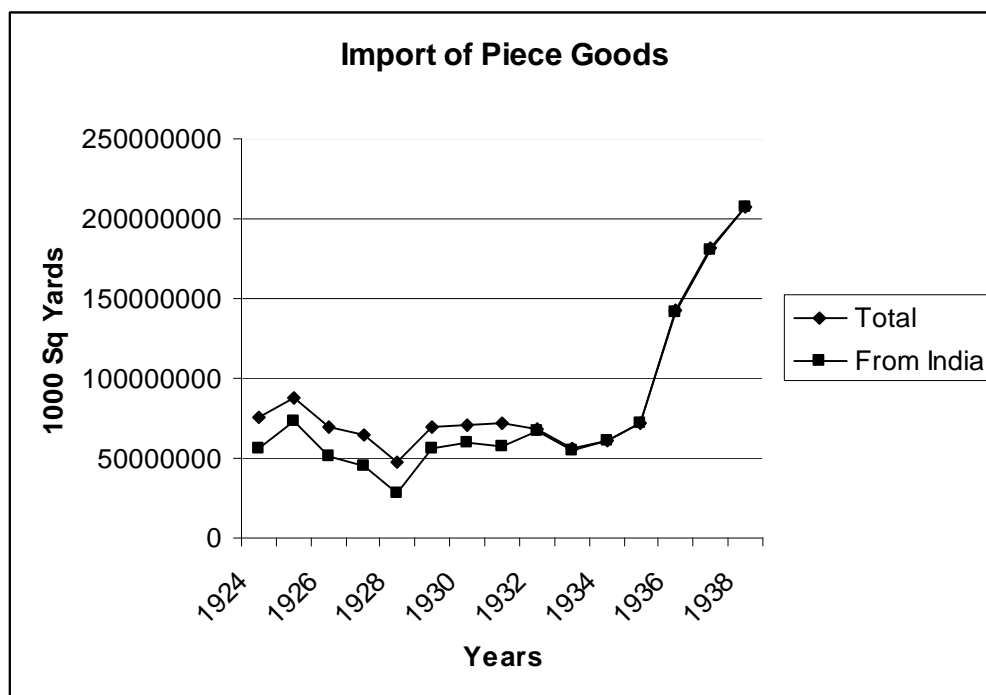
## **4.2 The Indian Competition**

The international competition in jute goods, especially from the Indian industry, which began during the 1880s, intensified during the inter-war period. The duty imposed in 1932 under the Import Duties Act gave protection against other countries but not against India, as it enjoyed the special privileges of Empire. As a result, there was a significant increase in the import of jute goods from India into the UK. The primary cause behind increased Indian competition was the overproduction in industry there. The rapid expansion had led to many new mills being established, which expanded the production capacity. However, when the demand fell, the Indian industry was unable to reduce the production in the 1920s, which led to overproduction (Stewart 1998: 93). Attempts were made by the sections within the Indian industry through the Indian Jute Manufacturers Association to curtail output. The restrictions were enforced in the form of curtailment of working hours upto 40 hours a week (Gupta 2005: 539). However, not all firms joined the agreement to reduce the output and these 'outside' firms continued to operate at 60 hours per week. Many of the 'outside' firms were newly established Indian firms. With relatively new machinery, it was in their interest to increase output (p. 539). However, by 1930 some of these firms had agreed to restrict their working hours, but with suggestions of further reduction in hours, firms began to breakaway from the agreement. There was a feeling

within the industry that in order for the agreement to be successful, all firms must abide by the curtailment. However, with many firms unwilling to join this movement, the collective strategy to reduce overproduction did not yield any tangible benefits (p. 541).

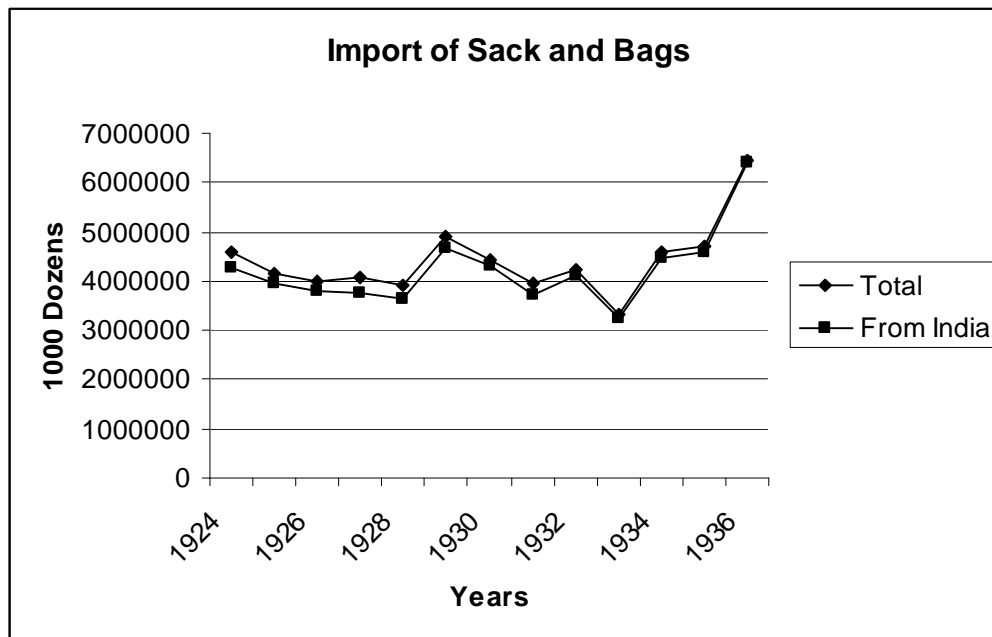
The effect on Dundee of the growing competition from the Indian industry was felt in all areas, including yarn, cloth, sacks and bags. Figure 11 shows the import of piece goods (any fabric that has been made-up for sale) during this period. Although there was a slight decline during 1928, the imports increased dramatically in the following decade. The import of sacks and bags showed a similar trend (see Figure 12). Although until 1928 the imports of bags fell, after this period there was a dramatic increase that continued in the following decade.

**Figure 11**





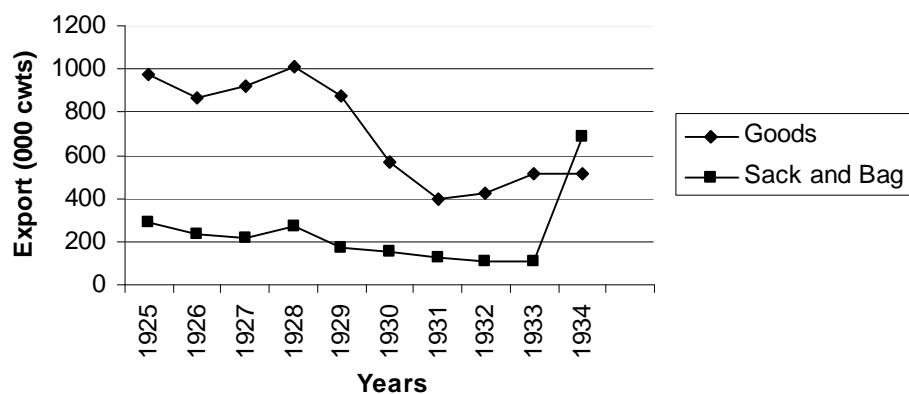
**Figure 12**



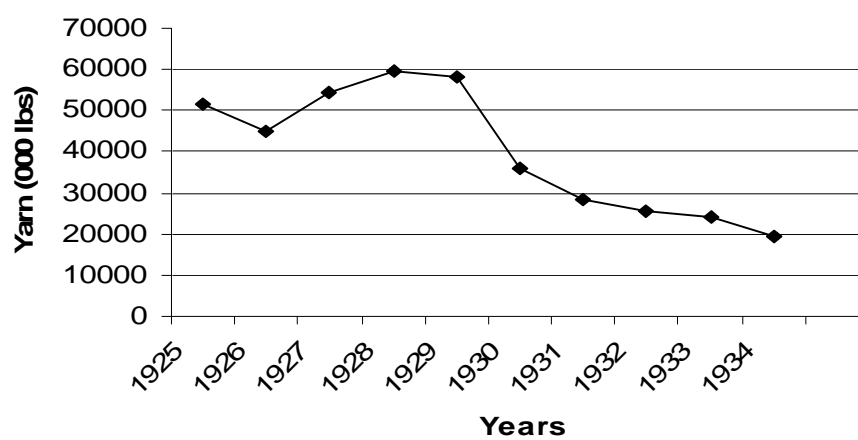
While the competition was growing in the domestic market, the Dundee industry also faced restrictions in export markets, particularly in Continental Europe. A report compiled by the Ministry of Labour Gazette in 1929-30 found that import tax in France was 64%, Germany 50%, Belgium 38% and Italy 30% respectively.<sup>82</sup> Correspondingly, the Figure 13 and Figure 14 shows that there was a general decline in the export of jute yarns, piece goods and sacks and bags.

<sup>82</sup> DUA MS/84/1-64: Dundee Jute Spinners and Manufacturers Association (DJSMA) Annual Reports, 1930

**Figure 13 Export of Jute Goods, Sacks and Bags  
1925-1934**



**Figure 14 Jute Yarn Export 1925-1934**



The growth of Indian competition in the domestic market had severely affected the Dundee industry. While there was a substantial increase in production in India by 48.5% and Continental Europe by 21%, overall production in Dundee decreased by 35%.<sup>83</sup> The Indian industry's expansion was however mainly in the narrower widths. These widths were the most suitable for making sacks and bags. Table 14 gives a summary of the number of looms in 1929 and 1933, whereas Tables 15, 16, 17 and 18 gives, in detail, the number of looms and corresponding widths.

**Table 14 Summary of Total Number of Sacking and Hessian Looms in India (1929 and 1933)**

	<b>Sacking</b>	<b>Hessian</b>	<b>Total</b>
<b>1929</b>	19502	31534	51036
<b>1933</b>	22693	37704	60397

**Table 15 Number and Size of Sacking Looms in India (1929)**

Reed Space	<b>32</b>	<b>32.5</b>	<b>33</b>	<b>33.5</b>	<b>34</b>	<b>36</b>	<b>36.5</b>	<b>37</b>
Looms	1336	2183	820	411	50	3656	1301	3238
Reed Space	<b>37.5</b>	<b>38</b>	<b>39.5</b>	<b>40</b>	<b>40.5</b>	<b>41.5</b>	<b>42</b>	<b>Other</b>
Looms	5775	73	151	119	2	36	--	351

**Table 16 Number and Size of Sacking Looms in India (1933)**

Reed Space	<b>32</b>	<b>32.5</b>	<b>33</b>	<b>33.5</b>	<b>34</b>	<b>34.5</b>	<b>36</b>	<b>36.5</b>	<b>37</b>
Looms	2212	1438	931	404	----	42	4395	1277	4828
Reed Space	<b>37.5</b>	<b>38</b>	<b>39.5</b>	<b>40</b>	<b>41.5</b>	<b>46.5</b>	<b>52.5</b>	<b>60</b>	<b>Other</b>
Looms	5870	154	183	6	36	51	35	11	820

<sup>83</sup> DUA MS/84/1-64: DJSMA, Annual Report, 1934

**Table 17 Number and Size of Hessian Looms in India (1929)**

Reed Space	<b>32</b>	<b>39.5</b>	<b>41.5</b>	<b>42</b>	<b>42.5</b>	<b>44</b>	<b>45.5</b>	<b>46</b>	<b>46.5</b>
Looms	----	136	----	270	450	141	900	3040	10846
Reed Space	<b>47.5</b>	<b>48</b>	<b>49</b>	<b>50</b>	<b>51</b>	<b>52</b>	<b>52.5</b>	<b>53</b>	<b>53.5</b>
Looms	----	107	113	455	908	2228	6103	386	1192
Reed Space	<b>54</b>	<b>54.5</b>	<b>56</b>	<b>56.5</b>	<b>57</b>	<b>57.5</b>	<b>58</b>	<b>58.5</b>	<b>60</b>
Looms	17	339	1034	418	146	297	169	350	160
Reed Space	<b>60.5</b>	<b>62.5</b>	<b>64</b>	<b>66</b>	<b>66.5</b>	<b>67.5</b>	<b>68.5</b>	<b>78</b>	<b>80</b>
Looms	----	23	324	232	----	184	86	28	6
Reed Space	<b>80.5</b>	<b>84</b>	<b>86.5</b>	<b>Other</b>					
Looms	42	137	75	192					

**Table 18 Number and Size of Hessian Looms in India (1933)**

Reed Space	41.5	42	42.5	45.5	46	46.5	48	48.5	49	
Looms	108	318	42	724	4037	15528	43	20	6	
Reed Space	50	51	52	52.5	53	53.5	54	54.5	56	
Looms	419	916	2223	6739	324	1151	57	390	975	
Reed Space	56.5	57	57.5	58	58.5	60	60.5	62.5	64	
Looms	459	241	371	145	389	275	16	2	284	
Reed Space	64.5	66	67.5	68.5	78	80	80.5	84	86.5	Other
Looms	100	259	184	87	28	6	45	112	75	606

To summarise, this section described the growth in Indian competition during the inter-war years. The competition in the domestic market continued to increase throughout the inter-war period, although this was limited to narrow width cloths, sacks and bags. The following section examines the collective strategies employed by the industry in order to compete against this growing challenge.

### **4.3 Collective Strategies**

This section examines the collective strategies employed by the industry in order to counter the growing international competition and constraints faced in the process.

#### **4.3.1 Curtailment of Yarn Production**

The growing Indian competition after the end of the First World War had resulted in decline in prices, particularly in yarns. In order to arrest the falling prices, the spinners had agreed, after a meeting under the Association of Jute Spinners and Manufacturers (AJSM), to follow some form of curtailment to shore up the prices. A committee was formed in the AJSM to bring this into effect. It was decided that production would be stopped for one day in four weeks.<sup>84</sup> The agreement also had an 'exit' clause, so that if any firm wanted to resume full time they could do so with three week's notice.

However, it was not long before the first application was made to this effect. Within two months, four firms made a request to allow them to resume full time working because they were finding it difficult to meet increased demand for their yarns. In order to restrain these firms from doing so, the Chairman underlined the success of the curtailment in helping to restrict the further downfall of prices and strongly urged the members to reconsider their decision.<sup>85</sup> However, these efforts proved futile. The argument put forward by Buist Spinning, one of the four firms, was that they made a special type of 'twist' yarn which was sold to the carpet manufacturers. It meant that they were less affected by the international competition

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<sup>84</sup> Dundee University Archives (DUA) MS/84/5/2/1: Minutes of Meeting of 'Curtailment of Yarn Production Sub-committee' 26<sup>th</sup> March 1924

<sup>85</sup> DUA MS/84/5/2/2: 24<sup>th</sup> June 1924

which was mainly in the sack and bag market (see Buist Spinning's case in this chapter). In an attempt to reach a compromise, Buist was allowed to resume fulltime in return for reverting back to short-time with stoppages every second Monday, as opposed to every fourth Monday which was agreed in the earlier plan.<sup>86</sup> Although Buist agreed to this arrangement, it was also short lived and, within two months, Buist again requested to revert back to full time. However, this time Buist's action resulted in the agreement being suspended all together.<sup>87</sup>

The continuation of imports into the UK led the spinners to again consider some kind of arrangement. With the recent attempts at curtailment proving unsuccessful, by 1926, suggestions were made to determine a minimum price.<sup>88</sup> However, even this scheme did not have all-round support. Mr Earnest Cox of the Jute Industries, the largest firm in the Dundee jute industry, questioned the viability of this arrangement. He was concerned especially about two issues: a) there was a possibility that a minimum price determined by the committee could be taken as market rate and b) by fixing the price in Dundee, it would leave them vulnerable to firms in the continent, over whom they had no control and who could undercut them in the domestic market to gain greater market share.<sup>89</sup> Moreover, he argued that a large part of their production was not in direct competition with Indian industry, as was the case with other Dundee firms, and therefore JI would not stand to gain much from such an arrangement.<sup>90</sup> Yet, in an effort to 'help the trade', he was willing to give it a trial on the condition that he had the option to withdraw in future in-case the arrangement had an adverse effect on their business.<sup>91</sup> Again, it was not long before JI exercised their right to withdraw from the arrangement. After just one month of trial, JI found that the scheme had a negative impact on its business and so argued for disbanding the scheme.

However, other members in the committee cautioned against such a move. They argued that the scheme barely had a 'fair trial'. With JI unwilling to subscribe to any form of agreement, the committee found itself divided on the issue. In order to resolve this impasse, members were asked to vote on whether they were for or against the scheme continuing. The vote presented

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<sup>86</sup> Ibid

<sup>87</sup> Ibid 4<sup>th</sup> September 1924

<sup>88</sup> Ibid 27<sup>th</sup> April 1926

<sup>89</sup> Ibid

<sup>90</sup> Ibid 30<sup>th</sup> April 1926

<sup>91</sup> Ibid

the committee with an interesting situation. In all, 22 members were in favour of the agreement, whereas 11 were against, 1 neutral and 5 members were not present.<sup>92</sup> Although a majority of members had voted for continuation of the scheme, with JI, the largest firm in the industry, expressing its opposition, the agreement was unworkable as it would be difficult to maintain the price.

#### **4.3.2 A Case for Import Tariffs**

The emphasis in the 1930s had shifted from curtailing the production, or fixing minimum prices voluntarily, to persuading the Government to impose an import tax and restrict import-based competition. Although the Government had imposed an Abnormal Importations Act 1932, it had left 'loopholes' that allowed the importation of sacks, bags and yarns. A special 'Fiscal Sub-committee', with Sir William Handerson as its Chair, was established in the AJSM whose remit was to liaise with the industry's efforts in this regard in YEAR. In order to make their case, representations were made to the Board of Trade (BoT). The thrust of their argument was that limiting imports would result in savings of 'unemployment payments' and help generate local employment.<sup>93</sup> Manufacturers were also requested to educate their customers about the need to 'buy United Kingdom jute goods' on similar lines.<sup>94</sup> The committee also sought the influence of local leaders including Sir Nairne Sandeman, Mr Dingle Foot and Miss Horsbrugh, all of whom were Members of Parliament. Help was also sought from Mr James Prain, the owner of a small sized firm involved in the sack and bag market, who was now on the Tariff Consultative Committee which was set-up by the Associated Chamber of Commerce.<sup>95</sup>

The committee's efforts soon paid off, as the BoT invited them for further discussion on the matter.<sup>96</sup> Sir Wm Handerson, Geoffrey Cox, of Jute Industries, and Frank Cathro, the secretary of AJSM, led this deputation. It was emphasised that although the initial tax on imports was a step in the right direction, it did not address the central issue concerning the industry, i.e. imports of sacks, bags and related yarns from India. The BoT commissioner, Mr Ashley,

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<sup>92</sup> Ibid 7<sup>th</sup> June 1926

<sup>93</sup> DUA MS 84/5/2/8 Minutes of Meeting, Fiscal Sub-committee 9<sup>th</sup> November 1931

<sup>94</sup> *ibid*

<sup>95</sup> Ibid 3<sup>rd</sup> December 1931

<sup>96</sup> Ibid 14<sup>th</sup> December 1931

expressed their inability to do anything with regards to imports from Empire countries.

<sup>97</sup> Although Mr Ashley did not commit to any immediate action, the representatives of the jute trade were pleased to learn that the BoT was keeping a 'day to day' watch on the entire imports situation.<sup>98</sup>

In order to help the industry make a stronger representation, the Chairman suggested appointing Sir Archiband Crawford K.C, who he understood to be in 'close touch' with Mr Ashley at the BoT.<sup>99</sup> Mr Crawford was also representing the Rope, Twine and Net Trade and the Flax trade in making their case for import tariffs. It was thought that he could help the industry in formulating its strategy in this respect. What was also important was that he was based in London and so was able to keep a close watch on the proceedings, something that the committee found it difficult to do from Dundee. However, the BoT was against any K.C representing an industry. Therefore, Mr Crawford was given an official position in the Association by being appointed the 'London director' on a fee of £500 per year plus all expenses.<sup>100</sup> This proved to be quite useful, as, soon after his appointment, Mr Crawford was able to arrange meetings with key people and help prepare the case. He suggested that in order to make a strong argument, the industry needed to clearly demonstrate the differences in cost of production between Dundee and other countries and their inability to work under the present 20% import duties.<sup>101</sup> The trade also continued to use the influence of local M.P Miss Horsbrugh, to raise the issue in the national parliament.<sup>102</sup>

In 1932, the 'Ottawa Conference' offered the industry another opportunity to make its case. The conference was a meeting of representatives from the British Commonwealth held to negotiate bilateral agreements which would provide limited imperial preference to Commonwealth goods. The jute industry was assured by the BoT that it would be allowed to make a representation at the conference. It was agreed that that the industry would be represented by Sir William Walker and the Secretary, Frank Cathro. The industry's position was that it wanted the duties to be no less than 40% on yarns and Hessian piece goods, 50% on

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<sup>97</sup> Ibid 16<sup>th</sup> December 1931

<sup>98</sup> Ibid

<sup>99</sup> Ibid 7<sup>th</sup> April 1932

<sup>100</sup> Ibid 25<sup>th</sup> April 1932; 29<sup>th</sup> April 1932

<sup>101</sup> Ibid 6<sup>th</sup> May 1932

<sup>102</sup> Ibid 13<sup>th</sup> May 1932



sack and bag piece cloth and 75% on sacks and bags.<sup>103</sup> With this aim, a delegation led by Mr Earnest Cox (Chairman of the Sub-committee), Sir Wm Henderson (Chairman of the Association), William Walker (representative to Ottawa) and Frank Cathro visited the Indian and the BoT representative in London before the conference. They argued that while other industries were looking to reduce import duties in the Empire countries, the jute industry's case was 'opposite' as it wanted to protect the domestic trade from the Indian competition.<sup>104</sup> However, it became apparent that they faced a 'political difficulty of no easy character'.<sup>105</sup> Moreover, the delegation learnt that the Government's representatives were only going to play the role of facilitators and it was left to the industry representatives to conduct the actual negotiations with their counterparts.<sup>106</sup> In their last effort to muster domestic support before the conference began, the committee decided to get in touch with the representatives of the cotton industry to exchange views, seek the support of trade unions and make a press release to draw attention to the 'seriousness' of the situation.<sup>107</sup>

From the records, it is not clear as to what exactly transpired during the meeting at Ottawa, but from Sir Walker's telegraph it is amply clear that the conference was anything but a success for the Dundee jute industry, as it was not able to secure any further restriction on imports:

“Sailing Duchess York Twelfth. Tell Sir William, Earnest Cox Mondau and Sime afterwards if they agree. Long interview Business Advisors Tuesday. Situation then difficult. Had meeting Runciman, Horace Wilson Friday. Told us stated position very clearly. President recognises force our statements. Gravity admitted. Said had it been any other country India. Our view Trade sacrificed for Empire politics and Indian officialdom. Suggest publicity. Cabled Horsbrugh similarly.”<sup>108</sup>

After the Association's failed efforts to persuade the Government to restrict imports into the US, an argument was made by members to liaise with the local Member of Parliament to put

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<sup>103</sup> Ibid 20<sup>th</sup> May 1932

<sup>104</sup> Ibid 17<sup>th</sup> June 1932

<sup>105</sup> Ibid 24<sup>th</sup> June 1932

<sup>106</sup> Ibid

<sup>107</sup> Ibid 27<sup>th</sup> June 1932

<sup>108</sup> Ibid 9<sup>th</sup> August 1932

pressure on the Government to restrict imports into the country.<sup>109</sup> However, Mr Crawford pointed out that MPs alone could not bring about any change through debate in the House of Commons. He suggested that it required the ‘influence’ of some ‘important’ persons, such as the Chancellor of the Exchequer or the President of the Board of Trade.<sup>110</sup> A ‘press campaign’ in all major cities, including Dundee, London and Glasgow, was launched to publicise the industry’s plight. However, it did not have much effect on the BoT. The Board argued that if fresh negotiations were started for the jute industry, it would have to also ‘reopen’ negotiations on other trade agreements that had been concluded with India, which the board was unwilling to do.<sup>111</sup>

Nonetheless, the industry, through the AJSM, continued to explore ways of restricting imports into the domestic market. For example, the possibility of imposing export duty on raw jute to the continental countries and imposing a quota on imports into the UK were explored. However, with regard to imposing duty on the export of raw jute from India, Sir Crawford, after some consideration suggested that the ‘wisest thing was to concentrate on the home market side of the question’.<sup>112</sup>

After some investigation the committee learned that the Ottawa Agreement could be terminated on a six-month’s notice. While the industry was warming to the idea of terminating the agreement, Sir Crawford suggested that it would be a mistake to ‘rush the position’. He suggested that it would be ‘preferable to steadily and quietly undermine the Government’s resistance’.<sup>113</sup> Following on his suggestions, Sir Crawford continued to do ‘propaganda work among MPs’. By now Sir Crawford had become an integral part of the industry’s ‘campaign’ and when the issue of continuation of his contract came, the committee argued that it ‘would be a mistake’ to terminate his agreement in the ‘middle of campaign’.<sup>114</sup> The aim was to meet anyone in the political circle who would be sympathetic to the cause of domestic industry. With this aim, the industry’s representatives, led by Mr Earnest Cox, Sir Wm Henderson, Frank Cathro and Archibald Crawford, met the members of the conservative ‘Ginger Group’

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<sup>109</sup> Ibid 30<sup>th</sup> August 1932; 16<sup>th</sup> September 1932

<sup>110</sup> Ibid 10<sup>th</sup> October 1932

<sup>111</sup> Ibid 14<sup>th</sup> October 1932

<sup>112</sup> Ibid 6<sup>th</sup> February 1933

<sup>113</sup> Ibid 17<sup>th</sup> February 1933

<sup>114</sup> Ibid 23<sup>rd</sup> March 1933

and later the Parliamentary Empire Committee, which has Sir Nairne Steward Sandeman as member of its committee. However, these meetings did not lead to any concrete measures. While the Empire Committee expressed its 'sympathies' with the industry's situation, it was unable to recommend any action for the next three years (which was also duration of the Ottawa Agreement). They felt that although some pressure may be applied to the Government before the end of the agreement, the Government was unlikely to enter into new negotiations before that.<sup>115</sup>

With little assistance coming from the political leaders, the industry got in direct touch with the Indian High Commissioner. However, he too expressed his inability to do anything personally and suggested the industry open channels of communication directly with the Indian industry. However, the Commissioner suggested that in return for any agreement by the Indian industry to self impose a quota on exports to UK, the Dundee industry would have to grant their Indian counterparts a preference over all Continental competitors in any future trade negotiations.<sup>116</sup> But making such guarantees was not in the hands of Dundee firms and therefore this possibility did not materialise.

#### **4.3.3 Research**

During this inter-war period, there was a gradual recognition of the importance of R&D, however, little emphasis was placed on the development of alternative fibres to regain Dundee's leadership in the market. This is illustrated in a special 'research sub-committee', formed by the Dundee Jute Spinners and Manufacturers Association in 1934 to explore various research related options. In its report, the committee indicated its preference for an association with the Indian industry in their ongoing efforts to establish a research facility.<sup>117</sup> However, there was little enthusiasm on the Indian side to the Dundee proposal and it was evident when they decided to establish a laboratory in London rather than in Dundee (the centre of jute production in the UK). After this, there was little willingness on Dundee's part to build an independent research facility. At the last meeting of the research sub-committee, the 'idea of a

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<sup>115</sup> Ibid 15<sup>th</sup> June 1933

<sup>116</sup> Ibid 7<sup>th</sup> August 1933

<sup>117</sup> DUA MS/84/5/3/5, AJSM Research Sub-Committee Minutes of Meeting, 8<sup>th</sup> October 1934

research scheme' was depreciated and the wording 'testing and standardisation' was suggested in place of 'research' and collaboration with the Dundee Technical College was proposed for this purpose.<sup>118</sup>

To summarise, this section examined three major collective strategies employed by the Dundee jute industry during the inter-war period: the curtailment of yarn production in the 1920s, restricting imports through import tariffs in early the 1930s and research during the 1930s. It also underlined the constraints faced in each of the strategies. The next section examines individual firms and their response to growing international competition by analysing their strategic repositioning attempts and the capabilities developed.

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<sup>118</sup> Ibid, 20<sup>th</sup> June 1938

## 4.4 Case Studies

This section aims to address the second research question, i.e. it studies the strategic response at the individual firm level by examining capabilities developed by them during the inter-war period to counter international competition. In order to do so, cases of two firms, Buist Spinning and Jute Industries, are examined.

### 4.4.1 Buist Spinning

“The Buist Spinning Company Ltd

Spinners of All  
Sizes and Qualities  
Of  
Jute Yarns and Twists,  
Carpet Yarns a Speciality

Stobswell Works, Dundee”<sup>119</sup>

#### 4.4.1.1 Background

The Buist Spinning Company Limited was incorporated in December 1900 by taking over the business of Laing Brothers & Company, which was established in the mid nineteenth century. As the name indicates, its principal activity was manufacturing yarns.

The principal investors during the formation were its principal owners: Charles Barrie Ovenstone, Andrew Buist and William Ovenstone. Nominal amount of shares were also held by other members of their family. As a result, the Chairman and the Directorship of the firm were confined to the members of the Ovenstone and Buist family. The first Chairman of the

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<sup>119</sup> DUA MS/71/6: A newspaper advertisement.

firm was Charles Ovenstone (1901-1931)<sup>120</sup> followed by Andrew Buist (1931-1944),<sup>121</sup> Reginald Ovenstone (1944-49),<sup>122</sup> and William Ovenstone (1949-68).<sup>123</sup> In each instance, the change in leadership was effected by the deaths of the Chairman, except in the case of William Ovenstone who retired from his post in 1968.

The firm benefited from the principal shareholder's experience in the different areas of the industry. At the time when Buist was established, William Ovenstone was already associated with the Dundee & Perth Shipping Company, Andrew Buist had experience in spinning and merchanting, and Charles Ovenstone was a merchant.<sup>124</sup> Correspondingly, William Ovenstone drove the raw jute buying policy, Andrew Buist was in charge of the manufacturing and Charles Ovenstone took care of the selling.

Being a medium sized firm, its operations were not very extensive. Buist did not have a separate marketing department, as a majority of yarns were sold through merchants. However, a sizable quantity was also sold directly to the manufacturers. For instance they were one of the main suppliers to weaving firms such as Craiks and Scott Fyfe, both of which are examined in this research.

Since its formation in 1901, Buist was seriously affected by the international competition, especially from India. As a result, countering this challenge took centre stage in the formation of its policies. The following sections describe the technological developments that Buist undertook in order to meet the international competition.

Before doing that, the next section describes the role of 'hedging'. It has been argued that the fragmented nature of the industry meant that much of the attention, and profits, was on the speculative activities of buying raw jute and selling yarns even before any production had begun. It implied that investing in technological developments was not high on the agenda of the decision makers. Examining the technological capabilities after having a look at the role of

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<sup>120</sup> DUA MS/71/2: Minutes of Board Meeting 6<sup>th</sup> April 1944

<sup>121</sup> Ibid 9<sup>th</sup> March 1931

<sup>122</sup> Ibid 6<sup>th</sup> April 1944

<sup>123</sup> Ibid 2<sup>nd</sup> December 1968

hedging will help to better understand the importance of capability in meeting international competition.

#### **4.4.1.2 A Policy of Hedging**

The spinners found themselves in a unique position. While at the one end they had to navigate through the daily price fluctuations in the raw jute (raw material), on the other end they also had to gauge carefully the price fluctuations of yarns. A careful dealing in this end was regarded as being enough to earn large profits for spinning firms. This was also the case with Buist Spinning.

The activity of managing the procurement of jute and selling yarns was referred to the management as 'hedging'. Although the term 'hedging' appears to give primacy to the role of 'speculation', in practice it was much more than that. It constituted judicious buying of raw jute and selling of yarn to reduce uncertainty of fluctuating prices in both these markets. It involved using highly personal judgements on the future movements of markets. Any misjudgement in this area would lead to jute being purchased at very high prices and/or yarns being sold at a low price, thus seriously affecting the firm's cost structure, revenues and eventually its profitability. The policy involved buying jute and selling yarns in advance as and when the prices were deemed appropriate. This meant that often jute was bought in advance for a couple of months without yarns being sold. It also meant that sometimes yarns were sold without first securing the supply of cheaper jute.

Such advance buying of jute or selling of yarn helped in three areas: Firstly, buying jute at reasonable rate enabled Buist to keep control on the cost of raw material. Secondly, flexibility in advance of selling yarns enabled it to secure the best possible price in a highly fluctuating market. And thirdly, it played a major role in securing the better qualities of jute which were essential for manufacturing the fine qualities of yarn. The better qualities of jute were available normally early in the harvesting season. Therefore it was important to secure them during a particular period even though there may not be enough yarn orders to justify the purchase. Therefore, although it was not useful directly in meeting international competition, 'hedging' played a supplementary role in sustaining the technological capability in manufacturing

medium and fine (discussed in the next section) yarns by securing a suitable quality of jute at a suitable price.

This policy was followed right from the inception of the firm. The board's extensive experience in shipping and merchanting played a vital role in determining the course of the policy. In a report of their first meeting, the board noted the following with regard to procuring raw jute:

“The company had jute secured at a moderate rate up to the end of July and Yarns have been sold at fair rates for delivery so that the production is hedged for some time. The Board is watching the jute market carefully at present of the view of adding gradually to stock as the season advances.”<sup>125</sup>

Similarly, in the case of yarns:

“The Directors mentioned that prices of yarns have continued to rule on a high level and no opportunity has been missed of hedging well forward by sales which show a good margin against the raw material, which has been secured into November at a very moderate rate as prices now rule.”<sup>126</sup>

Its importance cannot be undermined, considering the high level of fluctuations in the price of raw jute and yarns. In order to keep a track of the markets, management kept a close watch on price movements. Table 19 gives an indication of the level of price fluctuations that they had to face during a year.

**Table 19 Average Raw Jute Prices (1912-1913)**<sup>127</sup>

Jute	Highest	Lowest	Average
First Mark	27	20.5	23.8 (33 1/3 %)

First half of year: 20.5 to 24; 22% Second half of year: 21.10 to 27; 26%.

<sup>125</sup> DUA MS/71/1: 14<sup>th</sup> March 1901

<sup>126</sup> DUA MS/71/1: 27<sup>th</sup> June 1901

<sup>127</sup> DUA MS/71/1: 14<sup>th</sup> February 1913



Being an agricultural commodity, the production of jute, and also the price, was highly dependent on the state of climatic conditions during the year. The onset and development of the monsoon season played a major role in sowing and harvesting of the crop and thus the final annual production of jute. On their part, management diligently followed reports of sowing, forecast on rain and the official Government forecasts for the year's output. However, forecasts by Government did not always reflect the conditions on the ground. Therefore a close watch was kept on the developments through Buist's own network to assess the latest situations.<sup>128</sup>

A judicious management of procuring raw jute and selling yarn gave the firm an advantage over the local competitors, especially when the price of jute and yarn was going in the opposite direction i.e. higher jute price and lower yarn price. Having a stock of raw jute that was cheaper than the prevailing market rate, allowed them to sell yarns even when yarn prices were very low. On the other hand, competitors who did not hold a stock of cheap raw jute found it difficult to sell when the yarn prices were sagging. Such occurrences were very frequent and in one such instance, in taking stock of the situation the board noted:

“Better rates are however required to meet the higher prices now ruling for the raw material and for those who have to buy jute against present yarn prices it is bad business. In view of our cheap stock of raw material, our prospects are fair for the current year.”<sup>129</sup>

The high level of volatility in jute and yarn prices continued during the inter-war years. The immediate period following the end of the First World War was highly volatile. The price of yarns, especially the 8 lbs quality, fell and again rose by approximately 32% and continued to rise. The fine quality jute on the other hand fell by 21% and then rose 45%.<sup>130</sup> The second period of high level uncertainty was between 1929 and 1933. With the trade affected by the ongoing global depression, it was termed by the directors as one of the most trying times. The depression meant that prices of goods were at their lowest. As a result, the yarn prices did not take an upward turn for a considerable period of time to enable them to take advantage of

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<sup>128</sup> DUA MS/71/1: 27<sup>th</sup> June 1901

<sup>129</sup> DUA MS/71/1: 16<sup>th</sup> March 1903

<sup>130</sup> DUA MS/71/2: 3<sup>rd</sup> February 1920

cheap jute. The reducing of margins did not make an attractive climate to sell yarns in advance. Yet, the original policy of purchasing jute when the price was low was continued and directors relied on the past experiences to guide them through this phase:

“The policy of your directors from the inception of the company has been to keep well supplied with raw material and in the past this has proved to be the right course. Since the price of jute had drifted to an abnormally low level it would in the opinion of the Board, have been against the interest of the company not to have ample supplies. There is also the necessity of our having to buy early for our fine counts. However, at the time of striking our annual balance had drifted to a still lower level and in accordance with our custom our stock was written down to the new low level. Having secured a good and well selected stock we are now in a position to take full advantage of to improvement which we hope may come.”<sup>131</sup>

An alternative would have been to stop production until the prices were back up. However, as will be discussed below, Buist had built a capability in fine and medium twist yarns and workers had gained experience in making them; therefore going on short-time would result in losing those key people, something that management were keen to avoid even when there was great pressure from other firms in the industry to join the short-time movement (see Section ?? in this chapter).

To summarize, a judicious management in procuring jute and selling yarns played a major role before and during the inter-war years. The high levels of fluctuation within the jute and yarn markets made such a management vital in the firm's operation. It helped the firm in two major ways: firstly, to overcome the high level of uncertainty within the market by procuring raw jute and selling yarns at a reasonable price and secondly, to secure a better quality of jute which was important in making the higher quality yarns, as will be discussed below. Yet, the policy of 'hedging' was not developed to deal with international competition. In order to meet this challenge, Buist laid special emphasis on developing the spinning technology. The following section describes their efforts in details.

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<sup>131</sup> DUA MS/71/2: 27<sup>th</sup> February 1933

#### **4.1.1.3 Fine Yarns**

International competition, especially from India, was a major concern for Buist Spinning ever since its formation through to the inter-war years. It had affected particularly the heavier qualities of yarn, which were used mainly for manufacturing sacks and bags. Therefore, there was a conscious effort on the part of management to move away from making the heavy qualities of yarn in which the Indian industry specialised. Buist responded to the challenge by maintaining a technological superiority over the Indian, and most of the Dundee, industry in order to make finer qualities of yarn. While the heavy yarns were used mainly in making cloth for sacks and bags, whose production was being increased steadily by the Indian industry, the finer qualities were more versatile in their application. They could be used in a wider range of end-products such as carpets and linoleum whose markets were witnessing a steady growth. However, existing machineries were very old and therefore unsuitable for manufacturing fine and medium qualities. The introduction of new machines was therefore done with a view to specialising in fine and medium qualities of yarn. In one of their meetings just after the formation of the company, this policy was underlined by the Board unambiguously:

“After taking over the works, four directors were strongly of the opinion that the sooner the machinery was overhauled, repaired and replaced as opportunity offered, would the profitable working be increased as by so doing now only would a more satisfactory article be produced but a lower class of material be used. In considering this policy, they had also in view an idea of working to some extent into the finer end of the trade” (8<sup>th</sup> March 1902).

As discussed in Chapter 3, the preparing / carding process plays a central role in manufacturing fine quality yarns by producing a better quality of sliver. Therefore, in keeping with the policy of specialising in finer qualities of yarns to compete with the Indian competition, special attention was given to introducing new preparing machines whenever there were any improvements in them. Just after the commencement of the operations of the firm in 1901, the preparing section received first attention with new ‘push-bar’ drawing frames being ordered to

replace the traditional ‘spiral’ frames.<sup>132</sup> Thereafter, new push-bar machines were ordered at regular intervals, although stopping short of a full conversion.<sup>133</sup> A full conversion to the push-bar frames did not materialise, as, although push-bars increased the level of production, the spiral frames were found to be better suited to process finer quality of raw jute and produce a better quality sliver needed to produce higher qualities of yarn.<sup>134</sup> Nonetheless, improvements in the preparing section as a whole occupied a significant position in their overall aim to specialise in finer qualities of yarn. In keeping this intention, extensions were made to the building which would give them enough room to accommodate further expansions.<sup>135</sup>

These investments played a major role in building a capability in fine and medium quality yarns. In particular, twist yarns of 8 lbs, a medium quality, proved to be particularly successful. Initially, twist yarns were made for odd individual orders.<sup>136</sup> However, with the introduction of new preparing machines Buist were able to deliver a good quality yarn. It helped them very quickly to secure a market in this quality. With demand continuing to grow, new twisting equipments were soon ordered.<sup>137</sup> Within the following three years, twist yarns had become a significant part of the overall sales. Taking stock of their recent initiatives, the Board noted:

“There is no doubt that the keeping up of the machinery has greatly improved the general make of our yarns and of tending to their more ready sale. We are now in a position of being looked upon as a regular marker of Twists of all qualities and sizes in view of the demand we ordered as previously minuted, a new Boyd Twister and this is now working well and in fact all the Twisting is in full operation giving a production of about 15 tons per week.”<sup>138</sup>

The demand for twist yarns continued to grow in the following years. With their present building structures unable to cope with further addition of machineries, the premises were extended to accommodate new spindles capable of spinning fine yarns.<sup>139</sup> However, even

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<sup>132</sup> DUA MS/71/1: 27<sup>th</sup> June 1901

<sup>133</sup> DUA MS/71/1: 15<sup>th</sup> March 1905

<sup>134</sup> DUA MS/71/2: 14<sup>th</sup> August 1922

<sup>135</sup> DUA MS/71/1: 19<sup>th</sup> February 1906

<sup>136</sup> DUA MS/71/1: 17<sup>th</sup> August 1903

<sup>137</sup> DUA MS/71/1: 11<sup>th</sup> March 1904

<sup>138</sup> DUA MS/71/1: 18<sup>th</sup> October 1907

<sup>139</sup> DUA MS/71/1: 21<sup>st</sup> May 1908

these additions were insufficient to cope with the growing demand for fine and medium qualities of twist yarns and within two years additional twisting machines were ordered.<sup>140</sup> Thus, within nine years of purchasing the firm, the spinning capacity was increased by 38%, from 5024 spindles in 1901 to 6938 spindles. The additions were almost entirely in those capable of spinning fine and medium qualities. The pitch (distance between the spindles on a spinning frame) gives an indication of the type of yarn spun. As Table 20 shows, the size of pitch increases with the increase in the thickness of the yarn.

**Table 20 Spinning Frame Pitch Number and Yarn Wight**

Pitch (inch)	Weight / thickness of Yarn in lbs
3 ½ - 3 ¾	5 – 7
4	8 – 12
4 ¼ - 4 ½	10 – 12
5	20 – 40

Source: Sharp (1907)

Table 21 summarises, the number of spindles along with the corresponding pitch on the frame. It shows that 92.53% of the newly installed spinning frames were geared towards producing fine and medium quality yarns, with 56.56% of the spindles geared towards producing the fine quality yarn of 5 to 7 lbs and 35.97% for medium ranges of 8 to 12 lbs. In the 10 years since the firm's establishment, a total of £35,309 had been spent on special repairs, upgrading machinery and making extensions to buildings.<sup>141</sup>

<sup>140</sup> DUA MS/71/1: 21<sup>st</sup> March 1910

<sup>141</sup> Ibid

**Table 21 Number and Type of Spindles in Buist Spinning as of 1909<sup>142</sup>**

<b>Frames</b>	<b>Spindles</b>	<b>Pitch</b>	<b>Number</b>	<b>Weight (Lbs)</b>
12	50	5	600	20 – 40
29	64	4	1856	8 – 12
8	80	4	640	8 – 12
18	64	3 ¾	1152	5 – 7
14	70	3 4/4	980	5 – 7
2	72	3 7/4	144	5 – 7
16	90	3 ¼	1440	5 – 7
Old Rotary Roving Renewed			56	
Spiral Roving			70	
Total Spindles			6938	

With a large part of spinning machines now making fine and medium quality yarn, it also set Buist apart from the majority of spinners within the industry. For example, when short time was being talked about within the industry by the makers of ‘common’ qualities, Buist were not interested in joining the movement as their order books were filled for the following three months.<sup>143</sup> Thus, by the beginning of the First World War, Buist had overhauled its machinery and built their capability in manufacturing medium and fine qualities, especially for twist yarns.

The major consequence of the First World War for Buist was a general rise in overall costs (See Table 22). For instance, although the income per ton rose from £36.5 per ton to £98.13 (168.84%), the rise in cost of production was greater, from £7.1 to £22.5 (216.90%). This continued during the inter-war period. For example, the reduction in income per yarn was greater, from £102.15 to £50.7 (50.36%), then the reduction in cost of production, from £22.3 to £15.9 (28.69%) (See Table 23).

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<sup>142</sup> DUA MS/71/1: 15<sup>th</sup> July 1909

<sup>143</sup> DUA MS/71/1: 11<sup>th</sup> March 1904

**Table 22 Buist Production and Cost Statistics upto end of First World War**

	1913	1914	1915	1916	1917	1918
Yarn spun (tons)	6296	6029	6045	5761	5761	4244
Cost of Prod (£ per ton)	7.1	7.18	10.4	12.12	13.19	22.5
Yarn income, (£ per ton)	36.5	38.6	38.17	53.7	58.9	98.13
Jute used (tons)	6514	6225	6075	5927	5934	4265
Coal used (per ton)	11 $\frac{3}{4}$	12 1/3	11 $\frac{1}{2}$	12.32	12	15.24
Jute cost £	22.8	26.10	17.11	24.12	32	34

**Table 23 Buist Production and Cost Statistics during Inter-war Period**

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Yarn spun (tons)	5068	5224	Almost square		Square	Gain 2.5%	Loss 2.3%	Loss 1.09%	Square	
Cost of Prod (£ per ton)	22.3	22.5	20.14	16.15	18.7	15.19	16.2	15.15	15.3	15.9
Yarn income, (£ per ton)	102.15	133.6	60	54	51.1	48.18	59.12	59.14	50.19	50.7
Jute used (tons)	5112	5214	4715	5109	4701	4995	5415	5521	5444	5523
Coal used (per ton)	14.51	14.25	12.5	13.35	12.93	14.00	14.15	12.54	13.14	12.94
Jute cost £	38.17	63.9	32	26	26.1	26.8	35.15	40.11	30.6	29.18

The rise in general cost of production had made it particularly difficult to compete with the cheaper goods produced internationally. In addition, there was growing pressure from the local trade unions to reduce working hours and raise wages which would be a further setback to its

effort to meet international competition.<sup>144</sup> Before the war competition was mainly from the Indian industry but after the war competition also began to intensify from the continental countries, especially from Germany.<sup>145</sup>

In this context, the importance of speciality yarns was re-asserted. Taking stock of the situation, the Board weighed upon the suitability of two alternatives which would help them compete against international competition: first, to increase production in the heavy qualities of yarn and gain the benefits of reduced cost through economies of scale and, second, specialise in making finer qualities which would help them to move away from direct competition with the Indian and European industries:

“Dundee must either specialize in goods which Calcutta cannot compete on account of climate and uneducated labor or work two shifts one night and one day changing over say once a fortnight.”<sup>146</sup>

With the Indian industry appearing to be more interested in expanding their production of heavy qualities, increasing the production of same qualities in Dundee did not appear to be a sustainable option. The Chairman in his remarks to the board upon his visit to India, where he had a first hand experience of the latest developments, noted:

“The heavy end of their trade was much better then the Hessian end. This is accounted for by the former being largely a country or home trade while the latter is an export trade. No doubt an effort will be made to run 60 hours as fixed by the new act which comes into operation on 1<sup>st</sup> July. The Mills are working 54 hrs at present. I feel this country wants to get out of the common Calcutta competing end of the trade and go in for the finer and better fabrics where British skilled labour may hope to hold its own for a time.”<sup>147</sup>

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<sup>144</sup> DUA MS/71/2: 10<sup>th</sup> February 1919

<sup>145</sup> DUA MS/71/2: 23<sup>rd</sup> March 1922

<sup>146</sup> DUA MS/71/2: 10<sup>th</sup> February 1919

<sup>147</sup> Ibid



Therefore, the emphasis on medium and fine qualities that was established prior to the war, continued after it. It was also instrumental in giving an advantage to Buist over other firms within Dundee during the inter-war period. For instance, during the 1920s Dundee industry faced the problem of over-production in the Indian industry. The continuing imports into the UK were driving down prices and making it difficult for local firms to find a reasonable price. Unable to constrain Indian industry's output, the local firms were mulling an agreement within the industry to curtail their own production in order to stabilise prices (See Chapter 4, Section 4.3.1). Buist, however, were not seriously affected by this. On the contrary, their specialisation in medium and fine quality twist yarns had given them a steady demand for yarns. Therefore, Buist were unwilling to join the movement because they feared they would lose skilled workers who were trained to manufacture specialised yarns:

“Your Board after careful consideration decided to run full time for several reasons and face the music. We have a special Twist trade and our workers having been trained up to it, our desire is to keep them and while having this in view we had also in our minds to give all our workers full employment if at all possible. At one period we had to run into very heavy stocks of yarns and wait for a demand.”<sup>148</sup>

During the inter-war period, there was no special effort to further develop the fine spinning technology, either internally or by working closely with any of the engineering firms. However, when new technologies were developed that would help to reduce cost and strengthen their position in fine and medium qualities, they were adopted very quickly. The inter-war years saw further introduction of machines to this end.

The first was the introduction of ‘sliver roll formers’ in 1932 from the Dundee-based machine manufacturer Messer Douglas Fraser & Sons. It was anticipated that these would help reducing the cost by eliminating the need for cans and can packers and also help in delivering better quality sliver with longer lengths and fewer breakages.<sup>149</sup> After trials these were found to be

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<sup>148</sup> Ibid

<sup>149</sup> DUA MS/71/2: 7<sup>th</sup> July 1931

satisfactory and further orders were placed, totalling four devices.<sup>150</sup> However, its introduction did not lead to cans being fully replaced. Rather, the efficiency of cans was increased by installing the mechanical can packer.<sup>151</sup> Traditionally, the sliver was packed in the can by hand. The can packer system allowed the sliver to be packed mechanically. It increased the amount of sliver packed per can and also reduced the need to employ extra labour for this process.

More significant, however, was the introduction of the high-speed spinning system. Although not the first, Buist was among the early introducers of the high-speed spinning machines developed by Belfast-based James Mackie & Sons. The first system was ordered in 1932 and within the next five years three more systems were placed on order.<sup>152</sup> What was important was that these introductions were made to further strengthen their position in medium and fine quality yarns. The new system was also expected to bring the cost to 'irreducible minimum', thus helping to compete on cost internationally.<sup>153</sup> The urgency to introduce them was driven by the fact that a couple of competitors in Dundee had also ordered this machine and it threatened to affect their market in the fine and medium qualities. The significance of the high-speed machines could hardly be undermined, as, even after the start of the Second World War, an order was placed for a further 9 frames<sup>154</sup>

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<sup>150</sup> DUA MS/71/2: 4<sup>th</sup> July 1932

<sup>151</sup> DUA MS/71/2: 11<sup>th</sup> February 1932

<sup>152</sup> DUA MS/71/2: 22<sup>nd</sup> November 1932; 2 November 1933; 24 January 1935; 27 January 1937

<sup>153</sup> DUA MS/71/2: 27<sup>th</sup> Feb 1933

<sup>154</sup> DUA MS/71/2: 26<sup>th</sup> January 1940

## 4.4.2 Jute Industries

### 4.4.2.1 Background

The Jute Industries Ltd (JI) was established in 1921. It was formed by an amalgamation of seven of the oldest firms in Dundee: Thomas Bell & Sons, Cox Brothers, Gilroy Sons & Co, J & A D Grimond, John N Kyd & Co, Stewart Sandeman & Co, and Harry Walker & Sons. JI was the largest firm within the Dundee jute industry employing approximately half the industry's workforce.<sup>155</sup>

The management team of the new entity, including the Chairman and Directors, consisted of the former owners of the merged firm. Therefore there was continuity in its management. During the inter-war years, J Earnest Cox was the Chairman, T.H.H. Walker the Vice Chairman, and T Norman J Bell, Arthur J Cox, W G Fair, F M Richardson, Sir A.N.S Sandeman (M.P), R.C Thomson, and H Giles Walker held the directorship of the board.

JI had extensive presence in both the domestic and overseas market. At the time of its formation, JI's goods were supplied around the world to countries in Africa, Asia, Australia, Europe, North America and South America (See Table 24). Although goods were sold throughout the world, North and South America was the largest overseas market, whereas in the UK, Manchester, Liverpool and Kidderminster were the major centres (see Table 25).

**Table 24 JI Turnover by Regions between 19<sup>th</sup> Dec-31<sup>st</sup> Mar 1925 (in £)<sup>156</sup>**

Asia	1629	New Zealand	3566
Europe	55335	Africa	13210
South America	204363	Australia	9897
North America (Canada?)	470	America	188552

<sup>155</sup> DUA MS: 66/X/11/22 (1) (i) A newspaper article 'Dundee Jute Lock-Out' 1923

<sup>156</sup> DUA MS 66/ X/ 11/2 Commercial Committee Reports 1923-1927 27<sup>th</sup> April 1925

**Table 25 JI Turnover by Regions between 1933 – 1950 (in £) <sup>157</sup>**

	<b>A (Dundee and District- Scotland and Ireland)</b>	<b>B (Foreign and Colonial)</b>	<b>C (Manchester and Districts)</b>	<b>D (Liverpool and District- Birmingham, Bristol, Kidderminster, Leicester, Nottingham)</b>	<b>E (London)</b>	<b>F (Leeds and Districts)</b>	<b><i>Govt</i></b>
1933	27262	20623	13319	33254	24145	10489	
1934	31480	21106	12396	40635	24860	13655	
1935	34627	14772	14672	35305	22845	13790	
1936	31132	18182	11162	43604	31534	11374	
1937	33393	20373	21343	43564	34327	7358	
1938	29168	18102	11389	47154	65703	9125	
1939	47049	8904	17880	73566	94753	11467	
1940	59784	28010	15337	76373	121130	11791	
1941	57104	34145	22838	54005	96940	7920	
1942	39282	14833	31744	32982	86558	8580	
1943	55002	2894	20001	30120	88445	14409	
1944	34842	3085	9399	35804	29374	17880	49990
1945	48133	5433	13164	72620	55002	14431	35441
1946	58043	21020	24093	92941	59670	21214	2020
1947	93119	17372	46514	135025	89887	36955	4520
1948	126655	26563	50237	178860	136804	32048	3069
1949	111104	10130	54942	209536	111913	38257	10006
1950	135815	29811	63291	206499	151229	58294	46082

The extensive reach of the market was managed through a separate department within the firm termed as the ‘selling department’. The domestic sales were managed through agencies in London, Manchester and Liverpool on a commission basis. Similarly, agencies were appointed in various countries around the world. In the selling department, sections were created to look after different regions. However, its setup in the United States was on a different footing.

<sup>157</sup> DUA MS 66/X/11/6 (2) Sales Ledger in Balance Sheet

Instead of an agency, JI had its own sales office in New York, whose sole purpose was to find a market for JI's products.

The combined operations of seven firms made JI the largest jute-manufacturing firm within the UK. It was a fully integrated firm. Its operations were not jute limited to making yarn and cloth, but also included end products like carpet, and sacks and bags. However, the largest part of its activity consisted of making cloth and yarn, as Table 26 indicates.

**Table 26 JI Sale of Cloth, Yarn, Carpet and Others (in tons) 1921-1927**

	<b>Cloth</b>	<b>Yarn</b>	<b>Twine</b>	<b>Carpet</b>	<b>Webbing</b>
Sept 1921- Sept 22	21261	18447	2251	875	-
Oct-1922 to Sept 1923	18844	19373	2519	818	60
Oct-1923 to Sept 1924	24883	24842	2594	1196	281
Oct 1924- Sept 1925	24368	28305	2550	1023	94
Oct 1925- Sept 1926	21845	22240	1799	520	116
Oct 1926- Sept 1927	27228	33272	2435	641	132

The large size meant that JI had a very large requirement of jute. It was estimated that its annual consumption of raw jute was about 300,000 bales, one third of the UK's total

consumption.<sup>158</sup> With such a large requirement, it was crucial to ensure a steady supply at a reasonable price. As a result, JI entered into an agreement with Rallies, a long established international trading firm, to supply part of their jute requirement. Although questions were raised on this dependence on an outside firm to secure the supply of raw jute, the Chairman listed three major points in favour of the agreement:<sup>159</sup> Firstly, setting up of their own department would lead to additional expenditure which would result in increased cost per ton. Secondly, Rallis was among the first merchants to supply jute from India to Dundee in 1850s. Over the years, it had built an extensive network and knowledge of the jute market in India, thus giving JI the benefit of this in-depth experience. Thirdly, and more importantly, the jute market was highly volatile, with the slightest of rumours affecting the movement of price. The Chairman reckoned that if a rumour were to hit the market of 10,000 bales being purchased, it would result in an immediate rise in the price of jute. Therefore, with JI requiring a substantial quantity of jute, it would have been difficult for them to buy it directly without significantly affecting the price in the market.

During the formative years the production units of merging firms were reorganised with a purpose to reduce the cost increase efficiency. This was done by transferring machineries to the units where they could produce similar kind of goods. The Table 27 summarises the eleven production units along with the corresponding goods that they manufactured after reorganisation.

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<sup>158</sup> DUA MS/66/X/11/22 Dundee Advertiser: Newspaper cutting, Report on the First Annual General Meeting, 2<sup>nd</sup> March 1922

<sup>159</sup> Ibid

**Table 27 JI list of Production Units and Corresponding Products<sup>160</sup>**

Units	Product	Details
Belmont Works	Cloth	Wide-width cloth from 86” upto 168” width, and 450 to 2000 yards length rolls.
Angus	Spinning	NA
Rashiewell	Spinning	NA
Walton Works	Spinning	NA
Manhattan Works	Bags	Consisted spinning, weaving of cloth and bag making machines.
Camperdown Works	Cloth	Mainly narrow-width cloth. Spinning was done only to a limited extent. Some machines transferred to Manhattan Works and others scrapped during 1930s.
Heathfeild Works	Cloth	Medium to wide-width cloth upto 86” and 500 yard length rolls. Also included related spinning.
Maxwelltown Works	Cloth	Medium to wide-width cloth upto 96” and 500 to 2000 yard length rolls.
Bow Bridge Works	Cloth	Wide-width cloth from 86” to 168” and 450 to 2000 yard length rolls. Also included related spinning.
Caldrum Works	Cloth	Narrow width (36”) cloth for sacking and wide-width cloth upto 87”. Also included related spinning
Tay Works	Rugs	Chenille rug weaving along with related cloth making looms.

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<sup>160</sup> DUA MS 66/X/13/2 Detailed Inventory and Valuation of Individual Works 1933

In addition, JI also initiated a policy to train its workforce professionally through an apprenticeship scheme. JI was the only firm within the industry to have such a strategy. This scheme trained people in commercial and technical areas. Those who wanted to pursue the commercial side were required to obtain Chamber of Commerce Junior and Senior Commercial Certificate within 5 years and those going to the technical side were required to obtain similar certification from the Dundee Technical College. The apprenticeship period lasted for 3 years and all candidates were formally approved by the Board. Rules were also laid down for the relatives of the owners who wished to work in the firm, whereby the individual was required to enroll in the general apprenticeship, pass the required examinations and during this period should serve in the firm other than the one that they were associated with.<sup>161</sup>

#### **4.4.2.2 The Indian Competition**

By the end of the First World War, threat of international competition from India and continental countries was the major concern for the Dundee industry, including JI. This competition, however, was mainly in the sacking and bagging section. The cloth used in it was made on narrow looms, with the 40" widely regarded as the standard size. By the 1930s, it became very difficult for JI to compete in the narrow width owing to overproduction in India.<sup>162</sup> The overproduction had driven the price of cloth down to an extent where it had become un-profitable to manufacture this width. This situation had dominated for much of the inter-war period. By the second-half of the 1930s, the Board of JI deemed that only Government led initiatives would be able to have any significant effect:

“We are very much more taken up with the ever increasing importation of jute cloth from that country, and if nothing is done by our Government, either by way of quota or tariffs, it will not be very long before a number of narrow looms in Dundee are closed down.”<sup>163</sup>

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<sup>161</sup> DUA MS 66/X/1/2 Minutes of Meeting of Board of Directors 1926-29, 16<sup>th</sup> August 1927

<sup>162</sup> Ibid 6<sup>th</sup> January 1930

<sup>163</sup> Ibid 31<sup>st</sup> March 1936



With competition intensifying in the narrow-width looms, Jute Industries aimed to specialise in areas where they would not be in direct competition with the Indian industry. However, this emphasis was laid since the formation of the firm. In his address to the First Annual General Meeting, the Chairman outlined the company's position with regard to the growing Indian competition:

“Do not imagine that if Calcutta is tapping some of the lines we hoped to get, we for our part are doing nothing, are idly looking on, wringing our hands and bemoaning our fate. We are not taking it lying down, but are conducting experiments in finding new uses of jute fabric, improving our methods, and installing more labour saving machinery. I spoke to you of our research department. We have great hopes that material assistance will be forthcoming in this direction.”

The Chairman estimated that approximately 70% of their output was not in direct competition with the Indian industry.<sup>164</sup> The amalgamation of seven firms had meant that JI had inherited a wide range of products. The portfolio of products that were inherited with the merger of different firms played a major part in this strategy. These included different types of cloths such as backing for linoleum, fine Hessians, webbings, ‘Velvet Pile Fabric’ and Twill for miniature golf courses and also end products such as jute carpets.<sup>165</sup> But with the amalgamation, JI had also become the largest jute-manufacturing firm in the UK. So while these different products gave a range of options against international competition in sacks and bags, not all of them were produced on a significant scale to sustain JI's large production capacity.

End-products like carpets were never regarded as their main activity and so it received little attention in terms of investment in new technology and products. For example, little enthusiasm was shown when a proposal came for an alliance from a continental manufacturer who wished to introduce the more modern Jacquard looms into the UK. The attitude was

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<sup>164</sup> DUA MS ; Dundee Advertiser: Newspaper cutting, Report on the First Annual General Meeting, 2<sup>nd</sup> March 1922

<sup>165</sup> DUA MS: 66/X/11/28 File No. 6 Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1930-31, 8<sup>th</sup> September 1928 (for reference to golf mats)

similar when it came to introducing new products. Observing the growing use of rug cushion in the American market, the manager there suggested its manufacture in Dundee for the UK market.<sup>166</sup> But the management in Dundee was not keen on this development, as they did not regard floor-coverings as their main business. In their reply to the manager's suggestion, FM Richardson notes:

“We do not think this is a type of business we want to invest money in and, further, we have just heard that one of the largest carpet manufacturers in the country is installing plant to make these goods. This is, of course, only natural, as they are in a better position to push the sale of cushions than we are and incidentally, the particular firm in question spin their own jute yarn for their woolen rugs and carpets.” 19<sup>th</sup> Dec 1932

The following sections describe in detail the technologies employed by JI to counter international competition during the inter-war years.

#### **4.4.2.3 The Wide Looms and Long Lengths**

With the Indian competition mainly limited to the narrow widths, and end products like carpets not being regarded as their main business, JI relied on the wide-width looms during the inter-war years. These looms were largely used to manufacture the cloth for linoleum backing. Table 28 summarises total number looms and widths during the inter-war years. It shows that only 39% of their total looms were of narrow-width and therefore suitable for making cloth for sacks and bags. On the other hand, 61% of the looms consisted of medium and wide widths that were used for manufacturing linoleum backing cloth.

A wide range of widths also allowed them to take advantage of the developments in other areas. For example, when experiments were underway in Dundee to use jute in road construction, JI were ready to meet this demand with their 60” looms that were erected some years back for linoleum customers in the US. These looms were sitting idle owing to the keen

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<sup>166</sup> DUA MS: 66/X/11/29: File No. 7: Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1931-35, 26<sup>th</sup> November 1932

competition from the Continent in this width.<sup>167</sup> Although the trials to use jute in road building did not materialise, the broad range of widths in medium and wide width looms nonetheless placed JI in a position to take advantage of this potential market.

**Table 28 JI Summary of Loom and Widths<sup>168</sup>**

<b>Width in Inch</b>	<b>Number of Looms</b>	<b>Percentage</b>
Narrow (Up-to 59")	835	39
Medium (60 – 70")	331	16
Wide (70" – 200")	967	45
Total	2133	100

However, the primary use of medium and wide-width looms during the inter-war years was for the linoleum backing cloth. Linoleum, the final product in which jute backing cloth was used, was part of the cheap floor-cloth covering market. Therefore the issue of cost was vital in this industry. The wider widths were useful for the linoleum manufacturers because it helped them to save on the cost of sewing together two narrow widths. With competition within the linoleum industry intensifying, such savings in cost reductions were vital as it enabled them to compete successfully.<sup>169</sup> Some also found it convenient to have a wider width as it did away with the sewing process and as a result they preferred them even when the cost differentials were in favour of narrow widths. However, with price a driving issue in the industry, a few manufacturers were induced to use narrow widths if they could get it sewn and the final cost would be lower than the wider widths.<sup>170</sup>

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<sup>167</sup> Ibid 7<sup>th</sup> August 1933

<sup>168</sup> DUA MS 66/X/13/2 Detailed Inventory and Valuation of Individual Works

<sup>169</sup> Ibid 21<sup>st</sup> September 1933

<sup>170</sup> Ibid 4<sup>th</sup> March 1932

#### **4.4.2.4 The North American Market**

The American market in particular was very important for linoleum backing cloth throughout the inter-war years. However, it was facing some difficulties just at the end of the First World War. Before the war, the linoleum industry in the US was securing much of its supply of backing cloth from Dundee, and A & J D Grimond (one of the amalgamated firms of Jute Industries) was the leading supplier. The war had created disruption in supplies from Dundee which severely curtailed the production of linoleum in America. As a result, the paper manufacturers took advantage of this situation to introduce felt-paper based floor coverings. These coverings did not use any jute in their construction, thus negatively affecting jute's position within this important specialized market. Therefore, by the time Jute Industries was formed in the early 1920s, the prospects for linoleum market in the US, as far as jute was concerned, were far from encouraging. Therefore, a publicity campaign was launched to regain this market. In it, the qualities of jute a long lasting product was especially underlined. Owing to the inherent characteristics of paper, the paper-based felt coverings were not able to last as long as those made with jute. Therefore, the advertising campaign aimed to 'educate' the general public about the advantages of 'jute-based' linoleum floor-covering over the paper-based coverings.

#### **Figure 15 Jute Industries Advertisement of Linoleum Backing in the United States**

Interestingly, the local linoleum manufacturers in America were themselves making efforts to regain their lost market share. So when they heard about the efforts being made by Jute Industries, they were only too pleased. In a letter, a director of Armstrong Cork Ltd, one of the largest floor-covering manufacturers in America, expressed their appreciation:

“For some time we have felt that it is becoming necessary to educate the American public regarding the merits of genuine linoleum as compared with the felt paper imitations. So when we were informed by Mr Paynter that the JI contemplated an advertising campaign to exploit the fact that genuine linoleum has a burlap back, which adds materially to its life, we welcome the announcement heartily.”<sup>171</sup>

The importance of this market to JI can also be underlined by the special annual visits made by directors to personally meet linoleum manufacturers. Initially these visits were made by Mr T H H Walker and Mr F.M. Richardson, however in later years it was only visited by Richardson.

The wider width linoleum backing cloth continued to remain significant for JI into the 1930s. By the early 1930s, overproduction by the Indian industry coupled with the continuation of The Great Depression which reduced the general level of demand had led to depressed prices of jute goods in general. In Dundee, several firms were closing down. In this backdrop, only two things were doing well at JI. The first was carpets, owing to recent import tax which helped reduce imports and thus generated demand. However, as discussed earlier, carpets were never regarded as their major business. The second area which showed promise was the wide width linoleum backing cloth. For the first time in the last four years, all looms in wider widths were busy with local and international orders.<sup>172</sup>

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<sup>171</sup> DUA MS/66/X/11/36 Letter from Armstrong Cork Co, Linoleum Division, to FM Richardson, 21<sup>st</sup> July 1921

<sup>172</sup> DUA MS: 66/X/11/29: File No. 7: Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1931-35, 7<sup>th</sup> September 1933

#### 4.4.2.5 Substitutes

By the early 1930s, JI was again facing threats from substitutes being introduced in the linoleum market that had a potential to reduce the level of demand for jute backing. The substitutes threatened the dominance of linoleum as a cheap floor-covering alternative. New products such as printed linoleum, felt-based (as opposed to jute-based) linoleum and floor oilcloth were starting to challenge the traditional jute-based linoleum. The demand for these cheaper alternatives was mainly generated by the ongoing economic recession.<sup>173</sup> In addition, new products such as rubber floorings were also being introduced at the ‘high-end’ of the market. The introduction of new products at both the lower and higher-ends of the market had affected the overall demand for linoleum, thus affecting the demand for the jute backing cloth that was used in it. In a letter to the American branch, F.M. Richardson expresses his concern over these developments:

“Even amongst consumers of cheaper materials, fabrics are now being marketed which either have the appearance of linoleum or even claim to be superior to it. As most of these floor coverings are being produced without jute backing, and are in fact less durable than the original material, they constitute a real danger, both for linoleum and jute industry.”<sup>174</sup>

Initially, some linoleum manufacturers were hoping to compete with substitutes by reducing their prices, and they were relying on JI to give some reductions on jute backing cloth. However JI was unable to match their demand, thus allowing substitutes to gain popularity.<sup>175</sup> Moreover, the linoleum manufacturers had come to accept that the new products were there to stay (quote from the letter). In fact, some of them had also begun to manufacture it themselves.<sup>176</sup> For example, when a merger between the three largest linoleum manufacturers in the US took place (Geo Blabon, Certainteed Products Corporation and W&L Sloane), creating the largest floor covering firm in the country, only one facility was devoted to

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<sup>173</sup> DUA MS: 66/X/11/28 File No. 6 Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY, 1930-31, 19<sup>th</sup> January 1931

<sup>174</sup> Ibid 20<sup>th</sup> January 1931

<sup>175</sup> Ibid 28<sup>th</sup> October 1928

<sup>176</sup> Ibid 9<sup>th</sup> February 1931

manufacturing 'plain linoleum' (which used jute), and two separate plants manufactured felt-based and printed linoleum and rubber inlaid (which used no jute).<sup>177</sup>

However, despite these developments, by the second half of the 1930s the substitutes were not able to make serious inroads into the traditional linoleum market.<sup>178</sup>

#### **4.4.2.6 Local and International Competition in Wide-widths**

During the 1920s, competition in wider widths remained limited. In Dundee, only a handful of firms were dealing in wider width cloth for linoleum backing. These included Cairds, Malcolm Ogilvie, James Scott & Sons, and Low & Bonar. But their total capacity in these widths was very small compared to that of JI. Yet, with the continuing overproduction by the Indian industry in the standard width cloth, firms in Dundee and on the Continent were increasingly seeking to secure the market in the medium and wide-width cloth using heavy price cuttings. Therefore, for JI competition was slowly emerging in this speciality area. The close relationships cultivated by JI through its branch office in New York and annual visits by directors did give them an advantage over competitors. They were able to gain access to critical information related to specific orders. In particular, JI were able to secure the competitors' samples that helped them to gauge what others were offering and if possible offer similar qualities.<sup>179</sup> Occasionally, JI were also able to secure the quotes that were offered by local competitors such as Cairds for particular orders.<sup>180</sup> With the competition intensifying in the linoleum backing cloth market this information proved crucial, especially in securing large orders. However, securing such confidential information was a rarity rather than a norm.

Instead of matching the competition with similar price cuts, JI applied a two pronged strategy. First, it took advantage of its broad range of medium and wide-width looms to offer customers a variety of widths. So, when the competition got intense, JI was able to replace one width with

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<sup>177</sup> Ibid 7<sup>th</sup> August 1931

<sup>178</sup> DUA MS/66/X/11/30 File No. 8 Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1935-1942, 3<sup>rd</sup> August 1937

<sup>179</sup> DUA MS 66/X/11/27; File No. 5: Correspondence between New York Agent and F.M. Richardson at Dundee 1929-30, 11<sup>th</sup> February 1930

<sup>180</sup> DUA MS: 66/x/11/29: File No. 7: Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1931-35, 16<sup>th</sup> March 1932 ; MS/66/X/11/30 File No. 8 Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1935-1942, 20<sup>th</sup> September 1938

another to suit customers' needs.<sup>181</sup> The competitors, with their narrow range of widths and small capacity, were not able to offered similar option. Second, innovations were made to increase the length of rolls of cloth. The rolls were designed to hold from 250 to 2000 yards of cloth on a single roll. The long length rolls, like the wider width cloth, helped the linoleum manufacturers to reduce costs by doing away with sewing together shorter lengths of cloths. JI hoped that these longer length rolls would help to overcome their disadvantage in offering further reduction in prices. A letter from F.M. Richardson to the American branch gives a brief on this innovation and explains the purpose behind it:

“You will be pleased to hear that we are increasing our long length production, and by the end of this year we think we will be in such a position that our various customers will at least give us the preference of any business that is going, even if they cannot be induced to favor us slightly in price.”<sup>182</sup>

Initially, local Dundee competitors were not able to match JI in providing the long-length rolls. Therefore it gave JI a considerable advantage over the local competitors, especially when securing larger orders.<sup>183</sup> However, it was not long before others acquired this capability and started to provide longer length rolls.<sup>184</sup>

The international competition, on the other hand, was virtually non-existent until the early 1930s. The Indian industry concentrated its efforts to manufacturing the narrow-width cloth for sacking and bagging. Although some attempts were made to produce the wide width cloth, they were not successful. In one of his letters to the American branch, FM Richardson allayed any concern about a possible threat of competition from India:

“We have stressed very strongly the point that the making of Burlaps for linoleum, has been tried repeatedly in Calcutta and in NY, with disastrous results,

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<sup>181</sup> DUA MS: 66/X/11/29: File No. 7: Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1931-35, 7<sup>th</sup> November 1932; 13<sup>th</sup> January 1933

<sup>182</sup> DUA MS 66/X/11/27: File No. 5: Correspondence between New York Agent and F.M.Richardson at Dundee 1929-30, 27<sup>th</sup> November 1929

<sup>183</sup> DUA MS: 66/x/11/29: File No. 7: Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1931-35, 8<sup>th</sup> February 1932

<sup>184</sup> Ibid 5<sup>th</sup> October 1932; 27<sup>th</sup> October 1932



and that for some reason Dundee appears to be the only place where satisfactory quality can be made...”<sup>185</sup>

Some trials into making wider widths were also carried out in Japan. However, these were mainly to meet the demand for local linoleum industry. Nonetheless, it did not affect JI's market in this region. JI's ability to produce producing good quality wide-width cloth led the local Japanese linoleum manufacturers, who could secure the cloth locally and save at least 10% in transportation cost, to continue buying from Dundee.<sup>186</sup>

However, serious threat of competition in the wide-width cloth began to emerge during the second half of the 1930s, especially from Czechoslovakia. The industry there was beginning to experiment with the wider widths, especially in 108” and 114”, and threatened JI's lucrative market in the US.<sup>187</sup> With their ability to supply a sizable quantity of upto 50,000 yards and at 6 to 10% below Dundee's price, this was a small but very potent threat. The first news of Czechoslovakian competition in America came to the management in Dundee through their branch office in New York. The Czechoslovakian manufacturers did not have any distribution infrastructure and were looking for agencies to represent them. This news was picked-up by the branch NY office.

The initial suggestion from the branch to the management in Dundee was to get together with other major merchants to buy Czechoslovakia's entire wide-width imports into the country. In this way they could remove the competition and offer their customer cheaper goods while further strengthening their relationship with them.<sup>188</sup> However, this proposal did not receive support from the directors in Dundee. They argued that it would be a mistake to think that the competition would be limited only to Czechoslovakia, as there was equal possibility that Indian firms may also soon enter this market. If Indian firms did, it would render such a scheme useless. More importantly, it would hurt the 'goodwill' that they had built over the years with their customers. In his reply, F.M. Richardson explains their position on the issue:

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<sup>185</sup> DUA MS:66/X/11/31 No. 5 F.M Richardson, Sundries 1928-1930, 28<sup>th</sup> December 1928

<sup>186</sup> DUA MS 66/X/11/32 Private Sundries: Correspondence between F.M.Richardson and various home and overseas firms. 1<sup>st</sup> August 1930

<sup>187</sup> DUA MS/66/X/11/30 File No. 8 Correspondence between F.M. Richardson and Edward Paynter and L.J. Hiltz of Jute Industries Ltd NY 1935-1942, 5<sup>th</sup> November 1936

<sup>188</sup> Ibid

“We think that having a Gentlemen’s Agreement to keep prices might prove very dangerous. If it became known that there was a price ring, our customers, such as Allen and American Hair Felt, would almost immediately look around for another source of supply.... Our New York office is a selling agency, and their business is to get orders to keep our machinery running here and therefore we must have a free hand as regards price. There is another price with controlled prices. We think the goodwill which you have been able to build up with our various customers would probably go.”<sup>189</sup>

Instead, JI relied on their ability to manufacture wider widths. Their immediate action was to increase the production of the 108” widths. However, more significant was their later decision to make further alterations to the 144” looms and extend them to 200”.<sup>190</sup> The wider-widths were in great demand from the rug-cushion makers, who had recently installed 144” wide machines.<sup>191</sup> Moreover, jute was also increasingly being used for wall coverings and a growth in demand from this market was expected to lead to a greater demand for wider-widths than in the previous years. While the prospects in these widths were looking attractive, things were far from similar for the narrow widths because of growing imports from India.<sup>192</sup>

By 1938, however, attempts were also being made in Calcutta, especially by Ludlow Ltd, to weave 108” fabric, albeit in a very low quantity, and export it to the US, JI’s main market.<sup>193</sup>

The beginning of the Second World War had resulted in the disruption of trade routes and affected supplies to the US. The US agent feared that their inability to meet the demands of the market at this stage would allow other substitutes like paper, cotton and Indian narrow-widths, to make deep inroads into the backing business which could then make it difficult for jute to regain popularity.<sup>194</sup> On their part JI had conveyed these concerns to the ‘powers’ in London.

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<sup>189</sup> Ibid 10<sup>th</sup> December 1936

<sup>190</sup> Ibid 3<sup>rd</sup> August 1937

<sup>191</sup> Ibid

<sup>192</sup> Ibid

<sup>193</sup> Ibid 22<sup>nd</sup> March 1938

<sup>194</sup> Ibid 1<sup>st</sup> October 1941

However beyond this they were unable to do much. They were more concerned about retaining key workers, who were being called on to serve in the War.<sup>195</sup>

#### **4.4.2.7 New Fibres**

The archival records do not indicate any persistent attempt to find an alternative fibre to replace jute completely in all its products during the inter-war years. Rather, attempts revolved around experimenting with fibres that could be used for blending for specific products. For example, when special bags were being developed for the wool trade in Bradford, softer fibres were sought, because jute, being a coarse fibre, was found not particularly suitable for storing special qualities of wool. When a merchant sent a sample, tests were conducted to mix it with jute and weave it on existing machines. It was found that the blended fibre could be processed on jute machines without much alteration.<sup>196</sup> However the price of the fibre was regarded as a major constraint in sustaining the commercial viability of the blended fabric. In his reply to the merchant, F.M. Richardson laid out the constraints and inquired about cheaper fibres:

“We might be able to work a harsher fibre for our twines so long as it was cheap, and if we could find a low price wool substitute we might be able to do something with this in our carpet manufacture. I am afraid that all the fibres that pass through your hands are too good for us.”<sup>197</sup>

#### **4.4.2.8 Automatic and Semi-Automatic Looms**

Jl was one of the few firms in the Dundee jute industry to attempt trials of automatic looms during the inter-war years. The first trial was made in 1928 with four 68” looms purchased from Urquhart Lindsay & Co.<sup>198</sup> Jl’s attempt at introducing automatic looms was by no means the first within the industry as trials were already under way in some of the Continental countries, albeit at a small scale. Interestingly, there was a severe shortage of weavers during

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<sup>195</sup> Ibid 12<sup>th</sup> November 1941

<sup>196</sup> DUA MS:66/X/11/31: File No. 5, F.M Richardson, Sundries 1928-1930, 12<sup>th</sup> December 1928

<sup>197</sup> Ibid

<sup>198</sup> DUA MS 66/X/1/2 Minutes of Meeting of Board of Directors 1926-29, 4<sup>th</sup> December 1928

the 1920s. Therefore, automatic looms, with their ability to increase number of looms per weaver, would have been naturally preferred (or provided a good opportunity). JI was also convinced of persuading the trade unions on the use of the automatic machines as it would result in creating jobs where there were few. Yet, after initial trials, the looms were converted back to 'plain looms'.<sup>199</sup> Therefore, although attempts were made to introduce the automatic looms, they were not used widely during the inter-war years. Interestingly Continental firms were also experiencing similar problems with automatic looms. In a letter to James Mackie & Co, Mr Richardson expressed his opinion on the performance of automatic and semi-automatic looms:

“...with particular regarding Mr Spohn’s semi-automatic looms, I am perfectly certain that the Germans are right in their idea of semi-automatic against automatic looms. We have now had some years experience, and we cannot get results to compensate for the heavy capital expenditure involved in automatic looms.”<sup>200</sup>

Therefore, although attempts were made to introduce automatic and semi-automatic looms, they did not play any significant role in competing against international competition during the inter-war years.

#### **4.5 Conclusion**

The strategic response of the firms examined in this chapter was to move away from the traditional sack and bag market, where Indian competition was intense, into new markets. The focus was on exploiting existing capability in jute through innovation. Although minor in nature, firms used these innovations to develop specialised products. The two firms examined in this chapter, Buist Spinning and Jute Industries, presented contrasting cases in terms of their focus and size. Nevertheless, they demonstrated an equal amount of commitment in using their know-how of jute manufacturing to develop specialised products which met international competition. This is illustrated in Figure 16 below. In spinning, the capability was developed in

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<sup>199</sup> DUA MS/66/X/11/34 Correspondence between F.M.Richardson and various home and overseas firms.1935-8, 27<sup>th</sup> January 1937

<sup>200</sup> Ibid

medium and fine yarns, whereas in weaving it was in wide widths. However, during the inter-war years neither Buist nor Jute Industries ventured to introduce new fibre to replace jute.

**Figure 16 Buist and Jute Industries**

**Inter-war Strategy**

	<b>Market</b>	
<b>Fibre</b>	<i>Sack and Bag</i>	<i>Specialised</i>
<i>Jute</i>		→
<i>Other fibre</i>		

Source: Author

When compared to the focus of the Indian industry, Dundee's prime competitor, on narrow-width and sack and bag market, specialisation by Buist and Jute Industries did prove an effective strategy against the growing competition from the Indian industry.

The case of Jute Industries threw light on capabilities developed in weaving. In an effort to move away from narrow width, used mainly for making sack and bag, JI devoted its energy to develop capability in the light-weight wide width cloth. It allowed JI to enter into the specialised linoleum backing market. However, this capability was not developed during the inter-war period, but was inherited from one of the merging firms, Grimonds. The merger of seven firms led JI to inherit products, machines, engineering skills and the market network of individual firms. Prior to amalgamation Grimond, by the end of the nineteenth century, had started to develop capability in wide-width cloth. This had allowed it to enter the linoleum market across the USA, Europe and Asia. During the inter-war years JI built on this inherited capability in wide-widths to further expand in the linoleum backing market. JI's in-house engineering skills proved crucial in this regard. JI stood apart from the rest of the industry in

this area as it was the only firm in the Dundee jute industry to formally train its workforce in technical expertise. It also had a shed which was used to build machine parts and certain types of standard looms. Using these skills, JI was able to extend the widths of looms as and when it was required, to overcome challenges from the competition. It also enabled JI to provide the widest range of widths. Its engineering knowledge was used only to make minor innovations in looms. JI did not, however, undertake fundamental research into developing looms or ancillary machineries.

The case of Buist Spinning on the other hand gave insight into capabilities developed in spinning. In order to shift away from heavy yarns, used mainly for the sack and bag market, Buist developed capability in medium and fine yarns which allowed it to enter the specialised carpet yarns market. However, this was not an entirely new area, as market for carpet yarns was a long established one. The most significant step in the process of making fine yarns was the drawing/preparing process. Unlike JI, Buist did not have in-house engineering skills which could be used to make alterations to its machines. Buist therefore depended on engineering firms for any innovations in machinery. In order to develop capability in medium and fine yarns, Buist made regular investment to keep machines in the drawing/preparing section up-to-date. Although Buist regularly upgraded its machineries, it did not enter into any joint development work with machine manufacturers.

While firms continued to develop capability, in order to move into new markets, on an individual basis, the industry also employed collective strategies to counter the growing international competition. There were three major collective strategies employed by the Dundee jute industry during the inter-war period: the curtailment of yarn production in the 1920s, restricting imports through import tariffs in early the 1930s and research during the 1930s. Yet, none of the three strategies played any significant role in countering the growing international competition during this period. The yarn curtailment strategy could not be fully implemented because it was difficult to get co-operation from key firms. These firms were unwilling to join this restrictive strategy as they had already moved a significant part of their production away from markets where competition was intense. For example, Buist and Jute Industries were not interested in joining such movements, as they were not greatly affected by the international competition. They had developed significant capabilities in fine-medium

yarns and wide-width cloths and established themselves in the carpet and linoleum backing market. Although they joined initially, it was mainly owing to social pressures exerted by fellow Dundee firms. They soon withdrew from the agreements when it began to restrict their output in specialised markets which was witnessing a growing demand. Therefore, differences in areas of specialisation of capabilities meant that it was difficult to muster support from the cross-section of the industry for collective strategy to curtail output that was mainly aimed at sack and bag market. On the other hand, the industry was also unable to restrict the Indian imports through import tariffs. The failure to secure a deal at the Ottawa Conference in 1932 played a major role in this regard. Although the industry tried to exert pressure on the Government leading up to the conference, this did not convert to tangible benefit during the conference. A possible explanation could be the industry's relative insignificance to the Government compared to the Lancashire cotton industry and Empire trade compulsions. Although archival records do not shed light on what exactly transpired at the Ottawa Conference, Sir William Walker's telegraph points to these factors. However, another possible explanation is that, with only two people as representatives, the industry failed to make significant representation at this conference. With regards to research, the industry's efforts were anything but enthusiastic. With the Indian industry growing in size during the inter-war period, the Dundee industry wanted to involve them in order to make any meaningful breakthrough. However, the Indian industry was not too enthusiastic about associating with Dundee, thus the 'research' institute did not get off the ground.

To conclude, the collective strategies did not play any significant role in curtailing the growing international competition during the inter-war period. On the other hand, individual firms leveraged their capabilities to reposition themselves into new markets. The next chapter will examine the capabilities that firms developed in their effort to reposition themselves against international competition and the role of collective strategies during the post Second World War period.

## **Chapter 5- The Post-war Period (1945-1970)**

### **5.1 Introduction**

This chapter examines the strategic response of the Dundee jute industry during the post-war period. In particular, it examines the strategic repositioning and capabilities developed individual firms and collective strategies employed by the industry to counter international competition during the post-war period. As after the end of Second World War the industry received extensive protection from international competition in the UK domestic market, this chapter does not examine the implication of international competition separately. The chapter is divided into two main sections.

The first section addresses the third research question i.e. the role of collective strategies in countering international competition during the inter-war period. This is done by examining collective strategies employed by the industry and constraints faced in implementing them. Examining collective strategies will help to understand what role they had in shaping the strategic response and capabilities developed by firms studied in this chapter. This section also provides a general background of the industry during this period which will help to contextualize the cases examined in the next section.

The second section addresses the second research question i.e. what was the strategic response of selected case studies and what capabilities did they develop during this period. In order to do this, the cases of two firms, Scott & Fyfe and Craiks, are examined. Scott & Fyfe is a family owned firm, established in 1868. It is a medium sized weaving firm specializing in making cloth. It was one of the few firms to continue with flax until late 1890s, when much of the industry had converted to using jute after the Crimean War.

A medium sized firm, Craiks was originally established in 1864. The firm suffered difficulties in 1908 and as a result it had to cease its production. As Craiks was a significant employer in the Forfar region, the local community came together to finance the firm. The initial investors were David Morgan Graham (landed proprietor), Andrew Lamond Jr (cattle dealer), Donald Reich (merchant), William Coutts Jr (butcher) James Milne (house proprietor), Adam



Farquharson (draper). The board of the firm now comprised of David Morgan Graham as the Chairman and Andrew Lamond Jr, David Maxwell and David Reich as directors. With members of the board having little experience in the manufacturing and running of a jute manufacturing firm, Craiks proceeded to appoint a fulltime Works Manager and a General Manager who took on the day to day running of the manufacturing and selling operations. Since its inception, Craiks had specialised in weaving section of the industry.

Using the strategies identified in Case Analysis section in Chapter 1, the chapter will conclude by comparing and contrasting capabilities developed by Craiks and Scott & Fyfe during this period. It will also identify relationship between different capabilities and discuss its significance in developing major technological capability within and between the case-studies examined. With regard to the collective strategies, their implication in countering international competition and effect on individual firm's capability development will be identified.

## **5.2 Collective Strategies**

By the end of the Second World War in 1945, the international competition had led to the dramatic reduction in the size of the Dundee jute industry. The raw jute imports into the UK had collapsed to less than 25% of their 1896 levels (See Figure 2 in Chapter 1).

In order to determine the future strategy of the industry, the Government, along with the industry, commissioned the Jute Working Party just after the end of the Second World War. The Working Party's remit was to "report as to the steps which should be taken in the national interest to strengthen the jute industry and to render it more stable and more capable of meeting competition in home and foreign markets."<sup>201</sup> In all, a total of nineteen recommendations, which could be categorized into five major areas, were made by the committee.<sup>202</sup>

*i) Protection.* The first set of recommendations focused on the need to secure protection for the industry from the Indian competition that was expected to resume after the end of war. The committee concluded that without this, the industry would not be able to compete with the

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<sup>201</sup> DUA MS/86/XXV/7, Jute Working Party Report 1946, p. 3

<sup>202</sup> DUA MS/86/XXV/7: JWPR 1946

Indian competition which was set to intensify after the end of war. The committee also suggested that protection should be provided on the condition that the industry should reorganise by merging smaller units.

*ii) Reorganisation.* The second set addressed the need for ‘reorganisation’ within the industry through the merger of smaller sized specialized firms. It would result in integrated entities which would have spinning and weaving under a single roof. The committee, however, insisted that this should be done on a voluntary basis and that a special independent committee be set-up in the industry to assist this process.

*iii) Modernization.* The issue of equipping firms with modern machineries was also addressed by the committee. It was suggested that both spinning and weaving sections should be fitted with productivity enhancing machines. This included replacing old spinning frames in spinning sections and introducing automatic looms in weaving sections. The underlying objective behind modernization was to enable the firms to achieve increased output and better productivity.

*iv) New applications.* With regard to new applications, the committee made two suggestions: first, to explore the possibility of new uses of jute and second, to explore the possibility of using new types of fibers on jute machinery. The underlying reason behind this being the need to move away from Indian competition. Although the committee made recommendations for developing new applications, it did not suggest whether the industry should peruse this as a joint effort or whether it was the responsibility of individual firms.

Although different measures were suggested to strengthen the industry’s competitiveness in anticipation of the resumption of international competition after the war, the key recommendation was the issue of protection. Without it, the committee predicted dramatic implications for the local industry. As the following observation denotes:

“We see no prospect of the jute spinning and weaving industry in this country achieving stability unless it is afforded protection in the home market when it is again subjected to the competition which existed before war from low priced

imports of jute goods from India made by labour with much lower standards than those obtaining in this country” (JWPR 1946)

Nonetheless, the committee did not expect the entire industry to be affected similarly.<sup>203</sup> Three types of firms were expected to be least affected by Indian competition. Firstly, it was thought that merchanting firms who had their own manufacturing subsidiary would be able to continue by supplying products that could not be supplied by imports. Secondly, large firms who were able to increase production and reduce cost would also be able to meet the competition. And thirdly, the specialized firms that were not concentrating on ‘goods most likely to suffer from Indian competition, i.e. sacks and bags, were also expected to be able to meet the challenge of Indian competition.

Despite these findings, no new measures were introduced by the Board of Trade to protect the industry from the competition. Instead, the measures initiated under the Jute Control (JC) were used as a foundation to help the industry reduce the intensity of international competition. The next section describes how the JC, along with the Gentlemen’s Agreements, were used to reduce the Indian competition in the UK domestic market during the post-war period.

### **5.2.1 The Jute Control and the Gentleman’s Agreements**

The commencement of the Second World War led to the increased demand for sandbags. However, with embargoes on international commercial shipping lines, it had become difficult to import raw jute into the UK, thus affecting the production of sandbags. In order to avoid difficulties in this regard, the JC was established in 1939 to oversee the continuous supply of raw jute and jute goods into the UK. By July 1942, JC had become the sole importer of UK jute goods. During the war, the Government encouraged switching between Indian and UK made goods but, to protect the users from financial losses from the cheaper Indian supplies, prices of Indian goods were ‘marked-up’ to be in line with the UK made goods<sup>204</sup>. The JC, by issuing maximum prices, allowed the producers to sell at higher prices.

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<sup>203</sup> Ibid, page 114

<sup>204</sup> DUA MS 84/18/1 (2): Precognition by L.F. Robertson

However, stiff domestic competition among firms resulted in price-cutting, defeating the very purpose of the JC's price settings. Moreover, the Jute Controller who, until now, only issued yarn prices, wanted to extend this control to include the cloth prices<sup>205</sup>. The industry felt that growing control on prices by the JC would restrict their flexibility on determining prices. In one of the trade meetings, it was suggested that 'the Trade itself should make the maximum prices issued by the Control the minimum operative prices'<sup>206</sup> In order to draft a 'voluntary price agreement', a 'Price Committee' was established within the Jute Spinners and Manufacturers Association which would include members of the association as well as non-members.<sup>207</sup> Soon, the committee drafted the first Gentleman's Agreement (R.1339). The motive behind the formulation of the first Gentlemen's Agreement was to ensure price stability so that the JC was unable to provide, as well as retain, their own control on determining those prices.

As described in Chapter 1, the industry's structure remained fragmented during the post-war period. It consisted of jute merchants / brokers who bought and sold raw jute, spinners who made yarn from the raw jute, weavers who made cloth from the yarn (although some were integrated and so also spun), finishers who supplied special fibres for jute cloth, bag sewers who sewed the cloth to make bags, merchants who bought and sold UK made or imported bags and cloths, and second-hand bag merchants who bought and sold used bags and sacks.<sup>208</sup> Although some leading firms had their own merchanting arm (e.g. Jute Industries, Low & Bonar), this was not the case with a large section of the producers (specialist spinners and weavers) who sold significant proportions of their goods through merchants (see for example firms like Scott & Fyfe, Craiks, and Buist Spinning used in this research). Hence, the merchants also represented a strong section within the industry. As a result, any attempt by producers to maintain the minimum prices within the industry would have been difficult to achieve without the support of the merchants.

Traditionally, there was little precedent of cooperation within and between different sections of the industry. During the inter-war years, as described in the previous section, the lack of co-operation among producers stemmed from the different areas of specialization. With much of

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<sup>205</sup> Ibid 23<sup>rd</sup> January 1942

<sup>206</sup> DUA MS 84/16 Minutes of Meeting of Price Committee, 9<sup>th</sup> January 1942

<sup>207</sup> DUA MS 84/18/1 (2): Precognition by L.F. Robertson, 14<sup>th</sup> August 1942

<sup>208</sup> DUA MS 84/19/5 An un-titled document prepared for the MRTTP case in 1962

the Indian competition limited to sacks and bags, firms for whom these were not the main products were less enthusiastic for cooperation. Therefore, diversity among firms made it difficult to cooperate on minimum prices. The lack of cooperation in favour of minimum prices also extended to the competition between producers and merchants. For merchants the lower priced products, whether imported or Dundee-made, ensured good business as they could secure larger orders from customers. Therefore, owing to the conflicting interests, it was difficult for them to sustain any agreement. Hence, it was necessary to have cooperation within and among different sections to ensure price stability throughout the industry.

The case for having Gentlemen's Agreements was driven by producer firms who were feeling the heat of international competition in their traditional market of sacks and bags. All agreements were negotiated and administered by the trade association of the respective section (e.g. producers, merchants, bag sewers) and coordinating committees. Table 29 lists the names of associations to the relevant sections within the Dundee jute industry. Table 30, on the other hand, lists various agreements and the corresponding trade associations and committees that administered them.

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**Table 29 The Dundee Jute Industry Associations**

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**Association of Jute Spinners and Manufacturers (AJSM)** Represented the interests of producers (spinners and weavers) in Dundee and District.

**United Kingdom Jute Goods Association (UKJGA)** Represented the interest of firms or individuals who (until the date of imposition of Jute Control) imported jute goods (sacks and bags). Its members are individuals, not firms, who held senior positions in firms.

**Dundee Jute and Linen Goods Merchants Association (DJLGMA)** Represented the interests of merchants dealing in jute goods manufactured within the United Kingdom.

**Jute Sack and Bag Manufacturers Association (JSBMA)** Represented the interests of bag sewers within the United Kingdom. Established in 1949 to administer Gentlemen's

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Agreement R. 1336.

**Jute Importers Association (JIA)** Represented the interests of importers of raw jute in Dundee and District.

**London Jute Association (LJA)** Represented the interests of importers of raw jute in London.

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**Table 30 Gentlemen's Agreements and corresponding Coordinating Committee and Industry Associations**

<b>Agreement</b>	<b>Coordinating Committee</b>	<b>Industry Association</b>
R. 1340 Gentleman's Agreement Yarn Prices	Price Committee	AJSM
R. 1339 Gentleman's Agreement Cloth Prices	Price Committee	AJSM
R. 1338 Dundee Hessian Piece Goods Recommended Price Agreement	Joint Dundee Jute Goods Co-ordinations Committee	AJSM
R. 1337 The Imported Hessian Piece Goods Recommended Prices Agreement	The Co-ordinations Committee	UKJGA
R. 1336 The Tariff of Recommended Charges for Sewing, Stamping and Bundling Agreement	The Sewing Tariffs Committee	JSBMA
R. 1335 Bags made from Dundee Cloth Recommended Price Agreement	Joint Dundee Jute Goods Co-ordinations Committee	AJSM and DJLGMA

R. 1334 The Imported Bags and Bags made from Imported Cloth Recommended Prices Agreement	The Co-ordinations Committee	AJSM and UKJGA

In order to secure cooperation from merchants, the industry, led by producer firms, brokered a separate agreement among merchants (R.1337 and R.1334) in 1945<sup>209</sup>. Administered by the Jute Trade Co-ordination Committee, these agreements checked any attempts by merchants, and producers, to cut prices:

“...the idea behind the Co-ordination was that the equation of Dundee and Calcutta selling prices to consumers was to strengthen the Manufacturers determination not to break the Gentleman’s Agreement prices.....once the Schemes were introduced it would be quiet unnecessary for Producers to cut Gentleman’s Agreement Prices in any way. Provided Producers did not keep to these prices the whole Scheme of Co-ordination would be wrecked and all hopes of equating Dundee and Calcutta prices, which itself was a form of protection would disappear.”<sup>210</sup> Col. Hill, Don Bros, Forfar, 1952

Another major section within the industry was the bag makers, who bought the cloth and sewed them into bags. Although a large number of merchants had their own bag making houses, there were a significant number of small independent firms who converted cloth into bags. Therefore, in order to maintain stability in minimum prices, it was also necessary to secure their cooperation. Therefore, an agreement (R. 1336) with bag makers ensured price control in this flagship part of the trade.

<sup>209</sup> DUA MS 84/16/7 Jute Trade Co-ordination Committee, Minutes of Meeting, 28<sup>th</sup> May 1945

<sup>210</sup> DUA MS 84/16/5 Joint Dundee Jute Goods Co-ordination Committee, Minutes of Meeting, 13<sup>th</sup> March 1952

However, by 1952, there was uncertainty surrounding the future of the JC. The Government of the day was considering a further relaxation of restrictive activities across industries in the UK. In anticipation of these relaxations by the JC, and consequent adverse implications on prices, anxious members formed the Joint Dundee Jute Goods Co-ordinations Committee “to evolve a Scheme in conjunction with the Jute Trade Co-ordination Committee for Co-ordination of Dundee jute produced goods when necessary”.<sup>211</sup> Such an agreement within the industry would continue equate the imported goods at Dundee prices<sup>212</sup>. In 1952, the JC returned raw jute trading back into private hands and in keeping with the Government’s general policy of relaxing the restrictions across the industry, it withdrew from issuing statutory prices for yarn. This threatened the fate of other Agreements as the yarn price acted as the base price on which the price of cloth and bags was determined. The industry made a strong representation to the Government for continuation of protection citing the conclusions of the Jute Working Party Report of 1946 which had recommended protection for the industry. However, the appeals were unable to persuade the Government to continue to maintain the minimum price for yarn. Although no formal support was provided, the Government nonetheless agreed to allow the industry to determine the yarn prices through a Gentleman’s Agreement (R.1340). As a result, the price structure was now administered entirely through various interdependent Gentlemen’s Agreements.<sup>213</sup>

After the BoT withdrew from issuing prices through the JC in 1954, this responsibility was taken over by the industry and its accountant, Arimatage & Norton (A&N) of Edinburgh. The mechanism used to derive the yarn and cloth prices was based on the system that was developed by the JC in 1942 to arrive at the statutory yarn price.<sup>214</sup> Growing costs and the return of raw jute into private hands meant that it was important to ensure that the prices were as close to the current market prices as possible. This concern is reflected in the ‘yard stick’ given to the Price Committee and A&N in a memorandum that was prepared after some intense consultations.<sup>215</sup>

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<sup>211</sup> DUA MS 84/16/5 JDJGCC Minutes of Meeting, 11<sup>th</sup> February 1952

<sup>212</sup> Bounded in Agreements R.1338 and R.1335

<sup>213</sup> The 7 registered Gentleman’s Agreements were: R.1340 Yarn prices; R.1339 Cloth Prices; R.1338 Dundee Hessian Piece Goods Prices; R.1337 Imported Hessian Piece Goods Prices; R.1336 Tariff on sewing, stamping and bundling charges; R.1335 Dundee Cloth Bag Prices; R.1334 Imported Bags (including cloth) Prices

<sup>214</sup> DUA MS 84/18/1 Precognition by Charles Orford Allan of Armitage & Norton

<sup>215</sup> DUA MS 84/16 Minutes of Meeting of Price Committee, Memorandum on Basis for Fixing Prices, Agreed by Joint Meeting of the Prices and Raw Jute Committee, 22<sup>nd</sup> May 1954



Therefore, a two tier protection came into effect, with JC providing the mark-up on imported goods and Agreements ensuring those mark-ups were maintained by different sections in the Dundee industry.

Although the purpose of JC and Agreements was to protect the Dundee firms from ‘standard’ goods, i.e. sacks and bags, JC also issued mark-up goods that were not in direct competition with the Indian industry i.e. wider width cloth. However, the Agreements did not include the price of wider widths and concentrated only on the narrow width cloth and sacks and bags. Nonetheless, the industry effectively received protection in its entire range of products and it continued throughout the post-war period. By the end of the 1950s, however, the Government had recognised this predicament and in the guise of reaching a compromise between those calling for and against the removal of Agreements, the authorities decided to remove protective cover on the specialist wider width cloth. As the Pilmott Committee, set-up to suggest a future strategy for the jute industry observed:

“Our present arrangements are to some extent illogical, in that the products which least need a high level of protection (i.e. cloth over 72” wide) are in fact most heavily protected- by a complete ban on imports. It should, therefore, be possible to make some changes by substituting a mark-up for the present complete ban which would make our arrangements appear less restrictive in form without leading to any significant increase in imports.”<sup>216</sup>

#### **5.2.1.1 Implication of Jute Control and Gentlemen’s Agreements**

The evidence suggests that although managing a diverse set of Agreements that bound different sections of the industry was a challenging task, the industry was, to a large extent, successful in their efforts. The result of various Agreements was evident immediately after they were introduced. Taking stock of the Co-ordination Agreements, the Chairman noted that competition had been ‘wiped out, so far as Calcutta goods are concerned’.<sup>217</sup>

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<sup>216</sup> Scottish Records Office (SRO), SEP4/823 Confidential: The Future of the Jute Industry, Pilmott Committee Report, 6 February 1959

<sup>217</sup> DUA MS 84/16/7 Jute Trade Co-ordination Committee, Minutes of Meeting, 7<sup>th</sup> January 1947

In the absence of any form of formal protection from the Government against imported goods, these agreements played a very significant role in securing the domestic market for sacks and bags. In his message to the shareholders, the Chairman of Low and Bonar Ltd noted:

“It is the industry’s contention that the various price agreements operated by it are necessary lubricating oil which makes the unusual and somewhat involved form of protection work smoothly and efficiently, and with maximum fairness to all parties concerned”<sup>218</sup> (12<sup>th</sup> April 1960)

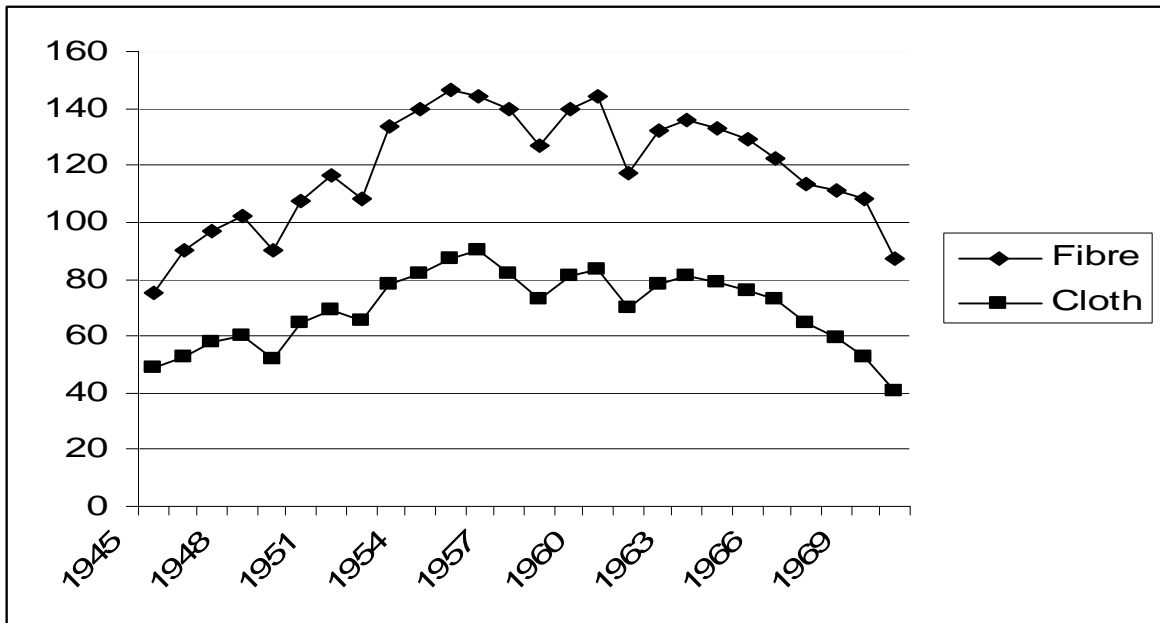
The Agreements, along with JC, played a vital role in restricting imports into the UK. The imports of yarn and cloth during the post-war period are shown in Figure 18 and 19. The extent of import reduction becomes clear when the post-war imports are compared to imports during the inter-war period (see Figure 11 and Figure 12). During the post-war period, the import of yarns had declined dramatically. On the other hand, import of cloth, though not reduced as significantly as yarn, had stabilized and did not go above the inter-war level.

The restriction in imports allowed the Dundee industry to increase its own production, both in yarn and in cloth, until the 1960s when the protection was removed (see Figure 17). However, much of the industry’s production had now shifted to the ‘specialist’ areas. Table 31 shows that the wide-width cloth consisted of 55% of the industry’s total out-put. On the other hand 40% of production was in specialised light-weight cloth. Only 5% of production was in the traditional sack and bag cloth.

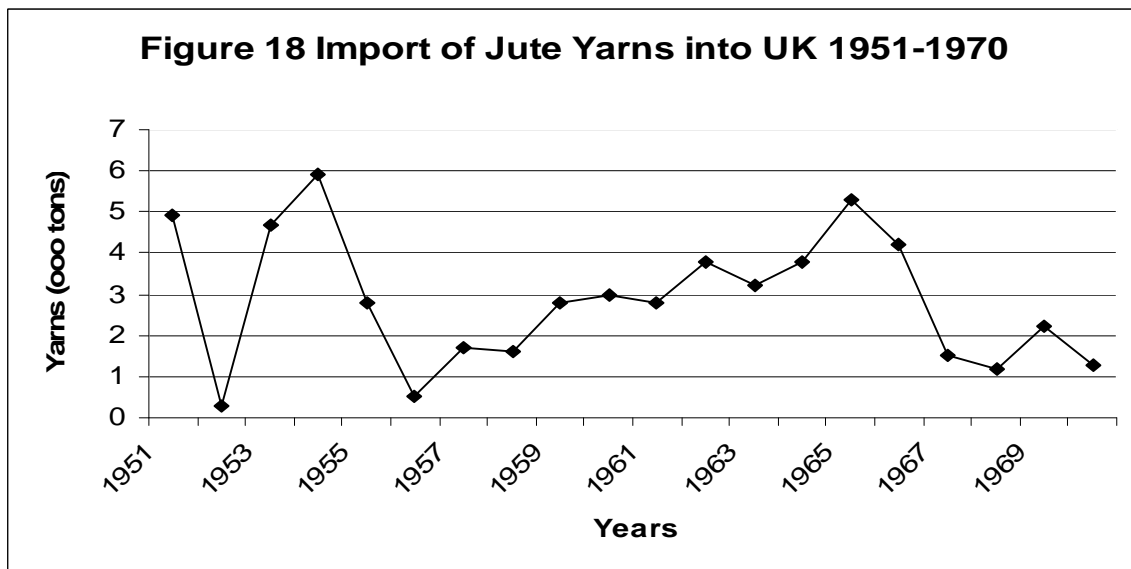
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<sup>218</sup> MS 84/12

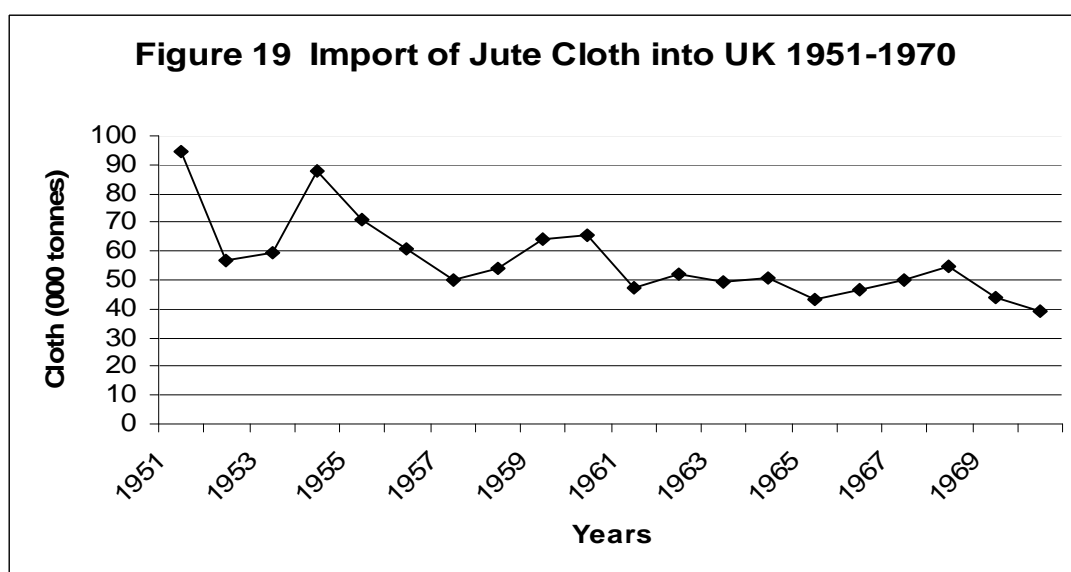
**Figure 17 UK Jute Industry Output 1945 to 1970 ('000 tons)**



Source: Howe (1982)



Source: Howe (1982)



Source: Howe (1982)

**Table 31 Categorisation of Imports and UK Production 1963 (tonnes)**

Category	Sold by Jute Control	% of Jute Control's Sales	Produced by Dundee firms	% of Dundee Production
Heavy bags, common sacking and woolpacks	5,400	15	-	-
Common Hessian cloth, mainly used for bag making	21,700	60	4,300	5
Equated goods (cloth between 32" and 72" not less than 7oz and not more than 10oz)	9,000	25	34,400	40
Excluded goods (mainly wider width cloth over 72")	-	-	47,300	55

Source: McDowall and Draper (1978)

It is difficult to pinpoint any single reason for 'efficient' running of the various Agreements. However, a combination of four factors played a vital role.

The first was the resurgence in demand during the post-war period. The Chairman of the Co-ordination Scheme underlined the role played by increased demand when reflecting on the performance of the scheme.<sup>219</sup> After the end of the Second World War, the UK experienced a significant rise in domestic demand due to post-war reconstruction efforts. This was in contrast to the inter-war period which was faced with the 'Great Depression'.

The second was the removal of 'mistrust' that prevailed within and between different sections had historically played a major role. Unlike during the inter-war years, the ensuing cooperation during the post-war period made it possible for the industry to negotiate and maintain a diverse set of agreements. Underlining the importance of this cooperation, the Chairman of the committee noted:

“Distrust has been completely displaced. There exists a realization that we are all necessary components of a whole. We put our best into a united effort knowing that if the whole industry can be kept healthy, individual sections itself will prosper.”

The third factor was the comprehensive but complex accounting mechanisms that were devised to determine the Agreement's prices. The complexity and secrecy surrounding how the prices were determined left little control in the hands of individual firms to determine prices themselves. As discussed above, the agreements were highly interdependent. Therefore, in order to calculate the price at one phase, it was imperative to determine the cost structure through which the previous set of price was calculated. In addition, the method through which prices were calculated was kept a closely guarded secret. The details of costs that were collected from the select firms were never disclosed to the wider industry. Therefore, it was difficult for individual firms to ascertain the nature of benchmark cost-structure and arrive at

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<sup>219</sup> DUA MS 84/16/7 Discovered Documents: Jute Trade Co-ordination Committee Minutes of Meeting, March 1951

the final price. Therefore, there was very little room for individual firms to ascertain and then manipulate the final price:

“..all signatories had been naming the same price and that it had not been left to any Signatory to deduct or add from any basic lists in the preparation of prices. The Chairman went on to say that whenever any price was required outwith of Co-ordination it appeared very few Signatories could in fact work it out for themselves.”<sup>220</sup>

The fourth factor could be attributed to the leadership provided by some of the key personalities (e.g., Sandy Beedie, Bert Caldwell, Neil Leitch, Col Hill) who brought and held together members of diverse interests within a fragmented industry with a history of suspicion among its firms.

#### **5.2.1.2 Dismantling of Gentlemen’s Agreements**

The eventual dismantling of the Jute Control and Gentlemen’s Agreements came in the 1960s. Two factors in particular played a major role in their removal: the first was the growing discontent among firms with regards to the rigid controls imposed by the agreements; the second factor was the national and international developments that were beyond the control of the industry. These two factors are discussed below in turn.

##### **5.2.1.2.1 Reconciling Conflicting Interests**

The relative success of the Agreements masked the tensions in the process. The major reason behind it was the delays in making price revision that would take account of rising costs. Although provision for revising manufacturing cost was made in the Agreements, the coordinating committee was slow in passing on the increases to consumers. They were aware of the growing sensitivity in the Government of the day to industry agreements. The BoT had already made their intention clear in 1952 about the agreements by withdrawing from issuing yarn prices and therefore the entire scheme. Nonetheless the BoT continued to provide the vital

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<sup>220</sup> DUA MS 84/16/5 Joint Dundee Jute Goods Co-ordination Committee, Minutes of Meeting, 7<sup>th</sup> July 1954

tacit support to the scheme without which it could not have been operated, as this view from Mr K.E McGregor at a meeting of coordinating committees clarifies:

“Although the present Controller says he does not recognize Co-ordination, nevertheless I would say that Co-ordination does acknowledge the unbounded assistance in the running of our Schemes given the Jute Control in the valuable function of the regular supplying of imported cloth.”<sup>221</sup>

The coordinating committee was therefore weary of increasing prices and inviting the attention of BoT officials. It did not want to give away the flexibility that it enjoyed in determining prices. Although A&N needed BoT’s tactical approval before issuing any fresh prices, the industry enjoyed relative freedom in collecting and determining the final price. More importantly, they did not want the Agreements to be dismantled. Highlighting the possible consequence of increasing prices during the early years of the Agreements the Chairman Mr Caldwell, of A&S Henry Ltd, and Col Hill, of Don Brothers Buist and Vice President of the Dundee Chamber of Commerce, noted<sup>222</sup>:

“...if they were otherwise then there was a danger of an investigation being made into costs”

“...the result would be a raw deal for the jute trade”

The delays in revising prices affected merchants and certain producer firms. Among producers, it was smaller sized manufacturing firms who specialized in narrow-width cloth for the sacks and bags market that were most affected. Although requests were made to coordinating committees for revision in prices, they were seldom acted upon.<sup>223</sup>

### ***A) Merchants***

Merchants were also affected similarly. The nature of the agreements meant that merchants had little power over adjusting their prices: “....it should be realized that we are not quite free

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<sup>221</sup> DUA MS 84/16/7 Discovered documents: Jute Trade Co-ordination Committee Minutes of Meeting, , 20<sup>th</sup> February 1956

<sup>222</sup> Ibid 8<sup>th</sup> January 1947

<sup>223</sup> DUA MS 84/16 Minutes of Price Committee, Letter from Jas Paterson & Co, Ltd 8<sup>th</sup> September 1955

agents in regards to prices”<sup>224</sup>. Their prices were dependent on the yarn and cloth prices, which were set by the producers who were represented in the Price Committee. As the BoT, for their part, closely administered the whole scheme, the Price Committee had to take into account the BoT’s political sensitivities, which gave them little room for price manoeuvrability. This meant that price revisions were often postponed in the face of growing costs. The merchants’ situation was aggravated further by their inability to adjust margins. When the agreement was being negotiated, the margin of 4% for merchants was set arbitrarily. The rate of margins was shaped largely by industry’s historical experience of interaction with Government accountants during the Second World War. Taking a cue from this, the Committee decided to continue to use this margin in the scheme:

“...during the war years, owing to ministry contracts it had been customary for them to send a cost accountant and it was found that the Government never quarreled with a percentage up to 4%. But above that they would not agree.”<sup>225</sup>

Initially the merchants appeared content with the 4% margin. Although, by setting an upper limit, it restricted them from earning higher returns, a common margin for all also provided them with a situation where they could expect a steady return. In an industry fraught with high-fluctuations in prices, this was regarded as a welcome development.<sup>226</sup> However, fluctuation in demand, growing costs and inflexibility in pricing their goods began to put pressure on the margins. These remained unchanged. This affected merchants who were based in England more than those based in Dundee, as they had to incur transportation charges. Requests were made regularly to the Coordination Committee to increase the margins.<sup>227</sup> However, these requests were seldom looked upon favourably by the committee which often cited the BoT’s sensitivities as the underlying reason.

However, by the mid 1950s, the growing use of paper bags as substitutes was forcing the producers to avoid making any revisions in price of jute sacks and bags. A rise in the price of jute bags would pave the way for rapid adoption of paper bags. Therefore, when merchants

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<sup>224</sup> DUA MS 84/16/7 Jute Trade Co-ordination Committee, Minutes of Meeting, 2<sup>nd</sup> March 1951

<sup>225</sup> Ibid 7<sup>th</sup> January 1947

<sup>226</sup> Ibid 18<sup>th</sup> March 1946

<sup>227</sup> Ibid 8<sup>th</sup> January 1947



were requesting a rise in margins to compensate for the mounting transportation costs, the producers put in a tough resistance citing the growing competition from substitute paper bags. Far from considering a rise in margins, the producers wanted to maintain the current level of prices to meet this competition. Speaking on behalf of the producers, Col Hill's (of Don Bros Buist) argument was that it was 'impossible' to meet the 25% difference that existed between the price of paper and jute bags. If the margins for merchants were increased, the producers would have to reduce their price to maintain the final price for consumers. And if prices were reduced to cover even 50% of this gap, 'producers would be out of business' as they could not reduce their costs any further. Therefore, Col Hill 'felt very strongly' that 'it would be wise' on the part of merchants 'to adjust freights if only as a nice gesture'.<sup>228</sup> A compromise was reached with the merchants agreeing to reduce their freight charges, but keeping the margins unchanged.

On certain occasions, control was also exercised over the pricing of goods that were not under the agreement, especially the government issued contracts.

“Finally, and in a very few words, although Government tenders are exempt from Co-ordination it is nevertheless expected that those quoting for the business will at least honor (the) Brown Book. A warning was sounded last year and Signatories were asked, nicely, I hope, to watch their steps in case any actions of theirs might injure Co-ordination proper. It was pointed out then that the danger can arise where a buyer operates in a variety of jute goods of which some come within Co-ordination while others do not. It is of the utmost importance that the greatest care should be exercised in such cases. Please do make a special note of this.”<sup>229</sup>

The situation was also aggravated by the rigid rules of the agreement that restricted the merchants' ability to determine their own credit policy. The merchants were bound by the “nett-cash” clause whereby the credit extended to a customer could be no more than 7 to 10 days. In some instances, this restricted the merchant's ability to secure more business because some of the key customers, such as the farming industry, took longer to pay. Moreover, they

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<sup>228</sup> DUA MS 84/16/5 Joint Dundee Jute Goods Co-ordination Committee, Minutes of Meeting, 4<sup>th</sup> June 1956

<sup>229</sup> DUA MS 84/16/7 Jute Trade Coordination Committee, Minutes of Meeting, Chairman's Report, 21<sup>st</sup> February 1958

could not secure a repeat order from customers who had yet to make their first payment. It also placed limitations on the amount of discount that could be offered, so damaging firms when trade was down. For instance, a request by a member to offer a larger discount led the Chairman to suggest that, in that case, the goods could not be sold, and should be sold to a firm within the trade who would secure business for them.<sup>230</sup> Such action instilled great resentment among the merchants. On one occasion, a group of merchants ran counter to the Chairman's directive and agreed among themselves to increase the prices.<sup>231</sup> Nevertheless, taking formal actions against such breakaway firms was not straightforward. When some English merchants were discovered to have imported goods from Continental Europe that undercut the price of goods falling under the agreement, the Committee realized that banning them from the scheme would not prevent them from continuing to import the goods.

### ***B) Sack and Bag Makers***

The sack and bag sewers were also affected by the Agreements. By 1957, they had begun to express dissatisfaction with the rigid price arrangements. Their main argument was that the mark-up on imported cloth had made it difficult for them to avail themselves of the benefit of cheaper Indian cloth to make cheaper bags. This, according to the bag manufacturers, had made paper bags cheaper in comparison to jute bags and was acting as a major factor in inducing customers to shift to paper bags. In their meeting with the BoT officials and the representatives of the AJSM (the producers), Mr Price of the UKJGA (representatives of the bag manufacturers) contended that the BoT's proposal to reduce the mark-up to 30% from existing levels was not enough to contain the inroads made by the paper bags. He pointed to the case of large users of jute bags who had converted to using paper-based bags. For example, Fisons, a fertilizer manufacture, used 20 million paper bags, British Oil Cake Mills made an 80% switch to paper, ICI for its C.C.F fertilizers had also made upto an 80% switch and were also seriously considering using paper for their nitro chalk division.<sup>232</sup>

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<sup>230</sup> Ibid 8<sup>th</sup> December 1952

<sup>231</sup> DUA MS 84/16/5 Joint Dundee Jute Goods Co-ordination Committee, Minutes of Meeting, 8th May 1958

<sup>232</sup> SRO SEP4/572: Minutes of Meeting with Ministers of representatives of AJSM and UKJGA held in Glasgow on 16<sup>th</sup> July 1957

Acting on these grievances, on 17<sup>th</sup> July 1957 the BoT reduced the mark-up to 30% on the import of the standard cloth used for making bags. They used two reasons to justify their decision. First, the end users in agriculture and heavy industries were unduly penalized by the higher price of imported bags through the mark-up and second, the mark-up had also induced a greater use of paper bags over jute bags, thus adversely affecting the bag manufacturers.<sup>233</sup> However, the bag manufacturers were not satisfied with this reduction. In their protest to the BoT on their decision to reduce the mark-up, the UKJGA contended that any mark-up above 10% would be of little value in addressing their concerns.<sup>234</sup>

The producers on their part were weary of the reductions in the mark-up. In a letter to the BoT, two major issues were underlined by the AJSM. Firstly, the spinning and weaving section commanded 'very much greater importance' over the bag making section, both in terms of capital invested and people employed. It was pointed out that out of the 20,000 workers engaged directly and indirectly in manufacture of jute in Dundee, nearly 18,000 were engaged in the spinning and weaving section. Furthermore, of the total capital investment in the jute industry since the end of the Second World War, 'more than 90%' was in the spinning and weaving section. Therefore, from the standpoint of people and capital employed, their (producers) concerns, rather than the bag makers, should be given greater consideration.<sup>235</sup> Secondly, the producers argued that reducing the mark-up on the standard quality imported cloth would adversely affect the specialty cloth in which Dundee based firms concentrated. With the reduced mark-up, it became 'increasingly an economic proposition to use these standard imported goods in place of the traditional Dundee specialties'. This was regarded by them as a very significant issue as it threatened the specialized market that Dundee firms had so carefully developed.<sup>236</sup>

However, by the end of the 1950s, producers' appeals for maintaining a high level of mark-up was finding little support within the BoT. The BoT's thrust was to nudge the industry towards diversifying away from jute.<sup>237</sup> But while the BoT was inducing the industry to diversify, it was unable to drastically reduce the mark-ups on jute. The major reason was Dundee's

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<sup>233</sup> SRO SEP4/572: BoT Statement in the House of Commons by the President of the BoT, 17<sup>th</sup> July 1957

<sup>234</sup> SRO SEP4/572: Letter from R.J. Hayward, General Secretary of UKJGA to the President of the BoT, 26<sup>th</sup> July 1957

<sup>235</sup> SRO SEP4/572: Letter from AJSM R.W.R Kennedy, Chairman to the President of the BoT, 6<sup>th</sup> August 1957

<sup>236</sup> Ibid

<sup>237</sup> SRO SEP4/823: The Future of the Jute Industry, Pilmott Committee Report, 6 Feb 1959

continuing dependence on the jute industry as a major employment provider. By significantly reducing the mark-up there was a threat of widespread unemployment in the region.<sup>238</sup> As a result, reducing the mark-up had become a political issue. Hence, although the BoT was in favour of reducing mark-ups, the pressure from bag-markers and merchants was not enough to implement this policy.

However, ensuing developments during the second half of 1950s at national and international level had made the Agreements legally unsustainable. These are described in the following section.

#### **5.2.1.2.2 National and International Commitments**

The previous section described the internal tension that arose by the mid 1950s, particularly by merchants and sack and bag makers. Consequently, representations were made to reduce the mark-up. However, apart from making nominal reductions, the BoT was unable to make any drastic cutbacks in the mark-ups. It was two major events at the national and international level that rendered further continuation of the Agreements untenable. The first was the passing of the Restrictive Trade Practices Act in 1956 and the second, UK's decision to join the European Economic Community. These are described in turn below.

Firstly, the Restrictive Trade Practices Act of 1956 made it illegal for manufacturers to act in collusion to jointly enforce the retail prices at which their products could be sold. As described above, pressure was mounting on producers from three other areas: the sack and bag makers, the customers, in particular the carpet industry (a public campaign was led by Gerald Nabarro, Member of Parliament for Kidderminster, the centre of carpet industry in the UK) and merchants. The court's decision to dismantle similar arrangements in the cotton industry in 1959 had further made it difficult for jute industry to justify the continuance of their arrangements. These pressures played a major role in bringing the jute industry's case to court.<sup>239</sup>

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<sup>238</sup> Ibid

<sup>239</sup> SRO SEP4/823: The Future of the Jute Industry, Pilmott Committee Report, 6 Feb 1959

The jute manufacturers on their part made a vigorous defence of the agreements. Three people were chosen to represent the industry and defend the Agreements: Sir William Walker (of Jute Industries), Herbert Bonar (of Low and Bonar), Louis Robertson (of Unijute). In order to further strengthen their argument, an academic, Professor Campbell, was also requested to join the team to justify the economic rationale behind the continuation of the Agreements.

The industry rested its case on three issues<sup>240</sup>:

A) *Employment*: It was underlined that there would be serious unemployment in Dundee and districts if the Agreements were dismantled. It was pointed out that, although successive Governments since 1945 had considered dismantling the agreements, they refrained from doing so as they were regarded as the only 'practicable' means of ensuring employment in the region.

B) *Ensuring price maintenance*: The interconnected Agreements were the only practicable way of ensuring protection to the local industry and the dismantling of any one of them would 'frustrate' the operation. Firstly, owing to the inability of JC to ensure that mark-up prices would be maintained once the goods were in the UK, the interlocking Agreements ensured that costs at every juncture were accounted for in the final price. Secondly, the prices were determined based on the cost of the most efficient firms, therefore it was not benefiting inefficient firms. Thirdly, the Agreements also prevented the tendency of some producers to sell at lower prices during the period when the demand was low.

C) *General economic benefits*: The agreements were 'not unreasonable', considering the employment that jute provided to the local economy. The kind of goods sold under the price Agreements, sacks and bags, were not directly sold to the general public. Therefore, they were not affected by the economic implications arising out of inflated prices. In addition, the dismantling of the agreements would 'make no difference to the cost of living index'. Therefore, considering that the Agreements ensured employment for the local economy and had very little economic impact on the general public, they were justified.

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<sup>240</sup> DUA MS 84/12/7 (100 (1) ) 29<sup>th</sup> February 1960

However, these arguments failed to impress and in March 1963 the Restrictive Court passed its judgment against the Agreement. Yet simultaneously, developments had also taken place at international level that undermined the Agreements' legality.

Second, the UK's obligation to the international treaties made it difficult to sustain the agreements in their present form. The Pilmott Committee in 1959 concluded that the agreements were in 'clear breach' of the UK's commitments to India and Pakistan to allow their imports duty free. It was in direct violation of the pledge made to the Asian members of the Commonwealth to allow them to reduce their balance of payment by way of exports.<sup>241</sup> Therefore, the Indian and Pakistani Governments had a strong case if they chose to press for reducing the import barriers. The jute industry was of great importance to India both in terms of foreign exchange and employment. Although the issue was raised from time to time, the Indian Government had shown a 'remarkable understanding' in this matter by not pressing the British Government to reduce the mark-ups.<sup>242</sup> However, this flexibility would cease in the event that India stood the chance of losing its market to European exports in the UK, which would be likely if the UK joined the European Free Trade Area.

In 1961, the UK decided to join the European Free Trade Area. The resulting implication was that it would have to adhere to the common European policies on international trade. As a result, it would have to abide by the Common External Tariffs which, in the case of the jute industry, were expected to be 25% on cloth and bags.<sup>243</sup> This rate would have been lower than the rate under the present arrangements. In addition, the treaty would require the UK to allow countries within the Community to be given free access to the British market and completely disband the JC by 1970.<sup>244</sup>

However, as discussed above, before these arrangements could be put in place, the Agreements were dismantled in 1963 under the Restrictive Practices Act.

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<sup>241</sup> SRO SEP4/823: The Future of the Jute Industry, Pilmott Committee Report, 6 Feb 1959

<sup>242</sup> Ibid

<sup>243</sup> Ibid Note of a Meeting with Representatives from Dundee about Jute Goods, 17<sup>th</sup> July

<sup>244</sup> Ibid

Yet, the protection from imports did not disappear overnight. Fearing a sudden rise in Indian competition in the domestic market, and the resulting unemployment in Dundee, the AJSM requested the Government to set-up a committee to look into the future course of action. The industry, led mainly by the producer firms, had hoped that the pre-1963 levels of mark-ups would be continued.<sup>245</sup> However, the Government was not eager to set-up any committee, let alone to determine the level of mark-up. It had hoped that after the Agreements were disbanded under the Restrictive Practices Act (1956), the proposal worked out under the European Common Market context would automatically be implemented, resulting in a fixed mark-up of 25%.<sup>246</sup> Therefore, when the committee was set-up, the Government was not willing to commit to any arrangements which went counter to its international trade obligations. In order to ensure that the committee's recommendations were in line with its international obligations, the Government quickly issued a statement which outlined the committee's remit, restricting it not to go beyond the stated international commitments. The committee's conclusion to reduce overall mark-ups was therefore not very surprising. The resultant structure after the 1963 review is described in Table 32 below. Under the new arrangements, all types of cloths would be available for import. The wider width cloth, 72" and above, which earlier was not imported by the JC, would now be allowed for import, albeit at 45% mark-up. However, wide-widths, which consisted of 55% of Dundee's total output, was the only category that was given help, with all other kinds of cloths. The 'equated cloth', which accounted for 40% of Dundee's output, and which was governed by the Gentlemen's Price Agreements, was to receive a diminishing mark-up; whereas, mark-ups on standard jute cloths used mainly to make bags and sacks was reduced to an insignificant amount. These arrangements were to be again reviewed in 1967. However, when the time came, there was little enthusiasm on either side to again enter into tiresome negotiations and they were therefore kept unchanged.

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<sup>245</sup> SRO SEP4/913: Draft Minute: Jute Import Policy, 22<sup>nd</sup> April 1964

<sup>246</sup> Ibid

**Table 32 Jute Goods Import Policy 1963<sup>247</sup>**

<b>Category</b>	<b>Present Arrangements</b>	<b>New Arrangements</b>	<b>% of JC's sales</b>	<b>% of Dundee production</b>
Heavy bags, common sacking and woolpacks	Imported by JC and sold without mark-up	Being returned to private hands	15	-
Common Hessian cloth, mainly used for bag making	Sold by JC with 20% mark-up	The mark-up will be reduced to 10%	60	5
Equated goods (cloth between 32" and 72" not less than 7oz and not more than 10oz)	Sold by JC at 'Dundee prices' (i.e. based on prices charged for similar goods by the Dundee industry under the uniform Price Agreements now terminated)	45% first year then reduced each year	25	40
Excluded goods (mainly wider width cloth over 72")	Not imported	45% mark-up	-	55
Yarn	JC does not hold stocks but imports against specific orders; no mark-up applied.	As a present.		

<sup>247</sup> SRO, SEP4/2952: Press Notice: Jute Goods: Import Policy, 13<sup>th</sup> August 1963



### **5.2.1.3 Summary**

Therefore, this section examined the role of Gentlemen's Agreements and Jute Control in countering international competition during the post-war period. While the Agreements played a pivotal role, the section also underlined the problems faced in maintaining the price agreements. However, the introduction of the law prohibiting collusive actions and the UK's commitment to joining the European Free Trade Area had also made further continuation of agreements untenable. The next section examines the role of collective strategy, especially with regards to fostering research during the post-war period.

### **5.2.2 Research (The British Jute Trade Research Association)<sup>248</sup>**

This section reviews the role of the research association in helping the industry to compete with the Indian industry. In particular, it describes the Association's initiatives in four major areas: finding new fibres, finding new applications of jute, improvements in existing products, and improvements in machines. The section also examines the extent to which research initiatives in each of the four areas was able to help the industry in their competition with the Indian industry, and also highlight the constraints faced in the process.

The British Jute Trade Research Association (BJTRA) was established in 1946. The BJTRA was jointly funded by the Government and the industry. The industry's contribution came through a subscription that was decided on a 'per capita' basis i.e. number of employees in the firm. It meant that two of the biggest firms, Jute Industries and Low & Bonar, were paying almost half of the industry's subscription. Because these two firms had their own research facilities, their involvement in research was always regarded as 'lukewarm'. Therefore, it was the 'medium sized' firms, who did not have their own research facilities, that cooperated the most in research initiatives.

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<sup>248</sup> Where appropriate archival source is not cited, information is based on interview with Mr. R. R. Atkinson and Mr S McKay

In its founding year, George E Scott was its Chairman and Col L E Hill the Vice Chair. Other members included C W Milne, Neil Leitch, RDF Caldwell, John F Robertson and Mr W F Keay. Therefore, it can be seen that people who were instrumental in coordinating the Gentlemen's Agreement (described in the preceding section) were also taking an active interest in the research association. The members consisted of a cross-section of firms from the industry, including producers (weaving and spinning), merchants and machine manufacturers.

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The establishment of the research institute followed from one of the major conclusions of the Jute Working Part Report in 1946, which emphasized the need for the industry to foster the role of research in the jute industry. Moreover, after the end of the war, the Government of the day was laying a great deal of emphasis on establishing research institutes across various industries. Research associations had already been established for industries such as cotton, wool, flax lace, felt-hat, rayon and laundering trades. Reflecting on the prominence given to research during the period following the war, Mr Atkinson noted:

“And the government of the day, round about 1950 decided that we should have research institutes; for cotton, for wool, for flax, for jute. God help me, there was even one for hats; because this was the magic wand that was going to going to cure all the problems. Much more expenditure in research and development and bingo that's it.”

Since its formation, the BJTRA placed its emphasis on four major areas. These are discussed below in turn:

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<sup>249</sup> Initial members included: Craiks (weaver), Don Brothers Buist (spinning and weaving), Fullarton & Wilson (merchant), A&S Henry (merchant manufacturer), Jute Industries (spinning, weaving and merchanting), Low & Bonar (merchant manufacturer), Baxter Brothers (flax weaver- part of Low & Bonar), Thomas Bonar (merchant- part of Low & Bonar), Fairbairn Lawson (machine manufacturer), Douglas Frasier (machine manufacturer), James Mackie (machine manufacturer) and Scott & Fyfe (weaver).

### 5.2.2.1 New Fibres

Finding a replacement fibre for jute was high on the Association's agenda soon after its establishment. In their search, the Association used the network of British Embassies in colonies around the world to sample fibres grown in those regions. The criteria for the search were governed by two aspects: the physical characteristics and the cost of processing the fibre. The efforts began with trials of natural fibres consisting of Linseed-straw, South African Stokroos, Sunn, Hemp, Willow bark etc.<sup>250</sup> The linseed-straw especially appeared to be suitable for spinning as it met the necessary standards of cleanliness required for processing yarns. It was also found that the fibre can be satisfactorily processed on the existing jute machineries. However, it was found that the linseed-straw was suitable only for making yarn qualities of 13 lbs and over and unsuitable for spinning finer qualities of yarns.<sup>251</sup> The trials with new fibres continued in the following years, including of jute grown in places other than the Indian sub-continent. However, they were found unsuitable 'as far as physical properties' were concerned.<sup>252</sup> After trying a variety of natural fibres brought in from around the world, the Association soon realised that it would be difficult to find a fibre that would be suitable enough to replace jute. Reflecting on their efforts, Mr Atkinson noted:

“After about 5 years of plotting away it was decided this was not...it wasn't going to happen. There is nothing better than jute. Because its plentiful, it serves its purpose, price is right, so that would more or less would pave to that aspect of it.”

Nevertheless, the Association did not abandon their search for new fibres altogether. However, it did mean a slight alteration in the kind of fibre that it was now looking at, as the focus had now shifted to 'manmade' fibres. The Association did not carry out any fundamental research in developing new fibres. The efforts were on developing 'blends' of various manmade fibres such as viscose/rayon, nylon, terelyne and polyester with jute.<sup>253</sup> Moreover, the blends were

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<sup>250</sup> BJTRA, Second Annual Report 1948

<sup>251</sup> BJTRA, Annual Report 1950

<sup>252</sup> BJTRA Annual Report 1951

<sup>253</sup> BJTRA Annual Report 1957

found to be stronger than the equivalent all-jute yarn.<sup>254</sup> However, all these were regarded as very fine fibres that were suitable primarily for the furnishing and apparel trade, where appearance and feel of the fibre was an important feature. On the other hand, jute was traditionally used in industrial markets such as sack, bags, linoleum backing and, by the second half of the 1950s, carpet backing cloth where cost and performance, and not feel, was the major feature.

Hence, although the researchers in the Association were able to resolve all the technical problems in developing the blends, they were unclear as to the purpose for which the blends were to eventually be used. As a result, the blends did not achieve commercial success. Underlining this ambiguity, Mr Atkinson noted:

“They didn’t know what the end product might be of these yarns. Technically it is not hard to blend jute with all these different fibres and get quite acceptable yarns. But then what do you use it for. By including jute you can reduce the cost, even then. A very wise gentleman said to me once, ‘don’t try to sell what you can make, try to make what you can sell’. And this is a prime example that it is possible to make all sorts of blended yarns, staple or viscous or continuous filament or nylon, polyester but at the end of it you made it, shown it can be done, then what the hell do you do with it.”

#### **5.2.2.2 New Applications**

With no major breakthrough resulting from their search for new fibres, the Association’s focus turned on finding new applications of jute. The early attempts were limited to the review of developments in prefabricated bituminous surfacing (PBS) that was developed during the Second World War in association with the U.S army’s Waterways Experiment Section.<sup>255</sup> The PBS is a waterproof fabric that is designed to be placed over graded and compacted natural

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<sup>254</sup> BJTRA, ‘Blends of Jute Continuous Filament Man-made Yarns Part 1’, by R.R. Atkinson and I.G. Cumming, Bulletin No 61; ‘Blends of Jute and Continuous Filament Man-made Yarns Part 2’, by R.R. Atkinson and I.G. Cumming, Bulletin No 62

<sup>255</sup> BJTRA Second Annual Report, 1948.

soil. The fabric was made by impregnating and coating the jute cloth with asphalt, which gave the cloth the appearance of roofing material. It was used extensively during the war for laying on airstrips as it kept the soil dry, thus providing a safe landing surface for the aircrafts. The mat, which was also known as the 'Hessian mat', was placed on more than one hundred airstrips between the D-Day and the crossing of the Rhine, in March 1945.

Further attempts to develop new uses did not materialise until a couple of years later. Now trials were conducted on combining plastic-based materials with jute. A promising application that was developed involved the use of a thin film of thermo-plastic material for bonding patches and repairing tears in sacks and bags.<sup>256</sup> Initial research indicated good potential for this application. However, further experiments indicated that higher cost might be a factor that would limit further adoption of this application. It was found that the most economical process to achieve this was to bond jute to polyethylene immediately after it was extruded. However, this process required the installation of extrusion plants, the cost of which was considered very high.<sup>257</sup> With sack and bags essentially a low cost product, installing an extrusion machine solely for this product did not appear to be an attractive proposition.

However, by this time a new use for jute had been discovered which was considered to be very significant. It was the use of jute as a backing cloth for tufted carpets. Interestingly, the BJTRA was not involved in this major development. Nevertheless, in order to educate the industry of the future potential for the use of jute in tufted carpets, it started to publish reports regularly on this development.

The tufted carpet was an innovation over the traditional woven carpets. It was reflected by the difference in the technique of manufacturing carpet. The woven carpet was produced on a loom through a weaving process by which the lengthwise (warp) yarns and widthwise (weft or filling) yarns are interlaced to form the fabric. The pile yarns were already dyed and worked into the base fabric at the same time as the backing was being woven. Therefore, in manufacturing the woven carpet, all three elements, including the pattern were produced on a loom in a single weaving operation. On the other hand, the tufted carpets were made-up from a

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<sup>256</sup> D1168, BJTRA, Annual Report, June 1950

<sup>257</sup> June 1952

base fabric into which piles of yarns were inserted by means of a wide sewing machine with a bar handling a row of needles, all working at once across the width of the cloth, making parallel lines of running stitch. In other words, needles in the tufting machine threaded the yarn through a backing, forming loops or tufts of the required length. An adhesive coating is then applied to the reverse side, anchoring tufts in position and a second backing was applied for extra strength. The relative simplicity of manufacturing process of tufting, compared to that of the woven carpets, allowed the tufting machines to give a greater production capability than the woven. The ability to produce at a larger scale also enabled the tufted carpets to be produced at a lower cost than the woven carpets.

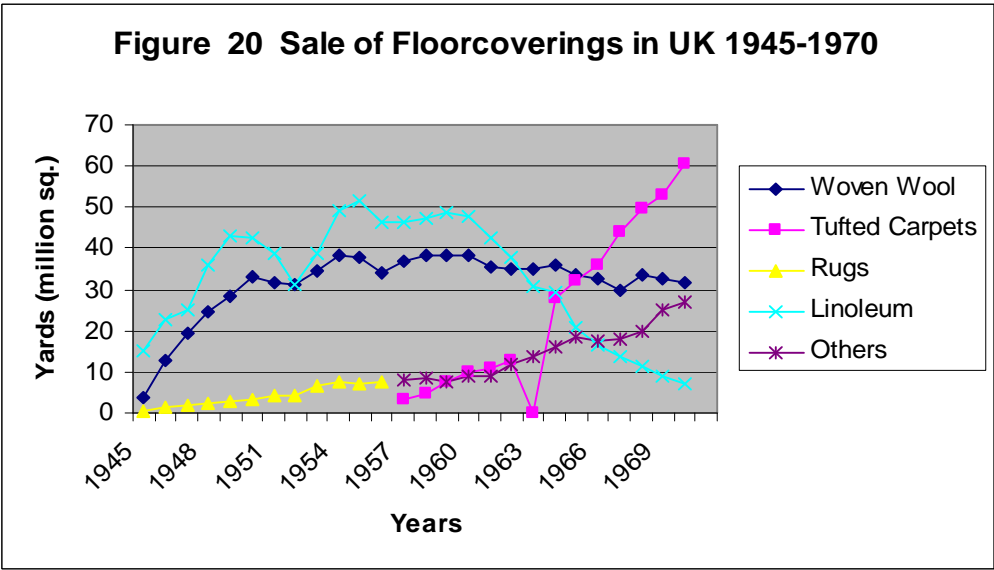
The market for tufted carpet was driven primarily by growth in the USA. Until 1950, tufted comprised 10% of the market and 90% was of woven carpet. This position was reversed within a decade with a phenomenal rise in the market for tufted carpets. It was about 60% in 1958, which rose to 85% by 1964, with the industry now worth over a billion dollars. In contrast, the tufted carpets witnessed a slower growth in the UK. It held 10% of the total floor covering market in 1958, which rose to just 33.6% in 1964. A major reason for the slow adoption of tufteds during the early years was the tendency among manufacturers and consumers to perceive it as an inferior quality product compared to the woven carpets. However, a greater variety of designs, patterns and the increasing quality of yarns helped to increase the general appeal of tufted carpets, which led to a rise in its market share.

The jute industry had a significant stake in the growth of the tufted carpet industry as jute was used to make backing cloth, the central component, for the carpet. The use of jute as a backing cloth was not an innovation, as it had been used traditionally as linoleum backing. Therefore, the application of backing cloth in tufted carpets did not amount to a radical innovation per se. Interestingly, jute was not the initial choice for backing cloth for tufted carpets. Up-to early the 1950s, carpets were made entirely out of cotton sheetings or 'ducks'. These continued to be used in the making of bedspreads, robes and smaller sized rugs. However, by the 1950s, jute had replaced cotton to become the preferred backing cloth. With greater stiffness and stability, jute was found to be superior to cotton in terms of its physical characteristics. Moreover, the cheapness of jute also provided an attractive alternative to cotton for tufted carpets which were themselves positioned as a cheaper alternative to the woven carpets. The tufted carpets were

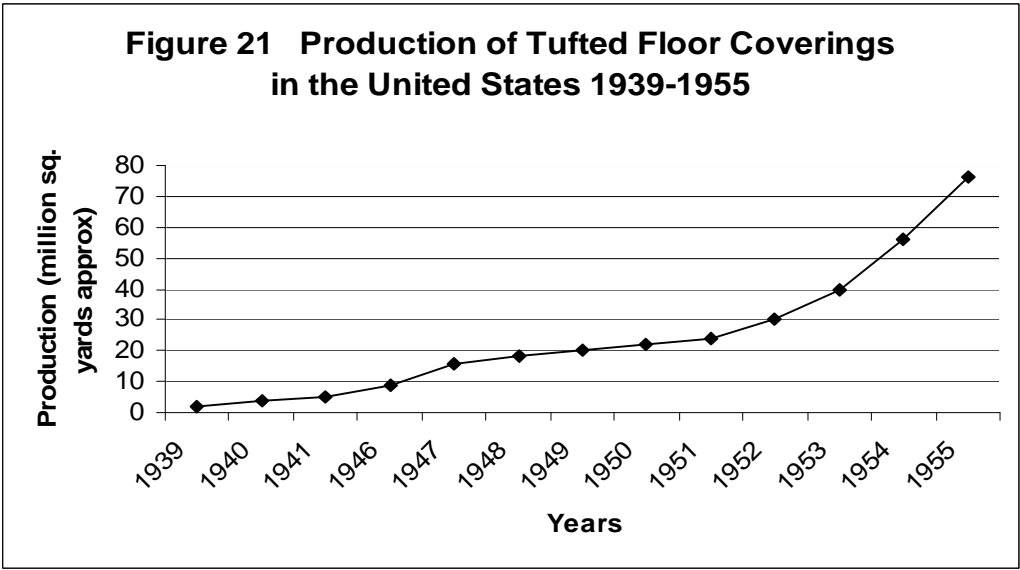
produced on machines that were upto 18 ft (216 inch) wide. Therefore the demand was primarily for the wide-width cloth.

Although jute was the dominant fibre in making backing cloth, it was not used for making piles, another major component, in the carpet. The pile yarn is the yarn which stands up from the body of the fabric and which form all or part of the surface. Therefore, it is important for the fibre to be soft in texture. Until the 1950s, cotton and wool, owing to their soft feel, were the preferred choice for pile yarns. In the US, cotton and wool was the dominant fibre in use until the early 1950s after which the use of man-made fibres gained momentum. Nylon was first introduced in 1947 and then its use grew gradually in the following years and by the 1960s, became the leading fibre for pile yarns. Use of other man-made fibres followed over the following years. For example, polyester was introduced in 1964, which was soon followed by polypropylene. A similar shift in the use of man-made fibre, albeit of different types, for pile yarns was noted in the UK. These included Celafibre, Celafibre/wool mixture, Fibrolane, Ardil, crimped Fibro, viscose/nylon mixture and acetate/wool mixture. The fibres were effectively produced by three local firms, Imperial Chemical Industries (ICI), Courtaulds Ltd and British Celanese Ltd. Therefore, man-made yarns continued to dominate the pile yarn market since the early 1950s. However, these fibres, owing to their properties, were not able to replace jute for making backing cloth, which continued to dominate this market during the 1950s and 1960s.

The phenomenal growth in the tufted carpet market, both in the US and in the UK played a vital role in reviving the fortunes of the jute industry. Because the growth was much more rapid in the US, that market was considered to be more significant for Dundee. In addition, there was virtually no jute-manufacturing firm in the US and so almost all of its requirements were met by imports. However, the BJTRA had not played any significant role in developing one of the biggest outlets for jute during the post-Second World War period. Much of the development work on backing cloth for tufted carpet was done by individual firms themselves, as described in the Appendix.



Source: Howe (1982)



By the end of the 1950s, however, the pressure on the Association was growing to find innovative uses of jute. The closure of many firms by the end of the 1950s and early 60s induced a major shake-up in the institute's research strategy. Until now, a large part of their resources were devoted to finding technical improvements in jute yarns, cloth and goods. The reorganisation put greater emphasis on finding new applications of jute. A major application that resulted was the use of jute as a substitute for fibreglass and plastic in certain products. It was found that jute could be used 'quite successfully' for certain reinforced plastic



applications. Two potential outlets emerged from these experiments, the use of jute in the body panels of buses and the use of jute in the manufacture of rowing boats. In both cases, jute replaced fibreglass. Therefore, it was proven that technically it was possible for jute to be used as a substitute for plastic and fibreglass in certain products. However, there were cost related aspects which hindered its wider commercial application. It was found that the jute absorbed more resin than the glass fibre. Consequently, although jute had a cost advantage per square meter, more resin had to be used to get the suitable product. With high cost of resin, the overall cost of the final product remained high. Further attempts were made to modify the cloth so that it absorbed less amounts of resin. Although it was possible for the cloth to be altered, 'economically it wasn't really as good as we thought it would be.' Therefore, the central purpose of using jute, to reduce the overall cost, was not achievable.<sup>258</sup>

Therefore, the Association faced two major constraints in finding new applications and blends of jute. The first was the cost of the fibre. In order to make jute suitable for use in other applications, it was often blended with other man-made fibres. However, the blending was unable to bring down the cost of the resultant fibre and this defeated the purpose for which jute was being used i.e. its cheapness.

The second was the 'attitude' of the firms whereby they adopted a 'traditionalist' attitude and were not willing to work closely with researchers at the Association.<sup>259</sup> As discussed above, researchers were able to overcome technical difficulties to develop blended fibers. However, they did not know the purpose of the blends and therefore were not able to develop blends more suited to the industry's needs. The researchers at the Association faced the same problem where finding new applications of jute was concerned. Reluctance on the part of firms to share their insights on the market stemmed from the fact that they were not willing to share their customers and specialised products which they had built over the years, as Mr McKay observed:

“...there was a certain attitude of traditional industry, that if you had something that might be helpful you would use it your self but you wouldn't tell the research

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<sup>258</sup> Interview with Mr Atkinson

<sup>259</sup> Interview with Mr McKay

people... trade wasn't too keen to have the research body working too closely with customers."

### **5.2.2.3 Improvements in Yarn, Cloth and Goods**

Another area where the Association directed its energy since the initial years of its establishment was in making technical improvements in the quality of yarn, cloth and jute goods and solving any kind of technical problems that firms might be having. It included things like examining the moisture in raw jute and products, irregularity in yarn, yarn count variation, faults in products, use of statistical methods for quality control and emulsification of oils.

### **5.2.2.4 Improvements in Machinery**

Apart from the jute fibre, the Association also made attempts to innovate in jute manufacturing machineries. Since its establishment, the Association had in its sights the recommendations made by the Jute Working Party Report on the development of 'automatic looms' to enhance productivity and reduce cost.<sup>260</sup> However, this was not on the top of their research agenda as attempts were only made in this direction after a few years. The initial efforts were geared towards determining the optimal productivity of looms per weaver. It was found that as the number of looms increased the weaver output at first increases also, although output per loom fell slightly owing to increased synchronisation of stoppages. A maximum weavers output, however, is reached when the group contains a certain number of looms, and further increases in this number causes a marked falling off in loom efficiency without increasing output.<sup>261</sup> Therefore, on the existing technology, output from a group of looms attended by one weaver was dependent on the number of looms in the group. The productivity from that group of looms could not be increased beyond a certain point.

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<sup>260</sup> BJTRA, Second Annual Report 1948

<sup>261</sup> BJTRA, Third Annual Report 1949

Any mechanical development on machines did not begin until a small weaving shed was constructed in 1951.<sup>262</sup> The shed was also fitted with a ‘humidification plant and temperature control unit’ and experiments were conducted on its impact on weaving. In particular the implication of humidity on the breakage of warp threads while weaving a cloth was examined. Trials were conducted in two areas: controlling the moisture in the weaving shed and controlling the moisture on the beams. After about a year’s investigation, it was found that it was the deficiency of moisture in beams that resulted in greater waste. A decrease in moisture from 14% to 10% increased wastage by one fifth.<sup>263</sup>

The Association’s attempts to induce developments in machineries were constrained by the restrictions imposed on them by the leading machine manufacturers, who did not want the Association to tread on their territory. Their influence was evident when the first significant mechanical device, the Auto Leveller, was developed by the Association. It was a device that was used after the drawing process in spinning. Traditionally, the sliver coming out of the drawing machine tended to be uneven. The leveller helped to remove any lumps and make the sliver in an even form. The device measured the variations and thickness of the sliver and altered its settings automatically to produce a more uniform sliver. The prototype was put under trial in a couple of factories and the result proved satisfactory. However, the Association was unable to further develop the device and produce it commercially. Its efforts were constrained by the Belfast-based engineering firm James Mackie’s insistence that the Association should not conduct research into machineries. Mackie during this time was also developing a similar device. And because it was ‘electronic’, it was considered to be more advanced than the one developed by the Association. More importantly though, Mackie feared that if the Association continued with this development, it might threaten its own market in the jute industry. Therefore, in a meeting specially convened to discuss this matter, Mackie, itself a member of the Association, overruled the research committee from pursuing any further developments in this area. Recalling this episode, Mr Atkinson noted:

“And they were pushing this and the situation got quite tense between the institute and James Mackie and Mackie more or less thumped the table and

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<sup>262</sup> BJTRA, Fifth Annual Report 1951

<sup>263</sup> BJTRA, Seventh Annual Report 1953

said, you must stop doing this, ours is the way to go. And unfortunately they had a stronger voice rather than the research committee. So there was problems in getting developments works through.”<sup>264</sup>

### **5.2.3 Summary**

The purpose of this section was to examine collective strategies adopted by industry to counter international competition in the post-war period and constraints faced in the process. The section found that two major strategies were adopted by the industry during this period: first, protection from imports through JC and Gentlemen’s Agreements and second, promoting industry-wide research through the BJTRA. The full implications of both strategies are discussed in the Conclusion section of this chapter. Clearly, between the two strategies, the industry’s major emphasis was on protecting the domestic market through import restrictions. This is evident by the amount of effort devoted by the industry to making each successful. Therefore, although at the industry level attempts were made to develop technology, they were not fully supported by the member firms. As a result, the BJTRA was unable to provide any breakthrough development as far as jute was concerned. This section also provided a general context prevailing within the industry during the post-war period. It has therefore given a useful background against which to examine the capabilities developed by individual firms to counter international competition during this period. This will be examined in the next section.

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<sup>264</sup> Interview with Mr Atkinson

### 5.3 Case Studies

This section aims to address the second research question i.e. to examine the strategic response and capabilities developed by individual firms during the post-war period to counter international competition. In order to do so, cases of two firms, Scott & Fyfe and Craiks, are examined.

#### 5.3.1 Scott & Fyfe<sup>265</sup>

##### 5.3.1.1 Background

Scott and Fyfe (S&F) was established in 1856 by Mr Young. Owing to some problems in ‘getting started’ in the initial years, Mr Scott and Mr Fyfe became involved with the running of the firm almost at the very beginning. The ownership again changed hands during 1890s when Mr Tough got involved and has since remained with the Tough family.

Unlike much of the industry that had changed-over to jute after the Crimean war, Scott & Fyfe was among the few firms that continued with flax. It switched to jute finally sometime in the 1890s. Before this change its main products were canvas, tarpaulins and plain sheets, whose end-uses were sailcloth and wagon covers. However, by the end of the 1890s Scott & Fyfe was ‘struggling to find markets for flax and linen products’. In order to move away from this declining market, efforts were made to replace flax with jute in the early 1900s. Although it is unclear as to the exact date when jute was first introduced, the shift towards it was a gradual process. With the introduction of jute, its main product was the narrow-width cloth, which was mainly used for making sacks and bags. This remained the main product during the inter-war years. S&F did not sew the cloth into sacks and bags, but only made the cloth. The cloth was sold to the merchants who then sold it to the bag manufacturers for the final conversion. Also, the company did not have its own in-house selling department.

The continuance of flax, until the end of the nineteenth century was in contrast to the majority of the industry, which had converted to using jute by the 1860s. The replacement of flax by jute was therefore the first major change in the company's history. There were two key implications as a result of this: First, there was a change in the market, from sailcloths and wagon covers to the sacks and bags. Second, although the majority of production was still sold through independent merchants, a small proportion began to be sold directly to a couple of bag manufacturing houses in Manchester. One of the major benefits of continued selling through the merchants was the timely settlements of payments. The standard industry practice was to settle the payments every Monday for the goods sold the previous week. As a result, it eased the burden on the manufacturer to carry a large working capital. However, the inter-war years saw, for the first time, attempts being made to sell directly to the manufacturers. As Mr Tough recalled:

“A major change came when my grandfather got involved in the business. Mr Scott and Mr Fyfe were struggling. They had hung on to flax and linen a bit too long. They hadn't done an awful lot to try and make any changes, although, I don't know, it shouldn't have been too difficult to change because other people were at it then but I suppose that the major markets were dripping away and from my grandfather's point of view, he saw the bag market as something that they had to really get involved in. And we became involved in, a little bit more direct discussions with converters of bags, as against selling the cloth to merchants.”<sup>266</sup>

The period during the Second World War did not have any major changes in S&F's capabilities. As it was the major provider of employment in Tayport, S&F was allowed to continue its operations during the war. During this period, the production was limited to making sandbags and other packaging material for war efforts.

Although S&F was a medium sized firm, it set itself apart from other similar sized firms as it had its own engineering department. The engineering capability allowed S&F to build its own

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<sup>266</sup> Interview, Mr Hamish Tough

looms from scratch. This capability continued to play a significant role throughout the post-war period.

The following sections describe the strategic repositioning attempts and capabilities built by S&F during the post-war period.

#### **5.3.1.2 Modernisation**

By the end of the 1940s, a major concern for S&F was the uncertainty concerning the independent spinners within Dundee. An investigation was conducted into the possibility of going into association with a spinning firm or establishing its own spinning facility. However, instead of making a foray into spinning, S&F concentrated on upgrading its weaving operations, which they considered their key business.

The modernisation began by the early the 1950s with an aim to improve the level of efficiency. It involved refurbishing the entire manufacturing facility consisting of 120 shuttle looms that were scrapped. Instead of buying new looms from specialised engineering firms, S&F built new looms internally using its engineering skills. However, the new looms were automatic and thus offered a marked departure from the old shuttle looms. The automation in the looms was enabled by fitting them with 'Ecco-loaders', an automatic loader for shuttles which was developed recently by local machine manufacturer TC Kay. It allowed S&F to increase their productivity significantly. In the traditional shuttle looms, a weaver could only manage one wide or two narrow looms. However, with an Ecco-loader a weaver was not required to stop the loom to change the shuttle, thus increasing the number of looms per weaver a maximum of six wide or eight narrow looms and effecting a considerable saving in cost. It was the first time any automation in machinery was introduced by S&F. Furthermore, until now, looms were running on steam power. However, with modernisation the steam engines were replaced with electric motors that were fitted on each machine, thus bringing an end to the steam power era. The factory was also fitted with the latest temperature control devices such as air-conditioning and humidification to ensure a consistent level of quality was maintained in production. By the end of this modernisation, the factory's efficiency was improved and a better quality in cloth

was being produced. However, the total number of looms was reduced from 200 to 120. This was because the new equipments that were fitted along side the looms took up a considerable amount of space. However, it did not affect the total capacity of production. On the contrary, the increase in the speed of looms led to a higher production level than was possible prior to modernisation.

### **5.3.1.3 Long Lengths and Wide Looms**

Before modernisation, S&F's output was mainly for the sacks and bags market and, as a result, the majority of its looms were of narrow widths. However, by the early 1950s there was a realisation that this traditional market was becoming a 'thing of the past'. There was a need to introduce wider looms to tap into the growing the carpet backing business. It is not clear as to exactly when the medium and wide-width looms were introduced, but by the early 1950s S&F had a small proportion of looms in these widths. They were instrumental in giving S&F an advantage over other firms within the industry who had concentrated entirely on narrow-widths. Recalling the significance of these widths, Mr Tough noted:

“...we wove up to about 80” fabrics. I am not sure when they were introduced, to be quite honest, but certainly we had these wide looms and they were quite useful to us, as they gave us that little bit of difference to the rest of the market and we did pick up quite a bit of business because of what was in those days wide looms.”

Having recently incurred a heavy expenditure on the modernisation of their looms, it was agreed that wider-loomes would be introduced at a later date as a part of the 'second phase' of modernisation. In the meantime, however, experiments were being carried-out to make wide backing cloth for carpets, although it had not reached a stage of final production. An area that was beginning to show promise was backing cloth for rubber carpet that was developed and patented by UniRoyal, a Dumfries-based firm. The process involved taking a rubber sheet and putting it into an oven and letting it sag. Lifting this would produce a 'waffle' shaped sheet. It required a good quality jute backing cloth. Although S&F got the order for it through the



merchanting arm of Low & Bonar, a local merchant and manufacturing firm, the significance of the wide widths, along with the modernised machines, played a major part in securing this order.

“Now that required a jute back which was quite important with its good quality of weaving and so on. And with our automatic looms and all sort of special protectors put in for faults we were doing pretty good cloth in those days. And Bonar, although they did some themselves, they were the major supplier to UniRoyal, again its from the merchanting side that they had got in touch with them in the early days of the manufacturing of this product and, at the end of the day we were probably manufacturing a high percentage of the fabric if not most for Bonar to virtually just hand on to UniRoyal for this underlay business.”<sup>267</sup>

However, soon after the looms were modernised the company suffered a heavy loss through a fire that broke out in the factory in 1956. A fortunate thing was that no lives were lost; but it destroyed the entire machinery that had just been renovated and refitted with modern equipment. It also brought the experiments on wide-width cloths to an abrupt halt.

The immediate concern was to rebuild the factory and ‘get back on their feet’. The rebuilding process that followed was very much influenced by S&F’s perception of the industry that was formed before the fire i.e. that the traditional business of sacks and bags was ‘becoming a thing of the past’ and it was time to ‘move on’. Therefore, the fire provided an opportunity to implement the ‘second phase’ of the original strategy, which was to increase range in the medium and wide-width looms. If pursued, the major market for the wide looms would have been cloth for carpet and linoleum backing. The backing cloth was required to be of a better quality than the one made for sacks and bags. However, manufacturing a better quality cloth depended on the availability of good quality yarns. And, by the latter part of the 1950s, the position of independent spinning firms was becoming difficult owing to the problems in supply of raw jute from India and Pakistan. As a result, many independent spinning firms were closing

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<sup>267</sup> Ibid

down. With uncertainty surrounding the supply of good quality yarns, further expansion of wide-width looms upto 144” and 180” did not appear to be an attractive proposition.

Instead, emphasis was given to making long-length rolls of cloth. These were in demand particularly by the carpet and linoleum manufacturers. However, it was not easy to make long rolls and not many firms were able to make them. Therefore, with further expansion in wide looms not looking an attractive alternative, it was hoped that the long length rolls would help to secure business in the backing cloth trade. Consequently, all the new looms were fitted with rollers able to wind long rolls. The cloth was rolled over the winders as it came out of the loom. Normally, the roller would be placed at the end of the loom where the cloth comes out. However, as the building had limited floor space, fitting rollers on the same floor would allow only for holding half the number of looms. So in order to make the best use of space, a special platform was built on top. The looms were placed on the platform and the cloth winders were placed below it. The cloth went down through the floor as it came out of the loom and rolled up directly on to the roller placed beneath. Besides making the best use of space, a major benefit of this arrangement was that it allowed for a 100% inspection of the production and maintained the quality of the cloth. The inspector would stand underneath and was able to inspect the entire production of cloth that was rolled on the winder. The unique set-up and its usefulness in checking the quality of the cloth also attracted the interest of the textile major Courtaulds, who were impressed with the layout and modelled one of their production units on similar lines.

The capability in making long lengths was a major factor in retaining the growing business of rubber underlay with Uni Royal that was developed just before the fire. The cloth that was woven was a ‘very, very light scrim’, so making them into long rolls was a particularly difficult process and not many firms were able to make them. Underlining the significance of long-length rolls in securing this major business, Mr Tough noted:

“So from the point of view of Scott & Fyfe we were in a little bit of semi exclusive situation with big rolls for roofing felts and big rolls for whatever was wanted and we were supplying fabric for Uni Royal...”<sup>268</sup>

During the 1940s and 1950s S&F did not face any direct international competition in these widths. However, by the early 1960s the threat of imports was beginning to affect this market. UniRoyal, its major customer, was trying to import cloth from India and Portugal. The main purpose behind it was that ‘they could see the difference in price’ between local and imported cloth. From Scott & Fyfe’s point of view, they were not in a position to do much except to make the best use of their modernised looms to maintain quality and make good long length rolls. This was the ‘first sign’ of imported material showing a potential of threat in this specialised market. However, the imported cloth from India was not of good enough quality. Similar problems regarding quality arose with the Portuguese cloth, although ‘nothing like the problems they had from India’. So, although UniRoyal bought some ‘odd lots’ of imported cloth, during the early 60s it did not pose an immediate problem. As a result, S&F again considered the possibility of extending the range of wide-width looms and entering the growing carpet backing market.

“So, at the end of the day, the imported material in both these situations never really came into being, it was never...there was no carpet primary, although there had been secondary backing of course of late but no primary backing of any significance came into the country, perhaps until more recently. But certainly in those days...we felt we were safe enough to go ahead and consider weaving wide width fabric, but it would be for the carpet industry of course in those days.”<sup>269</sup>

#### **5.3.1.4 Polypropylene**

Just around the time (the early 1960s) when the possibility of getting more wide looms was being considered, the S&F learned about the trials that were being made in the US to make a

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<sup>268</sup> Ibid

<sup>269</sup> Ibid

fabric from polypropylene. It was primarily for making sacks and bags. However, results from the initial experiments, were far from encouraging:

“.....in fact the first thing I saw was a bit of a disaster. In the American field they started to make sand-bags out of polypropylene...they got the length of being in the field and they discovered that polypropylene fabric they were making showed up as if somebody had put a 1000 watt lamp inside it...with their infra-red detectors and other things....it really...glowed...so all that had to be withdrawn and they obviously developed the fabric that wouldn't do.”<sup>270</sup>

Nevertheless, the American carpet manufacturers were leading more serious attempts. Traditionally, the American industry had secured its supply of jute yarns and backing cloth from India owing to the cheapness in price. However, a major weakness of the Indian industry was its inconsistencies in maintaining the quality. Initially the cost consideration was enough to overlook this deficiency. However, with the tufted-carpet growing in demand it was important to have a good quality jute yarn and backing cloth. The situation was particularly problematic, as local carpet manufacturers had no significant jute manufacturing capacity within the US on which they could rely for supply. Therefore, with little prospect of improvement of cloth from India, the American carpet industry was looking to alternative fabrics for its backing cloth. It was under these circumstances that the industry was driving research into polypropylene.<sup>271</sup> Trials with polypropylene were also being carried out in Dundee. These were led by a joint venture between Jute Industries and Low and Bonar. These developments, coupled with the knowledge of impending competition from India, made S&F reconsider their proposed investment in wide looms for jute cloth as an alternative for future development:

“This is before anybody was here as far as we were aware looking at it seriously, except Bonar and Jute Industries came together as Synthetic Fabrics and Polytape....they hadn't done it yet but they were dabbling away and there was a little bit of talk about it so we thought well if we are going to go into weaving of

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<sup>270</sup> Ibid

<sup>271</sup> Interview with Mr SK Palit

wide material, you know...are we doing the right thing, lets think about this polypropylene and get into that then mess about with putting in wide jute looms...”<sup>272</sup>

However, polypropylene being a new synthetic fibre, posed two major uncertainties: one, whether it could be produced on a large scale and two, whether customers would accept it. In order to learn about these and other issues pertaining mainly to the potential of the new fibre, Mr Hamish Tough made special visit to the US where serious development work was being carried out. During the visit they received assistance from W.R. Grace, a speciality chemicals company, who were pushing for the use of polypropylene in the US. With their help, visits and meetings were arranged with the local carpet manufactures and stores. The visit played a big part in confirming the potential of polypropylene as a viable fibre.

“So we came home and said look we are going to have to do something, this is the way we should be going and went to Jute Industries had a big board meeting and just sort of said lets do something about it.”<sup>273</sup>

Yet, there were technical problems to be resolved before full production could begin. Weaving with polypropylene was different to any of the other natural fibres, namely jute and flax, which they were accustomed to. The raw material for weaving jute cloth was the jute yarn, whereas, with polypropylene, the fabric was made from tape. The tape was extruded from polypropylene ‘chips’ through a special extrusion process. Being a synthetic fibre, its characteristics were different to that of any other natural fibre and so it was difficult to process on the existing standard looms which were suitable for weaving natural fibres.

“Tape was just different, tape was just different, I mean it was neither one thing or another and didn’t behave like filament yarns and didn’t behave like nothing on earth to be honest....”<sup>274</sup>

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<sup>272</sup> Interview, Mr Hamish Tough

<sup>273</sup> Ibid

<sup>274</sup> Ibid

There were two major difficulties. First, it was difficult to wind the tape on cops and adjust the beam of the loom. Using in-house engineering skills, the winding problem was soon resolved. However, it was still problematic to make beams on the looms suitable for weaving polypropylene. With little progress on this front they got in touch with Lesona, who specialised in making winders. Until now, they too had not attempted to make beams for weaving polypropylene, although Lesona had done experiments with making beams for other synthetic fabrics. But those beams could not be adapted to suit polypropylene. After doing some joint work with Lesona, S&F were soon able to develop a beam appropriate for weaving polypropylene. This was perhaps one of the first, 'beamer jobs' to be done for polypropylene. Overcoming these technical problems paved the way for successful weaving of polypropylene tape into fabric.

However, this led to the second problem, which was the shrinking of fabric after it was woven. In order to overcome this difficulty, Jute Industries had developed an additional process whereby the fabric was taken through an oven in which it was 'heat set'. However this required a considerable amount of investment in large equipment, besides adding another stage to the production process. An alternative was to have a 'low shrink' tape, which was not available yet. With investments being made in other areas, S&F were not keen to make this additional investment. Moreover, it meant adding an extra process to the production. So S&F got in touch with the US-based WR Grace, who supplied the tape, with a possibility of developing a low-shrink version. After further experimentation, Grace was able to supply such a tape to solve this crucial problem.

These trials were conducted on the standard jute looms that were built within the factory after the fire in 1956. However, with major hurdles in producing an acceptable quality of fabric now resolved, the possibility of getting more modern shuttle-less looms was considered. Again, the width of the looms was the crucial dimension. The new looms which were ordered were of medium and wide widths. It was also decided to get these looms from specialist manufacturers, rather than building them internally or using a non-specialist local engineering firm. Initially S&F inquired about it with Sulzer, a leading textile machine manufacturer based in Switzerland. However, at this point they were unable to supply looms suitable for weaving polypropylene. Moreover, they did not appear to show much interest in making their looms

adaptable to it. SMIT, an Italian machine manufacturing company, on the other hand had Rapier looms that were adaptable to weaving polypropylene. In all 24 of these looms were ordered. The decision to make this investment was made quickly. Considering that the weaving of polypropylene was relatively new and it had not been attempted on a large scale, there was a high level of uncertainty surrounding such a big investment. Recalling this decision Mr Tough noted:

“So we got this heat-set tape, bought this SMIT loom and within a month or two we decided look this is what we are going to do, so we ordered 24 wide Smith looms just like that and kept our fingers crossed, threw out half of the jute looms that we had put in after the fire and installed these on the high platform. And that was at the same time and they were being introduced at the same time as Synthetic Fabrics were installing 36 looms. So for the size of a company with 24 and the big Bonar and Jute Industries conglomerate doing 36 looms, we were quite major very early on and this was about 2 years before anybody else got involved in shuttle-less looms.”<sup>275</sup>

#### **5.3.1.5 Stitch Bonding and Knitting**

Polypropylene, being a manmade fibre, could be manipulated in a way that was not possible with natural fibres such as jute. By now the initial success in overcoming difficulties had given S&F the confidence to handle polypropylene, and man-made fibres in general, and to make necessary alterations to machines when required. It had opened further avenues in trying different weaving technologies and fibres. The stitch bonding and knitting technology in particular looked promising and investigations were made to learn about their potential. A visit to a trade conference in East Germany proved particularly decisive. The machines, although not directly suitable to manufacture the fabric, showed potential following some alterations.

“...having got there I liked the look of the machine and thought we could do something with it for industrial fabrics and the only way we would be able to

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<sup>275</sup> Ibid

check out on this, they are not sort of advertising it that you can do this and that with it, but I think we can do this and that with it, so don't say too much about it and so we ordered one there and then and within a couple of weeks it was actually in premises here.”<sup>276</sup>

After the machines arrived on the premises, the first trial was conducted to make a high-tension cable wrap. This fabric was earlier made using jute. During this period at least two other firms in Dundee, Jute Industries and H & A Scott, had also bought this machine and were experimenting on it, but they had little success. By this time, S&F's cable wrapping fabric was fully developed and ready for production. With Jute Industries and H&A Scott unable to find an appropriate use for it, S&F soon purchased the machines from them.

The second product that was developed using the knitting and stitch-bonding technology was the backing for UniRoyal's rubber carpet. Again, S&F had supplied this fabric (jute-based) to UniRoyal during the 1950s. On their part, UniRoyal were continuing their search to import the cloth from India in order to gain the benefit of the price differential between the Dundee made and the imported cloth. However, lack of consistent quality was a major issue that made this source of supply unreliable. As a result, UniRoyal was looking for alternative sources for its backing cloth. Recent trials gave S&F the confidence to work with new fibres and machines. Moreover, they were also experimenting with making other material, for example coverings for wallpapers using crepe paper. When UniRoyal came-up with the proposal, they were confident that they could use this experience to make the backing for the rubber carpets and found that crepe paper could be adapted to suit this purpose. As a result, some collaborative work was done with the paper manufacturer and a quality of paper suitable for this purpose was developed. Previously, when it was made using jute, the manufacturer's logo was barely readable on the cloth. Therefore, it was a feature that UniRoyal had specifically requested for the new fabric. Designing a logo that could be printed on the fabric required special skills that could not be sourced from the in-house engineering team. Therefore a designer from Courtaulds was contracted to make the company logo on the crepe paper. When the fabric was finally produced and tested on UniRoyal's machines, it was 'absolutely loved by the carpet

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<sup>276</sup> Ibid



layers'. The new fabric solved a major technical problem. With jute, the backing cloth was prone to stretching when it was fitted on the carpet and passed through machine. The new fabric, on the other hand, remained firm when it was passed through the machine and it was also easy to cut the carpet. Initially, it was estimated that it would take about two years before the fabric would be accepted widely by the industry. However, with the enhanced technological features, it was not long before UniRoyal switched over entirely from jute to the new polypropylene-based fabric, which was branded 'Textron'.

Therefore, by the end of the 1960s, S&F was successful in introducing a new fibre, polypropylene, to replace jute. The new fibre played a vital role in countering the imminent Indian competition in the medium and wider width fabrics that had become S&F's main foray in the previous 15 years:

“And therefore the Indian competition went and jute has never come back...they wouldn't be able to use jute any more. And in fact they have tried non-woven like that and they have tried all sorts of things but they always come back to the Textron, as we call it....which was our patented stitch-bonded crepe material which replaced jute and within a six to nine months period changed that whole thing across. Bonar lost all the weaving they had and all the merchanting sales and they offered some other paper products but they weren't interested and never really worked....”<sup>277</sup>

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<sup>277</sup> Ibid

### 5.3.2 Craiks Ltd

“Specialists in the finer qualities of jute...deal in synthetics, cotton and wool” (1963)

#### 5.3.2.1 Background

Craiks was established in 1864 as a private partnership in Forfar, near Dundee. The principal investor in the firm was James Craik, who prior to establishing the firm, was a local merchant. When compared with other firms in Dundee, it was a medium sized firm with around 230 workers. However, within Forfar it was the largest firm with John Lowson employing 200 workers, John Lowson and Sons employing 140 workers, and Laird & Co employing 130 workers.

After recapitalization in 1908, during the inter-war period, the majority of Craiks sales were in the narrow widths, suited for the sack and bag market. Figure 24 and 25 shows that at least 54% of its sales during the inter-war period was in these widths. As described in Chapter 4, during the inter-war period international competition in narrow widths had intensified. The competition was from both Continental Europe and India. However, it was the competition from the Indian industry, owing to increased working hours and the resultant over-production, which had significant implications for Craiks.<sup>278</sup> The issue of overproduction by the Indian industry remained unresolved until the end of the 1930s, and even then any resolution did not appear to be in sight.<sup>279</sup>

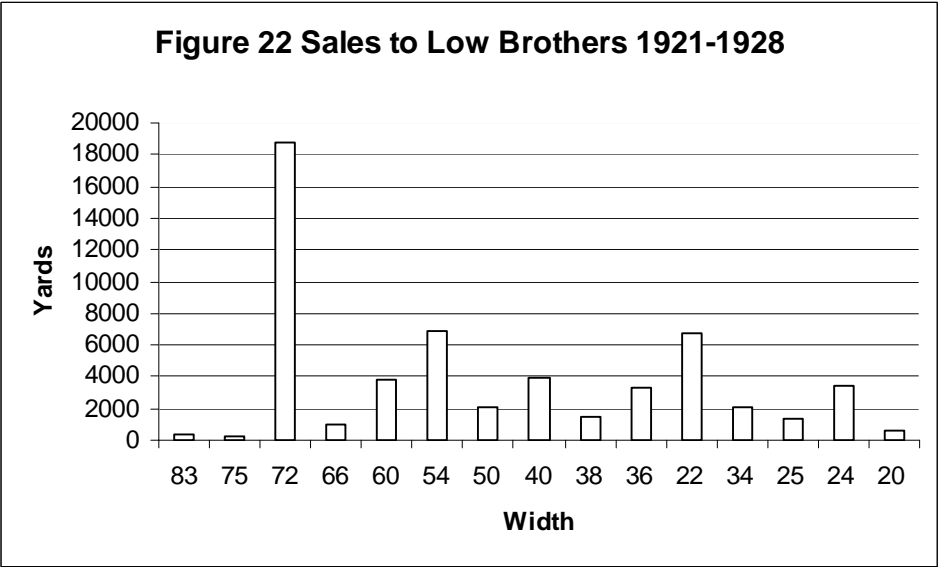
In order to deal with Indian competition, Craiks repositioned its efforts towards specialising. These ‘specialised goods’ consisted of cloth in the wide-widths. Records of sales during the inter-war period are not complete. However, existing records do indicate that the merchanting firm Low Brothers was Craiks largest customer. It also shows that the cloth was sold in a variety of widths were sold. It is difficult to compile a list of all widths, but the Figures 22, 23, 24 and 25 summarises the major widths and the corresponding percentage of sales to the Low

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<sup>278</sup> DUA MS/74/1/1: 14<sup>th</sup> March 1929

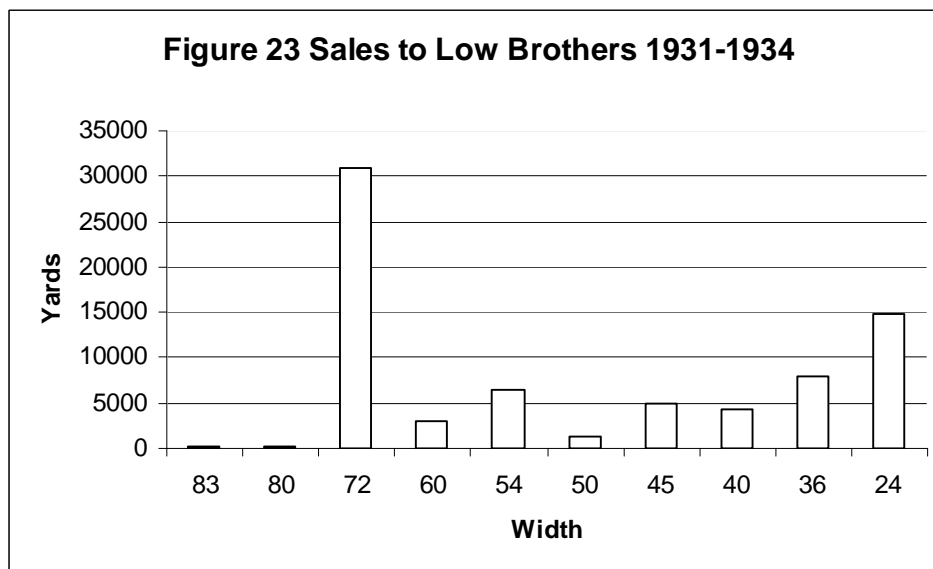
<sup>279</sup> DUA MS/74/1/2: 19<sup>th</sup> March 1936

Brothers which represents Craiks product mix during the inter-war period. For example, the wide-width 72” was the single largest selling width during this period. In addition, while the overall share of wide-widths as a total percentage of sales during the first half of inter-war period was 32%, this increased to 42% in later years. Nonetheless, the share of narrow-width still constituted a significant portion of total sales.

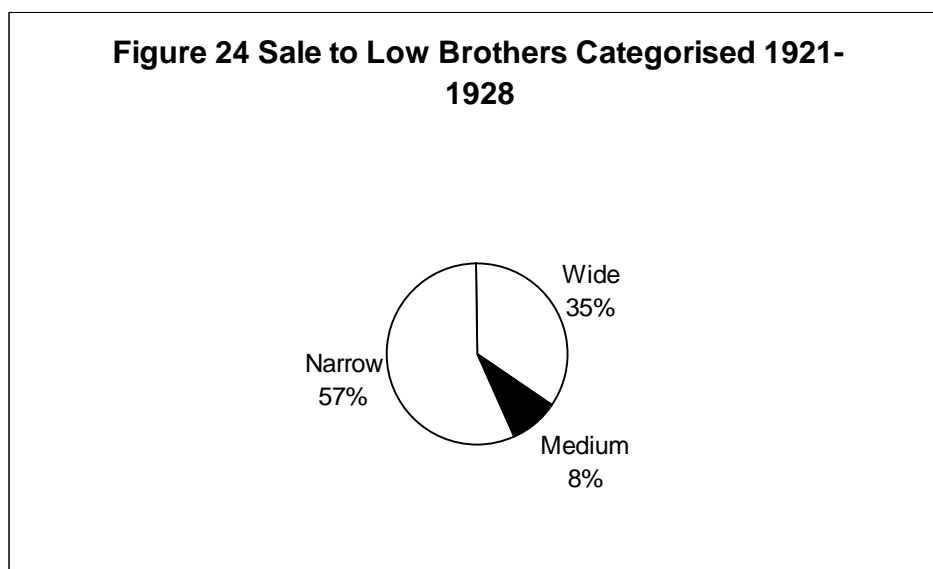


Source<sup>280</sup>

<sup>280</sup> DUA MS/74/6/2: Order Book 2



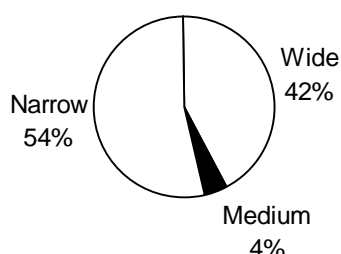
Source<sup>281</sup>




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<sup>281</sup> Ibid

**Figure 25 Sales to Low Brothers Categorical  
1931-1934**



The attempts to move away from the traditional markets began right after the end of the First World War. For example, a major product that was considered was linoleum backing. Contemplating the future strategy of the firm, the manager advised the Board of Directors to develop capabilities in length rolls of 1000 to 2000 yards that would allow them to enter the linoleum backing market. He had argued that with the German industry recovering after the war, and with the Indian competition in the narrower widths expected to grow, it was an opportune moment to enter this market. However, the Directors, after having considering the possibility, decided to wait for further developments before making an investment in it.<sup>282</sup> The proposal was not taken up again during the inter-war years. During this period Craiks relied mainly on medium width cloth (upto 72") to counter Indian competition in narrower widths. However, with little sign of any respite in this competition by mid-1930s Craiks considered manufacturing other fabrics. However, at this stage the director's power of investment was limited. In order to pursue this strategy, an amendment was introduced into the company's Memorandum of Association giving the directors greater power to invest in other textile fabrics.<sup>283</sup> No attempt was however made to introduce it before the start of the Second World War. Nonetheless, as will be described below, the directors were quick to take advantage of their extended powers by investing in cotton immediately after the end of War.

<sup>282</sup> DUA MS 74/1/1: 15<sup>th</sup> February 1917

<sup>283</sup> DUA MS 74/1/2: 3<sup>rd</sup> March 1934

The following sections will describe the strategic response and capabilities developed by Craiks during the post-Second World War period in order to meet international competition.

#### **5.3.2.2 New fibre: Cotton**

Immediately after the end of the Second World War, Craiks made attempts to reposition itself by moving away from the traditional jute markets. Introducing a new fibre was a major part of this strategy. However, as mentioned in the section above, this strategy was initiated during the 1930s. After the end of the War, directors used the additional powers granted by change in the Memorandum of Association to implement this strategy. Licence was sought from the Cotton Control in 1948 and by the end of 1949 yarn was secured and the production commenced.<sup>284</sup>

The introduction of cotton also brought about a change in weaving technology. Instead of manufacturing the fabric on the traditional jute machinery, Craiks introduced Northrop automatic looms. The cotton looms replaced part of existing jute looms that were scrapped. Therefore, this addition did not lead to a substantial increase in the firm's size.

The key feature of the automatic looms was that they were in the wide-widths. Initially, an order was placed for 32 looms. Owing to the increased demand and scarcity of materials in general after the end of the War, Northrop was only able to deliver the new looms by the end of 1949.<sup>285</sup> In the mean time, four second-hand Northrop looms were purchased to train the operators. Within a year, a further 16 Northrop automatic looms were purchased in the 90 inch wide-width.<sup>286</sup> Thus, by the early 1950s, approximately 25% of the total looms were overhauled with automatic looms in various wide widths. In addition, the looms were now run on electric motors, thus bringing an end to the era of steam engines.<sup>287</sup> The introduction of wide-width looms for cotton proved to be very useful for Craiks as it offset the fluctuating demand in the jute section. The basic process involved in the weaving of cotton was similar to that of jute. Therefore, when the demand for jute was low, weavers in the jute section were

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<sup>284</sup> DUA MS 74/1/2: 21<sup>st</sup> December 1949

<sup>285</sup> Ibid

<sup>286</sup> DUA MS 74/1/2: 14<sup>th</sup> September 1950

<sup>287</sup> DUA MS 74/1/2: 12 January 1951

transferred to the cotton section. It also helped to maintain the firm's overall order position and keep the looms busy.<sup>288</sup> The demand in wide-width kept steady, and with prospects appearing buoyant in this area, 8 more wide-width looms were ordered.<sup>289</sup>

However, the use of cotton also tied Craiks to the ensuing developments in the cotton industry in the UK during this period. During the early 1960s, the industry was still reeling under the pressure of international competition. The competition from Spain and Portugal proved to be worrying as it was in the wide-widths.<sup>290</sup> The re-organisation scheme led by the Government and the industry association had not brought about any significant improvement in the industry's position.<sup>291</sup> To a large extent the industry's prospects were probably more dependent on the re-organisation of the global cotton textile industry, rather than just the domestic. It was hoped that the negotiations held in Geneva on regulating the international trade in cotton would result in improving the prospects of the industry in the UK.<sup>292</sup> Although, it was acknowledged that even if negotiations were favorable to the British manufacturers, it would be months before any material benefit would arise from it. By the 1960s international competition was beginning to threaten the benefits derived by the introduction of cotton, especially in the wide-widths.

### 5.3.2.3 Jute

After the War the immediate developments were concentrated in the cotton section. It was only after 1956 that Craiks began repositioning in jute. However, when the developments were undertaken they were in line with those undertaken in the cotton section in terms of their two fold emphasis: firstly, the new looms that were introduced were automated, giving way to the traditional shuttle looms and were sourced entirely from James Mackie.<sup>293</sup> Secondly, the additions to the looms were mainly in the wide-widths upto 90". As Craiks already had looms upto 72", further additions to the wider widths strengthened their position in this area.

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<sup>288</sup> DUA MS 74/1/2: 25<sup>th</sup> June 1952

<sup>289</sup> DUA MS 74/1/2: 3<sup>rd</sup> November 1952

<sup>290</sup> DUA MS 74/1/2: 6<sup>th</sup> March 1961

<sup>291</sup> DUA MS 74/1/2: 21<sup>st</sup> September 1961

<sup>292</sup> DUA MS 74/1/2: 16<sup>th</sup> March 1962

<sup>293</sup> DUA MS 74/1/2: 16<sup>th</sup> April 1956

The purpose of extending the widths was to move away from the traditional sack and bag and into the linoleum backing market. Ironically, as discussed above, a former General Manager suggested entering into the linoleum backing market immediately after the end of First World War. Although Craik's entry into this major wide-width market was late compared to other firms within the industry, it was in tandem with the industry's attempt to move away from the narrow width sack and bag market to the specialised areas in wider widths, where Indian competition was limited.

#### **5.3.2.4 Dismantling of Collective Agreements and Strategic Alternatives**

The introduction of cotton, opened up another market and helped to offset the decline in the traditional sack and bag market. However, by the beginning of the 1960s the threat of international competition in jute and cotton was looming. On the other hand, capability in wide-widths of jute had enabled Craiks to move away from the Indian competition in the traditional jute based sacks and bags market. With the likely possibility of the ongoing court proceedings ruling against the Price Agreements of the jute industry, there was a renewed threat of intensified competition from the Indian industry, especially in the wide-widths. The situation was not very different at the cotton end. The cotton industry in the UK was under pressure from international competition and growing imports into the domestic market. The Government, along with the industry, was making efforts in four areas: a) bringing legislation to reduce imports. b) encouraging textile retail distributors to sell goods that had been spun, woven and finished in the UK. c) ensuring overseas goods were properly marked d) proving that the consumer was not getting any real advantage from cheap imports and that a loss of purchasing power caused by unemployment in the north of England would seriously affect other industries in the country.<sup>294</sup>

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<sup>294</sup> DUA MS 74/1/2: 23<sup>rd</sup> April 1962



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**Table 33 Craiks Short and Long Term Options in 1960s**<sup>295</sup>

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Short-term:

- a) An increase in conversion costs which is long overdue.
- b) An increase in our present output which is very difficult owing to weavers are lacking.
- c) Increase the number of looms per weavers. But this can only be done by introducing some form of automacy apart from the cost of this is not particularly good proposal in our class of trade.
- d) Increase the volume of fine Hessian but this is not very easy as the demand for these is now very limited.

Long-term:

- a) To consider merger or an agreement with a spinner.
  - b) Search for a new fiber.
  - c) Become part of a vertical concern.
  - d) Make fibers which are not made at present but are frequently asked to make.
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Faced with the prospect of increased international competition in both cotton and jute, Craiks contemplated their short and long-term alternatives (See Table 33).

In the short-term the emphasis was on improving productivity and further expansion of specialized goods.<sup>296</sup> Four areas in particular were identified for this purpose: the first, and relatively easy, alternative was to avail the benefit from the increase in price of goods through the price co-ordination scheme run within the industry (see Section 5.2.1 in this chapter).

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<sup>295</sup> DUA MS 74/1/2: 30<sup>th</sup> May 1963

<sup>296</sup> DUA MS 74/1/2: 30<sup>th</sup> May 1963

However, being a medium-sized firm, Craiks was not in a position to influence the proceedings alone other than to make its views known to the appropriate committee. Moreover, with the ongoing court case, the co-ordination committee was unable to increase the price levels any further. The second possibility was to increase productivity and decrease cost per ton by increasing production. But increasing productivity had its own set of constraints: a) there was a shortage of weavers that restricted the level of output; and b) the cost of automatic machines was very high. Therefore, introducing automation would have led to higher cost in the short run. With price being a major factor in their market, increase in cost would make their products uncompetitive. Nonetheless, experiments were being made to introduce some level of automacy. The third alternative was to increase the production of fine qualities. But it was difficult to implement this because market for these 'niche' products was limited.<sup>297</sup>

On the other hand, the long-term repositioning option reflected limitations of any further development of capabilities in cotton and jute. The first underlined the need to introduce new fibres. This would help Craiks to again move away from growing international competition in jute and now also from cotton. The second alternative would have led Craiks to further fortify its position in jute. Since the end of the Second World War there was a significant decline in a number of independent spinners in Dundee. This had made it difficult to ensure a secure supply of specialty yarns. Moreover, the integrated firms who had their own spinning facility were also not forthcoming in selling yarns to independent weavers as their priority was to ensure a steady supply of yarns for their own weaving section. Therefore, a merger / agreement with a spinner or becoming part of a vertically integrated firm had become a necessity in order to ensure a secure supply of yarns in the future and to strengthen their position in jute.

The following sections outline the initiatives taken by Craiks in the short term after considering the alternatives.

### **5.3.2.5 Further Developments in Cotton**

The immediate developments in cotton concentrated on leveraging the capability in wide-width looms. In particular, the directors enquired about the commercial potential of Flannelette

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<sup>297</sup> Ibid

Sheets (FS) which were showing a steady demand, owing mainly to the severe winter in the country. FS is a cotton imitation of the wool flannel. It is made using softly twisted yarns in the weft that respond to the action of the raising machine, producing a nap on both faces of the cloth. Their investigations revealed FS to have a very good potential, especially for the wide looms:

“Mr Cook also reported that he was to visit Manchester again to endeavor to secure business for the manufacture of Flannelette sheeting for which there was a growing demand. If successful the company would be in a position to keep all the broad looms working right round the clock.”<sup>298</sup>

With initial enquiries returning positive, the general manager, Mr Cook, made a special visit to Lancashire to interview big firms who had already commenced production of the sheets to examine the matter in detail. After his visit, Mr Cook underlined the following issues that were for and against this move.<sup>299</sup>

Five aspects in particular were regarded as hampering the implementation of this strategy:

- a) The high cost of transportation due to the geographic location of Forefar.
- b) As the demand for sheets grows, more firms would enter the market, thus reducing the margins in raising, a major process in finishing of the fabric.
- c) Rise in the number of vertical firms within the cotton industry would mean that firms would invest in their own raising plant.
- d) Although technological advances had made machines capable of most work, the ‘human factor’ still played a major role in the rising process. However, with few cotton-weaving firms located in Dundee, these skills were in short supply.

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<sup>298</sup> DUA MS 74/1/2: 6<sup>th</sup> May 1963

<sup>299</sup> DUA MS 74/1/2: 25 October 1963

e) The FS was aimed for the 'consumer market', as opposed to the industrial market, where Craiks had significant expertise. Therefore for FS, having a sales and distribution network was a major element in determining its commercial success. With Craiks not having a distribution channel themselves, entering this market would make them vulnerable when competing with the large integrated firms.

On the other hand, five issues were identified to be acting in its favour:

a) There were still 'bottlenecks' in the key manufacturing process of raising, especially in the wide-widths. As Craiks were able to develop their capability in this vital process, it gave them a distinct advantage.

b) As dying and bleaching was done externally through Lumsden and Mackenzie, Craiks physical closeness to them meant that large quantities of sheets could be processed without having to incur an extra cost in transportation.

c) The building for setting-up the manufacturing was already available.

d) The majority of equipment was already in place.

e) Other overhead costs could be kept low as existing staff could be used to manufacture sheets.

After much deliberation, Mr Cook advised 'against' making this investment. Nonetheless, the directors decided to proceed with it.<sup>300</sup> In the immediate term the decision proved to be beneficial as the demand for sheets was steady which kept all the looms busy with a 24 hour a day shift.<sup>301</sup> However, within two years the conditions changed dramatically. International competition was again beginning to pose a significant challenge to cotton and Craiks thus found itself in a very difficult situation:

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<sup>300</sup> DUA MS 74/1/2: 27<sup>th</sup> August 1963

<sup>301</sup> DUA MS 74/1/2: 21<sup>st</sup> May 1964

“The company’s own position was not very good and night shift, after a gradual seen down over the past year, was stopped a month ago without creating any redundancy. All efforts have been made to obtain fresh business....”<sup>302</sup>

### **5.3.2.6 Further Developments in Jute**

The immediate developments within jute were centred on leveraging their capability in wide-width looms. For example, experiments were done for printed Hessians, wall drapes and bedspreads.<sup>303</sup> However, it was the cloth for wall coverings that emerged as a major product.

The opportunity came unexpectedly through an inquiry from Low & Bonar and Winterbottom Products, who were looking for a supplier of this cloth. In this arrangement, Low & Bonar secured all their supplies from Craiks, making them the principle supplier. Craiks only made the cloth and dying was done by Lumsden and Mackenzie, the specialist dyers, while printing, where necessary, was done by Winterbottom Products, who in some cases also added their own patent furnishes to the cloth. Winterbottom Products did the final marketing.<sup>304</sup> Within a short period, wall coverings became a very significant outlet. When price-cutting ensued in the standard narrower widths after the announcement of the gradual withdrawal of price agreements, the steady demand for wall-covering cloth in wide-widths provided a much-needed cushion for the firm:

“Following the downward trend noted at last meeting, there had been a continuous decline in the demand for Hessians, apart from Wall Hessians, and price cutting has become rampant.” (25<sup>th</sup> Nov 1966).

Therefore when there was a fall in the demand of wall coverings, it had a serious consequence for Craiks because it meant reverting back to the standard width cloths in order to fill the spare capacity. In one such instance, there was a complete reversal of the situation when Craiks were

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<sup>302</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 25<sup>th</sup> November 1966

<sup>303</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 10<sup>th</sup> March 1966

<sup>304</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 8<sup>th</sup> June 1966

forced to produce 75% in standard widths and 25% in wider widths.<sup>305</sup> The situation continued to remain critical through the mid-1960s and by the later half of the decade there was serious concern about international competition. With the gradual removal of Price Agreements, the threat of Indian competition was again high on the agenda. In addition, with the formation of the European Free Trade Area there was also a possibility of a threat from European countries in the wide-width cloth.

“Since 25<sup>th</sup> Nov (1965) last the jute trade has passed through the most difficult time with greatly reduced demand at un-remunerative prices- a position somewhat similar to that in 1926 and 1951. It was well nigh impossible to forecast when any improvement was likely to take place. The continued high price of raw jute compiled with the reduced demand had placed the jute manufacturers in a most unfavorable position. A further factor which was having a disastrous effect on the trade was the importation of jute cloth from Portugal being in the E F T A Group these imports were coming in free to the detriment of certain widths not normally made in Calcutta.”<sup>306</sup>

Therefore, during the 1960s Craik’s attempt to leverage its capability in wide-width looms yielded benefits only for the short term.

### **5.3.2.7 Considering Polypropylene**

With further developments in cotton and jute, especially in the wider-end, unable to provide much assistance in the face of the resumption of the international competition, Craiks began to consider the possibility of implementing long-term strategies. In particular, they kept abreast of the experiments that were being conducted in Dundee to introduce polypropylene. It was estimated that around 110 new looms were being installed in Dundee with a capacity to weave approximately 50 million square yards of this new fabric.<sup>307</sup>

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<sup>305</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 15<sup>th</sup> December 1967

<sup>306</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 22<sup>nd</sup> March 1967

<sup>307</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 14<sup>th</sup> September 1966

During this period, the low price of cloth and the lack of demand had put jute in a very difficult situation.<sup>308</sup> Although AJSM and the BoT were exploring ways to extend the protection from the international competition after the termination of the Price Agreements, Craiks expected little material benefits from these attempts.<sup>309</sup> Therefore, polypropylene had become the focus of future policy.<sup>310</sup> Table 34 sheds light on the issues that were being considered during this period. It shows that directors at Craiks were concerned with two key issues: first, the growing ‘un-remunerative’ nature of business in general in the jute section and second, the labour supply had become very short. In addition, the introduction of polypropylene by firms in the Forfar region had made the situation more difficult. Under these circumstances, it was decided to make the best use of weavers, rationalise the jute section by scrapping certain looms and, more importantly, to keep a close watch on general developments in polypropylene and remain flexible to taking advantage of any growth in this area.

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**Table 34 Craiks Strategic Analysis in 1960s**<sup>311</sup>

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- It was un-remunerative to manufacture most type of common Hessian.
- The labour position, especially as far as weavers are concerned has never been worse.
- The setting up of polypropylene manufacture in Forfar was gradually increasing the pressure on labour market and could easily lead in a wages war.

He was therefore proceeding on the following basis:

- To make the maximum use of the weavers.
  - To search the market for every possible outlet for specialties and fine Hessians.
  - To stop the jute weaving shed re-organisation at its present level and scrap certain number of looms which were not likely to be required in the
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<sup>308</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 27<sup>th</sup> March 1968

<sup>309</sup> Ibid

<sup>310</sup> Ibid

<sup>311</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 27<sup>th</sup> March 1968

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foreseeable future.

- To utilize the space left over in the jute weaving-shed for any future development.
  - To streamline the Dressing Department to bring it up to date with present day equipment.
  - To keep a constant watch on the polypropylene position with a view to taking advantage of the anticipated boom in this synthetic fibre.
  - To keep future policy flexible.
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However, polypropylene was a recent discovery in the family of man-made fibres and so there were many technical issues that needed to be resolved before successful commercial production of the fabric could be commenced. Craiks' lack of an in-house engineering department proved to be a major hindrance during this period. It meant they had to rely on general progress within the industry to resolve technological difficulties before they could proceed with commercial production. Therefore the approach adopted by Craiks was to wait for developments rather than proactively resolve the technical difficulties. For instance, it was found that the winding process on the Northrop automatic looms was yet to be adjusted to suite polypropylene. In order to overcome this difficulty, they had to rely on automatic winders, Unifils, for which an order was placed. But the delivery of Unifils was not expected for at least one year, and so any experiments in weaving polypropylene could not be carried-out until then.<sup>312</sup> Therefore, the general approach adopted by Craiks was to wait for developments rather than actively resolve the technical difficulties. However, when the delivery was made, the trials proved successful. Craiks also carried-out trial orders for Synthetic Fabrics Ltd, a joint venture between Low & Bonar Ltd and Jute Industries.<sup>313</sup>

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<sup>312</sup> Ibid

<sup>313</sup> Minutes of Directors Meeting, Low & Bonar's Private Collection: 27<sup>th</sup> September 1968



Yet despite its growing significance, production in polypropylene had not reached any substantial level by the end of the 1960s. In order to do that, a considerable amount of investment was also required to purchase new looms and other ancillary equipments. Therefore, besides technical aspects, the future policy in polypropylene also depended on raising adequate finance. Among the alternatives considered for raising finance was a merger with Don Brothers Buist Ltd, a merger with South Mills Ltd, and selling part of its equity to Scottish Heritage Trust. However, negotiations with both Don Bros and South Mills fell through owing to a disagreement over the valuation of share price. Initially similar problems were faced with Scottish Heritage, however, after negotiations a deal consisting of 15,000 shares at £1 and a representation on the Board was concluded.<sup>314</sup> It gave much needed help to raise finance. However, it was not until 1972 when new 135” Northrop Sensomatic and Dornier looms were installed.

## **5.4 Conclusion**

The aim of this chapter was to examine the strategic response of the Dundee jute industry during the post-war period in the form of repositioning strategy and capability developed by individual firms and the collective strategies employed by the industry to counter international competition.

Following on from the inter-war period, the strategic response during the post-war period was a continued effort to move away from the markets in which the Indian industry specialised and into new markets. The capabilities developed during this period were in two areas: further developing capabilities in jute and the introduction of new fibres. In jute, especially in weaving, capabilities were mainly in wide-widths and long length. This capability continued to play a significant part until end of the 1950s. Although some efforts were made to introduce new fibres before the mid-1950s, its significance only grew after the continuation of protection was seriously threatened by the end of the 1950s. This is illustrated in Figure 26 below.

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<sup>314</sup> Minutes of Directors Meeting, Low & Bonar’s Private Collection: 6<sup>th</sup> May 1969

The two case-studies examined in this chapter provide insight in this process. Although Scott & Fyfe and Craiks were of similar size and focus, they pursued slightly differing policies. They both followed a two pronged strategy of developing capability in wide-width in jute and introducing new fibre. The difference was in the order in which they were pursued. While Craiks choose to lay greater emphasis on introducing cotton right after the end of Second World War and left development of wide-width capability in jute until the mid-1950s, Scott & Fyfe concentrated on developing wide-width capability in jute by the early 1950s and began to introduce new fibres by the early to mid-1960s.

**Figure 26 Dundee Jute Industry Strategy  
between 1945-1960s**

	<b>Market</b>	
<b>Fibre</b>	<i>Sack and Bag</i>	<i>Specialised</i>
<i>Jute</i>		
<i>Other</i>		

Source: Author

A unique aspect of S&F was that, even though it was a medium sized firm, it had its own engineering department which was used to build their looms and ancillary parts. However, this did not make SF entirely independent of engineering firms because little development work to improve machineries was undertaken within the firm. Nonetheless, in-house engineering skills played a vital role in developing their capability to manufacture wide-width in jute and in introducing polypropylene.

Immediately after the end of the Second World War, S&F initiated a two pronged strategy to reposition itself in order to move away from the traditional sack and bag market. The first phase was to modernise existing machinery in order to increase efficiency. SF relied on its in-house engineering skills to build their own looms. But in order to make looms automatic, they

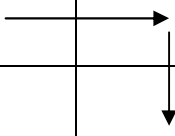
secured automation devices from a specialised engineering firm. This was completed by the first half of the 1950s. The second phase involved developing capability in wide-width cloth to enter specialised markets. This was to be undertaken during the second-half of the 1950s. However, before the wide-widths could be introduced, SF was faced with two eventualities. First, a fire had destroyed its entire production facility and second, several spinning firms in Dundee were faced with closure. In order to weave wide-width, it was important to have medium-fine qualities of yarn. With supply of high quality yarn remaining uncertain, the developing capability in wide-width became a difficult prospect. Nonetheless, SF persisted with their strategy to enter the specialised market by developing capability in longer length rolls when rebuilding was undertaken after the fire. Again, this was made possible by in-house engineering skills. By the early 1960s, however, developing capability in wide-width was again under consideration.

However, by this time two major events had occurred: first, experiments were being carried out in the US with polypropylene for carpet backing and second, the continuation of Gentlemen's Agreements was under threat, paving the way for renewed competition from the Indian industry. Importantly, SF decided to experiment with the new fibre, which was still not ready for commercial production, instead of developing wide-width capability in jute. SF's capability in engineering played a major role in managing this transformation.

Polypropylene was a new discovery and experiments were still being carried out to resolve technical difficulties in order for it to be produced commercially. The main difficulty was to find a loom suitable to weave the fabric. The traditional jute machineries were found not to be suitable for polypropylene. On the other hand, the looms of specialised machine manufactures, especially SMITI, although not specifically built to weave PP, were able to process the fabric. But they too required some alteration. Although SF's knowledge of machinery was mainly in standard jute looms, it gave them a basic understanding of the mechanics of looms. Using this capability, SF was able to make the necessary changes in the machines and make them suitable for weaving polypropylene.

**Figure 27 Scott & Fyfe Post-war Strategy**

	Market	
<b>Fibre</b>	<i>Sack and Bag</i>	<i>Specialised</i>
<i>Jute</i>		
<i>Other fibre</i>		



Source: Author

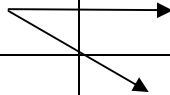
Craiks presents a contrasting approach. Unlike SF, Craiks did not have an in-house engineering department. Although this did not have any significant impact on its move to introduce cotton, it played a crucial role when polypropylene was introduced in the late 1960s.

Immediately after the end of the Second World War, Craiks introduced cotton to replace part of the existing production in jute. Older jute looms were replaced with Northrop automatic looms that were suited for weaving cotton and related synthetic fibres such as rayon and nylon. Production in these fabrics, which was dominated by cotton, accounted for approximately 50% of their entire set-up. However, within these fabrics Craiks built its capability in wider-widths. This allowed it to enter specialist markets. In jute, Craiks built its capability in wide widths. However, this was not done until mid 1950s. It was developed with a view to taking advantage of the growing tufted carpet backing market. Yet by the early 1960s wide-width capability in jute and cotton was under threat as protection was being lifted in both cotton and jute industry. Under these circumstances the importance of new fibres grew significantly.

During the early 1960s, experiments that were taking place in polypropylene in Dundee and in the US looked promising. But Craik's lack of in-house engineering knowledge proved to be a major obstacle during this period. As polypropylene was a new fibre, suitable adjustments needed to be made to looms before commercial production could begin. With Craiks not having engineering capability, it had to rely on advances made by engineering firms before it could introduce the fibre. Therefore, it could not introduce polypropylene until the end of the 1960s.

**Figure 28 Craiks Post-war Strategy**

	<b>Market</b>	
<b>Fibre</b>	<i>Sack and Bag</i>	<i>Specialised</i>
<i>Jute</i>		
<i>Other</i>		



Source: Author

While SF and Craiks continued to develop capabilities to reposition themselves, the industry was also actively engaged in collective strategies to this effect. The industry's strategies were in two major areas: to foster research into jute and to protect the domestic market.

The post Second World War period saw the first concentrated effort by the industry to collectively address the issue of research into jute by establishing the British Jute Trade Research Association (BJTRA). The Association's efforts were mainly devoted to three areas: finding new fibres, developing new uses, and improving quality and efficiency. The association played a significant role in assisting small sized firms, who did not have adequate resources to conduct research, to improve the quality and efficiency of their production. For example, the number of enquiries made to the Research Association rose from 70 in 1948 to 837 in 1955.<sup>315</sup> However, it was unable to make any significant contribution to the broader repositioning effort of the industry. This was due to two major factors: First, limited development work was carried out in association with the jute firms and their clients. As a result, researchers in the association did not have any idea about the end user's needs and how the product might be used. As a result, although researchers were successful in solving technical problems, for instance in blends of jute and other man-made fibers, jute manufacturers were not able to take

<sup>315</sup> BJTRA Second Annual Report, 1948; June 1955

it to market and commercialise it. It also deprived the Association a chance to develop end-user led products. The reason behind it was unwillingness on the part manufacturers to disclose their customer's names and products to Research Association. Although firms worked closely with their customers to develop specific products, they were unwilling to share this vital information, which they took several years to develop, with competitors in Dundee. The second factor was that the Association's efforts were restricted to research into jute. Although during the initial years the Association devoted much of its energy to finding new fibres, the search was limited to natural fibres. Its activities were restricted in so far as man-made fibres were concerned. This was particularly significant as man-made fibres were experiencing a growth during the post Second World War period and therefore offered a significant potential. This restriction was also maintained when development work was being done on polypropylene during the 1960s. The lead was taken by individual firms, prominent among them being Scott & Fyfe, and Jute Industries and Low & Bonar through their joint venture. Combined, these issues restricted the institute's ability to make a meaningful contribution to the industry's efforts to reposition itself.

On the other hand, the industry devoted a large part of their effort to protecting the existing domestic market through the Gentlemen's Agreements. Although the Agreements' primary purpose was to protect the sack and bag market, mark-up on imported cloth was also extended to include specialised cloths of wider widths, thus covering almost all ranges of jute goods made in Dundee. The scheme was able to deliver on its stated purpose, which was to protect the domestic sack and bag market. However, by mid-1950s the negative effects of the scheme were experienced by merchants, especially the importers, sack and bag sewers and customers (carpet manufacturers and sack and bag users). This led them to press the BoT to dismantle the Agreements. The eventual dismantling of the scheme was, however, the result of the passage of the 1956 Restrictive Trade Practices Act.

The collective strategies had a mixed effect on SF and Craik's strategic repositioning efforts. Both SF and Craiks were founding members of the BJTRA. Although they participated in minor experiments, an examination of their cases indicates that they did not rely on the Research Association to develop their capability in jute. Instead they made use of their own skills. Therefore, the Research Association did not have any influence on their repositioning efforts.

On the other hand, SF and Craiks were not actively involved with the Gentlemen's Agreements, although they abided by the issued prices. The main purpose of this agreement was to protect the domestic sack and bag market. By the mid 1950s both Craiks and SF had developed new capabilities to enter new markets. Craiks had transferred 50% of its operation to cotton and rayon and a significant proportion of the remaining in the specialised jute carpet backing market. Similarly, a substantial part of SF's operation was moved to the backing cloth and roof-felt market. Nonetheless, both SF and Craiks were beneficiaries of the ensuing protection. This is because, although the scheme was aimed at the sack and bag market, imported wide-width cloth was also subject to a mark-up. It is difficult to suggest what their strategic response would have been if wider widths, the speciality cloth, had not received mark-ups.

With regards to the Gentlemen's Agreements' implication for research within the industry, the cases examined in this chapter indicate that it did not stifle research into jute. Lack of any meaningful progress by the BJTRA was due to the reasons discussed above in this section. With regards to the implications for individual firms, SF's case illustrates that firms were actively looking for innovative uses. The most significant applications during the post Second World War period, tufted carpet backing cloth and the wall-coverings, came from the efforts of individual firms.

However, the Agreements had a significant effect on the speed of adoption of new fibers after the end of the Second World War. Although some firms made investments in man-made fibers, they never fully converted to them. The purpose of these Agreements was to protect the domestic market. Only after the domestic markets were threatened by dismantling of Agreements in the early 1960s were new fibres seriously considered. Therefore, had the domestic markets not been protected, the industry would have been under intense international competition and firms would have been induced to experiment with new fibres much earlier.

## **Chapter 6 Discussion**

### **6.1 Introduction**

The aim of this chapter is to draw together the findings and underline the contribution made to the Business History literature on understanding of the British industrial decline since the late nineteenth century and to the capabilities approach. This is done in two separate sections.

The first section juxtaposes the findings of this research with the demand-side thesis in order to examine its effectiveness in explaining the decline of the jute industry in particular and the UK textile industry in general. This section is divided into three parts.

The first part compares the effect of international competition in the jute and cotton industry to tease out similarities and differences between them. It will also help to determine the role of international competition as a major cause of decline of the textile industry in the UK.

The second part discusses the strategic response at the firm level by focusing on their general repositioning strategy and capabilities developed by them. It uses the strategies for analysis identified in the Case Analysis section in Chapter 1. Following from this, the type of capabilities developed within and between inter-war and post-war periods are compared and contrasted. Comparing within the period will throw light on different kinds of capabilities developed in that phase. Comparing between the two periods will help to identify the pattern of capabilities development in the Dundee jute industry during this critical phase. This part also identifies relationship between different capabilities and discusses its consequence and significance in the overall capabilities development. These findings are contrasted with the strategic response of firms in the cotton industry. This will help to tease out the similarities and differences in strategies employed within the two industries, thus helping to throw light on the general strategy adopted within the UK textile industry during this period. In addition, it also identifies the barriers that were faced in the process, an aspect that has not been addressed by the proponents of the demand-side thesis.



The third part discusses the implication for the Chandrian thesis in general. It uses the findings of this thesis, along with that of cotton and other industries such as coal and steel to determine relevance of employing this framework in the context of British industrial decline.

The fourth part discusses the collective strategies employed by the industry to counter international competition. It compares and contrasts types of strategies employed and their effects in the jute and cotton industries to identify the similarities and differences between the two industries.

The second section underlines the contribution to the capabilities approach. It is divided into two parts. The first part underlines the pattern of capability development during the inter-war and post-war period and compares it with the capabilities approach. It will help to identify whether the capability development pattern was consistent with the general framework. The second part uses the findings to discuss the notion of path-dependency in the capabilities approach. In particular, it discusses whether there was an element of determinacy in the way capabilities were developed by firms in the Dundee jute industry.

## **6.2 Effects of International Competition**

The international competition in the jute industry began during the 1860s. Initially this competition was from Continental Europe as a part of restrictive import tariffs imposed by these countries. By 1879, domestic industries had been established in a number of traditional Dundee markets including Germany Belgium, Austria, Italy, Russia, Poland, Spain and Czechoslovakia soon thereafter and restricted the Dundee jute industry's export to these major agricultural markets. However, the major threat came during the 1880s when the jute industry in India began to grow rapidly. In addition, the monetary instability in the world markets resulting from the demonetisation of silver had significantly devalued the Indian currency. This had major repercussions for Dundee as Indian producers now enjoyed a considerable cost advantage in manufacturing jute goods. This, coupled with its close proximity to raw material, key markets, low wages, and longer working hours, gave the Indian industry a sustained differential advantage (see Chapter 3). This differential persisted up-to the post-war period.

The analysis in Chapter 4 and 5 indicates that the challenges faced by the Dundee jute industry, in the form of growing international competition triggered by the restrictive import tariffs in the major international markets, was similar to that of the UK cotton industry. For example, the Dundee jute industry faced difficulty in accessing major European markets since the 1860s due to growing use of import tariffs by countries like France, Germany, Italy, Spain and so on, followed by the subsequent development of industries in these countries (See Chapter 3). A similar problem was faced by the cotton industry.

In terms of effect on market, the competition had similar impact on the jute and cotton industry in that the competition initially affected the 'standard' products. For example, in jute the products affected were sacks, bags and narrow-width cloth, and in cotton it was in the basic grey cloth.

In terms of the effect on the domestic market, the jute industry was affected earlier than the cotton industry. Although international competition began to affect both the jute and cotton industry by the late nineteenth century, by the inter-war period the international competition had made inroads in the UK's domestic jute market (as examined in Chapter 4). Whereas in the cotton industry, the domestic market was only affected by the end of the 1950s when the imports of cotton and rayon yarn and cloth began to exceed their exports (Singleton 1991: 115-116). This difference in the effect of international competition between the two industries was especially underlined by the representatives of the jute industry during the negotiations for the Ottawa Conference in 1932 in order to secure some kind of protection for the domestic market (see Chapter 4). The delayed impact on the domestic market in cotton industry can be attributed to the fact that the industry's major competitor, the Japanese industry, only began to accelerate its growth during the inter-war period (Robson 1957).

Therefore, this research finds that there is a broad similarity between the effects faced by the Dundee jute industry, in terms of growing international competition and its effects on markets, and that of the UK cotton industry. The next section discusses the strategic repositioning strategies that followed in the jute and cotton industry.

### 6.3 Strategic Response and Capabilities during the Inter-war and Post-war Period

The business history literature on industrial decline is grouped into two areas: those supporting strategic response in the form of specialisation and those supporting the strategy of mass production. This section juxtaposes the findings of this thesis with these two strands of debates and discusses the implications.

Within the textile sector, especially in the cotton industry, researchers have found indirect support for specialisation as a strategic response. Both Sandberg (1974) and Singleton (1991) indicated that continuing preference of mule spinning technology by firms in the Lancashire cotton industry was an indication of their preference to operate in specialised markets, as opposed to the standard markets where the American and Japanese industries concentrated. This has been supported also in more recent studies which have re-examined the existing data. In his effort to understand Lancashire's decision to continue with mule spinning, Leunig (2001) found that the principal reason was a 'greater emphasis on fine cottons' (p. 460). According to him, this was a 'rational response' to the growing demand for high quality goods. With mule spinning being a comparatively better technology than ring spinning for making fine quality goods, firms continued to invest in this technology. Broadberry and Marrison (2002) went further and identified specific products, such as jaconets, madapollums, mulls and cambrics, where Lancashire firms specialised; whereas Japanese firms concentrated on standard items such as long cloth and shirtings, sheetings, drills and jeans (p. 71). How do the findings of this study compare with this body of literature?

The cases examined in the DJI suggest that, in general, firms did respond to the growing international competition by repositioning themselves strategically. It was primarily in the form of specialisation. More importantly, this strategy was *in the context of fibres* and can be categorised into two broad sets: a) entering new markets using existing know-how in jute and b) introducing new fibre (See Figure 29).

**Figure 29 Repositioning during Inter-war and Post-war period**

	Market			
Fibre	A	B	C	D, E, F...
<i>Jute</i>				
<i>Other fibre</i>				

Source: Author

During the inter-war period, the competition from the Indian industry was limited to the ‘standard’ sack and bag market and narrow width cloth. The examination of Buist and JI during this period indicates that these firms had consciously decided to move away from the areas where Indian competition was getting intense. The case of JI indicated that, in weaving, firms built capabilities in wide width, lighter weight and long rolls of cloth. These were used mainly as backing cloth for linoleum. On the other hand, the case of Buist suggested that, in spinning, this corresponded to capability in medium and fine qualities of yarn for carpet yarns and yarns for lighter weight jute cloth that were being developed by weaving firms. Therefore, *during the inter-war period the repositioning was limited to entering new markets by developing further capabilities in jute*. But this strategy was limited to only a few firms, as others continued to operate in the traditional markets.

During the post-war period, however, a two-pronged strategic response was followed: a) entering new markets in jute and b) introducing new fibre. Initially, upto 1950s, a large part of the industry that had continued to operate in the traditional sack and bag market during the inter-war period, began to specialise and enter new markets. The case of S&F illustrates this. After operating in the traditional narrow-width sack and bag market during the inter-war period, S&F, during 1950s began to build its capability in wide-widths and long lengths. On the other hand, firms that had already specialised during the inter-war period, found new applications for them. The case of JI illustrates this. During the inter-war, JI was one of the few firms that had built a substantial capability in wide-width cloth that was used as a backing cloth for linoleum. During the 1950s, JI leveraged its capability in wide-width to develop the carpet backing cloth (see Appendix 1 for JI’s post-war strategies). Besides specialisation in jute, firms also began to introduce new fibres during the post-war period. For example Craiks introduced

cotton immediately after the end of the Second World War and by 1950s had half of its production in cotton and synthetics. JI also made forays into this with the establishment of paper sack and bags. However, until the second-half of 1960s the new fibres were not widely adopted within the industry. The importance of new fibre within the industry grew dramatically after this period.

The general strategy of repositioning into new markets and the importance of capability in wider widths and finer yarns is also supported by Whately (1992) in his company history of the firm Don Brother Buist Ltd. Whatley found that during the inter-war years, owing to growing competition from the Indian industry in the 'standard goods' (i.e. sacks and bags), Dons were 'very much in the forefront of the search for markets for non-standard goods' (p. 179). The majority of the firm's looms at this moment were in narrow-widths that were found to be 'too narrow for the contemporary market' (p. 181). In their effort to enter into specialised markets, Dons went on to build their capability in medium and wide widths upto 80" by the mid-1930s (p. 181). During the post-war period, especially between 1945 -1959, Dons were able to leverage these capabilities further (p. 196).

The next section discusses how this strategy was effected using firm's capabilities.

### **Section 6.3.1 Capabilities**

A major aim of this study was to investigate the role of technological capabilities in formulating firm's strategic response. The examination of individual firms highlighted the significance of engineering skills as an important capability in enabling the repositioning. It played a vital role in developing wide width and long length capabilities in jute cloth and in introducing new fibre, especially polypropylene. Traditionally, textile-manufacturing firms, both spinning and weaving, sourced their machines and ancillary equipments from specialised engineering firms. It made the textile manufacturers dependent on engineering firms to bring out developments in machines in order to introduce new developments themselves. The cases examined in this research indicates that, although a purpose built machine can be bought from engineering firm, if a textile firm possesses the capability, it can carry out alterations to existing machines in-house. This would help the firm in two ways: firstly, it would result in a

saving by having to avoiding making large investments in new machines and secondly, it would enable the firm to introduce product developments faster by carrying out minor innovations which only required alterations to the standard machine supplied by the engineering firm.

The case of JI during the inter-war period illustrated how this capability was used to make alteration to existing looms in order to develop its capability in wide-widths and long length rolls for linoleum backing cloth. JI further leveraged this capability to develop the carpet backing cloth in the 1950s. Similarly, engineering capability played a vital role for S&F in developing long-length rolls during the post-war period. The examination of cases also indicates that the engineering capability is of great importance when a fibre is new, it can't be processed on existing machineries and engineering firms also do not have the necessary machines to process them. This point was clearly evident when in the 1960s JI (along with Low and Bonar, See Appendix 1) and SF were experimenting with Polypropylene. As it was a newly found fibre, existing looms were unable to process the fibre into fabric satisfactorily. Moreover, during the initial period machine manufacturers were also unable to supply customised looms. Both JI and S&F made extensive use of their engineering capabilities to, at first, understand and learn about the properties of the fibre and then, to make alterations to existing looms in order to weave Polypropylene fabric. With JI being the largest firm in the industry and S&F a medium sized, they offer a contrasting case. It indicates that regardless of the size of the firm, this was a vital capability. Craiks, on the other hand, did not have engineering capability and as a result faced difficulty during the trial period. Furthermore, this study also suggests that engineering capability may be less important when engineering firms have machines (and the know-how) that can process the material. The case of Craiks introducing cotton immediately after the end of Second World War illustrates this aspect. While cotton was a new foray for Craiks, this industry was well established and therefore looms and skilled people to operate them were readily available. As a result, Craiks was not required to undertake any major technological readjustments. Similarly, for Buist this capability did not play a major role in developing medium and fine quality yarns. The quality of yarn was mainly dependent on the quality of raw jute and the drawing process. In order to secure better quality raw jute, Buist practiced advantage buying and thereby accumulated

stocks of higher quality jute. Whereas in the drawing process engineering firms routinely introduced innovations, so Buist was not required to develop its own engineering capability.

Nonetheless, this capability played a vital role in developing new products. In the case of S&F, it formed a central pillar and continued to play a significant role beyond the 1960s. Underlining its significance, Mr Tough commented:

“The technical know how is ...not only the technical know-how of how to make fabrics, which comes from experience and being prepared to buy a machine and have a go at it and see what you can do with it and learn about it, learn as much as the machinery manufacturer without telling him anything. Because he then goes and tells everybody else in terms of buying the machine. Most of our machines are to some degree modified internally, we have a design department that does that, we have 2-3 drafts men, we have CAD systems for design, most things that are special to us are either standard machines bought from Carol Myer...now Carol Myer are the company you never tell about anything you are doing and we modify it to do a job for the customer and learn as we go along. We don't go to Myer and say build us machine. We go to Myer and buy a standard machine and then do A, B and C to it. We design it here and get the parts and then add it and don't let the Myer technician near it as long as possible.”

Within business history literature, and especially that on the textile industry, detailed examination of how capabilities were used to facilitate the specialisation strategy has been rare. An exception has been Parsons and Rose (2005). They examined firms involved in one of the less researched areas of the cotton industry, the finishing section (especially those firms that were operating in the outdoors market). Parsons and Rose examined the strategic response of these firms between 1960 and 1990. They looked at how, after the decline of cotton in the 60s, experience gained in this industry helped firms to carve out a niche when man-made fibre, especially Nylon, was introduced (p. 693). The structure of this sector resonated with that of the wider textile industry in that it consisted mainly of small firms who had neither in house research and development capabilities nor were directly engaged with any external agencies for this purpose (p. 702). Therefore, the growing use of man made fibres threatened their positions

in this area as firms did not have appropriate capabilities to deal with the new fibres. However, they were quick to identify opportunities to collaborate with specialist chemical and finishing industries that had the required skills, often leading to new development of new products and even establishment of new companies (p. 703). Hence, by tapping into this external knowledge-base residing within surrounding industrial clusters, traditional firms specialising in outdoor markets were able to maintain their advantage in this sector. Parsons and Rose's study has some differences and similarities with this thesis. The difference is in the form of sectoral speciality i.e. finishing section vs. the spinning (yarn) and manufacturing (cloth) section; while the similarity is in the form of nature of the phenomenon i.e. the decline in the use of existing fibre (cotton/jute) and introduction of new fibre (Nylon/Polypropylene). Although firms examined in both studies adopted the new fibre, they provide an interesting case in contrast in how they approached this matter. The finishing firms continued their association with external networks after the initial period and incorporate it into their business model for future growth. Whereas this study found that although firms entered collaboration initially with others as they did not have requisite skills, they soon internalised the learning and reduced their dependence on external networks for key capabilities. It would be interesting to explore the aspects that led to this difference in approach in future research.

The next section discusses the constraints faced by firms within the Dundee jute industry in their attempt to reposition and develop new capabilities.

### **6.3.2 Barriers to Strategic Repositioning and Capability Development**

The current literature in the textile sector, especially in the cotton industry, has underlined barriers in two major areas: a) institutional rigidity, which hindered the introduction of mass production (for example, Lazonick 1983) and b) inability to influence government to secure access to large international markets, which led to closure of major markets (for example, Dupree 1990; Rose 2000). Although researchers have acknowledged the importance of a specialisation strategy as a strategic response, barriers faced by firms in their effort to implement this strategy have received little attention within the current literature.



A major finding of this study has been the identification of barriers faced by firms in their development of capabilities in jute and the introduction of new fibres. The aim of this section is to underline these aspects and discuss its impact on the overall strategic repositioning strategy in the Dundee jute industry.

### **6.3.2.1 Attributes of Jute**

Although firms repositioned themselves by developing new capabilities, they faced significant constraints in the process. This research found that limitations associated with the properties of jute acted as a major constraint. For jute, the coarse nature of the fibre and cheapness in price were its two most important features. As discussed in Chapter 3, these two aspects enabled jute to replace flax in Dundee during the Crimean War in the 1850s. However, the fibre's physical properties proved to be a major constraint in further developing capabilities. Although this issue did not come across strongly in the archival records of individual firms, it was accepted widely within the industry and discussed at various forums.

During the post-war period, developing capabilities in jute beyond what had already been developed was proving to be a challenge. This was because further innovations depended on finding new applications for jute. However, the limitations associated with jute's physical properties were difficult to overcome. This reflected in the fact that jute was not accepted widely beyond its traditional markets. For example, in an effort to promote the wider awareness of jute and its uses, the Dundee jute industry had underlined jute as a versatile fibre having around 101 applications (see Table 3 in Chapter 1). However, almost all these applications were in the industrial market. In these markets jute had very little competition from any other fibre, as durability and cost were the main features that were the driving factors. However, jute's coarseness was a major constraint in entering consumer markets, where finer and softer fabrics were needed. Although attempts were made to enter the consumer market, for example in wall coverings, they did not meet with great success because the fibre's inherent properties were not suitable for these markets. Recalling the problems faced in carrying out further innovations in jute during the post-war period Mr McKay, the Head of Research Department at Jute Industries and a Research Committee member of the BJTRI, observed:

“Unfortunately, the mere nature of the fibre limited the scope. I mean if it was exposed to sunlight it would rot away, so from that point of view its durability. But on the other side, the fibre itself limited to the extent you could produce lighter yarns, because beyond a certain point it is not possible because of the coarseness of the fibre- unlike cotton- so you were faced with, relatively speaking, bulky yarns because you could not get it down to anything really fine. And even had you succeeded in doing that, the applications were fairly limited. There is a certain restriction on development because of the nature of the fibre itself.”

However, these limitations were not just prevalent in the post-war period of the 1950s and 60s, but persist even to this day. Mr Atkinson’s reflection on the outcome of major research institutes (including Dundee, India and Bangladesh) gives a startling insight into the developments in machinery, processing and the application of jute since the 1950s:

“...you had the jute research institute working from about 1950 till 1974 or whenever it folded up; 20 years. And nothing came out of it. You’ve got the Indian research institute which has been working longer. Nothing of significance has come out. You’ve got the Bangladesh institute working from 1960s into the present being. Nothing has come out of it. Yes alright, minor things here and minor things there, little bits and pieces. But there has been no wholesale redevelopment of the process. The process today is exactly the same as it was in the 1890s. Fundamentally it’s the same. The machines have changed slightly, they are going a little bit faster now. But its been fundamentally the same. There has been no significant change there. And equally there has been no market of any size developed, despite about 150 research years. It’s rather sad but I think it just means that jute is ideal for sacks and bags. Finish. Full stop.”

Therefore, during the post-war period the further development of capability in jute was constrained by the limitations associated with the fibre’s inherent physical characteristics. With the dismantling of protection under the Monopolies Act during the early 1960s, as discussed in Chapter 5, international competition was again beginning to pose a serious challenge. In this context, the importance of a new fibre became paramount to the industry’s survival.

### **6.3.2.2 Significance of New Fibre**

While attempts were made to find a new fibre during the post-war period the issue of introducing a new fibre had also been considered in the industry during the 1880s-1890s. As described in Chapter 3, it was one of the two strategic responses, the other being specialisation in jute, that were considered within the industry at that time to counter the growing international competition.

The discussion above highlights that limitations associated with the physical nature of jute played a role in underlining the significance of introducing a new fibre. The importance of a new fibre was also driven by the fact that the Indian industry enjoyed a cost-based advantage over the Dundee industry. It was accepted generally in Dundee that when the Indian industry caught-up with any specialisation undertaken by Dundee by developing its capabilities, India's advantage in manufacturing cost and closeness to raw material would again give them an edge over Dundee. Therefore, the cost advantage enjoyed by the Indian industry compounded the limitations caused by the properties of the fibre.

The cost differential between Dundee and the Indian industry weighed heavily on the strategy that was considered within the Dundee industry, particular during the post-war period. For example, it was reflected very prominently in the Jute Working Party's report on the industry's future in 1946. An estimate calculated in the report gives an idea of this differential. In order to avoid 'over estimating the difference in comparative costs', they used the most efficient means of production by using sliver spinning frames with a double shift to calculate the Dundee cost and an old plant with a single shift for the Indian estimate, thus arriving at the 'minimum UK cost and the maximum estimated Indian cost'. Even with such considerations, the cost difference was too high to reconcile (See Table 35 below).

**Table 35 Comparison of Conversion Costs between UK and India (1946)**

	<b>UK Cost</b> <b>pounds per ton</b>	<b>Indian Cost</b> <b>(estimated per ton)</b>
Operating Costs (wages and overhead expenses)	37.16.5	20.10.0
Capital Charges (interest on capital and depreciation)	10.1.11	7.12.0
Conversion Cost	47.18.4	28.2.0

Source: Jute Working Party Report (1946)

The importance of keeping the end-product cheap was also not lost during the post-war period. In their effort to persuade the Board of Trade officials to persist with Gentleman's Agreements, the representatives of the industry ironically underlined this aspect in no uncertain terms:

“This is a factor of the very highest importance and it is one which my colleagues and I felt, at both the meetings we have had with you, that we had had failed to get over to you. Many cloths traditionally woven in Dundee and bags made from such cloths, differ either in weight or in dimensions from the characteristics of standard imported cloth. These differences have been introduced in order to meet special requirements of consumers of every measurable value to those consumers. As the price of imported cloth of standard specifications is reduced, so the value to the consumer of the speciality specification he is in the habit of buying is progressively cancelled out, so that on a reducing price of imported cloth, it becomes increasingly an economic proposition to use these standard imported goods in place of the traditional Dundee specialities.”

Therefore, during the post-war period protection from imports played an essential role in sustaining the Dundee jute industry. But with uncertainty in the long-term continuity of import protection, the future in jute also appeared unsure. As a result, the significance of a new fibre

grew dramatically during the post-war period. The importance of new fibre was also noted by the Jute Working Party in their report in 1946.

Nonetheless, even by the late 1950s new fibres were not adopted widely within the industry. The Pilmott Committee Report in 1959 on the 'Future of the Jute Industry' found that only a handful firms had begun using new fibres. As Table 36 below indicates, of the total 57 firms surveyed, 38 firms were wholly dependent on jute. Of the remaining, only 9 firms were using synthetic fibres to some extent (largely rayon with 2 firms also using nylon), 2 firms were using wool, 1 firm was making paper and felt, 1 firm had diversified partly into engineering, 3 firms were engaged in carpet and brattice cloth, and 1 firm in flax. Only 1 firm had completely changed over from jute to rayon.

**Table 36 Number of Firms on Jute and Other Fibres (1959)**

	<b>Wholly on Jute</b>	<b>Mainly on Jute</b>	<b>Jute and Other products</b>	<b>Formerly on Jute</b>
<b>Number of firms</b>	38	8	11	1

Source: Pilmott Committee Report, 1959<sup>316</sup>

Among the firms that were using new fibres, the majority of them had introduced Rayon. Rayon is a fine fibre and has a feel and texture akin to that of cotton, silk linen and wool. Owing to its fineness, Rayon is widely called an 'artificial silk'. Therefore, it was more suitable for the markets where fineness of yarn / cloth was of paramount importance. In the cloth side, it was more suited for the apparel and furnishing markets. It was not particularly suitable for the traditional jute markets of sacks, bags, and backing cloths where the emphasis was on the coarseness of the fibre. With properties similar to that of cotton, it could also be processed on looms such as the Northrop, which was primarily made for weaving cotton. The Rayon yarn was more suitable for pile yarns, which were required to have a softer feel (the

<sup>316</sup> SRO, SEP4/823 Confidential: The Future of the Jute Industry, Pilmott Committee Report, 6 February 1959

different types of yarns used in carpet are shown in Figure 4). Jute, on the other hand, was used as a weft yarn, which was required to be of tougher build. As a result, Rayon could not be used to replace jute as a weft yarn.

Therefore, within the jute industry, Rayon was more suitable for firms that had moved away from the traditional industrial markets of jute into the apparel and furnishing industry. This could explain why during the post-war period Craiks, who had entered into furnishing market with the introduction of cotton, laid greater emphasis on it than Scott & Fyfe, who continued to operate in the industrial market.

However, it was not until the introduction of Polypropylene in the mid 1960s that any serious replacement for jute was found, a replacement that could be used in its traditional markets and prove economically viable. Comparing this new fibre with other fibres that the industry had tried previously, Dr Stout, Director of Research at Scottish Textiles Research Association (formerly BJTRA) noted:

“What is the future? Polypropylene tape is the first synthetic material to challenge jute both on technical merit and price. It is likely to be the first of many challenges. So research work must keep well ahead of commercial development.”<sup>317</sup>

Polypropylene had three major technical advantages over jute in the traditional products.<sup>318</sup> First, jute was prone to rotting if used in damp conditions. Second, jute being a biodegradable fibre, tended to lose its colour and texture if it was exposed to sunlight for an extended period of time. Being a man-made fibre, Polypropylene was able to overcome the limitations of jute. Third, the jute primary backing cloth was highly prone to breaking needles that were inserted in it in the process of making tufted carpets. In other words, the jute backing tended to be a ‘needle avoiding backing’ whereby when needles are punched they tend to get brushed aside. On the other hand, Polypropylene fabric was an ‘acceptor’ of needles. As the needle was punched down, the fabric would spread around it. As a result, the pile was placed much closer

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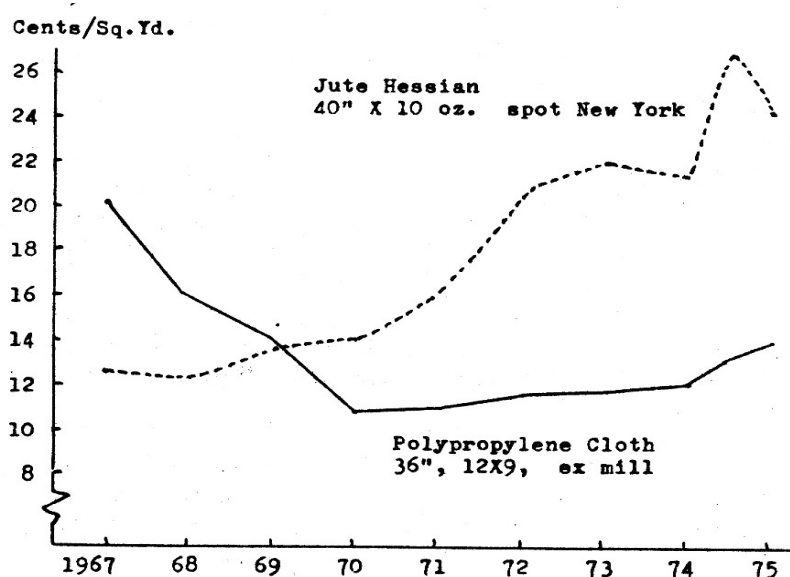
<sup>317</sup> ‘Adding another string to the textile bow’, Newspaper cutting from Glasgow Herald, 25<sup>th</sup> August 1969

<sup>318</sup> Interview with Mr Ian Hutchion, Mr Sandy McKay,

to where it was intended to be. Whereas jute being fibrous material, was able to provide a better 'bond' in a tufted carpet which was not possible with a Polypropylene backing fabric (McKay 1973). However, in order to overcome this, latexing was introduced to achieve better bonding between the backing and the carpet pile. Nonetheless, other technical advantages outweighed this aspect to make Polypropylene overall superior to jute.

Besides being technically superior, Polypropylene was also cheaper than jute, at-least during the late 1960s. The fluctuation in the price of raw jute in the late 1960s had led to a significant price increase in jute goods, making Polypropylene-based cloth cheaper than jute (See Figure 30). Its relative cheapness compared to jute played a major role in this new fibre being adopted widely by the industry.<sup>319</sup> The price of Polypropylene continued to remain competitive with the price of jute between 1960s and 70s.

**Figure 30 Polypropylene resin, Jute Hessian and Polypropylene Cloth Equivalent Prices, 1964-74 (actual) and 1975 (estimated) in the USA**



Source: McDowell and Draper (1978).

<sup>319</sup> DUA, MS 84, Dundee Jute Spinners and Manufacturers Association Annual Report, February 1970

This research therefore suggests that a major element of the ‘demand side’ thesis, i.e. that the firms in the UK concentrated on higher quality goods (so far as the jute industry is concerned) can be applicable only to a limited extent. In the case of the jute industry, owing to the limitations associated with jute’s physical characteristics as a fibre, further specialisation was very significantly constrained. In their examination of the cotton industry, the demand side proponents have not identified the constraints faced by firms in developing higher-end capabilities. This research therefore underlines technology related barriers faced by the firms as barriers in the demand side thesis.

As mentioned in Chapter 1, the aim of this research is not to examine in detail the counterfactual strategy of the industry. However, the above discussion does lead to a possible counterfactual strategy for the industry. It is not a result of ‘speculative thinking’, but has been derived by closely examining multiple options that were being considered within the industry. As has been discussed, there were limitations associated with the physical characteristics of jute. Therefore, initiating further development work was very difficult, if not impossible during the post-war period. The ‘latest’ development, i.e. backing cloths for tufted carpets, was also under threat from Indian competition once protection was lifted in the 1960s. The industry therefore faced a ‘squeeze’ whereby at one end, low cost based competition was looming and at the other end the properties of jute put constraints of what more could be done with jute to develop new applications and enter new markets.

The introduction of new fibre was viewed within the industry as a possible strategic option. If a new fibre could have been applied in the existing industrial market, it would have given the industry a chance to move away from the Indian industry’s jute-based competition. Therefore, although the *replacement of jute by a new fibre could be perceived as a ‘threat’ or ‘death knell’ for the ‘jute’ industry, it was a necessity through which the Dundee ‘textile’ industry could continue to survive*. This idea has also been supported by Guldie (1987) who drew a parallel between the introduction of jute and Polypropylene and suggested that ‘the coming of jute was as inevitable as the replacement by Polypropylene’ (p. 125).

The counterfactual proposition of the supply side thesis was that if the cotton industry had enhanced its level of productivity, it would have performed better against the international



competition. This research, on the other hand, introduces a competing counterfactual proposition. According to this argument, as far as the jute industry was concerned, *if a new fibre had been introduced successfully during the end of the nineteenth century or during the inter-war period, the industrial textile industry of Dundee would have experienced a similar resurgence as the one experienced when jute replaced flax in the 1850s*. However, its sustainability would have depended on how rapidly low-cost industries would have developed internationally.

As discussed in Chapter 3, a new fibre was also under consideration as a strategic response between the 1880s-90s. Why then did it take the industry until the 1960s to introduce it? Attempts should therefore be made to examine why the industry failed to proactively introduce this much earlier. Initial analysis leads to two major issues. The first aspect is examined in this research i.e. the properties of the fibre and the nature of industrial market. As jute was coarse and cheap, it was suitable for it to be used in particular industrial markets, but it was difficult to find another natural fibre with these two key features to replace jute. The second explanation relates to the cognitive aspect. For example, MacKay, Masrani and McKiernan (2006) have argued that a possible major limitation could have been the dominant ‘jute’ mentality that was prevalent within the industry. Since the introduction of jute in 1850s, the industry was widely known by its raw material, as the ‘Dundee jute industry’, rather than the customers it served in the industrial markets, the packaging industry. As a result, the innovations, both products and process, were mainly within jute (p. 935-936). Had the industry perceived itself as a ‘packaging’ industry, it could have avoided locking itself into jute and could have been more vigorous in its search for new fibres (p. 936). These two explanations are not necessarily mutually exclusive. In fact, it is possible that the cheapness of jute and the inability to find any other fibre to replace it could have led to the belief within the industry that ‘jute is king’ and is irreplaceable.

To conclude, the cases examined suggest that firms in the DJI indeed followed a strategy of specialisation as part of their strategic response. However, a major finding of this study is that specialisation was in the context of fibres. Therefore, in order to gain a better understanding on the decline of the industry, it is important to also get better understanding on barriers faced in implanting this strategy. The resulting implications for research on the textile sector, and

especially the cotton industry, can be identified as follows: the current literature indirectly indicates that firms responded to the growing international competition by fostering further specialisations within cotton. Was introduction of a new fibre regarded an option as a part of overall strategic response? If not, then why? If yes, then what efforts were made by firms individually and collectively in this regard? Lazonick (1983) found that cellulose fibres, especially Rayon, was tried in the cotton industry by early 1930s and by 1936 it constituted 1% of total yarn production (p. 221). These figures remained stagnant upto 1950s and it was only after 1964 that production of Rayon and other man-made fibres picked up (p.221). Why did this diffusion take so long? What problems were faced by the firms? Further research on these issues should shed interesting light on the strategic response of the cotton industry and its eventual decline.

### **6.3.3 Implication for the Chandlerian Thesis**

What implications do the interpretations discussed above have for the traditional argument which argues that the British industrial decline was due to its failure to adopt the techniques of mass production? Although this theory has come under heavy criticism, it continues to find renewed support within the literature. For example, in a recent examination of adoption of this model in European countries between 1945 and 2000, Whittington and Mayer (2000) concluded that ‘the rumours of death of old style big business are greatly exaggerated’ (p. 49). Although period during the period following the Second World War ‘almost no’ multidivisional firms could be found’, the scenario has changed during 40 years since then (p. 187). In their survey of Fortune magazine’s 500 largest firms in 1999, they found that 6 out of top 10 firms by revenues were established in 19<sup>th</sup> century or earlier, indicating the ‘staying power’ of big businesses (p. 49).

Within business history, and especially in the cotton industry, this debate has translated into examining the failure to build large corporations due to lack of investment in technology (continued preference of mule over ring spinning technology), structure (fragmented over integrated), and professional management and their role in general industrial decline. As a result, firms were not able to avail the benefits of economies of scale and scope and lag behind in productivity compared to their competitors internationally.

The examination of the DJI also reflects this pattern in these three areas. First, with regards to investment in technology, although attempts were made to improve productivity by introducing process innovations, it was clearly not regarded by the firms as a primary strategy against growing competition from the India industry. Instead, firms examined in this study relied more on repositioning themselves through product innovations which helped them to move into new markets where competition would not be as intense and build capabilities in these niche areas.

Was the strategy of specialisation also employed beyond the textile sector? Dintenfass's (1992) examination of the coal industry during the inter war period certainly points in this direction. Chapter 2 described various innovations introduced by colliers in management of their 'works'. Besides these, as Dintenfass identified, firms also innovated in their marketing practices, which were primarily aimed at moving into higher end market. For example, firms such as Ashington Coal Company strategically chose to move away from 'run-of-mine' and concentrate on higher quality coal during the inter war period. It was crucial in enabling the firm to sustain its presence in domestic and export markets when the foreign competition was threatening other Northumberland firms (p. 173). Similar strategies of specialisation have also been observed in the Sheffield steel industry (Tweedle 1995). The industry got a kick start during early 19<sup>th</sup> century by drawing on local factor conditions such as coal, water-power, and mineral resources. However, by 1840s competitors in the US began to capture the big domestic market there and a few decades later the German industry began to show its strength. Firms recognized that there was a need to 'adapt to these changes, and many others, across its range of determinants if they were to stay ahead of competition' (p. 60). The policy employed by firms was that of specialisation. While the US and German firms focused on bulk steel production, Sheffield firms concentrated on specialist high-end products. Hence, besides cotton industry, the experience of DJI also resonates with the other industries facing similar challenges during this period. It indicates that in the UK the process of competing on high-end specialist markets, often regarded as a late twentieth century phenomena, had actually begun since the late nineteenth century.

However, in the DJI, firms did not overlook productivity enhancing technologies altogether. The case of Buist during the inter-war period showed that when better machines became available in drawing and spinning they were introduced without much delay. However,

introducing automatic looms was not a primary strategy during the inter-war period with both Craiks and S&F. Although JI had experimented with automatic looms during the 1930s, it had reverted back to using standard shuttle looms with slight modifications and converted them to 'semi-automatic' looms. During the post-war period, the cases of Craiks, S&F and JI showed that introducing automatic looms went hand-in-hand with repositioning into new markets. Therefore this research finds that, especially during the post-war period, *firms used both strategies in conjunction in order to counter international competition, with repositioning as a primary and productivity as a secondary strategy.*

Second, although this issue was not examined directly, the cases did not indicate that firms undertook any professional training of management. However, as the case of Jute Industries illustrated, some firms actively encouraged their technical staff to undergo professionalised trainings in their area of specialisation.

And finally, very few firms reflected the ideal Chandlerian type corporate model with large vertical and horizontal integration. On the contrary, large part of the industry was made up of small sized firms which specialised either in yarn or cloth manufacturing. In addition, these firms also did not have their own marketing department and relied on merchants. This study examined a mix of both small sized and archetypal Chandlerian firms. The analysis (in Chapter 4 and Chapter 5) indicated building a large integrated structure was not on top of their agenda. The predominant concern that transcended firms was how they can respond to the growing international competition through specialisation in jute and through new fibre. Therefore, a small or medium sized firm when operating in the specialised market could respond equally well to the growing international competition as a larger firm. Hence, *what products a firm made and what market it operated was of considerable significance.* But this does not suggest that the issue of productivity and size were completely irrelevant. However, it does indicate the relative significance of one aspect over the other.

Hence, a major implication of this interpretation is that it indicates a shift in focus from examining issues associated with implementing productivity enhancing techniques, such as mass-production, (which has been the central focus within current literature) to issues associated with implementing product-market strategies. For example, how was the strategy of

specialisation executed and what problems did firms face in the process? Both of which have been the focus of this research.

These strategies constituted the strategic response at the firm level. The following section discusses the role of collective strategies as a strategic response to the growing international competition.

#### **6.4 Collective Strategies**

This section juxtaposes collective strategies employed in the jute and the cotton industry during the inter-war and the post-war period. It compares the types of strategies employed and its effect within both industries in countering growing international competition.

As examined in Chapter 4, during the inter-war period the Dundee jute industry's collective effort centred on two major strategies in the forms of the curtailment of yarn production (during the 1920s) and the restricting of imports by lobbying for import tariffs (during the 1930s). Although an effort was made to establish a research association, it did not receive as much attention by the industry as was devoted to the other two strategies. The cotton industry's efforts during the inter-war period were in three major areas. First, in order to promote research, the industry established the Shirley Institute. Second, efforts were made by the Government to secure easier access to international markets where the industry was facing increased competition. And third, an effort was also made to increase productivity through the 'more looms per weaver' experiment. Hence, it can be concluded that the pattern of collective strategies followed in the jute and cotton industry were of a similar kind.

However, the effect of these strategies displayed a mixed pattern. For example, in both these industries the price agreements could not be sustained. The major reason was the conflicting interests among firms, which resulted from different areas of specialisation. In the cotton industry, this difference among firms was also responsible for the failure of collective effort to increase productivity through the more looms per weaver experiment. However, with regard to the Government's assistance in countering international competition, the cotton industry had greater success in securing the Government's help than did the jute industry. For example, one

of the major forms of help that the cotton industry was able to get from the Government was the 1932 Ottawa Agreement. In this treaty, the cotton industry managed to secure greater access to the Indian market, whereas the jute industry was not able to restrict imports into the domestic market. A possible explanation of the success of cotton over jute could be the greater significance of Lancashire region in the national politics.

With regards to the post-war period, as examined in Chapter 5, the jute industry employed two major collective strategies, in the form of Gentlemen's Price Agreements for 'standard' quality goods (i.e. narrow-width cloth and sacks and bags) and in research and development (through the British Jute Trade Research Association). The cotton industry's efforts were also focused in two areas: first, in the form of the Yarn Price Agreement to maintain a minimum level of yarn price in the domestic industry. And, when the Price Agreements were dismantled in 1958 under the Restrictive Practices Act, the Government offered the cotton industry incentive to modernise through the Cotton Industries Act of 1959. During this period, the cotton industry also focused on collaborative research via the Shirley Institute. Hence, it can be concluded that, just as during the inter-war period, the collective strategies implemented in the jute and cotton industry during the post-war period displayed a similar pattern.

Yet, the two industries displayed two major differences, especially with regards to the price agreements: a) the Gentlemen's Agreement in the cotton industry was restricted only to the spinning section, because an acceptable agreement could not be drafted among the weaving firms. This was in contrast to the experience of the DJI. Here, all sections of the industry, including importing merchants, spinners, cloth manufacturers, distributing merchants and, bag sewers consisted part of a complex set of interconnected price arrangements. Non-adherence to the agreement by any one section would have meant that the original aim, to equate price of imported and locally made goods, would be unachievable. Within each section (i.e. spinners, manufactures, merchants, bag sewers) special committees were established whose remit, although not legally binding, was to ensure that the members followed the prescribed price guidelines. The committee Chairs employed various pressure tactics to achieve this objective. b) the current literature on cotton industry does not clarify whether the agreement was applicable to certain or all types of yarns. In the DJI, the agreement was primarily aimed to help the most vulnerable 'standard goods' (sacks, bags and narrow cloth). However, owing

perhaps to lack of understanding on the nuances of the jute industry by the authorities, the industry managed to also secure import tariffs for the specialised goods (wider width cloths of over 72”). It was only when the Pilmott Committee was established in the late 1950s that this unusual policy was spotted by them.

With regards to the effect of the collective strategies, the two industries displayed certain key similarities. For example, under shelter of protection from international competition, much of the jute industry’s effort was on reequipping its machineries with automatic looms, high-speed spinning systems and wider-width looms to increase productivity and move away from the traditional narrow-width sack and bag market (examined in Chapter 5). Similarly, the cotton industry was also under directions from Government to scrap old looms and spindles and replace them with automatic looms and ring spinning systems. However, these reinvestments did not help to secure either the jute or the cotton industry’s future. After the protective cover was lifted, the importance of alternative fibres increased considerably in both these industries. The significance of alternative fibre in jute has been discussed earlier in this chapter. Similar need was felt in the cotton industry. For example, Singleton (1991) noted a recommendation made by one of the Directors of Courtalds that ‘Lancashire would have to reduce its reliance on cotton and increase its involvement in man-made fibres if it intended to survive’ (p. 219). Commenting on the investment strategy of the cotton industry between 1950 and 1965, Singleton concluded that the productivity enhancing investments in cotton, in the form of automatic looms and ring spinning, were ‘misguided’ (p. 166-167).

With regards to the effect of the collective effort in promoting research, as examined in Chapter 5, the research initiatives of the BJTRA did not have any major impact on building the jute industry’s capability to counter international competition. There is little research on the constraints faced in the development of research initiatives at the Shirley Institute in the cotton industry. As a result, it is difficult to compare and contrast the problems of the two industries.

## **6.5 Entrepreneurship: Damnation or Redemption?**

As noted in Chapter 1, an important aspect associated with examining the British industrial decline using either the supply-side or demand-side framework, has been to determine the performance of the 'British entrepreneur' during this critical period. The terms 'damnation' and 'redemption' have been used widely within the literature to characterise their attempts as either a 'failure' or 'success'. What does the strategic response of individual firms employed in the Dundee jute industry tell us about this perennial issue within British business history?

This research did not focus on individual entrepreneurs, so it is difficult to comment on their personal characteristics. However, the quality of their entrepreneurship in general can be examined indirectly in the form of efforts made by the firms to develop capabilities in order to counter the growing international competition. Were the owner-managers rational and successful in developing capabilities to meet international competition or did the constraints get the better of them?

Traditionally, the proponents of the demand-side thesis have been sympathetic to the entrepreneurs and have directed their energies towards their 'redemption'. According to them, factors such as the growth in international competition and the closure of major international markets, which were responsible for the decline of the industry, were beyond the control of individual firms. On the other hand, the supply-side proponents have been less sympathetic to the entrepreneurs. According to them, the strategies employed by them, i.e. small scale specialised firms, were the root cause of the eventual decline. The focus of analysis in these examinations has been the industry. As a result, proponents on both sides of the debate have been able to derive highly generalised and polarised conclusions.

Instead of examining the industry as a whole, this thesis has examined the strategies of individual firms. The conclusions derived from the analysis suggest that a broad-brush generalisation is not appropriate to characterise the decline of the Dundee jute industry, as discussed in the following three points:



Firstly, within the industry some firms were actively involved in developing their capabilities in order to enter in new markets as a strategic response to growing international competition during the inter-war and post-war period. However, these firms were very few and the majority of the industry continued to operate in the traditional markets.

Secondly, the success of this select group of firms can also be determined based on the nature of capabilities developed i.e. within jute or new fibres. For example, during the inter-war period, the general emphasis was on further developing their capabilities in jute; whereas in the post-war period it was in jute and in new fibres. However, as discussed earlier in this chapter and in Chapter 3, the industry had also considered introducing a new fibre during late nineteenth century as a part of their strategic response to international competition, but firms were only able to successfully introduce it during the 1960s. Hence, as far as developing capabilities in new fibre is concerned the industry's overall efforts between the late nineteenth century and 1950s can be deemed less than successful. Nonetheless, during the 1960s, the entrepreneurship displayed by select firms such as Jute Industry and Scott & Fyfe in introducing polypropylene was an exceptional nature. As far as developing capability in jute is concerned, this can be regarded as relatively successful because firms were able to develop new capabilities during both the inter-war and post-war periods, albeit it was difficult to further develop capabilities beyond a certain point. Hence, it is important to underline the technology related barriers faced in further development of capabilities in jute and the introducing of new fibres (as discussed earlier in this chapter).

Thirdly, even those firms that could be regarded as relatively successful at developing new capabilities were not all were proactive during both the inter-war and post-war periods. For example, Scott & Fyfe was highly successful during the post-war period in developing capabilities in jute and introducing new fibre in the form of polypropylene, but not during the inter-war period when they made little effort to develop new capabilities in jute. Whereas Buist was actively seeking to develop capabilities in finer qualities of jute during inter-war period, but did not attempt to take its capability further in the post-war period. On the other hand, Jute Industries was successful in the both inter-war and post-war period in leading the way in developing capabilities in both jute and polypropylene. Whereas Craiks displayed enthusiasm

in developing capabilities in cotton by the late 1940s, but lagged behind in further developing capabilities in new fibres in the 1960s.

Therefore, firms within the industry displayed heterogeneity in their effort to develop capabilities during the same and different periods. This finding is similar to that of Dintenfass (1992). In a detailed examination of the strategies of four collieries, he found that those firms differed among themselves and with the rest of the industry in the strategies that they employed. Following from this, Dintenfass concluded that it is unreasonable to pigeonhole an industry's performance as a success or failure without first examining the strategies of individual firms in detail. The findings of this study reiterate the importance of examining and cross-comparing the strategies of select firms while examining the decline of the industry.

## **6.6 Contribution of and to the Capabilities Approach**

This research used the capabilities approach to develop greater insight into strategies pursued by the firms. This section discusses two major aspects related to this: first, contribution made by the capabilities approach to the understanding of the issues examined in this thesis, and second, contribution made to the theoretical development of the capabilities approach. These are addressed by discussing the following issues: i) pattern of capabilities developed, ii) constraints faced in capability development, and iii) the general path-dependent nature of capabilities.

i) Helfat and Peteraf (2003) have suggested that the capability development can be triggered by internal or external factors. This study found that the dominant trigger driving the capability branching in the Dundee jute industry between the late nineteenth-century and the post-war period was an external factor in the form of growing international competition. Other developments, especially the post-war period, such as dismantling of the Gentlemen's Agreements and discovery of Polypropylene also played an important role.

With regards to the actual branching of the capability, Helfat and Peteraf (2003) have suggested that when existing capabilities come under threat, a firm's response can be in these

six forms: retrenchment, retirement, renewal, redeployment, recombination and replication of their existing capabilities. Each strategy can be adopted individually or in combination with others. Examination of cases in this research has suggested that the general pattern of capability development was only partly consistent with this framework.

For example, according to Helfat and Peteraf's categorisation, renewal and replication occurs mainly within existing product-markets, whereas redeployment and recombination leads to new products and markets. This study found that the renewal and redeployment of capability was consistent with the categorisation. For example, renewal of capability was in the form of increasing the quality of their traditional products, mainly narrow-width cloth for sacks and bags, by making cloth of lighter weight for the same market; whereas redeployment of capability was in the form of developing cloth of wider-widths and longer lengths for carpet and linoleum backing, a new market (See Figure 31).

However, the strategy of recombining, which involves using the existing with new capabilities to enter new markets, was found not to be fully consistent with the categorisation as suggested by Helfat and Peteraf. For example, the introduction of polypropylene can be generally regarded as recombination of capability. It required existing capability in cloth manufacturing and engineering skills along with new capabilities in the form of converting polypropylene into tape and cloth (See Scott & Fyfe case in Chapter 5 and Jute Industries and Low & Bonar case in Appendix 1). Hence, this aspect was consistent with the general categorisation. However, during the initial period, the introduction of polypropylene did not lead to development of new products and entry into new markets. The initial product produced by polypropylene was the wide-wide cloth for the carpet backing market (See Figure 31). It was also used to make the industry's traditional products sacks and bags for the traditional packaging market. Hence, both the product and market remained the same. Therefore, this aspect was not consistent with the categorisation. However, over the years, due to physical characteristics of polypropylene, firms did develop new products and enter new markets (see Figure 31), a characteristic consistent with Helfat and Peteraf's categorisation of recombining capabilities.

**Figure 31 Capability Categorisation**

	<b>Market</b>		
<b>Fibre</b>	<i>Sack and Bag</i>	<i>Specialised</i> (Carpet and Linoleum Backing)	<i>Specialised</i>
<i>Jute</i>	Renew	Redeploy	Recombine
<i>Other</i> (Polypropylene)	Recombine	Recombine	Recombine

Nonetheless, the general nature of strategic response and pattern of capability development employed in the jute industry in order to counter growing international competition has also been observed in other industries. It is acknowledged here that the jute and semiconductor industries are vastly different in terms of their technological sophistication and industry dynamics, yet the jute industry's repositioning strategy of recombining existing capabilities to enter into new markets resonates with the strategic response of the American semiconductor industry during the 1980s (Langlois and Steinmueller 1999; 2000). The semiconductor industry was established in the USA after the end of the Second World War. Until 1980s, when the Japanese challenge emerged, the American industry was highly fragmented. The Japanese industry, on the other hand, had built its position based on integrated industry structure and demand pattern (1999: 19). In their examination of the industry, Langlois and Steinmueller challenged the traditional view that argued that in order to compete against the growing international competition from Japan, the American industry should imitate their Japanese counterparts by consolidating and rationalising their operations (p. 19). What they found was that, although consolidation did take place, the industry's main strategy was to reposition itself by developing new capabilities and entering new markets (2000: 1168).

ii) The capabilities approach helped to give an insight into the constraints faced in developing new product related capabilities in order to counter the growing international competition. A major constraint was in the form of existing technology, the physical characteristics of jute. In discussing the issues that determine the direction of a firm's expansion, Penrose (1959) argued that the direction a firm takes is determined by the set of skills possessed by existing personnel. Their knowledge of the technology and market, gained by years of experience plays a vital role in how they perceive the potential of development, which in turn determines the scope and nature of the further development of existing capabilities (45-58, 77-79). However, Penrose also argued that the scope of what can be developed is also shaped by the resources that managers work with. Therefore, while the potential of capabilities that can be developed depend on the 'capacities of men', the 'capacities of men is also shaped by the resources men deal with' (p. 78). In other words, the limitations imposed by the existing technologies restrict the range of capabilities that can be developed. Therefore, this issue reflects the crucial role played by the constraints of jute's physical properties in developing further its capabilities. As discussed above and in Chapter 5, considerable attempts were made, especially during the post-war period, to further develop new applications of jute. However, these were curbed by the limitations that were imposed by the nature of jute fibre.

Another form of constraint was the lack of supporting capabilities in developing new product related capabilities. This was evident during the introduction of Polypropylene. The cases examined showed that while JI and S&F were able to take an early lead in Polypropylene, Craiks was not able to move quickly in this area. As pointed out in Chapter 5, Polypropylene was vastly different to jute, both in terms of fibre properties and its potential. Therefore, it could be regarded as a major innovation within the industry that required a new set of skills. Examining the capabilities developed during the period of change in an industry, Langlois and Robertson (1995) proposed that if the innovation is entirely new, in that there is no significant existing industry, than the firms most likely to take advantage of it would be those that already have the most important relevant capabilities (p. 117). This fits in with the experience of JI, S&F and Craiks when introducing Polypropylene. Being a radically new innovation, Polypropylene required firms to possess considerable technical capability to conduct trials. With JI and S&F having experience in this area, they were able to use it to make experiments

early, whereas Craiks found itself highly dependent on technical developments to take place first before it could make a foray into Polypropylene.

Hence, the capabilities approach provided a useful framework for understanding the strategies adopted by firms individually in the jute industry in response to the growing international competition. The jute industry did not develop any radically new capabilities between the 1880s, when international competition rose dramatically, and the 1950s, before the introduction of Polypropylene. It was incremental in nature. However, this experience is consistent with the capabilities approach, which argues that capabilities generally are developed in an incremental fashion. The following observation by Langlois and Steinmueller (2000) underlines this aspect succinctly:

“The pattern of capabilities or resources available to a firm evolves slowly out of earlier patterns, largely in response to the opportunities the world presents. Strategy is not a matter of creating capabilities out of whole new cloth but rather of picking and choosing among existing capabilities from a menu that circumstance dictates. And even that choice is often constrained and shaped by conditions outside the control of managers” (p. 1171-1172).

iii) Clearly, the pattern of capability development in the jute industry during the inter-war and post-war periods to counter growing international competition displayed path-dependency. For example, firms developed capabilities in wide-width cloth and finer yarns by making use of their existing capabilities. However, as this study has found, the industry was also considering the possibility of introducing a new fibre by the 1880s and again after the end of the Second World War. Therefore, this research suggests that by simply arguing that the development of a particular capability was due to its path-dependent nature robs the analysis of two aspects: a) the range of options available to a firm and b) the opportunity to gain deeper understanding as to why a particular capability was pursued over others. As a result, this study has also demonstrated that by identifying and examining multiple strategic options that were considered by the firm before committing to a particular capability, it is possible to reintroduce the notion of choice that is central to the capabilities approach but overshadowed by over emphasis to path-dependency.

## **Chapter 7 Conclusion**

### **7.1 Introduction**

This chapter summarises the findings of the thesis and underlines key theoretical contributions and normative implications. The chapter also points out limitations within which this research was conducted.

The purpose of this thesis was to examine the decline of the Dundee jute industry, especially during the inter-war (1919-1939) and post-war (1945-1960s) period, using the demand-side framework. In particular, this research examined the effects of international competition and the repositioning strategy adopted within the jute industry. The repositioning strategies were studied by examining the capabilities developed by individual firms and the role of collective strategies. The thesis used the capabilities approach from the strategy literature to develop greater understanding of the capabilities developed by individual firms.

The analysis found that the decline of the DJI corresponded with the major tenets of demand side framework. For example, firms pursued a strategy of specialisation in order to counter growing international competition. However, this specialisation was in the form of developing further capabilities in jute and a new fibre. During the inter-war period firms concentrated in developing capabilities in jute, while during the post-war period, although firms still developed further capabilities in jute, the significance of developing capability in new fibre increased considerably. Although collective strategies were employed to counter the threat of international competition these strategies could not be successfully implemented during the inter-war and post-war period. Strategies like arranging minimum prices in both periods (i.e. inter-war and post-war) were difficult to implement owing to conflicting interests among firms; although the Gentlemen's Agreements during the post-war period received greater success over similar efforts during the inter-war period. On the other hand, the success of collective research strategy was hampered partly by hesitancy of firms to liaise closely with the Research Association and partly by the inherent limitations of the jute fibre.

The theoretical contributions and normative implications arising out of these findings are underlined in the following two sections.

## **7.2 Theoretical Contribution**

This thesis has made a contribution to three major areas of literature: Dundee jute industry, business history, and capabilities approach.

### **7.2.1 The Dundee Jute Industry**

As mentioned in the first chapter, the DJI was a major part of the UK textile industry and had major social and economic significance for the Dundee region. Yet, the business history literature on this vital industry has been sparse. This study has made an attempt to address this issue. Its contribution can be identified in five major areas:

*Data:* A major contribution of this study is in the form of empirical data. This can be categorised into two parts: first, this research investigated cases (Buist, Craiks, Scott & Fyfe and Jute Industries) and collective strategies that have not been examined previously within the current literature. With regards to Scott & Fyfe, no archival record exists as it were destroyed in a fire in 1954. Hence, information on this firm adds a new dataset. Secondly, a new dataset have also been created through interviews. Each of the twelve interviewees played a pivotal role in the industry's post-war history. However, the specific role of four persons deserves particular mention: Mr R. R Atkinson (leading role in the British Jute Trade Research Association and jute research in general between 1970s – 1990s), Mr Sandy McKay, Ms Joanne Taylor and Mr Hamish Tough (pioneering role in introduction of Polypropylene). These people had not been interviewed before in the context of research on the Dundee jute industry and so these records would be of significant historical importance. The interviewees have also donated a collection of interesting material (not available in Dundee University Archives) on the jute industry which will be of historical value.



*Issues:* This study examined the decline of the industry and its strategic response in the form of strategies employed by firms individually and collectively. Although these issues have not been examined systemically in combination, the subtext of decline and particularly the competition from Indian industry has been treated in all the literature on the business history of the DJI. However, only Howe (1982) has methodically examined the issue of decline and firm's strategic response, although he too excluded the analysis of the collective strategies. By examining firm level and collective strategies, this study provides a fuller understanding on the industry's overall strategic response to the growing international competition.

*Period:* Although the existing literature has covered a significant chronology, it has concentrated on the early and later part of industry's life. For example, the beginning of the industry has been examined by Carrie (1964) 1861-65, Gauldie (1969) 1790-1885, and Lenman et al (1969) 1850-1914; whereas Howe (1982) 1960-1977 has primarily focused on the later part of the industry. The inter-war (1919-1939) and post-war (1945-1970) has received little attention within the literature. Moreover, researchers have not contrasted events and strategies within different periods to determine their relative significance on industry's decline. By specifically examining the inter-war and post war period, along with the late nineteenth century (1860s – 1900s) and cross-comparing strategies during these periods, this study has made an attempt to address this aspect. In addition, the issue of periods examined attains greater significance especially when it is combined with the research issues investigated in this research (discussed above). Hence, this study is one of the first attempts to examine industry's strategic response over almost entire industry's life (1860 to 1970).

*Method:* The primary focus of current literature on the DJI has been at the industry level. Although Whately (1992) has charted the company history of Don & Low, there is very little systematic cross-examination of individual firm's strategies. With an explicit focus on four firms and by contrasting their strategies, this study has introduced a methodological novelty within the existing literature. The detailed analysis and implications have been discussed Chapter 4, 5 and 6.

*Juxtaposition with other sectors:* The current literature on DJI has yet to situate the industry's case within the wider business history literature on British industrial decline. By comparing the

strategies employed within the jute industry with that of the Lancashire cotton industry (a related textile sector), this study has made an attempt in this direction. Furthermore, much of the effort in the business history literature has been devoted to examining the Lancashire cotton industry. As a result, there is little examination of other textile sectors. With the introduction of jute to this debate, this study has made an attempt to redress this balance and help to provide greater light into the decline of the UK textile industry in general. As a consequence this study has found that there were many similarities between the two sectors, especially in the form of threats faced by the growing international competition and the use of specialisation as a strategic response to this challenge. However, by identifying the barriers faced in specialising, especially in further development within jute and introducing new fibres (see Chapter 6), this study has opened up possible avenues for research of these issues in the cotton industry.

### **7.2.2 Business History**

- First, the demand-side framework has been used mainly to examine the decline of the cotton industry. This thesis examined the decline of the Dundee jute industry with this framework and thus introduces a new case. The examination of another textile industry helps to build a better understanding of decline of the textile industry in general since the late 19<sup>th</sup> century.
- Second, this thesis has further developed the demand-side framework by examining the strategic response in detail. Although the role of collective strategies as a strategic response is examined extensively, the strategic response of individual firms has remained under-researched within the existing literature. This study cross-examined the response of individual firms by comparing and contrasting the capabilities developed by them. In addition, this thesis also identifies barriers, especially the technological, at the firm level in developing capabilities. In the current literature, the barriers have been mainly attributed to the limited success of collective efforts to restrict international competition and provide easier access to international markets. By identifying barriers at firm-level, this research extends our understanding of barriers faced in the textile industry.

- Third, this thesis also contributes to the research approach by using a framework from strategic management to examine the issue of British industrial decline. The use of strategy models to examine the decline has not received much attention. An exception in this regard is a study by Singleton (1997) who used Porter's (1980) five forces to describe the cotton industry's strategies. However, the strategies were broadly categorised at an industry level to give a picture of the industry's overall response. Moreover, Singleton's primary focus was to examine the world cotton textile industry and British cotton industry's strategic response was only one part of the study. On the contrary, this research has used the capabilities approach with the main aim to examine the strategic response of individual firms in the Dundee jute industry. The use of this approach has also led to new insights on firm's responses. In particular, it has helped to understand why some firms were able to develop new capabilities faster than the others in the face of international competition and limitations associated in further development of capability in jute (discussed in detail in Chapter 6). Moreover, categorising the strategies of firms in terms of capabilities has also helped to understand the industry's overall response in a new way.

**7.2.3 Capabilities Approach:** While contribution to the capabilities approach is of secondary nature in this research, two major implications to the development of this theory have been identified and are discussed below.

- First, this thesis has made an attempt to redress the issue of determinacy, which has occurred due to high-emphasis on path-dependency, in the capabilities approach. This was done by employing suggestions made by historians, both post-modern and traditionalist, to take into consideration various alternatives that were being considered by the subject while conducting a historical analysis. As a result, this thesis also identified the capabilities that were being considered but not employed by the firms, while examining in detail the capabilities actually developed by them. Consequently, this study was able to shed new light on the pattern of capabilities developed in particular and the decline of the Dundee jute industry in general.

- Second, this thesis provides an empirical case for Helfat and Peteraf's (2003) theoretical model of capability branching. In addition, the case also contributed our understanding of the nature of capability development, especially when it is 'recombined'. As discussed in Chapter 6 (Section 6.6), after a capability has been recombined it can also be used in the same market, as opposed to only in new markets, as suggested by Helfat and Peteraf. Hence, this study also makes a contribution to the development of this theoretical model.

### **7.3 Normative Implications**

The two major issues examined in this study, the growing international competition and the strategic response in the Dundee jute industry during the inter-war and post-war period, are relevant for the British textile, and manufacturing industry in general, even today. For example, the Textile Clothing and Strategy Group (TCSG) report for the future of textile industry and the DTI report on the future of UK manufacturing industry identified the threat of international competition as a major challenge for British firms in recent times and suggested various strategies that can be employed to counter this.

However, in these reports, the challenge of international competition to the British manufacturing industries has been perceived as a late twentieth century phenomena (e.g. TCSG: 5-6; DTI: 9, 19). But as the findings from this study have indicated, industries have grappled with this challenge since the late nineteenth century. Therefore, suggestions that these challenges are of contemporary nature are erroneous.

Furthermore, these issues have been examined extensively within the business history literature over the last three decades. Hence, one way to develop greater understanding of this challenge in the contemporary period is to foster greater engagement with the business history literature. Importantly, this was the aim Hannah (1983; 1984) identified for business historians when he argued for greater thematic focus within the literature. This study has also shown that when this is combined with employing theoretical frameworks from related disciplines such as

strategic management, it can help to develop better understanding of the strategic responses employed in British industries.

For example, the TCSG and the DTI report have underlined two major strategies, a) enhancing productivity and b) product and market innovation, as possible options for firms to consider in the face of international competition. These two strategies have also been underlined in this study, and business history literature in general, as the industry's strategic response. However, the findings from this study suggest that firms did not employ the policy of enhancing productivity as their primary strategy. Instead, much of their energy was devoted in further developing their technological and product capabilities. It helped firms to develop new products with which it entered new markets and moved away from the areas where international competition was concentrated. However, this strategy was only useful in the medium-term. Internationally, firms soon caught-up on these innovations and again posed a challenge. Hence, British firms were again faced with the need to further innovate and develop their capabilities. Therefore, continuous development of capabilities to enter new markets becomes a very important strategy to counter international competition. Furthermore, capability development, particularly in the textile industry, can take two major forms: a) in the form of new product-market applications and b) new raw materials (fibre). The former option is relatively easy to implement, but as discussed above, can provide advantage to firms only in the medium-term. For a longer-term advantage, firms need to also consider the possibility of developing new fibres. It has a potential to significantly alter the competitive landscape. However, this option is relatively difficult to implement. In both options, possession of relevant technical capabilities, in particular the engineering capability, can give a firm great advantage over other firms. However, in the latter option, the issue of cost of the new fibre can play an influential role. If the new fibre comes at a significantly higher cost, it becomes difficult to replace the existing fibres in the traditional markets. However, a lower costing fibre, which has a similar or improved functionality over the existing fibre, has the potential to replace the existing fibre very quickly.

A major role in fostering innovation and developing capability has been that of joint research initiatives within the industry. The TCSG and the DTI report have indicated that this can be in the form of joint-ventures between firms, formation of a research association or in liaison with

the Universities. The analysis from this thesis indicates that an important part/aspect of the research association's success is the need for closer co-operation between the firms and the Association. This is especially important because firms have to manage their conflicting interests- how much and what information to share with research association, because market information is proprietary and plays an important role in developing its own technical capabilities. Balancing off diverging interests is an important element in the success of this collaborative effort.

#### **7.4 Limitations**

Any historical study covering a period of over 90 years and using a theoretical framework will be bound by some limitations. This study is no exception in that regard. The limitations associated with this study are grouped into three major areas: data related (one to five), theory related (sixth), and limitations associated with cross-comparison with other industries (seventh).

First, the case studies selected for this research did not have sufficient data for both the inter-war and the post-war. For example, Jute Industries and Buist Spinning had considerable information for the inter-war period, but during the post-war period records on their activities were not as much detailed. Similarly, Craiks and Scott & Fyfe had detailed information for the post-war period, but not enough records on their activities during the inter-war period. Although existing data gives an insight into their strategies during this period there is lack of in-depth records, especially letter books and minute books in both periods. As a result, a closer examination of their strategic response and the rationale behind it between the two periods could not be conducted.

Second, a significant amount of information on firms and the industry's context is derived from official minute books. Although they provide greater insight into their activities compared to only statistical data, official minutes are often sanitised versions of events. Therefore, they may fail to reflect the extent of tensions prevailing during the period. Where possible, interviews (discussed below) with people associated with the issues have helped to overcome this problem. However, interviews were not always possible as people associated with issue are

no longer living. In this situation, as done in this study, different archival records should be used to gain insight on the particular aspect. Nonetheless, it is acknowledged that in many cases even this may not be possible, as records may not have survived. This is an inherent limitation of any historical research that is difficult to overcome.

Third, there were gaps in records on sales and profits for the periods examined in this study. This was the case at both industry and firm level. It would have been interesting to look at various products and their year-on-year sales and juxtapose them with the data collected from minute books and reports. Together, they could have provided a richer picture of industry and selected case study's context.

Fourth, there are limited records of other leading firms such as Scott & Robertson, Low & Bonar, James Scott etc. Existing records indicate that these firms employed innovative strategies during inter-war and post-war period. Availability of detailed records would have facilitated a wider cross-comparison of strategies within the industry. It would have also led to greater understanding of the industry's strategic response in general.

Fifth, interviews conducted for this research provided valuable information on the industry's activities during the crucial post-war period. It has helped to triangulate information collected from archival sources. However, the period involved is over 40 years old and average age of interviewees was more than seventy five years, there are issues associated with people's memory. It is possible certain events and issues would have been overlooked while others were given greater importance with the benefit of hindsight by a single interviewee. In this study this problem was overcome by interviewing a number of people. It helped to triangulate information from different sources. However, it is acknowledged that this may not be possible in a historical study where there are no surviving people associated with the issue. Nonetheless, where possible, interviews should be conducted along with an examination of archival records in order to develop greater insight into the phenomenon under study.

Sixth, use of a theory to examine an aspect implicitly limits the scope of examination of the issue. In this research, the use of capabilities approach to examine the strategic response limited the examination of strategies to only technological capabilities developed by them.

However, a firm's response can also be in the form of joint venture, internationalisation etc. As a result, by only focusing on capabilities, a broader understanding of industry's strategic response could not be achieved. In addition, the constraints identified in this study have been mainly technology related. The role of other factors constraining a firm's general strategic response has not been examined. For example, within the business history literature, workers' union has been generally regarded as a major issue influencing the direction of firm's strategies in industries such as coal, shipping and motorcar. To what extent did the unions influence individual firm's strategic response in the Dundee jute industry? Clearly, this aspect could not be examined in this research. However, it offers an opportunity for further research, as is discussed in the next section.

Seventh, although cotton, like jute, is a textile industry, both have subtle differences in their industry dynamics. Hence, a comparison between the two industries is not between two entirely similar sectors. As a result, findings from research on the Dundee jute industry cannot be seamlessly applied in the British cotton industry. For example, there is a difference between their market focus. While the jute industry concentrated mainly on industrial textiles, the cotton industry was focused on consumer markets. As a result, there was a difference in its product mix and down-stream value chain. For example, being in a consumer market made it more important for firms in cotton industry to be in direct contact with consumers and gauge their changing preferences in patterns and material. However, with much of its products in industrial market, the firms in jute industry had to deal with other firms who used jute as an intermediate material in their final product. The difference was also notable in the industry's raw material supply. For example, the cotton industry had multiple sources from where it could secure raw cotton. However, the Dundee jute industry was heavily dependent on the Bengal region of the Indian sub-continent for its entire supply of raw jute. As a result, Dundee firms could not diversify their source of raw jute when faced with challenges such as heavy price fluctuations, quality etc. In addition, the findings from this research cannot be seamlessly applied to other British industries either. For example, the British industrial decline encompasses industries such as coal, shipbuilding and motorcar. Each of these industries have industry specific characteristics and challenges which needs to be examined separately before a general comparison is made between different industries to arrive at general framework for the decline



and strategic response. Clearly, this provides an opportunity for future research, as discussed in the following section.

### **7.5 Suggestions for Future Research**

The limitations identified in the earlier section have provided an opportunity for further research. Four potential avenues are identified and discussed below.

First, as discussed in this thesis, the dominant theory attributes the British industrial decline, especially in the textile sector, to lack of investment in three key areas: production technology, a dedicated marketing facility, and professionalisation of personnel. This study examined the strategic response in the form of specialisation and the role of technological capabilities in enabling this strategy. It illustrated that enhancing productivity, although an important aspect, was not the primary technology-based strategy used in the DJI. Instead, firms focused on leveraging their technological capability to specialise and enter new markets, thus challenging the traditional notion that there was little innovation in terms of technology.

Researchers have begun to examine the role of a lack of investment by specialised manufacturers in marketing as a barrier in product-market innovations within the industry and leading to industrial decline. While some scholars have underlined the positive aspects of dependence on merchants, especially in reducing risk and transaction cost in accessing export markets (Wilson 1995; Rose 2000), more recent research into this issue has questioned this (Popp 2002). Popp investigated the relationship of a pottery manufacturing firm, Cork, Edge & Malkin, with its merchants during late nineteenth century. Like other industries, the pottery sector was also fragmented and manufacturing firms rarely had their own marketing department, relying instead on merchants to fulfil this important function. As the manufacturer appears to be cut-off from interacting with the end users, there is little possibility of new product developments. Popp found that merchants did offer lower transaction cost especially in the export market. However, the merchants seldom gave specific product-market information, resulting in a high 'information cost' for the manufacturer. Hence, the firm had very little information with which to shape its future business strategy in the international

market. Notwithstanding Popp's study, there is a general consensus within the current literature that research into this area remains limited and that there is a need to examine this aspect in detail.

In the case of DJI, the association between a lack of a dedicated marketing department and lack of product-market innovations within specialised manufacturing firms can only be determined after identifying whether the proximity to end users gave any distinct advantage to merchant-manufacturers in developing their technological capability.

A major section of the Dundee jute industry, like the cotton industry, was merchant-manufacturers. Firms such as Low & Bonar and A&S Henry characterised this important section which was different from specialised manufacturers in two major ways: a) being merchants, they interacted directly with end users and thus were privy to vital information on customer requirements, product performance and general trends. b) unlike manufacturers, who produced only in Dundee, merchant-manufacturers also sourced their products from India and other countries.

Despite merchant-manufacturer's significance and distinctiveness within the industry, the current literature on DJI has not examined its strategic response and cross compared it with that of specialised manufacturers to identify any differences. This is vital in understanding the overall response of the industry to counter international competition.

This thesis has already established that product-market innovations were preferred over production efficiency gains as a strategic response. Therefore, further research could examine the role/significance of marketing infrastructure (see Table ??) in developing new product capabilities with the following guiding research question:

- Was the lack of an internal marketing department a detriment to development of product market for specialised manufacturers?

Or conversely

- Was the presence of a marketing department a positive influence on product market development for merchant-manufacturers?

Hence, the current research can be extended by introducing two new elements: a) merchant-manufacturers, a new segment of the industry, and its strategic response and b) lack of marketing as a barrier, a new factor, and its implication on product-market innovations. This is summarised in the following table.

**Table 37 Proposed Framework for Future Research**

	<b>Investment in Technology</b>	<b>Investment in Marketing</b>	<b>Professionalisation of Personnel</b>
<b>Specialised Manufacturers</b>	Doctoral thesis (a)	Proposed plan (c )	
<b>Merchant-Manufacturers</b>	Proposed plan (b)	Proposed plan (d )	
<b>Merchants</b>			

Source: Author

Following specific issues can be examined: What was the quality of relationship between specialised manufacturers and their merchants? How did this affect product-market innovations? With the absence of formal marketing network, how significant was the role of informal networks such as industry association memberships, personal contacts etc for specialised manufacturers to collect market information? Furthermore, as merchant-manufacturers were able to source their supply from India and enjoy the cost advantage, theoretically, for them the pressure to foster product-market innovations to counter the growing international competition may not be as high. They could continue to operate in traditional markets by sourcing cheaper supplies. To what extent did this act as a barrier of innovation within the firm and industry in general? In addition, with operations in different countries, these firms depicted the traits of multinational firm. What distinct capabilities did they develop as a result? What barriers did they face in the process? Did developing capabilities in niche area matter to them as much as it did to specialised manufacturing firms? Examining these

issues will help to determine the significance attached within the existing literature to the lack of an internal marketing infrastructure in effecting a wider industrial decline.

Second, this study examined the strategic response of the Dundee jute industry during the inter-war and the post-war period. The period between 1970 (after introduction of polypropylene) and 1990s (the end of jute manufacturing in the UK) also provides an interesting phase for study. In particular it would be interesting to examine how firms established themselves using new technology during this period. Polypropylene was different to other natural fibres in that, unlike jute, it could be manipulated to make different products. The mixing of traditional knowledge of industrial markets and technological capability of new fibre by firms to expand and re-establish themselves in the changing industry provides an interesting area of study. In particular, the case of firms such as Scott & Fyfe and Low & Bonar who have transformed themselves from traditional jute-based to using multiple man-made fibres and expanded their presence in the industrial market provides an interesting case study.

Third, this study examined the strategic response in form of technological capabilities and challenges faced in the process in the Dundee jute industry during the period of its decline. In order for the findings to be compared to other industries for a general understanding on the British industrial decline, these issues should be first investigated in different sectors. The use of capabilities approach to examine these issues can be useful for this purpose. Efforts should also be made to identify the range of capability development options that were under consideration and underline why some of them were not pursued. A cross-comparison of industries after such a study can reveal the similarities and differences in the use of technological capability as a strategic response and nature of capability related problems in different industries. In addition, with detailed examination of firms as case studies, lessons can also be learnt on how firms across industries successfully used technological capability to counter international competition. This will provide a richer and meaningful insight on the decline of British industries.

Fourth, this research demonstrated the benefits of cross fertilisation of research between business history, strategic management and history. While the use of strategy theory shed new insights to the business history debates, a contribution was also made to the theoretical

development of the capabilities approach. However, a reference to the history literature was important to address the issues arising from application of theory in historical analysis. The insights from history literature helped to identify the epistemological assumptions that are involved when a theory is used in historical analysis. It also helped to counter an element of determinacy that is prevalent in the notion of path dependency. Hence future attempts to cross fertilise research between business history and strategy could be made more fruitful by association with the history literature.

## **Appendices**

The records on Jute Industries for the post-war period are not as extensive as for the inter-war period. Therefore a full examination of their capability development strategy during this period could not be undertaken. However, there is enough information to give an insight on the nature of capabilities developed during this period.

### **1.0 Jute Industries**

Immediately after the end of the Second World War, by 1948, Jute Industries (JI) had introduced two major initiatives: establish capability in a new fibre, especially Rayon, and manufacture multi-walled paper bags to replace jute made sacks. Nonetheless, for majority (particularly from 1953 to 1966) of the post-war period, JI depended heavily on its capability in wide-width looms that was developed during the inter-war period. The details are described in the following sections.

#### **1.1 Rayon and Paper Sacks**

The first venture was the introduction of new fibre, rayon, in 1945. JI was among one of few in the Dundee jute industry to try this fibre very early. The raw material for making rayon yarn, the rayon staple, was supplied by Courtdals. During this initial period, the supply of staple was very restricted, so there was difficult to ensure its continuous supply. In order to protect the interest of other Dundee firms spinning rayon, a committee was in the AJSM to distribute staple among them. However, rayon was not introduced to replace jute. It was processed at the Stanley Mill, located in Perthshire, which produced cotton goods.

The second foray was in multi-walled paper bags in 1949. This was the first major development in the jute side of JI's business. Paper sacks were aimed to replace jute sacks and bags, the traditional market for the narrow-width looms. The demand for substitutes had risen sharply at the end of the Second World War owing to political changes in the Indian subcontinent which disrupted the export of raw jute and sacks to the UK were disrupted. This

shortage had seriously affected the major users of sacks and bags in the UK, especially the farming industry.

In order to overcome this problem, JI decided to manufacture multi-walled paper bags. However, with no capability in this area, JI, in 1949, entered into a joint venture with Low and Bonar and Messers C. Davidson & Sons (paper manufacturers based in Mugiemoss, Aberdeenshire in Scotland), both of whom had already initiated discussions to this effect. In this agreement, a separate company named Abertay Paper Sacks Ltd was formed to carry out the production of paper sacks. Under the agreement, Low and Bonar provided the technological know-how from their Canadian subsidiary, Bonar-Beamis Ltd, and Davidsons supplied the paper from their mill in Aberdeen.<sup>320</sup> The finished bags were sold by Low and Bonar and JI individually through their respective marketing operations. An agreement between the two firms was made to divide customers into two groups: customers to whom they would jointly sell the paper bags (called the 'joint list') and customers whose orders were open to competition. The 'joint list' mainly included large customers such as ICI, British Sugar Corporation, Tate & Lyle, Lever Brothers & Unilever and Scottish Agricultural Industries, whereas the individual list consisted mainly of smaller customers.<sup>321</sup> In the case of joint list, proceeds were to be shared equally between the two firms.

Although production began by 1951, Abertay Paper Sacks Ltd was not able to attain any significant scale and the venture failed to make any significant impact. The primary reason was the lack of regular supply of pulp at low price, as Christopher Bonar recalled:

“We although never got involved in multi-wall in the UK, I think the reasons for that is the market was dominated by the big vertical suppliers, principally in Scandinavia and there didn't seem to be any way of getting in competitive basis against people like that.”<sup>322</sup>

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<sup>320</sup> MS 66/XI/1: 11<sup>th</sup> February 1949

<sup>321</sup> Ibid: 9<sup>th</sup> July 1949; 23<sup>rd</sup> March 1950

<sup>322</sup> Interview with Mr Christopher Bonar

## 1.2 Wide-widths

By 1953 the introduction of tufted carpets in the US had provided JI with a new large market in jute. The opportunity first came to JI in the form of an inquiry from its marketing department in New York. However, the technical specifications for this cloth were different to what JI had been producing for the linoleum backing cloth. Therefore, in 1953 JI sent its Works Superintendent, Mr Lewis Strachan, who was in-charge of all their weaving plants, to the USA in order to learn more about this inquiry.<sup>323</sup> Using the capability in backing cloth for linoleum, JI was able to resolve technical difficulties and produce satisfactory cloth for this new market. Therefore, within the Dundee jute industry, JI played a pioneering role in developing this significant market long before the tufted carpet industry began to take root in the UK.<sup>324</sup> JI's early entry into this vital growing market in the USA also proved to be an advantage when the tufted carpets sales grew in the UK after 1957.

Therefore, between 1954 and mid-1960s, the wide-width backing cloth, buoyed by the exponential growth in tufted carpets, became the back-bone of JI's activities. By 1967, the narrow-end of JI's business, mainly sacks and bags, was only 6% of the group's turnover.<sup>325</sup> The importance of this market was reflected by the addition of wide-width looms in re-organisation that was undertaken in 1954. Its significance can be further underlined from the fact that Mr Strachan, who played a central role in JI's entry in this market, was made the Chairman of the firm by 1966.

## 1.3 Polypropylene

Yet, by early 1960s JI was beginning to seriously consider experimenting with an alternative fibre to replace jute. Importantly, developing a capability in a new fibre to replace jute was actually on the cards since early 1950s. It was mainly championed by Mr Graham Hope Pilcher, one of JI's senior directors, who had been on its senior management since the late

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<sup>323</sup> SEP 4/2952: How Carpet-backers won the West, article in The Scotsman, 17<sup>th</sup> Sept 1969

<sup>324</sup> Ibid G.A.S Cox, Director of Jute Industries (Exports): Where a trip abroad is run-of-the mill, article in Glasgow Herald, 15<sup>th</sup> November 1967

<sup>325</sup> Ibid Graham H Pilcher: Carpets and Coal Mines in Jute's Mixed Bag: article in Glasgow Herald, 15<sup>th</sup> November 1967



1920s. After the end of the Second World War, he had persuaded a young chemical engineer, Mr McKay, into the firm with the aim to set-up a research department to look into the possibilities developing capability in synthetic fibre:

“I arrived here having been persuaded by one of the senior directors of the then Jute Industries, that they needed to build up R&D organisation in the company. He hadn’t quite persuaded his fellow board members at that time to go ahead with it, but wanted me to come along and do another job for a year or two in anticipation of establishing research and development department. I think at the time clearly one or two of the people involved were envisaging a day when a synthetic competitor to jute would emerge and they wanted to be at the start.”<sup>326</sup>

However, the board did not heed to Mr Pilcher’s suggestions and no further initiatives were taken in this direction. Two possible reasons could have been behind the board’s resistance to build capability in new fibre. First, the fact that by 1953 JI had begun to leverage its capability in wide-widths to reap the benefits of the growing tufted carpet backing market. Second, although some trials with new fibres were conducted (for example Rayon), the fibres did not have properties suitable to replace jute.

However, by early 1960s, two major developments had endangered JI’s capability in wide-widths and as a result created a need for developing capability in new fibres. The first was the impending decision of the Restrictive Practices Court on the Gentlemen’s Agreement. The second was the threat to jute carpet backing market due to trials of Polypropylene in USA in 1962-3. While the dismantling of the Agreements would have created problems for the viability of jute manufacturing in general in Dundee in the long-term, the latter development specifically threatened the wide-width backing market and posed an immediate challenge, as Mr McKay recalled:

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<sup>326</sup> Interview with Mr Sandy McKay

“...well it was forced on us by the fact that in the States they’d started to experiment with wide woven Polypropylene. And the threat to the primary backing market was clearly something that we had to be interested in.”<sup>327</sup>

As a result, using its research expertise, JI began to experiment with this new fibre. Initially, the trials were conducted using tapes bought from Courtalds. The expertise of JI’s research staff was very crucial in these initiatives. In particular, Mr McKay had expertise in chemical engineering and had some experience of synthetic fibres in his earlier position at British Celanese, where Polypropylene was often discarded as a waste product. However, not long before, JI entered into a joint venture with Low and Bonar to jointly explore the potential of this new fibre. It is difficult to determine what exactly prompted JI to form this venture, especially because JI had the capability to carry-out basic research in polyolefins and the marketing network to facilitate the sale of final product. However, as Christopher Bonar indicated, friendly relationship between the Chairman of two firms, Sir William Walker and George Bonar, may have been the driving the reason:

“My father is a very close friend of Sir William Walker and so it was quite natural for us to be together rather than in competition. And I think by this time Dundee was tending to see India as the enemy rather than other competing firms within Dundee. I think there was a bit of siege mentality, if you like, about the whole situation.”<sup>328</sup>

Initially this venture was informal and research staff from both firms jointly explored the possibilities in various strands of polyolefin, with particular emphasis on Polypropylene. During this period, the tape was secured from ICI. However, by 1966 this venture was formalised with the formation of Polytape Ltd. Plasticisers was the third partner in the venture and with its help Polytape was able to carry out the extrusion process internally and make the tape, thus eliminating the dependence on external firms for this important input. The establishment of Polytape was soon followed by the formation of Synthetic Fabrics (Scotland) Ltd 1968. The manufacturing of Polypropylene yarn and cloth was considerably different to

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<sup>327</sup> Ibid

<sup>328</sup> Interview with Mr Christopher Bonar

that of jute. In addition, being a newly discovered fibre, a number of technical aspects were yet to be resolved. As a result, it was necessary to have capability to undertake these initiatives, as Mr McKay noted:

“... it required a lot of co-operative work with polymer suppliers for examining the appropriate conditions for extrusion and also the appropriate physical conditions for tapes, weaving and then we had to go into appropriate construction of cloth to meet certain demands form tufters, for instance. It was development to the extreme at that stage. Everything was in the melting pot and had to be defined, as it were.”<sup>329</sup>

Developing capability in Polypropylene helped JI, and Low and Bonar, to counter the threat to their wide-width capability in jute. During the initial period new products were directed at the existing markets. For example, the major product of Polytape was yarn for the woven carpets, whereas Synthetic Fabrics made wide-width backing cloth for tufted carpets.

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<sup>329</sup> Interview with Mr Sandy McKay

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