

Malaysian Worries: Manufacturing Management Caught in the Middle?

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Abstract

Whereas the academic view on the contribution of manufacturing to competitive strategies has undergone a paradigm shift, or even possibly some, the question is whether practice has changed really. Three workshops in Malaysia reveal that manufacturing managers have troubles implementing their strategies. That is caused for part by the position of their companies in the supply chain, for part by the pressures caused by sales departments causing focus on the here and now, and for part by the undervaluing of the manufacturing function. That leads to deliberations whether much has changed since Skinner's seminal works in 1966, 1969 and 1974.

Keywords: Manufacturing strategy, ethnography, focus group, strategy implementation.

Introduction

Many scholars into manufacturing strategy take Skinner's (1969) seminal work and sometimes his other works (1966, 1974) as point of departure for research into the alignment between business strategy and manufacturing strategy (e.g. Brown and Blackmon, 2005; Sun and Hong, 2002), the contribution of manufacturing to the competitive strategy (for example, Amaoke-Gyampah and Acquuah, 2008; Ward and Duray, 2000) or the notion that it is not all about cost (like Bengtsson et al., 2009), too mention just a few. However, all these works assume implicitly or explicitly that manufacturing managers, or those otherwise responsible for manufacturing, have ample opportunity to realise an appropriate manufacturing strategy. However, on closer examination, the writing by Skinner (1966, p. 140; 1969, pp. 137-138) expresses also (strong?) discontent about the lack of empowerment for manufacturing managers in both shaping and realising the contribution of manufacturing to overall firm performance.

Research Objectives

This might well be because research into operations and manufacturing management takes implicitly a positivist approach. A quick look into this domain reveals that many papers take surveys and questionnaires as starting point; Chang et al. (2005), Gilgeous (1998), Grant et al. (2013), Kathuria et al. (1999), Lau (2002), Schroeder et al. (1986) and Swamidass and Newell (1987) are cases in point. The outcomes of these studies are mostly about alignment of manufacturing strategies with competitive (or business) strategies and

the content of manufacturing strategies. However, this methodological stance does not necessarily address insight into the broader challenges manufacturing managers face, as also expressed by Meredith et al. (1989). This is commensurate with those that propagate the divide between qualitative and quantitative studies as starting point for advocating the advantages of mixed methods (e.g. Johnson and Onwuegbuzie, 2004; Sandelowski, 2000), albeit that this is a simplistic classification of research methods. Returning to the point of departure for this paper – Skinner’s discontent about the lack of empowerment for manufacturing managers – the question arises whether constructivists’ approaches or alternatively participatory methods have been applied to understand better the challenges that manufacturing managers face.

In that perspective, looking at the highest ranking citations of Skinner’s work (1969) reveal that the main focus is on content of manufacturing strategy, commensurate with Dangayach and Deshmukh’ remark (2001b, p. 918) that more than 90% of the works they examined has this orientation; then, in their setting out of research directions, they seem to take the positivist approach again. Even Ward et al.’s (1994) study into pro-activeness takes a quantitative research methodology and does not reach beyond the finding that a pro-active posture of manufacturing management (and involvement in setting the competitive strategy) carries benefits for overall performance. And, for example, Swink and Way’s (1995) literature review on manufacturing strategy, typical for works by others, does not even consider the posture of manufacturing management other than by structural measures. Only Maruchek et al. (1990, pp. 115, 117) find that manufacturing strategy was viewed as reactive to marketing strategy and subject to constraints by corporate philosophy (for example, facilities and capacity). These initial finds only support the stance that the factual personal challenges for manufacturing managers in setting out and implementing strategy have been largely discarded in academic literature, a gap we aim to fill.

Scope and Outline of Paper

Therefore, this study at hand aims at understanding those personal challenges for manufacturing managers better. That might then result in directing research beyond positivist approaches about manufacturing strategies and their implementation. Ultimately, the findings should result in not only more effective realisations of manufacturing strategies but also in a better understanding of factual formation processes for manufacturing strategies.

This paper starts with a literature review on the strategy formation process for manufacturing in the second section. In the third section, the research methodology of using focus groups and the results of the study are presented. That is followed by a discussion of the findings and a final section with concluding remarks completes the paper.

(Systematic) Literature Review

Based on the background of the research project and the deliberations on the current state-of-the-art, a structured approach to the literature review has been followed. First, by searching for relevant literature in defined databases and by using defined keywords, the approach followed as much as possible the guidelines for a systematic review of literature (Baumeister and Leary, 1996; Green et al., 2006). Unfortunately, it was impossible to conduct a full systematic literature review (e.g. Tranfield et al., 2003), since the literature is spread among a wide variety of sources and has many different keywords under which

it appears. The core keywords that were used in combination during the search were: 'manufacturing managers', 'implementation' and 'manufacturing strategy'. Because the onus was on the challenges with implementing manufacturing strategy for manufacturing managers, qualitative research is more suitable than quantitative research for excavating their views; hence, the three core keywords were expanded with four qualitative research methods: 'action research', 'case study' (or case studies), 'ethnography', 'focus groups' and 'interviews'. Papers – only publications in journals were taken in – that contained statistical analysis of any kind were discarded. Also, works that had little or no information about the views of manufacturing managers were not included. Furthermore, if a search in a specific database or search engine yielded 25 consecutive returns that were not containing any qualitative study within the scope of this literature review, the search was halted. Surprisingly, or after all perhaps not surprisingly, the searches with the combination of the three core keywords with 'ethnography' and 'focus groups' produced no relevant papers. After scrutinising returns from ABI/INFORM, Google Scholar and Scopus, 32 relevant articles until and including 2012 were retrieved; those retrieved are discussed below as a narrative review.

Narrative Review of Qualitative Studies into the Implementation of Manufacturing Strategies

As one of the themes emerging from the retrieved papers, not only quantitative but also qualitative studies have focused on the contents of manufacturing strategies and their alignment with business strategies. That perhaps business strategies weakly connect to manufacturing strategies, both for formation and implementation, is shown by Meredith and Vineyard (1993) in three longitudinal case studies for the implementation of manufacturing technology. That stance also appears in the works of Barnes (2000) based on six case studies of SMEs and Menda and Dilts (1997) based on their case study of a pharmaceutical firm. In addition, Decoene and Bruggeman (2006) find this also when reviewing how manufacturing managers respond to the performance indicators derived from the Balanced Score Card. Similar findings are reported by Barnes (2002). However, Dubois et al. (1993) contradict this for part since the generic competitive strategies are seen as sufficient explanation for setting out manufacturing strategies (note that these generic strategies are often the starting points for quantitative studies). Maruchek et al. (1990, p. 115): manufacturing strategy set under the umbrella of corporate strategy (conference). And corporate planning processes determine performance objectives. To that perspective, Lewis (2003) adds that manufacturing strategies should set out in an iterative fashion rather than as top-down approach, based on three case studies in the aerospace industry; Talebi and Rabiei (2011) arrive at a similar conclusion. Nevertheless, it seems that competitive strategies are an insufficient inspiration for setting out manufacturing strategies that would make sense to manufacturing managers.

Some other research concentrates on the formation of manufacturing strategy and interaction with other disciplines in firms. Barnes (2002) shows through three case studies that the formation of manufacturing strategy is not necessarily a derivative from the business strategy. Alternative approaches are also propagated for the formation of manufacturing strategy, such as Balanced Score Card (Borges de Menezes et al., 2010; Decoene and Bruggeman, 2006), the core competency approach (Dangayach and Deshmukh, 2001a), Quality Function Deployment (Crowe and Chung, 1996), service orientation (Fry et al., 1994) and manufacturing audit (Menda, 2004); note that Fry et al. (1994) try to refocus the attention from inventory levels to reliability of manufacturing by building in slack in manufacturing resources. In addition, Swamidass et al. (2001) find

the priorities of manufacturing managers differ and that the level of involvement differs on the dimension of maturity (marketing!). Smith et al. (2009) add political skills in the mix. And Pagel's (2004) focus is on communication. Hence, there is a wide variety of works indicating that the formation of manufacturing strategies and the interaction with other functions does not necessarily follow the route of using the business strategy as rationale and justification.

The other works focus on specific aspects of the manufacturing strategy and its implementation. An example of this is the work by Eppler and Platts (2009) and Mills et al. (1998a, b) when they use pictorial representations for clarifying the manufacturing strategy for managerial levels as well as employees and for the purpose of learning by managers; note that Barnes (2000) also advocates strategy charting in the same fashion. Another specific aspect that has been investigated is information technology for order processing, such as the implementation of enterprise resource planning (Muscatello et al., 2003), based on the case study methodology. And manufacturing technology (Mohanty and Deshmukh, 1999) and outsourcing (Probert, 1996) have also been looked at. In addition, Kinnie and Staughton (1991) and Oliver (1990) concentrate on facets of human resources for the implementation of manufacturing strategies. Strategic aspects of manufacturing networks appear in the works of Colotla et al. (2003), Rudberg and West (2008) and Shi and Gregory (1998). Toyota's production system (Adler et al., 1999), Lean production and JIT (McLachlin, 1997) have been investigated, whereas Nordahl and Nilsson (1996) focus on manufacturing managers' perspectives on flexibility. Often, these qualitative studies into specific aspects reveal little about the challenges manufacturing managers face when implementing a manufacturing strategy.

Implications for Empirical Research

However, which challenges manufacturing managers face when implementing a manufacturing strategy still remains more obscure in the context of these qualitative studies. Even the abundant quantitative studies, address this limitedly. Papke-Shields and Malhotra (2001) investigate involvement and influence. They follow that up later by another study (Papke-Shields and Malhotra, 2008) focusing on the perceptions of manufacturing managers. The studies conclude that pro-activeness as being the solution. Mismatch between perceptions already found by Swamidass (1986). Some have looked into pro-activeness, to be understood as degree of involvement and commitment to a long-term programme (Ward et al., 1994). However, that pro-activeness also requires an appropriate strategy formation and implementation process, which also depends on how manufacturing managers themselves view their practice.

Research Methodology

The relatively under-research topic means that an inductive and an interpretative approach should be followed.

Design of Research Method

With relatively known about the position of manufacturing managers in terms of involvement for setting (business) strategies and challenges they face when implementing manufacturing strategies, we have chosen to use focus groups with an ethnographic perspective to excavate their views. The ethnographic stance as different from case study research (Yin, 1994) comes from the extent to which the researcher immerses himself or herself in the life of the group studied. In addition, according to Kitzinger (1995)

Table 1: Overview of sessions on Strategic Capacity Management

Session	1	2	3
Strategic Capacity Management	<ul style="list-style-type: none"> • Manufacturing strategy: formation and implementation • Systems thinking 	<ul style="list-style-type: none"> • Manufacturing strategy: content • Organisational structures for manufacturing 	<ul style="list-style-type: none"> • Manufacturing strategy: content • Appropriation of manufacturing technology • Decision-making make-or-buy • Dynamic aspects of implementation of manufacturing strategy
Cases	<ul style="list-style-type: none"> • Case on resource utilisation • Case on business process management 	<ul style="list-style-type: none"> • Case on planning of production • Case on organelle structures 	<ul style="list-style-type: none"> • Case on make-or-buy decision
Firms participating (see Table 2)			

focus groups have advantages in terms of engagement with participants and elevating topics that might not have come to the table during interviews (note that Maruchek et al. [1990] used a conference setting akin a focus group for discussing the link between the corporate strategies and manufacturing strategies). For those reasons, the combination of focus groups where participants can express their views formed the basis for the research design.

To structure the meetings of focuses groups, three sessions were organised. Each of these sessions was thematic by using the notion of Strategic Capacity Management (Dekkers, 2002, 2003; Orr, 1999). Each session followed more or less the same pattern. First, there was a presentation about the reach of Strategic Capacity Management followed by a specialist topic. Cases that allowed some discussion related to the topic were used; typically, such a case would not have a solution that would be obvious and would require participants to hone their skills of analysis and synthesis. All topics of the sessions are listed in Table 1. Care was also taken that each session would allow ample time for discussion and for that reason they lasted 8.5 hours each.

Profile of Participants

Data have been collected from managers of Malaysian manufacturing firms as an economic setting in which manufacturing contributes to economic growth. The Malaysian economy has witnessed strong growth over the last three decades, growing at an average annual rate of 5.8% (Bank Negara Malaysia, 2012). Particularly, the manufacturing sector in Malaysia is experiencing substantial growth and consists of second tier suppliers to a wide variety of industries (Mahadevan, 2001). The manufacturing sector contributes to about 25% of the total Gross Domestic product (average figure for 2010 -2012, Bank Negara Malaysia Annual Report 2012). There has been a positive growth of 4.5% to 11% for the past three years (2010 to 2012) in manufacturing production (Bank Negara Malaysia, 2012). That implies that the growth of the manufacturing sector as such creates a setting in which its contribution is not disputed.

The profile of the participants is found in Table 2. Though not intended to be a representative sample, the firms were working for varied from large to small in size and covered a range of industries. One of them was an OEM and others were suppliers with their customers being both national and international.

Table 2: Overview of Malaysian cases

Company	A	B	C	D	E
Employees	120	2500+	110	220	1200+
Product	Electronic components (MTO)	Electronic components (MTO)	Heat treatment (ETO)	Plastic components (MTO, MTS)	Durable cons. goods (MTO, MTS)
Challenges	<ul style="list-style-type: none"> • Inconsistent quality from main supplier • Rigid org. structure 	<ul style="list-style-type: none"> • Quality problems from components suppliers. 	<ul style="list-style-type: none"> • High variety • Unpredictable demand • Short lead-times 	<ul style="list-style-type: none"> • Dependency on few major customers 	<ul style="list-style-type: none"> • High degree of rework • Dependency on local market
Interviewees	<ul style="list-style-type: none"> • General manager • Manufact. manager 	<ul style="list-style-type: none"> • Manufact. manager 	<ul style="list-style-type: none"> • Managing Director • Production Executive 	<ul style="list-style-type: none"> • General man. (manufact.) • Production Planning Man. • Quality man. 	<ul style="list-style-type: none"> • Section manager • Production supervisor (2x)
Additional data		<ul style="list-style-type: none"> • Site visit 		<ul style="list-style-type: none"> • Site visit 	<ul style="list-style-type: none"> • Site visit
Recent changes implemented		<ul style="list-style-type: none"> • Assembly line with feed from manufacturing cells 			<ul style="list-style-type: none"> • Move to new site

Data Collection

After each session, the discussions and responses were noted. Three firms invited the researchers to visit manufacturing facilities and to continue the discussion about the challenges they faced.

Results

The results for manufacturing strategy show contradicting results. Some of the firms were implementing changes, albeit they seemed more a result of the initiative of manufacturing managers than a result of the manufacturing strategy. However, almost all companies recorded pressures, even though different in its source. For company A, the sales force was seen as making it impossible to implement a manufacturing strategy:

They keep on pushing it every time [ed. meaning orders]. They don't give time to make and they set unrealistic targets [ed. costs]. And they do this over and over again, even when they know it can't be done.

While as such this statement points in multiple directions, lack of internal communication with sales, competitive bidding for orders by offering low prices and short deadlines, etc., it also highlights that production is operating in isolation and give insufficient time to reflect on the setting and implementation of a manufacturing industry. Case D added that the pressure by the main customers, the firm is a first-tier supplier to manufacturing sites of an international conglomerate, so that they were factually financing components for that customer by profits made on components for other OEMs. Firm D was desperate, even to the extent that they knew that manufacturing equipment that could not be replaced with better functioning equipment simple because of a lack of cash-flow. Even if they would succeed, such action would lead to further demands on cost-price reduction by their main customer. Hence, the perspective of the manufacturing managers was rather gloomy, despite being persistent in trying to process orders.

Furthermore, for the second component of SCaM – organisational structures –, one of the Malaysian companies (reported a change in organisational structure and lay-out; the four other Malaysian companies had mostly a functional structure commensurate with

the flexibility in products and responsiveness to orders (similar to Tier 3 in Koste and Maholtra [1999, p. 87]). For one of the companies (C), because of its scale and typical engineering-to-order processes the organisational structure was considered less of an issue. However, all Malaysian companies seemed to recognise that their control structures were not sufficiently adequate for order processing. Shorter lead-times and higher variety were putting greater emphasis on matching production capacity with (forecasted) orders; only one company mentioned that the current horizon of planning (measured in months) allowed sufficient flexibility for optimising production. The company that had implemented an organisational change did introduce a production line with manufacturing cells feeding into it; before they had a functional structure, which had for long caused headaches in terms of coordination and order processing. In fact, it had been recognised late that this organisational structure was beneficial. Whereas some of the companies were growing, the management style could be characterised as entrepreneurial (Phase 1 of Greiner [1998]). Hence, the five manufacturing organisations thrived on the flexibility and the entrepreneurial management style to respond to customer orders.

In terms of technology, the picture was more blurred. For company A production technology was not directly an issue. Case B had already invested in manufacturing cells. Case C relied on its own technological knowledge. As mentioned before, the nature of the engagement with the main customer of D did not allow the company to invest in production technology. In the case of E a move towards a new plant with relatively state-of-the-art production technology was being prepared. The current plant was operating at a utilisation degree of about 60%. The participants of E could not explain why this move was beneficial. However, neither of the companies

The presentation about pros and cons on outsourcing did provoke reactions with regard to suppliers. Both the quality of parts and the reliability of delivery troubled manufacturing managers to a large extent, particularly in the case of A, B and E. Certainly the dependency on suppliers, with no direct substitute available, seemed to cause this sense of frustration. Furthermore, there was the anger that little could be done about, with the decisions for selection of suppliers being outside their remit and hardly any interventions possible; recounting some experiences of other companies that had been more assertive led to the reaction that empowerment by higher hierarchical levels was limited so that a more proactive stance was often overruled. In addition to the earlier frustrations about not being given the space to form and implement a manufacturing strategy, the performance below par by suppliers, worried the manufacturing managers immensely.

The additional invited visits to three companies revealed more about the manufacturing managers' views on implementing strategy. For Case D, the company visit revealed that the actual manufacturing was hampered by constraints in equipment availability; that was due to the poor make of equipment, whereas at the same time, the maintenance was delegated to a group of workers from one ethnic group who did not disclose improvements or share information in the company for more systematic improvements. Manufacturing management felt really disappointed that they could not increase the productivity by purchasing better equipment since they were already subsidising products by profits made on other products, with the overall income generation insufficient for investment; yet, the company was further pressured to reduce prices. The factory visit to company E showed that while the manufacturing strategy was geared towards lean production, the production and scheduling particularly for suppliers was still based on push principles. Although not directly seen as detrimental, the actual practices being different in different departments in the same company, created a feeling of being less connected. That appeared in the decision-making, too; top management was seen as having its own strategy, while making middle managers including manufacturing management accountable for contradicting

decisions. At the same time, the best practice for production management was to be implemented, for example lean production. That contradiction in behaviour by top management created a feeling of being victimised rather than being participatory in decision-making and contributions. Hence, the three visits painted a richer picture for the challenges the manufacturing managers were experiencing, particularly with regard to the contradictions that have to solve.

Discussion of Findings

Hence, the overall picture that emerged from the focus groups and the visits is one of a blend of despair, frustration and feelings of being left alone, while at the same time there is a drive for wanting to do better. That inspiration for wanting to do more is either internally constrained or restricted by customers. In terms of influence the manufacturing managers that engaged with this research experience that they can hardly direct the strategy, with Case C being somewhat an exception; rather they are left to their own devices for fire-fighting with forming and implementing manufacturing strategies pushed entirely to the background.

Hence, the results of the focus groups support more the findings of qualitative studies found in the systematised literature review in this paper than the quantitative studies. No matter their rationale, the quantitative studies have been unable to excavate this struggle of manufacturing managers. Not only seems a discussion missing about how factually manufacturing strategies relate to the business strategy, this is an area for further research, also the involvement of manufacturing managers is very different from text book approaches.

Concluding Remarks

Therefore, from both the systematic literature review and the empirical study it can be derived that research into (strategic) manufacturing capabilities and trade-offs is of little value to manufacturing managers themselves. That does not necessarily mean that outcomes of quantitative studies on the relationship between competitive (or business) strategies and manufacturing strategies are not valid or the manufacturing managers should not be pro-active. The results of the focus groups in the current study show simply that the reality for manufacturing managers might differ substantially from the more theoretical rosy pictures about the implementation of manufacturing strategies.

At the very same time, this raises the question what can be done about it by academics. Note that generally speaking the ones participating in the focus groups were well-educated, so teaching is not necessarily a solution. More sophisticated models for implementing manufacturing strategy neither. Perhaps supporting (individual) manufacturing managers with action research and case studies, though this is quite an undertaking. In the meanwhile, it seems that whereas sophisticated approaches are possible, we have not really moved away from the settings for Skinner's call.

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