

Mapping, Measurement and Alignment of Strategy using the Balanced Scorecard: The Tata Steel Case

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ABSTRACT *This management accounting case provides insights into the emergence of global firms from emerging economies that have effectively adapted modern management accounting tools in strategy implementation. It is based on real-life situations and was developed using information from interviews and access to the firm's internal processes, journal articles, and other publicly available information. It is suitable for use in second level courses in management accounting or on MBA programs. It provides insight into the use of the balanced scorecard, in particular the strategy map and measurement.*

KEY WORDS: Case study, management accounting, balanced scorecard

Introduction

It was well past mid-night on a crisp January night in 2007. The Tata Head Office in Mumbai (Bombay) was alive with restless anticipation as Chairman Ratan Tata, Managing Director Muthuraman and a handful of key executives monitored the London auction for the Anglo-Dutch steel firm Corus. CSN Brazil had proved to be a determined player and had already raised the bid close to 570 pence per share, edging the total purchase price beyond the \$9 billion mark. Tata knew that this was a crucial stage in the life of Tata Steel (TS) given the global changes taking place in the steel industry. Besides, the company had prepared for this moment over the past few months, beginning with Managing Director Mr Muthuraman focusing on meeting expansion goals through a program of selective mergers and acquisitions.

While steel prices had leveled in developed countries, recent increased steel consumption in emerging countries such as India and China had rejuvenated the steel industry. However, consolidations and mergers were also beginning to re-shape the industry and the supply chain to increase the competitive strengths of the industry.¹ Historically, the

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‘commoditization’ of steel had made it vulnerable to economic cycles. Additionally, while raw materials’ vendors and major customers such as automobile companies were highly-concentrated, the steel industry was fragmented. This also made it more vulnerable to raw material price increases combined with steel price fluctuations that often resulted in a profit squeeze. The cost of freight had also increased, due in large part to Chinese trade, making it necessary for companies to locate closer to raw materials. In fact, it was now imperative for TS to adopt a global strategy to survive.

The company had adapted to the environment, while retaining its historical image for high moral and ethical standards. The company has incorporated insights about stakeholders’ needs through a ‘stakeholder engagement’ system in developing and implementing strategy. Additionally, the Balanced Scorecard (BSC) had become critical in integrating various components of the strategy, and communicating it throughout the organization. After the initial adoption of the BSC, the company felt the need to strengthen its use. In January 2004, TS invited Ted Jackson, then President of the Balanced Scorecard Collaborative, to conduct management seminars on the use of the scorecard. Mr Sharma² of the Strategy and Planning Division recalled that the workshop was attended by Senior Executives of Tata Steel and its associate companies. The concept of the strategy map was refined and developed in some detail. Additionally, Ted Jackson also discussed the BSC cascading process and clarified how Business Support unit scorecards differed from the Business unit scorecards. Mr Sharma remarked that the workshop had succeeded in adding needed momentum to the use of the BSC and increasing communication within the organization.

Background

Steel, the basic commodity that forms the basis for several products from the construction of buildings and tankers, to hairpins and clips, has a complex and global supply chain (see Figure 1) and a shifting customer base.

The recent resurgence in the industry, fueled by the construction boom and increasing demand for consumer goods in emerging countries, was an opportunity for Tata Steel. Tata Steel (TS) had come a long way since its inception on 26 August 1907 as the Tata Iron and Steel Company. Whilst zealously guarding an enviable reputation for high ethical values inculcated by the founder, Jamshedji Tata,³ TS had developed a placid culture over the years, with a sizeable payroll and a limited steel capacity less than five million tonnes per annum (mtpa). Liberalization of the Indian economy in the 1990s and a change of management resulted in major changes in the company. The new Chairman, Ratan Tata, set in motion a culture of change in management without compromising the ethical base that defined the essence of the Tata philosophy captured by the Tata Code of Conduct. The company transformed itself from an outdated high cost operation to a low cost

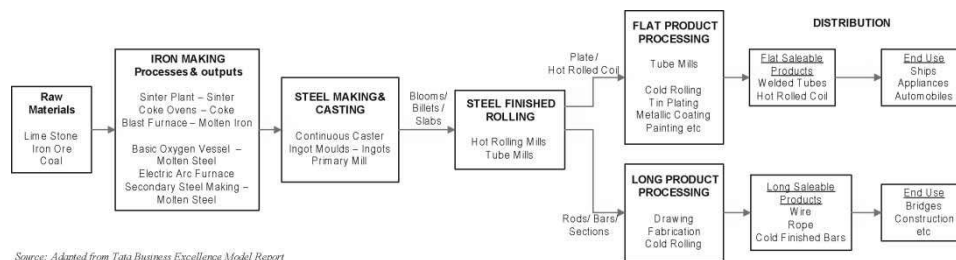


Figure 1. Steel industry overview

modern steel producer, named third in management by World Steel Dynamics.⁴ It was also increasingly becoming the preferred supplier of steel for high-end products such as automobiles. However, the steel sector was changing rapidly and globalization was the next challenge. Fragmentation in the steel industry led to lower margins compared to other players in the supply chain. For example, three iron ore suppliers had over 60% of the total market share, with margins of 35%. Customers such as the automobile industry were also highly- concentrated with the top five firms controlling 65% of the market. In contrast, the top 10 steel firms had only about a quarter of the total global output and a margin close to 10%.⁵ This had also resulted in re-structuring of the industry, leading to mergers to increase price stability. Chairman Ratan Tata understood the challenges:

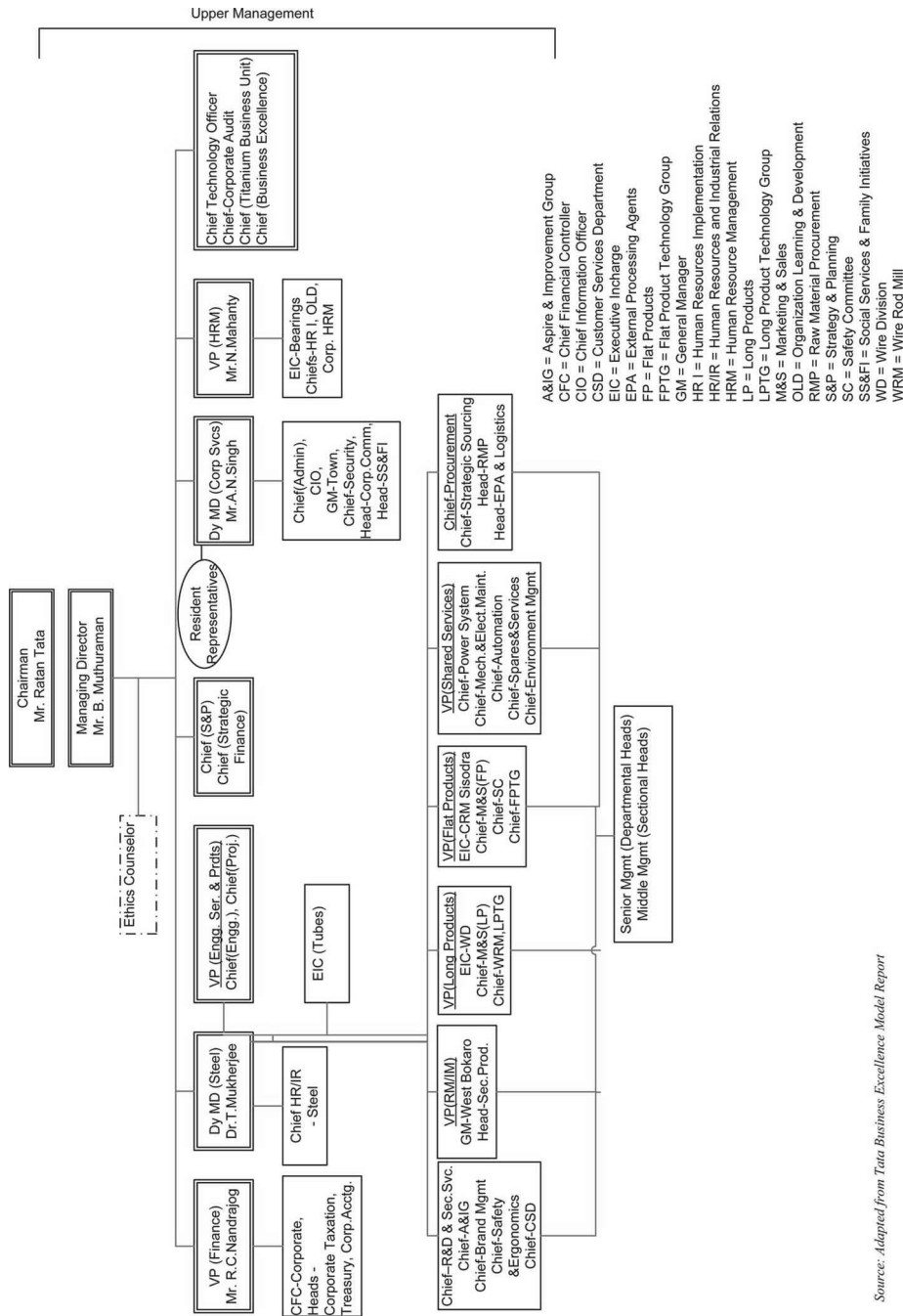
In this changed steel scenario, Tata Steel cannot stand still. It must explore ways of enhancing its capacity domestically while also establishing finishing facilities in strategic locations internationally, leveraging its low cost Indian base and the availability of domestic iron ore. The Company needs to evaluate and invest in new emerging steel-making technologies, so as to enable it to be a state-of the-art steel-making facility.

Tata Steel had begun to shop globally, purchasing NatSteel in Singapore⁶ and Ferrochrome Smelter in Richards Bay, KwaZulu-Natal, South Africa. In October 2006, Tata Steel made a bid for the Anglo-Dutch steel giant, Corus, which specialized in high-end steel products including aircrafts and automobiles. Ratan Tata felt that this purchase would integrate well with the company's global strategy.⁷ Thus, Tata Steel was poised to reap the benefits of globalization, liberalization and the growing steel demand from Asian economies, while remaining alert to the threats of hostile takeovers, the pressures on prices and raw materials, and the increasing competition to create value for the customer.

Role of the BSC in Tata Steel

After spending time with management at the head offices in Jamshedpur, Ted Jackson outlined a program for the BSC workshops. The key objectives of the workshops were to revitalize TS's BSC program to make it more effective, to integrate the BSC with the Strategic Governance process, and to create momentum using the BSC as a dynamic process. Several key executives, including Mr Muthuraman, the Managing Director (MD), Mr. Mukherjee, the Deputy Managing Director (DMD) of Steel, and Mr Chaturvedi, Vice President (VP) of Flat Products, attended different sessions in the workshop (see Figure 2 for the organization structure). There was a variety of sessions, including sessions for strategy development, strategy maps, and cascading of the scorecard.

In the strategy session, executives reviewed key factors integral to the strategy, the firm's vision, values and mission. All reaffirmed the firm's desire to remain true to the vision of the founder, Jamshedji Tata, to strengthen India's industrial base through the effective utilization of staff and materials by mobilizing high technology and productivity, consistent with modern management practices. The TS vision recognized that, while honesty and integrity were the essential ingredients of a strong and stable enterprise, profitability provided the main spark for economic activity. The vision also acknowledged the need for an atmosphere free from fear, and thereby reaffirmed its faith in democratic values. The Tata Code of Conduct institutionalized the firm's value system. The code included several articles that highlighted the need for transparency and mutually beneficial relationships with different stakeholders (Elankumaran *et al.*, 2005).⁸ The Tata Code of Conduct specifically forbids bribery and corruption in various forms.⁹ The firm's mission was to mobilize resources to avail itself of opportunities through areas such as emerging technologies, new business models, value creation, customer service, new



Source: Adapted from Tata Business Excellence Model Report

Figure 2. Organization structure

products, services or businesses to make the firm EVA positive.¹⁰ Additionally, the firm would keep in view the vision by improving the quality of life of the employees and the communities served and upholding the spirit and values of the Tatas in nation building.

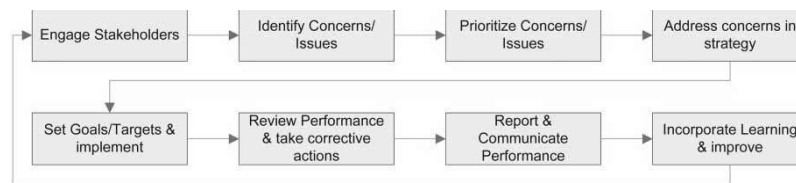
The firm placed a high priority on 'stakeholder engagement' and used feedback from stakeholders to identify key areas of strategy and as a means to integrate economic, social and environmental issues (part of the Code of Ethics) into its strategy.¹¹ The engagement process (Figure 3) helped identify key stakeholders within stakeholder groups, assess and prioritize their concerns and address them in corporate strategy.

The executives were familiar with the variety of forums to receive feedback and communicate with stakeholders including *investor satisfaction surveys*, customer conferences and *satisfaction surveys*, *vendor dialogues*, *meetings with key suppliers*, *employee dialogues*, *senior citizens' forums*, and *joint community meetings*. Information from stakeholder engagement, integrated with values, mission, and the competitive environment, formed the basis for strategy development. Using this information, the executives were assigned the task of drawing up the 'strategy map,' which Ted described as the 'roadmap' of the strategy linking key components of the strategy in the four BSC perspectives. After several hours of debate and heated discussions, the executives finally agreed to a map over which there was reasonable consensus (see Figure 4). Mr Sharma recalled some of the discussions with executives from different functional areas highlighting their contributions to overall strategy. The Chief (Strategy and Planning) coordinated the efforts, guiding discussions along the areas linked to the BSC perspectives.

While the strategy map proved to be invaluable in articulating overall strategy, Ted Jackson emphasized the critical importance of cascading strategy to different levels in the organization by developing scorecards at the corporate level, as well as for each business unit and support unit. Scorecards formed an integral part of communication and alignment of strategy. The cascading process began at the corporate level with the Managing Director's (MD) scorecard.

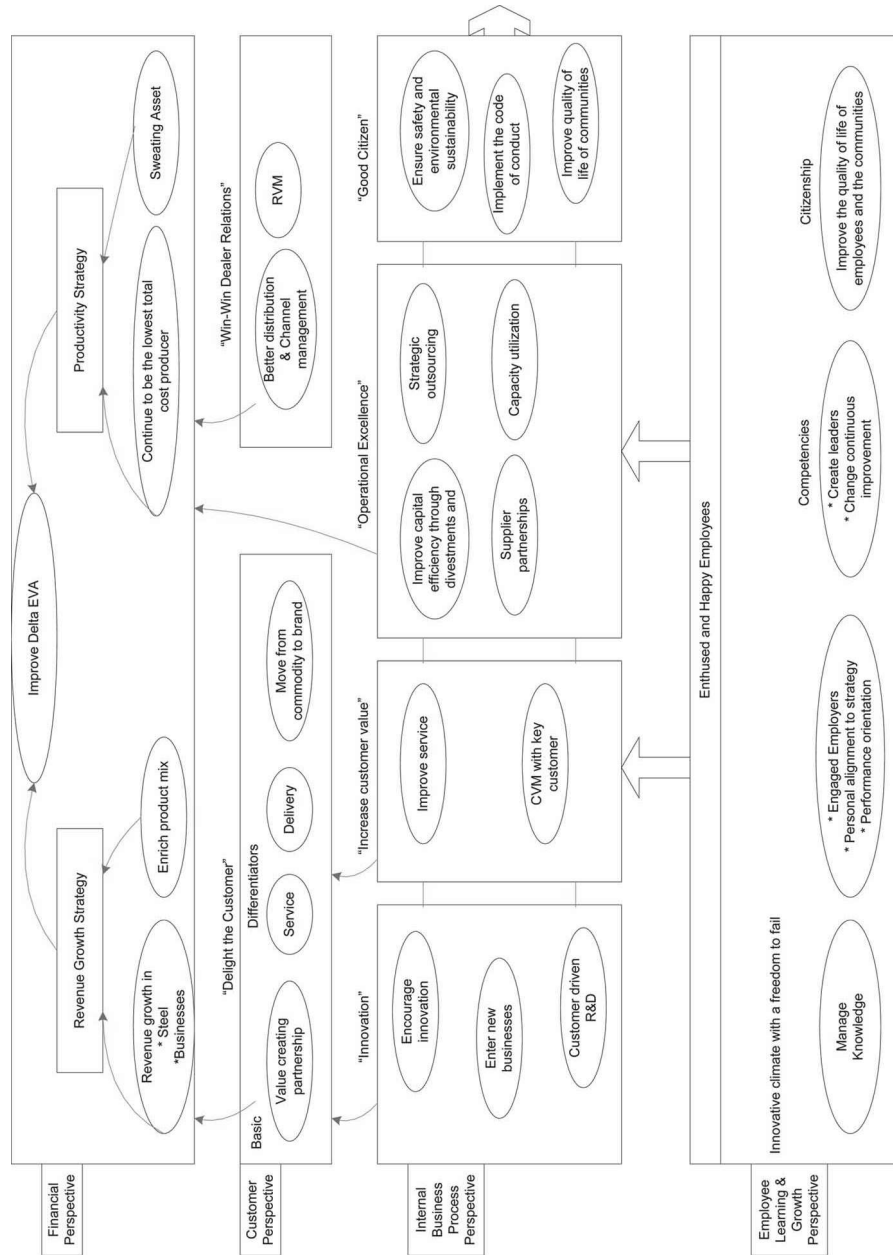
The team next worked on the outline for the MD's scorecard (also called the corporate scorecard) that emphasized areas where the corporate office provided the synergies to enable achievement of organizational strategy. Muthuraman had set the financial goal of becoming EVA positive, a target he recognized as difficult in the steel industry. He recognized the need to emphasize quality through branding, and meeting the manufacturing demands of sophisticated customers such as automobile and aircraft manufacturers to increase margins. The global aspects of the Revenue strategy, to achieve revenue growth and diversification into related end products through mergers, were also evident in the scorecard (Table 1).

The BSC now needed to be cascaded to different levels in the organization. The task would continue long after the workshop, but the sessions had set the stage for a renewed and revived implementation of the BSC. As Mr Sharma thoughtfully summarized the impact of the BSC, he expressed his appreciation of the overall usefulness of the



Source: Tata Steel Corporate Sustainability Report, available <http://www.globalreporting.org>

Figure 3. Stakeholder engagement process



Source: Adapted from Tata Steel Corporate Sustainability Report, available <http://www.globalreporting.org>

Figure 4. Strategy map

Table 1. Corporate balanced scorecard

BSC perspective	Corporate objectives	Strategic measures (unit)	Actual	Target	Benchmark	Strategic initiatives
Financial outcomes	Create incremental EVA year on year on existing business	Economic value added (EVA) (Rs. Crores)	507	10% incremental EVA year on year	Posco China Steel (5.4%)	Grow organically & through M&A (in India & overseas) to 15 mtpa by 2010
	Sustainable & aggressive growth	Increase in top line growth (%)	21	20% year on year	43% Gerdau SA	Execute overseas Fe-Cr facility
	Invest in attractive new business					Establish global presence in steel manufacturing
Market outcomes	Divest, merge, acquire					Establish a low cost coastal plant to link domestic & global operations
	Move from commodities to brand	Retail sales through brands (%)		100%		Internal Capacity expansion
	Value creating partnerships with customers	Customer satisfaction index (CSI) – (flat products, long products, tubes) (index)	1.06 (FP) 1.10 (LP)	1.14	1.12 Baoshan Steel	Execute Titanium Projects plans
Internal business perspective	Value creating partnerships with suppliers	Corporate image index (out of 100)	7.7	92	Individual and parameters for each stakeholder group separately benchmarked	Develop well-defined M&A framework for domestic & overseas acquisition
	Continue to be the lowest cost producer of steel	Supplier satisfaction index	7.7	8.0		Improve brand promotion & brand positioning
	Outsource strategically	Employee cost (% of turnover)	11.87	Contain at 02–03 levels	Tata Steel is the benchmark	Implement retail value management (RVM)
Learning perspective	Encourage innovation and allow the freedom to fail	Corporate citizenship index (out-locations)	10	10		Customer value management (CVM) program with 100% OEM customers (enterprise Accounts) by 2007
	Ensure safety and environment sustainability					Develop customer relationship index
	Improve quality of life of the communities we serve	Organization learning index	441	650	Unique measure	Improve operational excellence & sustain cost competitiveness
Learning perspective	Enthusied and happy employees	Employee satisfaction index	3.8	3.9	3.89; Infosys	Improve perception—potential employees, school students, government, financial community
	Improve the quality of life of the employees	Leadership behavioral index (%)	74.7	85	Unique	Improve corporate governance practices
	Unleash people's potential and create leaders who will build the future					Implement social accountability (SA 8000)
Learning perspective						Implement OHSAS
						Collaborate with DuPont for institutionalizing safety
						Bring unionized cadre in knowledge management fold
Learning perspective						Improve knowledge sharing & knowledge Manthan
						Improve workplace ambience, safety & ergonomics
						Increase time spent on developing people to create leaders at all levels
Learning perspective						Create leadership pipeline and develop global managers

Source: Adapted from Tata Business Excellence Model Report.

workshop, particularly in the strategy map development. Business units and support units would now need to develop their own scorecards using appropriate themes from the strategy map to ensure strategic alignment. Using the stakeholder approach, the firm set about determining areas of customer and stakeholder concerns and requirements, the focus for further development of business unit scorecards.

Business Units: Measurements and Outcomes

Customer Outcomes

Mr Mukherjee of the Mumbai (Bombay) sales office, explained that the Sales (Flat Products) Division used its 'listening and learning' activities (customer visits, satisfaction surveys, and other 'listening posts' such as call centers and e-linking) to gather information and develop measures by customer segment and product category. An example of customer value creation was evident in the Bombay sales office where, in the midst of hectic activity, Mr Mukherjee negotiated the next month's supply of auto grade steel with representatives from Mahindra & Mahindra, a major auto customer. The Bombay office had a direct video conferencing with the production facilities at Jamshedpur and the customer production facilities. The agreement included details of 'technical' and 'delivery' conditions, key components of the customer value proposition.

A key feature of the marketing strategy has been the development of strong relationships with large customers and retailers. In line with the strategy, TS developed measures by customer type and product segment to identify areas to strengthen relationships with customers. Important measures in the Enterprise category included share of business, satisfaction index, and awards and certificates;¹² for distributors, measures included monthly sales analysis, complaint analysis, number of products, Brand Equity Index, and new products introduced. Additionally, measures by product segment and product mix, as indicated in Table 2, enabled the firm to develop processes to meet customers' expectations. Classified broadly by production into Long and Flat Products, the mix indicates the product development strategy move from commodities to high-quality brands. The firm also used brand names such as Tata Shaktee and Tata Steelium to differentiate their products and to emphasize quality. Branded products, contributing about 14% to the company's sales, commanded a premium over non-branded products in the market, with a higher turnover.

The customer requirements reflected the close interaction and led to innovations. As Mr Mukherjee explained, 'We convey the customer requirements to production in Jamshedpur. While we try to ensure that all customer complaints are addressed and orders are complied with in a timely manner, each customer has unique needs that we also try to fulfill. Sometimes, we have seen major innovations from production and R&D, as a result. Take the case of the innovation of 'galvanized bake hardening steel' for dent resistant automotive use, a breakthrough in developing steel for automobile chassis.'

Internal Business Processes

TS identified several processes key to implementing strategy. 'Operations and Fulfillment' was one critical process that included several support processes (Table 3).¹³ The concerned departments used information from surveys and business plans to determine key process requirements. These process requirements were translated into in-process and key performance measures. Key performance measures (KPM) measured the effectiveness of the process (outcomes) and they were linked to the BSC. However, the process owners were particularly concerned with the in-process measures, which guided their activities.

Table 2. Market segments and expectation

Products	Segment	Customer requirements
Flat products— HR, CR, galvanized	Auto segment	Surface quality Order compliance Complaint redressal
	Appliances	Shape and hardness Order compliance Complaint redressal
	General Engineering	Mechanical properties Order compliance Complaint redressal
	Hot rolled products	Consistency in chemical properties Consistency in mechanical properties Order compliance Complaint redressal
	Tata Shaktee	Zinc yield ratio Complaint redressal
	TISCON: projects	Weight/meter Yield strength Weldability (carbon equivalent) Compliance to technical delivery conditions Complaint redressal
	TISCON: retail	Compliance to technical delivery conditions Yield strength Complaint redressal
	High carbon wire rods	Compliance to technical delivery conditions Segregation level Complaint redressal
	Low carbon wire rods	Compliance to technical delivery conditions Complaint redressal
Long products, Tiscon-wire rods		

Source: Adapted from Tata Business Excellence Model Report.

Improvements in these areas also generally translated into improvements in KPMs. The control methods ensured internal and external audits of the efficiency of the processes.

The departments/business units controlling the processes usually developed their own scorecards tied to the MD's scorecard and the strategy map. For example, the objective of the R&D was to make Tata Steel an EVA-positive company. As MD Muthuraman put it, 'It is the strategy that drives the research objective. R&D has a BSC that is tied to the MD's BSC. It contains various strategic measures in the perspectives of finance, customer, internal business processes, people and special projects. Its performance is measured against the metric set in the BSC.'

Learning and Growth

The support departments, particularly the HR, had also streamlined their activities to conform to the strategic goals spelled out in the BSC. New employee orientation included

Table 3. Key support processes, requirements, KPMs and in-process measures (operations and fulfillment value creation process)

Key support processes	Key process requirements	In-process measures	Key performance measures (KPMs)	Control methods	Process owner
Procurement	Timely availability of products and services at competitive prices; Partnership with suppliers	Average lead time for placing order; GRN cycle time; Feedback from vendors on timely payment; Spend base covered by strategic sourcing; Trends in improvement in response time (IT);	Savings through strategic sourcing; Supplier satisfaction index	Monthly reviews; segment steering committee reviews	Chief Procurement
Social responsibility and corporate citizenship, safety and environment	Involvement in community development and ensuring a safe and clean environment. Congenial work environment.	Waste utilization; capital investment on pollution equipment; safety training; expenditure on society	CCI; family planning; water pollution, quality; immunization; man-days lost due to accidents; ambient air quality; reportable accidents	Social audits; compliance to ISO 14001 and OHSAS norms; ISA 14001 and OHSAS internal and external audits	MD; DMD (customer service) and DMD (safety)
Information management	Timely availability of data and information at all levels for decision-making	Trends in improvement in response time (IT); IT uptime	Overall CSI with ITS	Internal CSI; Help desk monitoring	CIO

Research and development	Develop new customized products for customers; efficiency in operations through better processes	R&D expenditure	No. of innovations; no. of patents; no. of new products developed; new product development cycle time	R&D reviews at apex level and second level	Chief (R&D and shared services)
Shared services mgmt	Availability of plant and equipments; energy consumption; availability of electrical power	Compliance to performance requirement of level 2 systems; power generation stage-wise energy consumption	Average uptime of automation products; specific energy consumption; power rate; works power cost	Internal CSI (services)	VP (shared services)
Finance and accounts	Timeliness; accuracy; speed of processing	Internal CSI	Cycle time for cost reports; accuracy of cost reports; invoice processing within due date; monthly accounts submission; remittance of salary to banks	Internal, external audits	CFC (corporate)

Source: Adapted from Tata Business Excellence Model Report.

CCI = Corporate Citizenship Index; CFC = Chief Financial Controller; CIO = Chief Information Officer; CSI = customer satisfaction index;

DMD = Deputy Managing Director; GRN = goods receipt note; ITS = Information Technology Services; MD = Managing Director; VP = Vice President.

the Code of Conduct, team building exercises, company policies, strategic objectives, acculturation, and management systems and processes. Management development training focused on a key ‘basket of competencies’ vital to the short-term/long-term growth of the firm. Training programs were developed by employee category, (e.g. workers, supervisors, and officers) and employee life cycle, (e.g. new employee plant visits, on the job training, special projects, and advanced training).

To cultivate a culture of innovation and knowledge management, TS employed ‘learning from failure’ sessions that led to new insights into processes and innovations. Mr Maheshwari, Chief of Scientific Services pointed out that: ‘learning from failure and developing an innovation evaluation method is extensively used to improve and differentiate products.’ TS also captured knowledge at different levels from ‘tacit shop floor’ knowledge to ‘global expert’ knowledge and communicated it across the organization through its knowledge management (KM) portal. In line with Tata values, training included that of disadvantaged groups, (e.g. tribal groups) and diversity training in such areas as cultural (religious, language and social) and gender (professional and social empowerment of women).

The firm recognized the importance of feedback and incentives to ensure the effectiveness of training and knowledge management programs. There was systematic data collection integrated with information technology that enabled timely collection, retrieval, and analysis of performance measurement (Table 4).

Sometimes training was not as structured, nevertheless linked to strategy. Mr. Chaturvedi recalled how MD Muthuraman had sent him to Northwestern University’s Kellogg School of Management (located in Evanston, Illinois, USA) for a week long program on mergers, acquisitions and alliances. He did not realize that, in just a few months, his time there would be put to good use during the acquisition of NatSteel in Singapore. Sending Chaturvedi to

Table 4. Key data and Information gathered for daily operations and organizational performance (sample, not exhaustive)

	Key data and information	How collected
Daily operations	Sales, dispatch compliance, productivity, cost, quality	SAP
	Customer complaints	Lotus notes/manual
	Employee grievances	Manual
Organizational performance	Safety performance	Safety incident reporting system
	Customer satisfaction index, supplier satisfaction index, market share	Third-party survey
	Employee satisfaction index, corporate citizenship index	Internal survey
	Economic value added (EVA), profit after tax (PAT), operating profit, asset utilization, return on equity (ROE), growth, revenue from branded products, premium from branded products	SAP
	Tata business excellence model (TBEM) score	External assessment

Source: Adapted from Tata Business Excellence Model Report.

Kellogg was part of Muthuraman's plan of transforming TS into a global player, something that was increasingly taking shape.

Merger and Continuing Challenges

Looking back over the years since the initial BSC implementation and the revival after the workshops in 2004, Mr. Sharma concluded that BSC had helped improve focus and flexibility, increasing the ability of the firm to initiate new ventures and adjust to changes. Recent financial results were also impressive. Despite price fluctuations and raw materials increases, Tata Steel leveraged its low cost, high productivity and revenue strategy to influence its bottom line considerably. Recent quarterly earnings indicated that Tata Steel's EBITDA was considerably higher than that of competitors such as Nippon Steel, Arcelor, POSCO, JFE, and Mittal Steel.¹⁴ However, challenges for the future remain. The external environment in the steel industry has many uncertainties and strategy needs constant evaluation. While the demand side appeared to have gained momentum, there was always the concern about cyclical demand. Additionally, overcapacity in the Chinese supply side could also destabilize prices.

Nevertheless, TS was now better equipped to meet these challenges. The results of the takeover battle were in. Overnight, Tata Steel had changed from the 55th to the 5th largest steel firm in the world with a capacity of 25 mtpa and a global reach. At \$11.3 billion, the cost was high, but according to Ratan Tata, 'we hadn't reached the limit we had set ourselves.' The immediate challenge was to integrate a much larger firm, a process that could include many possible hurdles. However, there was now an air of confidence. As Ratan Tata summed it, 'the human chemistry was good. There is more going for us than against us. When the hurdles come, we will deal with them. What we have done now is create an integration committee that will operate towards integration of both companies seamlessly.'

Suggested Questions

1. How does Tata Steel develop strategy?
2. Using the strategy map (Figure 4), organization chart (Figure 2), and other relevant information, present scenarios where different functional area managers use the strategy map to interact and discuss a unified strategy.
3. Strategy map and strategy implementation:
 - (a) How does the strategy map result in measures and initiatives in the BSC?
 - (b) Comment on how different perspectives contribute to the final goal of becoming EVA positive.
4. Measurement and incentives:
 - (a) Briefly describe the steps in measurement that enable TS to use measures to improve performance and increase transparency (use Tables 1 to 3, with emphasis on Table 2).
 - (b) Does the nature (or type) of the measures influence the BSC implementation? Identify the different types of measures in the TS case and indicate their usefulness.
 - (c) What are potential problems/ pitfalls that may affect strategy implementation? Discuss how they may (or may not) apply to the Tata Steel case.
5. Considering the future of the merger with Corus, discuss possible ways that Tata Steel could benefit from using the Balanced Scorecard approach.

Notes

- ¹Most recently, the Arcelor and Mittal Steel merger created the world's largest steel company with 110 million tonnes capacity, setting the stage for more mergers.
- ²Some names have been changed to protect the identity of individuals concerned.
- ³A Parsi philanthropist and pioneer, Jamshedji Tata was involved in the nationalist movement during British colonial rule in the 1800s. He was one of the first to see the need for self-sufficiency through a thriving manufacturing sector.
- ⁴The firm was third in management after S. Korea's Posco and China's Bao Steel, based on such criteria as management, technology and cost of production. Some details of the transformations during this phase are outlined in Seshadri and Tripathy (2006), which includes projects such as revamping the blast furnace and turning around the rolling mills. See also, Meredith (2005).
- ⁵Recent world capacity was about 1113 million tonnes, with production of 962 million tonnes. China contributed about 31% of the total, followed by the EU and the USA. India totaled about 40 million tonnes, with Tata Steel production capacity equaling about 5 million tonnes; currently, the top 10 producers produce about 30% of the total world production. Information on the steel industry can be accessed from a variety of sources listed in the references, including speeches by Mr Mittal of Mittal Arcelor available at <http://www.mittalsteel.com/News+and+Press/Speeches+and+Presentations.htm> (accessed 31 March 2007) and presentations by TS's MD Mr Muthuraman available at <http://www.tatasteel.com/investorrelations/investorevents.asp> (accessed 31 March 2007).
- ⁶Dhawan and Roy (2004).
- ⁷Corus was about five times the size of Tata Steel. However, Tata Steel had the backing of the vast resources and access of the Tata Business House, which included a stable of companies such as Tata Motors and Tata Consultancy Services (the largest information systems firm in India).
- ⁸See Elankumaran, Seal, and Hashmi. (2005).
- ⁹Bribes are often commonly accepted as a means of accessing licenses and circumventing a circuitous system, but the firm's reputation helped to overcome many of the problems that plagued the system.
- ¹⁰Economic value added (EVA) an extension of Residual Income, was trademarked by Stern Stewart and Co. TS used the measure to target returns (RONA) that was greater than the cost of the capital invested. $EVA = (RONA - WACC) \text{ times invested capital}$, where: EVA is economic value added, RONA is return on net assets (=net operating profit after tax/net assets), and WACC is weighted average cost of capital.
- ¹¹While the firm identifies shareholders, financial community, customers, media, employees, regulators, suppliers and partners as stakeholders, the key stakeholders are customers, employees, shareholders and suppliers.
- ¹²Recent awards included 'Best Localization Award' from Hyundai and 'Approval for Global Supplies' from Caterpillar, demonstrating 'customer delight'.
- ¹³Specifically, Tata Steel identified 12 key enterprise processes (KEP) through a framework detailed by APQC. APQC (initially called American Productivity and Quality Center) became internationally-renowned after the creation of the Baldrige Awards and later work in setting up the International Benchmarking Clearinghouse and the Open Market Benchmarking Collaborative that helps identify current benchmarking measures and best practices (see <http://www.apqc.org/portal/apqc/site> for more details).
- ¹⁴EBITDA stands for earnings before tax, interest, depreciation, and amortization and is useful to analyze and compare profitability between companies and industries because it eliminates the effects of financing and accounting decisions. April 2005 to March 2006 comparisons of steel companies from news briefs on Tata Steel website showed: Tata Steel: 40%, Nippon: 19%; Arcelor: 16%; POSCO: 30%; JFE: 22% and Mittal: 16%.

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