

Dynamic capabilities and their direct impact on firm's Performance

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Abstract—The study conducts an ex-post review on the steel manufacturing industry to track and evaluate the dynamic capabilities and their direct impact on firm's performance. It further measures or estimates the effectiveness, costs and benefits or value of the firm's performance interventions. The assessments serve to evaluate whether the contentious issues identified during the operation have been addressed.

Keywords— Capabilities, Performance, know-how's.

I. INTRODUCTION

It is widely accepted in South Africa and internationally that dynamic capabilities do have indirect and direct impact on a firm's performance and the capability impact is the most egregious form of competition. The report will be structured as follows: firstly discusses the background of the firm; secondly an overview of the indirect impact of the dynamic capabilities provided in terms of the programs developed, sectors supported and the integration of the impacts into the organizational and its supply chains. With regard to the indirect impact on firms performance the research acknowledged that steel manufacturing (i) likely has sufficient capabilities such that can reduce margins thereby driving manufacturing and rivals out of the market; (ii) has significant power which could enable an organization to source large volumes from suppliers at discounted rates compared to competitors and may result in high competitiveness. Thus concept of dynamic capabilities essentially says that what matters for business is corporate agility: "the capacity to sense and shape opportunities and threats, to seize opportunities, and to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets and building strategic assets.

II. MANUFACTURING CAPABILITY OVERVIEW

Sudden and severe economic down turn, and market demand increases requiring rapid increased capacity. Increased segment competition, and compliance issues that threaten the ability to perform. Capability also as the ability of the combination of people, machine, methods, material, and measurements to produce a product that will consistently meet the design requirements or customer expectation. Capability measurements allow the company to summarize process capability in terms of meaningful percentages and metrics and to predict the extent to which the process will be able to hold tolerance or customer requirements. The fresh dynamic capabilities framework focuses on the firm's ability to quickly orchestrate and reconfigure externally sourced competences—ranging strengths such as (leadership and strong values excess to process knowledge in the ArcerlorMittal Group part of a global company with access to the Sub-Saharan Africa market, earmarked in the Group for exports from South Africa production process and layout with lots of potential for brown field's expansion to multitude sourced, crowd backed open innovations such as product automation — while leveraging internal resources such as platforms, know-how, and magnificent performance that's above reproach. The new dynamic capabilities framework is driven by the rise of operational strategy, new advanced technology, information and network economics and the fall of the transaction costs of specialized multi-party adaptation. The dynamic capabilities framework for corporate strategic management bridges innovation strategy, and multinational strategy experimenting, innovating and learning faster while

organizing organizational capabilities worldwide for execution in a globally networked and interdependent environment.

III. METHODOLOGY

A comprehensive survey was conducted in ArcelorMittal plants across South Africa to investigate the impact of manufacturing strategy on competitiveness, manufacturing capability and performance of the company. Lakshmi Mittal holds about 60% of the company share and the remaining 40% belongs to the public. The plants surveyed are commercial plants with minimum, maximum and average size of 60000, 6000000 and 465000 m², respectively. Around 57% of the surveyed plants are located in industrial area, while remaining 33% are located close to city. The steel production capacity of these plants ranged from 1600 to 1900000 tons with the total turnover of steel production of 10 billion Rand. All of these plants have easy access to road.

IV. RESULTS

The majority of the respondents agreed to most of the statements about manufacturing strategy, with more than 60% of the respondents either agreed or strongly agreed (Table 4.5). Very few respondents disagreed or strongly disagreed and some handful of respondents also chose to stay neutral. Hence, it can be observed that the manufacturing strategy is aligned with corporate strategy and other functions. Manufacturing is observed to have clearly defined strategic objectives and is clearly communicated to all staffs.

Table 4.5: Responses to the Manufacturing Strategy

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
Manufacturing strategy is aligned with corporate strategy	Count	0	1	6	9	3	19
	Row N %	0.0%	5.3%	31.6%	47.4%	15.8%	100.0%
Manufacturing strategy is aligned with that of other functions	Count	0	3	3	9	4	19
	Row N %	0.0%	15.8%	15.8%	47.4%	21.1%	100.0%
Business functions meet frequently to coordinate activities	Count	0	2	5	8	4	19
	Row N %	0.0%	10.5%	26.3%	42.1%	21.1%	100.0%
Manufacturing is powerful relative to other functions	Count	1	2	1	10	5	19
	Row N %	5.3%	10.5%	5.3%	52.6%	26.3%	100.0%
Manufacturing has clearly defined strategic objectives	Count	0	1	3	10	4	18
	Row N %	0.0%	5.6%	16.7%	55.6%	22.2%	100.0%
Manufacturing strategy leverages existing capabilities	Count	0	1	3	11	4	19
	Row N %	0.0%	5.3%	15.8%	57.9%	21.1%	100.0%
Manufacturing strategy is clearly communicated to all staff	Count	0	2	6	8	3	19
	Row N %	0.0%	10.5%	31.6%	42.1%	15.8%	100.0%
Manufacturing strategy is frequently reviewed and revised	Count	0	1	8	4	6	19
	Row N %	0.0%	5.3%	42.1%	21.1%	31.6%	100.0%

As per the majority of the respondents, the manufacturing capabilities of the plant were observed to be average. The majority of the respondents stayed neutral when asked about the presence of the state-of-art manufacturing processes, superior technological workforce, equipment protected by the firm's patents, proprietary equipment giving competitive advantage, unique engineering skills and abilities, and engineering core strength of the plant (Table 4.6). The majority agreed on the availability of unique manufacturing process capabilities, superior technological knowledge, and high engineering capabilities. Only few respondents strongly disagreed with the capabilities of manufacturing plant.

Table 4.6: Responses to manufacturing capabilities

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
Your plant has state-of-the-art manufacturing processes	Count	2	4	10	2	1	19
	Row N %	10.5%	21.1%	52.6%	10.5%	5.3%	100.0%
Your workforce has superior technological skills	Count	1	5	11	2	0	19
	Row N %	5.3%	26.3%	57.9%	10.5%	0.0%	100.0%
Your plant has unique manufacturing process capabilities	Count	0	4	5	9	1	19
	Row N %	0.0%	21.1%	26.3%	47.4%	5.3%	100.0%
You have superior technological know-how in your plant	Count	1	1	7	10	0	19
	Row N %	5.3%	5.3%	36.8%	52.6%	0.0%	100.0%
This plant has equipment that is protected by the firm's patents	Count	1	6	7	2	1	17
	Row N %	5.9%	35.3%	41.2%	11.8%	5.9%	100.0%
Proprietary equipment helps you gain competitive advantage	Count	1	5	6	3	3	18
	Row N %	5.6%	27.8%	33.3%	16.7%	16.7%	100.0%
Is the Engineering capability at this plant is high.	Count	0	2	8	9	0	19
	Row N %	0.0%	10.5%	42.1%	47.4%	0.0%	100.0%
Are the Engineering skills and abilities at this plant unique?	Count	0	2	11	6	0	19
	Row N %	0.0%	10.5%	57.9%	31.6%	0.0%	100.0%
Is Engineering the core strength of the plant.	Count	0	3	10	6	0	19
	Row N %	0.0%	15.8%	52.6%	31.6%	0.0%	100.0%

Based on the majority of the respondents, the plant performance was observed to be satisfactory with some exemption on delivery issues (Table 4.7). The majority of the respondents agreed that the plant performs above mediocre exertion; products confirm to customer satisfaction, satisfactory pre- and after-sales service, supreme product volume flexibility, and solemn attention on hazardous materials discharge. The majority of respondents were observed to be neutral when asked about product delivery (speed, reliability and flexibility of changing deliver dates), production variety flexibility, and prompt lead time to introduce new products or new processes. The majority of the respondents disagreed that numerous new products are introduced each year.

About 60% - 80% sales of the most important product line of the company comes from domestic market and remaining 20% - 40% comes from exports (Table 4.2). Similarly, about 70% - 75% purchases of the most important product line of the company comes from domestic suppliers and remaining 25% - 30% comes from foreign suppliers (Table 4.3).

Table 4.2: Sales markets

		Frequency	Valid Percent
Domestic Markets	Valid	60%	3
		70%	2
		75%	1
		80%	2
		Total	8
	Missing	System	13
		Total	21
Export Markets	Valid	20%	2
		25%	1
		30%	2
		40%	3
		Total	8
	Missing	System	13
		Total	21

Table 4.3: Product suppliers

		Frequency	Valid Percent
Domestic Suppliers	Valid	70%	3
		75%	1
		Total	4
	Missing	System	17
		Total	21
Foreign Suppliers	Valid	25%	1
		30%	3
		Total	4
	Missing	System	17
		Total	21

Only about 5% - 10% plant sales come from within the firm (affiliates) and 90% - 95% comes from outside the firm (Table 4.4). Almost 90% - 100% plant sales come from B2B and only up to 10% plant sales comes from B2G.

Table 4: Plant Sales

		Frequency	Valid Percent
Within the Firm	Valid	5%	1
		10%	2
		Total	3
	Missing	System	18
		Total	21
Outside the Firm	Valid	90%	2
		95%	1
		100%	1
		Total	4
	Missing	System	17
	Total	21	
B2B	Valid	90%	1
		100%	2
		Total	3
	Missing	System	18
		Total	21
B2G	Valid	10%	1
		Total	1
	Missing	System	20
		Total	21

V. CONCLUSIONS

There is no argument that strategic management programs are vital to manufacturing organization's ability to stay competitive on a day to day basis. But they are often limited in their ability to quickly and efficiently respond to extra ordinary events and challenges that organizations often face. In these situations, a more appropriate response is an event based approach that provides a temporary influx of effort, focuses on high priority opportunities that directly respond to what is happening, yet ensures that changes that are achieved are not temporary and remain in place moving forward. Dynamic capabilities are necessary in order to meet new challenges. Organizations and their employees need the capability to learn quickly and to build strategic assets. New strategic assets such as capability, technology and customer feedback have to be integrated within the company. Existing strategic assets have to be transformed or reconfigured.

Recommendations

People have proper tools, equipment, skills and capabilities to do what is expected of them. The feedback from their performance must help them adjust to do what is right and its best.

To successfully meet the challenges represented by manufacturing companies, organisations requires a process based approached that helps to identify and bridge the performance gaps in a way that ensures performance gaps in a way that ensures performance will be sustained within a time scale that meets the needs of the business.

GENERAL RECOMENDATIONS

1. To keep the manufacturing strategy design team focused on key business advantages, corporate executives must know what questions the team can answer and be kept updated through consistent delivery of key metrics so they can understand the progress that is being made and the importance of the results. By establishing these three pillars, a manufacturing strategy team can be a successful, as an integral, repeatable process within the organization.

2. South African manufacturing companies need to focus on innovation, collaboration and smart partnerships as a means to finding creative and alternative methods to continue to compete effectively. Fact is education and skills are the top constraints to the industries competitiveness. The skills shortage is the worldwide phenomenon and it's directly impacting a company's ability to resource appropriately for continual innovation and growth. Outsourcing non-core functions and forming smart partnerships with key suppliers to alleviate the risks associated with being unable to source specialist skills is a growing trend. South African manufacturing industry needs to adopt an innovative and coordinated national strategy. This will create a vision for the future and align all facets of the nation to a goal in which all components work together, thus creating greater growth and opportunities for all.
3. Manufacturing operations can be divided so that a portion of the products and components needed are made in South Africa and another portion in low-cost countries. Local manufacturing capabilities can be used to take care of streams in demand while offshore manufacturing can be used to save on costs, where possible, for stable demand.
4. South African steel companies can sustain operative evading which involves managing risks with fine-tuning in locations for manufacturing, sourcing and selling. This creates flexibility in the supply chain and market-facing activities. Such flexibility can help alleviate the impact that large and long-term changes in dollar rates have on revenues and profits. This can be achieved for both their new and existing products.
5. Keeping manufacturing processes that are not too labour intensive onto dry land is another strategy to consider. For example, the final assembly of steel can be — manufactured in a low-cost country and can be completed close to the customer. This “split-shoring” helps to shorten the time to respond to market changes and simplifies customization to meet changing consumer demands.
6. With the quality of innovation a strong point, launching new and better products at a fast speed should linger to be a focus for manufacturing companies in South Africa. Early in the lifespan succession of these products it is difficult to estimate demand. The delivery gap integral in offshore manufacturing makes this a risky plan. A more practical tactic may be to manufacture these products locally at first, then shift production to low-cost countries as demand stabilizes. In the short term, this creates enlarged capacity and requires short-term investments, but creating flexibility in capacity is vital for diminishing risks in the supply chain.

Implementation of these capabilities would also have profound insinuations for the workplace that would have to be addressed in a socially responsible manner. As presented, they pose targets and goals for research, whether or not they represent what future factories will actually be like. A manufacturing business is devoted to the production of tangible objects that are high in quality and competitive in cost, meet customers' expectations for performance, and are delivered in a timely manner.

Finding and achieving the appropriate balance among these traits — quality, cost, performance, and time to market — defy all manufacturing businesses. Those companies that are successful in meeting that challenge remain in business; those that are not usually disappear. How can manufacturers respond proactively to developing changes rather than wait and react post-facto? With manufacturing facilities located both near the customer and in low-cost countries, the total landed cost can be used to decide the percentage of total demand to be manufactured at each location. This flexibility plays a very crucial role in cutting down costs as well as meeting the high distinctions in the customer demand. It is not the biggest company that will survive, but the quickest to respond to customer specification as well as exceed their expectations.

REFERENCES

- [1] Dutta, S., Narasimhan, O. and Rajiv, S. (2005). "Conceptualizing and measuring capabilities: methodology and empirical application", *Strategic Management Journal*, Vol. 26, pp. 277-85.
- [2] Flynn, B.B. and Flynn, E.J. (2004). "An exploratory study of the nature of cumulative capabilities", *Journal of Operations Management*, Vol. 22, pp. 439-57.
- [3] Giovanni J.C da Silveira and Rui S. Sousa. (2010). Paradigms of choice in manufacturing strategy—exploring performance relationships to fit, best practices, capability based approaches. *International journal of operations management* Vol 30.
- [4] Größler. A (2010). An exploratory system dynamics model of strategic capabilities in manufacturing, *Journal of Manufacturing Technology Management*, Vol 21.
- [5] Swink, M. W. & Hegarty, H. (1998). Core manufacturing capabilities and their links to product differentiation *International Journal of Operations & Production Management* Vol 18 pp.
- [6] Wild, R., Slack, N, Chambers, S, Johnston, R, Harrison, A. & Harland, C. (1995). Capability building involves planning and fitting activities. *Production and operations management*.
- [7] Wilkes, J., Yip, G., & Simmons, K. (2011). Performance leadership: managing for flexibility. *The Journal of Business Strategy*. Vol 32 pp. 22 – 34.
- [8] Wouter, W.A., Beelaerts van B, Sicco, C. Santema, A. H, Jong, T. Elferink, N. (2012). Does Value Leverage Pay off? A Model for Measuring Value-Leverage Capabilities in Automotive Large-Scale System Integrators, *A Focused Issue on Competence Perspectives on New Industry Dynamics*, Vol 6 pp.209-235.

BIOGRAPHY

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