UNIVERSITY OF BOLTON

SCHOOL OF BUSINESS AND CREATIVE TECHNOLOGIES

MSC SUPPLY CHAIN MANAGEMENT AT RAK CAMPUS

SEMESTER 1 EXAMINATIONS 2009/2010

SUPPLY CHAIN STRATEGY

MODULE NO: EBU4008

Date: Monday 18 January 2010 **Time: 14.00 – 16.00**

INSTRUCTIONS TO CANDIDATES:

There are 6 questions on this paper.

Answer 4 questions.

All questions carry equal marks.

Please refer to the case study notes at the rear of the paper.

School of Business and Creative Technologies
MSc Supply Chain Management at RAK Campus
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Supply Chain Strategy
Module No. EBU4008

1. Identify HG Ceramics Order Winning and Order Qualifying criteria for the OLD Concepts Products and the NEW Concept Products. **(8 marks)**

Discuss why the differences in order winners and qualifiers identified above are so critical in the HG Ceramics case. **(17 marks)**

2. Discuss outsourcing possibilities in design, manufacture and distribution for HG Ceramics. **(10 marks)**

Identify both benefits and risks to each of the outsourcing possibilities identified above. **(10 marks)**

Conclude your answer by listing those areas of outsourcing that you would recommend for adoption. Justify your choices. **(5 marks)**

3. One major difference in the supply chain for the HG Ceramics new concept products is that it has to deal with a vastly increased product range, with higher variety, more raw materials and a greater number of distribution channels.

Discuss the problems that this scenario creates in the case, and develop recommendation for improving the supply chain to alleviate these problems. **(25 Marks)**

4. Discuss the role of improved information systems in procurement, operations management and distribution at HG Ceramics. **(17 marks)**

Say how improved systems would alleviate some of the problems in the case. **(8 marks)**

5. Discuss the benefits and drawbacks of separating the OLD concept and NEW Concept products into distinct divisions in HG Ceramics, having their own dedicated design, production and distribution systems. **(25 marks)**

6. Evaluate the applicability of the following concepts, as applied to the HG Ceramics case study.

- Vendor Managed Inventory (VMI) **(5 marks)**
- Just In Time (JIT) **(5 marks)**
- Cross Docking **(5 marks)**
- Collaborative Forecasting Planning and Replenishment (CFPR) **(5 marks)**
- Enterprise Resource Planning (ERP) **(5 marks)**

END OF QUESTIONS

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Case study notes

1. INTRODUCTION

The original HG Ceramics Company was built upon a local source of suitable clay and other resources, and began production in 1985, with one factory producing 4000 Sq m of plain white ceramic wall tiles. By 1990 it had expanded its original factory, and opened a new one and tripled its production. Although the bulk of its sales were still in the basic range of wall tiles, it had diversified into different colours and sizes. In 1995 the company was bought by a large and expanding building products and home improvements retailer, and became the prime source for its parent company 'own brand' products. HG is located in a low labour cost, and low raw material cost region, and hence provided a useful competitive advantage for the parent retailer. After the take-over HG became totally dependent on the parent group customer for its wall tile business, and sales remained static until 1999 when questions were raised because the demand for basic plain wall tiles began to drop. Customer expectations had increased in the markets in which the parent retailer operated, and more popular, more up-market finishes and glazes had caused a dip in sales of basic products. HG still remained cost competitive, but the demand for their products was falling.

In a strategy review in 2000 it was decided to allow HG to tout for its own business again, and become a little more independent from the parent retailer. They still retained the core business as sole supplier for plain colour wall tiles, but were encouraged to seek other business and introduce new designs. They were also told that from 2003, the parent company would re-tender for the plain colour wall tiles, making HGs position increasingly uncertain.

In addition to the pressing need to reverse the falling sales of their existing products, HG also knew that they had to focus on cost reduction in the supply chain and/or develop new markets in order even to retain their traditional business.

In 2001 George Tobias, a new and dynamic managing director was recruited to HG and he very quickly made major changes to their business strategy.

In George's words;

'At that time our ceramic wall tiles were becoming common in many homes. The market we served was mature, with many competitors. End customers, and indeed retailers were spoilt for choice in this market and consequently our margins were extremely tightly squeezed. If our volumes continued to fall at the same time, then this was potentially a lethal combination for HG. We had a culture within the organisation of being a manufacturer of basic products. We churned them out in their thousands of square metres, this was the only way we could compete. We had invested heavily in high volume/low cost manufacturing equipment. I felt that we had to focus much more on the products and produce designs that people really wanted, and that differentiated us from the competition.'

In 2002 George Tobias presented the Management of H.G. a number of strategic options:

A. Accept the loss of half of its sales, reduce the size of the company quickly with, or ahead of, reducing demand and concentrate on basic tile products. The company's engineers believed that their mastery of the new automated high volume tile making and firing technology would enable them to reduce the manufacturing costs of basic tile products and compete successfully with their low-overhead competition. Having re-established themselves by technological dominance as lowest cost producer, they could expand again.

B. Continue the mix of activities as at present and find alternative outside customers for their wall tile operation. The great advantage of this strategy, it was argued by some of the company's management, was that it would capitalise on the company's strengths. Any other strategy would dissipate the existing pool of market and manufacturing expertise in the wall tile area.

C. Diversify into new replacement business which would fill in as plain wall tiles declined. Suggested new products included, more up-market wall tiles, floor tiles, ceramic sanitary ware such as bathtubs, toilets, shower trays etc. The general idea of this strategy was to find products that would suit the growing standard of living in both export, and the home market. Hitherto, most products had been exported at the behest of the parent retailer. However, the home market standard of living had risen to such an extent that HG products could now be affordable in many domestic homes in the low-cost economy of the HG factories.

3. NEW CONCEPT PRODUCTS

In the end, and after much debate, it was a variant of the last strategy which won out. The company was persuaded by the views of one of its young product designers. His case was that the generation then entering their 30s were spending ever more than previous generations on their homes. Also their 'lifestyle' was such that they were more conscious of design, quality and co-ordination in their purchases. Retail outlets were responding to these changes, traditional homeware manufacturers should do likewise.

From this initial perspective the company evolved a corporate policy to design, manufacture and sell ranges of high quality, well designed, co-ordinated, fashion homeware which would reverse the currently held image of the company's consumer products and enable the company to compete in a different and growing sector of the market. These products were known within the company as 'new concept' products. The company would still maintain the old range of plain wall tiles (“Old concept products”), and would exploit the rising living standards in the home market to sell these and other similar products to new generations in the country of origin.

4. THE POSITION IN 2007

New concept homeware had been a remarkable success from the launch of the first products in 2003. Starting with more interesting colours and glazes, the company had also expanded into recessed soap dishes and fancy borders and mosaic tiles. All of the products were of high quality, stylish design and produced in co-ordinated colours. With the cost advantage of plentiful labour and raw materials new export markets had opened up, and their parent retailer also increased their own volume of business with HG.

Traditional “old concept products” even saw a resurgence due to an aggressive home marketing campaign, and rising domestic standards of living.

In 2005 the company acquired a business consisting two factories that produced sanitary ware, and took over the design, mould production and manufacture of toilets, bathtubs, shower trays and wash hand basins. The range of products now consisted:

- ☐ Plain wall tiles
- ☐ Plain Floor tiles
- ☐ High gloss floor and wall tiles
- ☐ Textured floor and wall tiles

- ☐ Mosaic floor and wall tiles
- ☐ Bathtub incl. legs
- ☐ Shower tray
- ☐ Washbasin
- ☐ Wash stand
- ☐ Toilet combination
- ☐ Wall toilet
- ☐ Bidet
- ☐ Urinal
- ☐ One piece toilet

A new moulding area had been created and the company designers worked hard to expand the range.

By 2007 sales had grown more than three fold and profits more than seven fold since the new concept was introduced. Old concept was still produced where the high volume equipment meant they could be churned out at very low cost. Mainly the very high volume lines had survived. In sales terms old concept products now accounted for less than 10% by value but about 26% by volume.

5. IMPLEMENTING THE NEW CONCEPT POLICY

The company had been forced to change in several ways since 2003 in order to implement the new concept policy. Although sales and profits were up, problems were acute in many aspects of the management of the supply chain and manufacturing.

6. RAW MATERIALS

The advent of the new range of products brought with it a significant increase in the number of raw material types and colours as well as higher quality levels. The 'old' products did not require close colour matching since machines were set up and huge batches run giving several months supply of one colour. Since the range was so limited, this was the most efficient way to run the operations. However with the new concept but precise colour matching in the new ranges was critical, and all the more difficult as customers often bought co-ordinated ranges of sanitary ware, floor and wall tiles. The 'new' products were clustered around a 'matching' range of products as a strategy to enhance sales -the purchaser having brought one item for the home would be more likely to buy another item of the set when next purchasing. This meant that it was necessary to maintain colour matches over a long period of time.

The company now had four factories and a vastly increased variety of raw materials. Two of the factories produced sanitary ware alone; one of the others produced only tiles whereas the fourth factory had areas for virtually all the HG products. Both of the tile factories produced ‘old’ and ‘new’ range tiles for different customers. Each had their own purchasing function, inspection and storage areas, and many of the suppliers had separate contracts with each of the four factories. Purchasing records, stores management and IT systems were separate at each of the four sites.

With the huge increase in raw material types across the company it is often difficult to know what is in stock and what needs ordering. Often production is dictated by which raw materials are available rather than by customer due date.

Different suppliers sold the same product to each of the four factories. In some instances up to eight different suppliers were used to supply the same product to HG.

By 2008, the company accountants were starting to warn of vastly increased raw material holding and inventory costs.

7. THE MANUFACTURING PROCESS

> **‘At the beginning of the changeover there were many technical difficulties which had not been foreseen. These ranged from the technical specification of the machine to do the job through to requirement for brand new moulding skills and machines. New colours, glazes and shapes meant a whole new level of complexity. New Product launches are also becoming more frequent and life cycles shorter which causes problems. The only way to be sure of meeting launch dates is to try each new glaze and mould as we receive it, irrespective of whether or not we can then leave it in the machine to produce the initial launch quantities. Approaching the job in the preferred way of waiting for a machine to be available for the whole of the mould testing and initial production run period is risky. If one of the last-tried moulds required substantial modification we would miss the agreed schedule. But this means that at times we can have 30% of our capacity working on new products. The problems of trying to be a development unit and production unit under the same roof are enormous. The pressure of achieving deadlines, particularly when little or no slack time has been allowed in the plan, requires all our attention so that normal production has to look after itself'.**
> (Gorge Rajkandayo, production Manager, factory 1.)

With the “Old Concept” the available production capacity had shifted markedly towards machines and kilns over the last few years. In order to keep manufacturing costs down, the company had in fact moved towards a more automated operation. This had increased productivity, especially on long production runs, but made ***product changes*** much more difficult because the production lines and firing lines were larger and much more sophisticated. Suddenly, with the new concept the changeovers and disruption due to smaller batches and higher variety had increased dramatically.

There was undoubtedly a tension between keeping batch sizes large (for more economic manufacturing costs, and workers volume based bonuses), and keeping them small with frequent changeovers – to suit the higher variety of products now offered. In practice a compromise was often reached. Because the production process was split into manufacture of the slip – or unglazed product – and glazing, the amount of Work In Progress (WIP) had steadily increased until 2008, when pressure on space was at a premium.

All these changes had taken their toll in terms of industrial relations. From 45 operators in 2001, mainly watching large semi automated lines, there were now four factories, 120 operators, with frequent product changes and machine adjustments which the operators did themselves. Some resentment had been expressed over being '...expected to be technicians but paid like production workers...' this being a reference to the department's payment by results scheme. A survivor from the old days, the scheme based operators pay on the number of pallets of tiles each individual line produced in the week.

8. MOULDING

With the advent of recessed ‘soap dishes’ etc., and for the sanitary ware, emphasis was now placed on moulding, mould design and testing. The Mould Shop was a key part of the manufacturing operation. As fashions changed and new designs became much more frequent, the mould testing became a real bottleneck, and a disruption to production. Again tension had built up between the design department and production because of the constant need to stop production to test new moulds

9. DESIGN

This feature of the business had expanded considerably over the years such that by 2007 there was a separate design function with a manager and seventeen staff. Their job was to liaise with the customers (often these were large builders merchants, and building product retailers), agree to the design detail and complete the required drawings. The manager in charge of the Tool Room then undertook to sub-contract or make the moulds and to get the mould into production.

Up to 30% of production capacity on the moulding lines can be lost due to mould testing.

10. PRODUCTION CONTROL

> **'The new range of products present a different set of problems in production control terms. Their design and style introduces additional complexity purely because of the quantity of components and the amount of packaging involved. Planning and controlling these new ranges is very difficult due to the uncertainty inherent in the mould-testing process, the procedure for agreeing packaging and having a fixed launch date which all these activities have to meet. Though, perhaps the biggest change has been the huge increase in product range.'**
> **(Geoff Ngono, Production Controller.)**

In addition, Geoff explained that marketing often wanted to try out additional colours to those planned in order to increase sales in existing markets or to break into new ones. In situations such as these the production run was small and then made even less efficient by often requiring several colour changes as well.

11. MARKETING

The Marketing Department was divided into product areas and by home and export. Each of these had a manager responsible reporting to Mark Williams who holds the newly created post of Marketing Director. Mark, who joined the company in 2005, confirmed that, in his opinion, the change in product direction had enabled the company to compete successfully in a new sector of the market.

> **'Before I joined the company, it had already achieved recognition in the market as a manufacturer of high quality, well-designed products and as a front runner in this sector. Frankly, that was one of the big reasons for my agreeing to take on this job.'**

The second big area of change in market direction has been the emphasis on the home market for ‘old concept’ products. Standards of living in the home country had been increasing such that traditional export products now have growing markets domestically. This has meant an increased role for marketing and the need for more direct marketing rather than industrial marketing which was more successful for the export market.

What has been found more and more for the new concept products is that colours and styles – particularly for wall and floor tiles – change each year as fashions change. There are staples, that have stable volume and design, but increasingly we have to be very quick to market with new designs for some of the range to keep ahead of the fashion.

12. DISTRIBUTION

HG now had four factories producing a huge variety of products. They also had both a substantial export market (around 60%), and a growing domestic market. The domestic market at the present time demanded the 'old' concept products, whereas the export market required both.

In 2007 they had signed a contract with a chain of building material stockists in the home country to supply 'old concept' products in large volumes. They also sold direct to home builders from two retail locations owned by HG. As the domestic demand for volume has risen the distribution system has come under increasing pressure and managers are constantly striving to avoid late delivery with customers.

HG also have two export warehouses, one for sanitary ware, and one for tiles. The products are trucked overland to the ports for export. The high variety of product types and numbers now in the range often causes delay in shipping as export orders are often made up of a variety of product types from both distribution centres. Distribution centre stockouts have met an all time high, and relationships between distribution and the factories are strained.

13. THE FUTURE

Mark Williams had continued to push the new concept policy in relevant product areas and had been instrumental in bringing in several new/updated product ranges since joining the company. The latest was due to be launched in early 2008.

> **'We hope to repeat the success we have had with the new concept homeware by breaking into the hotel supply market, as well as a new top-end hand produced and hand glazed range of tiles. Already our first batch of designs have been approved and moulds are being designed at this moment. I would not be surprised if hotel sanitary ware accounted for 15-20% of our turnover within two or three years.**

Overall the company was proud of its achievements and confident in the future.

> **'We have come a long way since those days of change. Our parent group had the foresight to re-think the corporate policy when demand for old style products in the export market diminished. For the past seven years I have attempted to reinforce the change to the new concept and greater domestic market, as I consider it to have been a sound strategy. The marked increase in sales is anticipated to continue as both home and export sales are up on last year. But for corporate success to continue it is important to use our productive capacity efficiently. However, I do recognise that new product launches make large demands on the system but they are our future life blood. In addition we have to keep all areas of**

costs down -our decision to go towards automation was one way of keeping competitive.'
(George Tobias, Managing Director)

Yet in spite of the company's success George knew that there were problems, especially in the supply, raw materials, operations and distribution functions. New product introductions were a constant irritation, finished goods stock had grown disproportionately over the last few years, and the costs of distribution have risen sharply reducing profit on old concept products. Introducing new capacity to manufacture the new ranges would need careful planning. The distribution system felt unsuitable for the new operation. Most pressing of all, labour unrest over the payment scheme in the moulding department needed dealing with.

This last problem was a direct result of the failure to redesign jobs and the payment system to take account of changed manufacturing methods.

'We need to get a firmer grip on the whole of our operations; we seem to have only the haziest idea of what's going on the shop floor. I'm hoping that things will improve after our new Operations Director arrives next month. Of course we should have made this kind of appointment years ago. One of the first tasks he'll have is setting up some kind of system to tell us how we are performing at each of the factories at the operations level. I will also be asking him to put some broader supply chain measures in so that we can get a control of both the old and new concept products. We may be successful but I believe we could be a damn sight better.'