Chapter 9
Differentiation

Adopting a differentiation strategy, providing distinctive products and services, and winning the trust of customers are the important development directions for iron and steel enterprises in the future, especially for small- and medium-sized ones. Specifically, the first is the differentiation of development strategy, namely strengthening the research on market demand and competitors and identifying the enterprise positioning in the process of "becoming bigger and stronger", "doing the finer", "becoming moderately diversified" and "relatively diversified", and developing corresponding strategy to achieve industrial chain differentiation and regional differentiation. The second is the differentiation of products, namely optimizing product structure, increasing the share of competitive products, focusing on product serialization, and improving the "one-stop" supply capacity. The third is the differentiation of production lines, namely achieving specialized production, greatly improving production efficiency, and reducing production costs through the technical transformation of equipment. The fourth is the differentiation of services, namely improving pertinence and recognition by adopting different service models for different customers and different regions. The fifth is the differentiation of sales, namely common products are mainly sold by e-commerce platform and direct sales to large customers, so as to reduce intermediate links and sales expenses. The high-quality special steel products mainly focus on the modes of technology sales, strategic customers, early intervention, and continuous tracking, keeping up with customers' demands and gradually expanding the market. The sixth is the differentiation of control, namely vigorously implementing low-cost production strategies for common products to improve their competitiveness. The high-quality special steel products are oriented by strengthening product quality to open up the market and improve customer recognition.

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9.1 History Review and Status Analysis

Since the reform and opening-up, Chinese iron and steel industry has been rapidly developing with the support of strong cost competitiveness and which has also objectively caused the extensive growth mode of the iron and steel industry dominated with quantitative expansion. In recent years, the state has focused on the industrial restructuring for the development of the iron and steel industry, which means that the scale expansion in the traditional way is no longer feasible. In addition to the continuous implementation of energy conservation and emission reduction policies, the growth in iron and steel consumption is constrained to some extent. With the continuous adjustment of the product structure and technological advancement of the enterprise, the homogenization of products has become more and more serious and the competition has become increasingly fierce.

At present, the disorderly competition of low-end products in Chinese steel market is fierce, mainly in three aspects: First, the price is disorderly. Chinese iron and steel industry shows overcapacity and sluggish downstream demand, the low-end products of all enterprises are at the same level, and there is no obvious gap in varieties, specifications, and quality among their products. Consequently, iron and steel enterprises are pressing each other's prices to seize the market, so their profits are meager or even minus, causing disorder competition. Second, the export is disorderly. The steel products exported from China are mainly low-end products with low added value, and the average export price is significantly lower than the average import price. In 2016, the average price difference between import and export was USD 493.1/t. The steel products exported from China still have problems such as the concentration of export destinations. The disorderly export of such low-end products has intensified trade frictions among countries, resulting in multi-faceted anti-dumping against Chinese steel products by European countries and the USA. Third, existence of shoddy products. The existence of "shoddy" products such as counterfeit hot-rolled rebars by substandard steel and counterfeit micro-alloyed or ultra-fine grain rebars with water-cooled rebars is also an important reason for the "Malignant Competition" in the iron and steel market in some regions of China. Substandard steel products are produced in many small steel plants in China. Although their quality is not high, they are sold in a low-cost dumping operation mode because of their low cost and low burden on enterprises, which further deteriorates the market environment.

Iron and steel enterprises are eager to break away from the homogeneous competition of low-end products. Consequently, many high-end production lines have been launched in recent years, and their equipment levels are very close. However, many enterprises have similar product mix and lack of scientific and rational market positioning, which has led to the increasingly homogeneous competition of high-value-added products. For example, as of the end of 2016, 15 sets of hot rolling wide-strip mills over 2000 mm had been completed in China (Table 9.1), with a total output of 71.5 million tons. They have high equipment levels and are generally positioned to produce automobile panels and home appliance panels, resulting in repeated construction of a large number of high-end equipment with similar product

Table 9.1 Status of hot rolling wide-strip mills over 2000 mm in China

No.	Enterprise	Mill specification/mm	Output/$\times 10^4$ t	Mill type	Date of put into operation	Equipment level
1	Baosteel	2050	400	3/4 tandem	1989	Domestic advanced level in China
2	WISCO	2250	450	Semi-tandem	2003	Domestic advanced level in China
3	Liuzhou Steel	2032	350	Semi-tandem rolling	2005	Domestic advanced level in China
4	Anshan Steel	2150	500	ASP	2005	International advanced level
5	TISCO	2250	450	Semi-tandem	2006	International advanced level
6	Shougang Qiangang	2160	450	Semi-tandem	2006	International advanced level
7	Masteel	2250	550	Hot tandem rolling	2007	International advanced level
8	Shougang Jingtang	2250	550	Semi-tandem rolling	2008	International advanced level
9	Hanbao Steel	2250	450	Semi-tandem rolling	2008	International advanced level
10	Rizhao	2150	500	Semi-tandem	2008	International advanced level
11	Benxi Steel	2300	550	Semi-tandem rolling	2009	International advanced level
12	Valin Steel	2250	450	Semi-tandem rolling	2009	International advanced level

(continued)

Table 9.1 (continued)

No.	Enterprise	Mill specification/mm	Output/$\times 10^4$ t	Mill type	Date of put into operation	Equipment level
13	Pangang Group Xichang Steel	2050	450	Semi-tandem rolling	2011	International advanced level
14	Baotou Steel	2250	500	Semi-tandem rolling	2014	International advanced level
15	Zhanjiang Base of Baosteel	2250	550	Semi-tandem rolling	2015	International advanced level
	Total		7150			

positioning. Taking pipeline steel as an example, all the hot rolling wide-strip mills of WISCO, Baosteel, Ansteel, TISCO, Shougang, Masteel, Benxi Steel, and other large iron and steel enterprises in China are able to produce pipeline steel products, resulting in serious product homogenization and obvious overcapacity and outstanding contradiction between supply and demand; consequently, it directly leads to a sharp drop in the price of pipeline steel products, which ultimately causes the profit space of all enterprises' pipeline steel to shrink sharply.

With the increasingly tight constraints on the environment and resources faced by the iron and steel industry, the pressure on iron and steel enterprises is enormous due to the cyclical adjustment of upstream and downstream industries, the unreasonable industrial layout, and the overcapacity caused by disorderly competition in various regions. "Homogeneous competition" is one of the main culprits for the current chaos and drawbacks of the iron and steel industry. The homogenization of products causes vicious competition among enterprises; the homogenization competition of enterprises makes the development of the iron and steel industry uncoordinated, unbalanced, and unsustainable. To this end, if China's iron and steel industry wants to complete the transformation and upgrading, its way out is to vigorously promote the differentiation strategy.

Michael Porter, the master of strategic management in the USA and the "father of competitive strategy", pointed out that the economic significance of differentiation is to manufacture scarce products, which means the enterprise shall manufacture the scarce product that is different from competitors in a certain aspect or a certain link of the business process under the market structure of supply and demand balance or oversupply, namely "partial short supply", so that the enterprise will have their own competitive advantage and gain excess value of innovation. As Michael Porter pointed out, the significance of company's advantages or disadvantages ultimately depends on the extent to which the company can respond to the market with relatively

low cost and differentiation. By implementing differentiation strategies and by relying on innovative products, innovative brands, and innovative markets, opening-up their own exclusive market space, maximizing value, and winning lucrative market returns should be the most important goals of each iron and steel enterprise for transformation and development.

During the 12th Five-Year Plan period, most iron and steel enterprises in China began to consider implementing differentiated development strategies. While adhering to moderate scale operations, they constantly adjusted their operating variety structure and expanded their differentiated competitive advantages. However, it is still in the infancy for Chinese iron and steel enterprises to adopt differentiation strategy, and is necessary for them to strengthen understanding and implementating of the same. At present, there are two points worthy of attention in the competitive environment of the iron and steel market. The first is the pressure from similar marketing: Since most steel products are standardized, homogeneous products and the differences among products of different enterprises are less, and the marketing strategies and means are similar. Secondly, technical competition is homogenized: Advanced technology is widely used by large iron and steel enterprises, which is one of the reasons for similar products.

9.2 Development Environment and Policy Orientation

9.2.1 Development Environment

1. Economic Environment

At present, the global economy is still in a stage of deep adjustment, the recovery momentum is insufficient, instability, and uncertainties are numerous and varied, the economic situation is complicated, the recovery base of developed economies is relatively fragile, and the major emerging economies are facing pressures such as economic slowdown and structural adjustment. From the perspective of the domestic environment, China will further promote the transformation of development mode and economic restructuring, and economic growth will maintain a new normal in the stage of medium-high speed. On the other hand, with the further advancement of China's new industrialization, informationization, urbanization, agricultural modernization, and greening, domestic demand will gradually be released, consumption will become the backbone of economic growth, and the proportion of the added value of the service industry has surpassed that of the secondary industry and ranks first. At the same time, with the implementation of China's "the Belt and Road Initiative", coordinated development of Beijing-Tianjin-Hebei and the Yangtze River Economic Belt, new regional economic growth pole will gradually take shape. The domestic economic situation is nurturing opportunities in difficulties; especially, "the Belt and Road Initiative" has brought unprecedented opportunities for international

cooperation between iron and steel enterprises. On the whole, the macroeconomic environment at home and abroad is still tightening in the coming period.

2. Environment of the Industry

The competition pattern of global iron and steel industry is undergoing profound changes and adjustments. After the international financial crisis, developed countries have implemented the "re-industrialization" strategy to reshape the new competitive advantage in manufacturing; especially as Germany, the USA, Japan, Britain, France, and other countries announced their plans or strategies to revitalize the manufacturing industry, the new technological revolution characterized by the deep integration of the new generation of information technology and manufacturing is triggering far-reaching industrial changes and forming new production methods, industrial forms, and business models, which will greatly enhance the competitiveness of the iron and steel industry in the established powers. Some developing countries have also seized the opportunity of global industry re-division to actively participate in undertaking industry and capital transfer to expand international market space by taking advantages of accelerating growth of local steel demand, labor, and resources. It can be said that China's iron and steel industry is facing "double-side pressure" from developed countries and other developing countries.

China is in the decisive stage of building a well-off society in an all-round way. As an important basic industry of the national economy, the iron and steel industry has entered into the second half of production and consumption peak period, the period of profound adjustment of the market structure, the key decision period for the establishment of an iron and steel powerhouse, and the historical opportunity period for innovation and development. In the future, the risks and challenges faced by China's iron and steel industry are mainly reflected in the fact that international trade protection is not optimistic, the task of resolving overcapacity is arduous, the risk of business chain failure is increasing, and the risk of relocation of iron and steel enterprises in core areas is intensified. Overall, the environment of China's iron and steel industry is not optimistic.

3. Market Environment

The demand of the international iron and steel market will remain generally in a state of mildness, trade remedy measures are prevalent, resource nationalism has risen, and international market competition among iron and steel enterprises will be further intensified. The pattern of China's economic growth depending on the investment is changing, the steel consumption intensity of specific economic aggregate is further reduced, steel production and consumption show a downward trend from the peak arc region, and the industry has entered into a difficult stage of reduction development. With the upgrading of the demand structure and the adjustment of the industrial structure, the market will put forward higher requirements on the iron and steel enterprises in terms of variety, quality, and service. In addition, environmental resources and human resource bottlenecks will further intensify, so the pressure on steel manufacturing costs will increase. Various measures on comprehensively deepening the reform will stimulate the vitality of various economic factors and create

a fair competitive market environment. At the same time, it also requires iron and steel enterprises to accelerate reform, innovation, and transformation development to adapt to the rapidly changing external market environment. Market competition is gradually shifting to quality and differentiated-based competition from quality expansion and price competition.

In the current and in the long run, the most obvious characteristic of the iron and steel market is still serious oversupply, and the situation of brutal market competition is difficult to change. Under the new normal, the increases of the quality of consumption and the proportion of personalized demand in China's iron and steel market will become more obvious. During the 13th Five-Year Plan period, with the adjustment to emphasized consumption and service in the adjustment and transformation of the domestic economic structure and the weakening of downstream demands, it is expected that the peak arc zone of consumption quantity of China's iron and steel market will be extended. From the perspective of consumption structure, with the implementation of *Made in China 2025* [1], and the establishment of the steel structure promotion group by the Ministry of Industry and Information Technology and the Ministry of Construction to promote green buildings, the equipment manufacturing industry and steel structure construction will maintain a relatively fast growth rate in the future, which will drive the demands for strip products, and China's market share of strip will expand in the future.

4. Environmental Protection Constraints

The iron and steel industry is a key industry for the prevention and control of air pollution. Since 2015, the new environmental protection law and the new series standards for iron and steel industry have been fully implemented. Known as the most stringent new environmental protection law in history, it adds more measures, such as government accountability, public interest litigation, no-limit punishment on a daily basis, and criminal detention of responsible persons. The high-pressure situation formed by the new environmental protection law will deter illegal activities for a long time. The Beijing-Tianjin-Hebei region is the region with the most serious air pollution in China. According to the monitoring results of the environmental protection department, none of the 13 key cities in the Beijing-Tianjin-Hebei region can conform to comprehensive standards, and the situation of air pollution prevention and control in the Beijing-Tianjin-Hebei region is very serious.

The new series of environmental emission standards in the iron and steel industry not only increase the assessment indicators, but also significantly tighten emissions. Among them, the discharge standard of wastewater from iron and steel industry is supplemented with total nitrogen and other 13 water pollutant indicators, the pollutant emission standards are supplemented with pollutant indicators such as dioxins and nitrogen oxides, and the pollutant discharge standards of coking and chemical industries are supplemented with PAH and other 14 indicators of pollutants with industry characteristics. The emission indicators stipulated in the new standards obviously become stricter, and the environmental protection costs of enterprises will increase by a large margin. Especially in the regions of Beijing-Tianjin-Hebei, Yangtze River Delta and Pearl River Delta that are implemented with special emission

limits for atmospheric pollutants, the environmental protection supervision faced by iron and steel enterprises will be more stringent, and some iron and steel enterprises will be forced to shut down due to non-compliance of environmental protection.

9.2.2 Policy Orientation

The Adjustment and Upgrade Plan of Iron and Steel Industry (2016–2020) issued by the Ministry of Industry and Information Technology proposes that China's iron and steel industry will no longer be in the period of large-scale development and will enter into the development stage of structural adjustment, transformation, and upgrading in the next five years, and it will insist on structural adjustment, structural adjustment, innovation drive, green development, quality first, and open development to accelerate the realization of adjustment and upgrading and improve the development quality and efficiency of China's iron and steel industry. It can be seen that China's iron and steel industry will implement "differentiated competition" in the future, and policy orientation will change from blindly pursuing high value-added in the past to encouraging enterprises to purse differentiated and characteristic development according to their own development situation and market demands.

On January 27, 2016, the State Council held a third meeting in the month to guide financial institutions to adjust their credit policies and support industrial enterprises to upgrade their quality and efficiency. It was clearly stated for the first time for the iron and steel industry that "for the enterprises and backward production capacity suffering long-term losses or losing their liquidity or failing to meet environmental protection and safety production standards or unable to be rectified, their relevant loans should be resolutely compressed and withdrawn and the dissolution of overcapacity will be supported"; "the enterprises under standard operation and able to repay debt are encouraged to issue their corporate credit bonds in order to adjust their debt structure". From the perspective of policy influence, with the supply-side reform entering into the practical stage, the financing channels and financing costs of iron and steel enterprises will accelerate differentiation. The iron and steel enterprises with backward production capacity, nonstandard operation, weak profitability, poor solvency, and high reliance on external financial support may face difficulties in turnover due to tightening of financing environment and thus facing risk of default or bankruptcy; eligible corporate financing channels (including equity and bond financing, accounts receivable financing, etc.) are expected to be broadened, and the proportion of direct financing will increase.

Guidance Catalogue for Foreign Investment Industries (2015 Edition) announced by National Development and Reform Commission points out that the common manufacturing industry will be further liberalized and foreign capital will be allowed to take holdings over domestic iron and steel enterprises. *Adjustment Policy for Iron and Steel Industry* (2015 Edition) (Draft for Comment) proposes to encourage foreign capital to participate in the merger and reorganization of domestic iron and steel enterprises, to build a new open economic system, to liberalize the restrictions

of foreign investment on the domestic iron and steel sector, and to enjoy the same investment policy of domestic and foreign enterprises. This reflects that China's market will be gradually opened in the future, China's iron and steel industry chain is highly mature with perfect infrastructure and the good development environment will attract the steel plants with foreign investment to seek differentiated construction, and it will be more conducive to Chinese enterprises to participate in international competition, especially opening-up emerging markets in South Asia and Southeast Asia such as India and Vietnam.

9.3 Case Analysis

9.3.1 Differentiation of Development Strategy—Baosteel Ltd.

The development path of Baosteel in the past 40 years can be highly summarized as follows: taking "striving for first-class" as the strategic orientation, implementing "excellent product strategy", and realizing "import substitution". The essence of Baosteel's excellent product strategy is the differentiation strategy around elaborate works. For a long time, the differentiation strategy has always been the leading strategy for Baosteel's development, leading Baosteel to become a world-class steel company with international competitiveness.

Since its establishment in 1978, Baosteel has been positioned to produce high-value-added, high-tech, and high-end steel products that are in short supply in the domestic market and cannot be produced by other domestic steel plants and can replace import products, has been fully promoting market-oriented product upgrades, and has focused on the development of high-end steel products represented by automobile panels, electrical steel, stainless steel, oil and gas steel, and special high-temperature alloy steels to form a competitive strategic product group; in terms of quality and technology, through the further development of processes, equipment, and products, Baosteel has developed high-quality, high-tech, and high-value-added steel products; through the implementation of the excellent product strategy, Baosteel's high-standard and high-quality brand image has been firmly established in the market.

Baosteel has been adhering to the principle of "customer-oriented and always right" for a long time. Since 1990s, Baosteel began to promote customer satisfaction (CS) project and implement total satisfaction management (TSM) strategy and proposed the new concept of "standard + α" in 1997 to realize the customization of product quality from satisfying the enterprise standard to satisfying the customer's use requirements and taking sanctification of customer's demand as the standard for the effective operation of the inspection quality system. "Standard + α" is a concentrated expression of Baosteel's business philosophy of "customer-centered

and customer-satisfied" and is also a concrete embodiment of serving the people by serving customers.

When discussing the products positioning of Project Phase-III in the early 1990s, the Baosteel leadership has resolutely and decisively listed the automobile panels as the first strategic product in virtue of anticipation of huge market demand and development potential of automobile industry in China under a far-sighted and unique strategic version. And they also decided to change the main product of completed Project Phase-II from mechanical steel into automobile panels. Through continuous learning and innovation, Baosteel achieved a success in developing automobile panels ahead of the industry. Today, Baosteel's automobile panels have firmly occupied half of the domestic market of the same.

Following the automotive panels, in 2003 Baosteel listed silicon steel as the second dominant strategic product. In addition to the strong market demand, the more important point of choosing automotive panels and silicon steel as the strategic leading products is their development and production which have a strong driving force for Baosteel's product upgrade and a revolutionary and comprehensive improvement of Baosteel's management, innovation, production, and technology level. In particular, oriented silicon steel is a handicraft in steel boutiques, and its product quality is often considered as an important indicator of a country's iron and steel production technology and represents the top level of today's iron and steel production technology. Internationally, only a few companies, such as Nippon Steel, are able to produce oriented silicon steel, and they at the time imposed a technical blockade on the fast-growing Baosteel. Therefore, Baosteel officially decided at the end of 2004 that silicon steel technology would be independently developed and silicon steel engineering would be independently integrated. In May 2008, the oriented silicon steel production line of Baosteel was successfully put into operation. It can be said that the strategic vision and the decision-making qualification on bravely climbing the innovating peak of Baosteel's leadership have played a key leading role in the successful development of automotive panels and silicon steel.

9.3.2 Product Differentiation—Shiheng Special Steel

In recent years, in the face of the complex and ever-changing market environment, Shiheng Special Steel has fully utilized the decision-making mechanism of rapid response, firmly grasped the "three lifelines" of market, efficiency, and innovation, constantly optimized the product mix with the reform as the driving force, adhered to the low-cost strategy, and continuously explored new profit growth points, so its profit per ton of steel and its tax per ton of steel always rank among the top three in the industry. In 2016, the company realized a profit of 1.42 billion yuan and a treasury tax of 620 million yuan and achieved a profit of 401 yuan per ton of steel, ranking first in the industry.

In the increasingly competitive development environment of the iron and steel industry, Shiheng Special Steel has explored their own successful enterprise transformation experience. Shiheng Special Steel firmly grasps the ability of the company's

products to adapt to the market, profitability, and innovation ability. With the aim of "doing better and stronger", it has achieved the overall goal of high operational efficiency, market share, strong resource control, low overall cost, and good economic returns. The main experience is as follows:

The first is product differentiation and specialization. Shiheng Special Steel fully utilizes the advantages of the existing equipment level, is committed to product mix optimization, and has established a differentiation strategy and "five-oriented" product policy, namely small-scale, high-strength, specialization, micro-alloying, and high-quality, so as to create their own competitive advantage. Its market share of anchor steel in the country is more than 50%; ultra-fine grain steel accounts for more than 50% of the total steel products, and the production technology has reached an international leading level; the proportion of high-strength steel rebars reaches 100%, and the proportion of high-strength steel rebars of 500 MPa is far more than the industry average.

The second is to rely on technological innovation to enhance the competitiveness of the enterprise. Shiheng Special Steel has established a standard process for project approval, implementation, process management, achievement evaluation, assessment, and incentives in technological innovation and formed a virtuous cycle model of information collection, subject research, and project transformation. Shiheng Special Steel is the only enterprise in China that has mastered the rolling technology of ultra-fine grain steel bar. Continuous equipment innovation and technological breakthroughs make its rebar wire rod products that have two competitive advantages: brand quality and cost.

The third is the innovative management model to enhance corporate efficiency. The first is to strengthen the system construction for management innovation. The management organization shall be improved, the innovation of all employees shall be deepened, and a scientific project establishment, management, review, and reward system shall be established. The second is to establish a management model of "efficient, long-term, and breakthrough". The value chain is divided into more than 50 core businesses, the management model is innovated by taking each core business as the subject, and it is implemented continuously. The third is to create an economic and technical indicator system with unique characteristics. Sixty-seven key economic and technical indicators were determined, among which indicators such as product mix, burden structure, capital operation, cost performance, and purchasing index were creatively included, which played a significant role in improving the ability of enterprises to adapt to the market.

9.3.3 Differentiation of Production Line—Fangda Special Steel

Since the completion of reform and reorganization, Fangda Special Steel has taken a series of effective measures in the areas of technological transformation, product development, and information technology, focusing on the development of producing

better and stronger spring flat steel and industry chain of "spring flat steel—plate spring". After the transformation of the original spring flat steel production line, a new high-end special steel production line was built to increase the annual production capacity of the spring flat steel from 0.3 million tons to 1 million tons and the proportion of high-end special steel to be more than 45%, so the product mix has become more reasonable.

In the aspect of industry chain construction, it has merged and holds shares of some domestic enterprises producing automobile plate springs and suspensions and has formed a characteristic industry chain of "mine-smelting-spring flat steel plate spring". Its domestic market share of automobile plate springs has been significantly improved.

In terms of product development and construction of laboratory facilities, a plate spring laboratory has been built and successively provided with a series of advanced inspection and experimental equipment worth more than 30 million yuan, which lays a foundation for product quality testing and research and development of new spring flat steel products. New process and new technology are adopted, and research activities are carried out to improve the quality of spring flat steel. The research and development of new products were strengthened, and 17 varieties of rectangular spring flat steel with rounded corner and thick section spring and the new spring flat steel products of more than 300 sizes were successfully developed.

In the aspect of automation control, the information transformation of the spring flat steel production, manufacture, and quality inspection data was carried out, and the whole spring flat steel production process from blanking, production, and manufacturing to the product delivery under dynamic computer monitoring and management was realized, so the production efficiency of the spring flat steel is significantly improved.

By means of those effective measures, significant results have achieved. After the production line is perfected, it has the characteristics of high efficiency, stability, and high control level and has formed differentiated competition with other domestic enterprises. The differentiation of the production line is finally reflected in the product. The spring flat steel products of Fangda Special Steel cover GB standard, Japanese standard, German standard, American standard, and more than 20 designations specially developed for customers with the width of 44–150 mm and the thickness of 5–50 mm. Fangda Special Steel is the most comprehensive and most productive spring flat steel production enterprise in China, and its spring flat steel production ability is constantly getting better, stronger, and higher, and spring flat steel is the product which has always provided Shiheng Special Steel with profit after the financial crisis [2].

9.3.4 Service Differentiation—Baosteel Ltd.

In the implementation of transformation strategy of "from manufacturing to service", Baosteel took the lead in channeling resources to both ends of the smile curve—R&D

and marketing network, and formed a R&D service system featuring "Early Vendor Involvement" as the business card, and the processing and distribution service system all over the world, thus enhancing the original product advantages of Baosteel's automotive plates into a package solution featuring comprehensive competitive advantages from product development, material selection, and deep processing of steel products until JIT distribution.

With the continuous development of the steel market, Baosteel's original unique leading products have also become homogenized products. In order to enhance the differentiated competitiveness of those products, Baosteel took its own advantages to start with service. After years of operation, it has realized the service creating value for Baosteel. At present, Baosteel's services have been carried out in the entire process of pre-sale, in-sale, and after-sales, and its technical content is also constantly improving. Technical service and technical support have become the main features of Baosteel's customer service system, such as on-site instruction and guidance to users on Baosteel's product application technology, helping customers to select materials reasonably, providing product consultation, up to participate in the production, operation, and even development process of customers, and establishing a customer application technology research center to help them improve productivity, assist them to develop new products, form a set of leading efficient service system, and cultivate and form their core capability with the overall advantages of production, sales, and research. Benefited from the successful application of the differentiation strategy, Baosteel has achieved outstanding performance, and its comprehensive competitiveness ranks among the best in the global iron and steel industry.

Early Vendor Involvement (EVI) means the early involvement of vendors. It is a customer-centered and customer-oriented value creation activity of the supply chain comprehensively participated by the suppliers. For Baosteel, EVI is not only a technical marketing activity but also an innovative business model that aims to satisfy the demands of customers, promotes the development of products and technologies of Baosteel, and accelerates the marketing promotion and business cooperation. Through EVI, Baosteel focuses on customer's demands, fully involves all aspects of the customer from R&D to mass production, and gives full play to the capabilities and advantages of Baowu Steel Group to create customer value, thus conquering the highest position in market competition.

At present, the EVI of Baosteel has formed an EVI cooperation type, which covers the whole process of automobile development and manufacturing from advanced engineering design, early (concept) and body design, mold (tool) design and development, vehicle type production and mass production, and satisfies different demand levels of customers. Baowu Steel Group has the ability to provide customers with a "target cost-oriented" and "lightweight-oriented" package solution and has established in-depth cooperation with all major domestic automobile manufacturers. At the same time, the EVI work is no longer limited to automotive customers, but also expanded to customers in different industries such as home appliances, electrical steel, and metal packaging. The EVI work of Baosteel is an effective exploration and practice in the process of transforming from manufacturing to services.

At present, China's automobile industry is facing the pressure from the constraints of petroleum, environment, and transportation, and the whole industry will enter a stable developing period with low growth. At the same time, domestic competitors in the iron and steel industry have entered or target to the demands of the automobile industry and launched fierce competition with Baosteel through strategies such as new units, new product development, improved production technology level, and "low price penetration". Particularly influencing by the factor of the price, the Baosteel is currently facing tremendous pressure on the fixed-point acquisition of new models and the share maintaining of the old models; especially, the price competitiveness of hot-dip galvanized products has declined significantly. Facing with such a brutal market competition situation, Baosteel needs to comprehensively enhance its competitiveness in an all-round manner from the perspectives of products, technology, services, marketing, etc. to maintain and consolidate its current market share. The EVI work of Baosteel is a highlight of Baosteel's concept of "competitive products + service". While creating value for customers, it also greatly enhances the added value and competitiveness of Baosteel's products. Today, with the increasingly fierce competition for product homogenization, Baosteel fully demonstrates the value of the company's technological advantages and service capabilities through EVI work, avoiding falling into simple and low-level price competition, thus maintaining the market share of the company's products and higher ability of premium, and creating a competitive path for differentiated services [3].

9.3.5 Sales Differentiation—POSCO

In recent years, the situation in the international iron and steel market has deteriorated rapidly. In order to get rid of the crisis, various iron and steel enterprises have also chosen to take diverse measures for improving quality. POSCO will improve the competitiveness of the iron and steel industry as one of its core strategic directions. That is to say, through the combination of product technology and marketing strategy, POSCO will provide differentiated value to customers and maintain a profit gap of more than 5 percentage points with competitors, thereby improving its competitiveness.

Even if the high-quality steel products are produced, if they are not convenient for customers or with poor economic nature, they will not be favored by customers. In view of that, POSCO has built a new business model "technology-based platform business" that integrates "highest performance steel products" (hardware) with "customer application technology" and "commercial support" (software) into the entire marketing campaign, facilitating customers to use POSCO' s products, which is the original intention of "solution-based" marketing. POSCO not only participates in the research and development process of customer products, but also provides customers with product application technology and even necessary financial support. This kind of comprehensive, customer-oriented, and "solution-based" marketing is now fruitful and has greatly boosted the growth of sales of high-value-added products.

1. Solution-Based Marketing of "Product Technology Services"

Since 2014, as the market competition has become increasingly fierce, in order to ensure its own competitiveness, POSCO has officially proposed a "solution-based marketing" concept that is more advanced than EVI activities, aiming to meet the potential needs of customers and provide customers with differentiated value.

After Kwon Oh-joon became the chairman of the board, he established a "solution center" at the headquarters of iron and steel business, which aggregates the company's internal distributed solution-based marketing functions to provide customers with systematic solutions, starting a new business model. Through the implementation of solution-based marketing activities that are differentiated from competitors, POSCO has established strong partnerships with Korean enterprises such as LG and Samsung Electronics, as well as other overseas well-known enterprises such as Volkswagen and Mahindra.

POSCO has been supplying side plates to Volkswagen for more than 10 years, and its Motive Power is the strategy of solution-based marketing. The outer side plate requires to be processed by advanced mold technology such as crack processing and wrinkle correction, and strict quality management is required after the steel plates are supplied. In the automobile markets of global emerging country, POSCO not only provides the major automotive manufacturers with the necessary mold technology for the outer side plates, but also continuously strengthens the locking effect on automotive materials. Through continuous development of "solution-based marketing" of mold technology, POSCO has supplied the German Volkswagen with outer side plates for more than 10 years.

In March 2014, POSCO successfully won the bid for construction of the Dongdaegu Compound Transfer Center under the control of Korean Shinsegae Department Store, becoming the sole designated supplier of H-beam and medium and heavy plate products for the project. The material designed for the project is RH section steel, which is not produced by POSCO, so POSCO does not meet the conditions for the tender. However, the POSCO Research Institute of Science and Technology (RIST) worked closely with the construction steel product sales office to design and develop the high-strength HSA800 steel product, which can completely replace RH section steel, and proposed a cost-saving budget plan to the construction contractor, and finally won the bid. At the same time, POSCO also received the order of medium and heavy plate products for the project, which is fully contributed to the strategies of "Total Solution Provider" developed by POSCO P&S and the steel processing center.

In April 2014, POSCO and DK Austech in Korea signed a memorandum of understanding on "supporting overseas export of auto parts materials", providing solutions in forming analysis and mold technology, and promoting export sales deploitation of Korean parts manufacturing industry.

DK Austech has been doing business with POSCO since 2004. It mainly produces auto suspensions, chassis, and other parts and supplies them to domestic and foreign

auto manufacturers. The company participated in the "common development" activities of POSCO and introduced QSS, security diagnosis, and other activities. Benefiting from POSCO's "solution-based marketing" campaign, its cost of products and export competitiveness have got different degrees of improvement, resulting in obtaining orders for chassis parts from Japanese auto enterprises. Last year, it began to expand the proportion of exports to Japanese auto enterprises.

2. Solution-Based Marketing of "Fund Support"

POSCO's "solution-based" marketing not only provides technical support for the development or application of new steel grades, but also provides financial solutions for customers with capital operation difficulties.

NSB is a design company for building girders. Despite its technical strength is strong, its financial strength is obviously insufficient, making it difficult to carry out post-business expansion and effective project management. Previously, the company successfully cooperated with POSCO to develop a special "Sbarch composite girders" used inside the arched steel box, which can save more than 30% of the steel consumption. Meanwhile, due to the internal filling of the concrete, not only the anti-settling and seismic performance of the building are improved, but also the beauty of the arch shape can be reflected. Based on this technology, the company undertook the design and construction project of the Bridge on the Busan Outer Ring Expressway, with the construction cost of 22 billion won and the steel product consumption of 8000 tons. Hence, the company needs to invest 5.3 billion won for steel product procurement to manufacture girders.

At the beginning of the project, the company only received 10% of the contract amount, and its credit transaction with POSCO also required a two-month cycle, so its initial steel procurement funds were obviously insufficient. To this end, NSB was planned to outsource steel structure manufacturing enterprises, which generally adopts low-cost imported steel products. In response to this problem, POSCO also provided NSB not only with the information on steel prices and market conditions but also a cost-saving solution, which made NSB aware that it is very beneficial to directly purchase steel products to manufacture girders. In order to solve the shortage of initial procurement funds, POSCO provided procurement funds supporting service and studied related credit programs with the assistance of POSTECH Venture Capital Corporation.

Although NSB is a small- and medium-sized construction company with certain industry risks, after many studies, POSTECH Venture Capital Corporation still decided to provide 1 billion won in credit. In the end, NSB reduced the cost by adopting the cost reduction plan provided by POSCO under the background of initial capital shortage. Up to now, 1200t steel products have been supplied directly by POSCO, and the rest are supplied by POSCO's processing center—Toyo S-TEC.

In exchange for providing the necessary support to the customers with capital turnover difficulties, the customers will give priority to the steel products provided by POSCO, instead of importing or outsourcing steel products, thus achieving a win-

win situation. There are still a lot of small- and medium-sized customers like NSB. Therefore, POSCO will continue to provide solution-based marketing with "funding support".

3. Expansion of Sales and Transfer of High-End Products and Technology

At present, POSCO mainly improves its profitability by increasing the proportion of high-value-added products. Its research mainly focuses on high-strength automotive plates, extremely thick plates for energy service, and steel products for extremely low-temperature LNG storage tanks. Under unfavorable conditions such as global steel products oversupply and unsatisfactory demand, POSCO has continuously improved its market power through the differentiated strategy of WP products (World Premium).

POSCO selected 220 items of WP products in 2014, and the sales volume of WP products maintained a good growth trend, laying a good foundation for the long-term development of customers and helping to enhance the competitiveness of customers. In 2014, the sales volume of WP products was 10.207 million tons with a year-on-year growth of 13%, and the proportion of WP products increased from 30.9% in 2013 to 33.3%. In 2015, the sales target of WP products was 12.15 million tons, and the proportion of the same increased to 36.0%. As of 2016, POSCO is planned to increase it to 41%.

With the rapid development of the automotive industry, automobile production has increased significantly, and automobile varieties have also become more diversified. The demand of lightweight automotive vehicles for high-strength automotive plates is also increasing. To this end, POSCO selected automotive plates such as AHSS, MAFE, and HPF as WP products and strengthened the marketing efforts on it. POSCO has continuously set up technical service centers at home and abroad to build "solution-base" around the world. Through close cooperation among headquarters of iron and steel business, Pohang/Gwangyang Steel Plants, and Technical Research Institute, POSCO has established a response mechanism for production, marketing, research and development, and technical services throughout the company and vigorously implemented "solution-based" marketing to customers. The A&C Construction Company of POSCO is also promoting various high-performance steel products such as PosMAC, POS-ALUWALL, and POS-BH beam from the beginning of the building engineering to the procurement of raw materials to the completion of construction. At present, the service effect of WP products has been widely recognized by the industry, which indicates that POSCO's technical strength has also been upgraded by leaps and bounds, thereby further consolidating the competitive advantage of its advanced product production and sales systems.

In addition, in order to improve the competitiveness of its iron and steel industry, POSCO is planning to sell its own innovative technology to overseas and provide technical solutions to create new benefits for it. POSCO's goal this year is to build the POIST business globally. The so-called POSCO's Innovation Steel Technology (POIST) means POSCO's exclusive steelmaking technology. As an innovative, compact, integrated steelmaking process, this technology integrates three processes, namely FINEX for ironmaking, PS-BOP for steelmaking, and CEM for continuous

casting and rolling, so as to maximize competitiveness compared with traditional processes and there is an epoch-making improvement in profitability and environmental friendliness.

In order to improve production efficiency, POSCO is also promoting the sales of CEM technology (Compact Endless Casting and Rolling Mill) downstream to FINEX. CEM is a short-process steel rolling technology that integrates continuous casting and continuous rolling. Its core process technologies include high-speed continuous casting, headless hot strip rolling, and batch rolling technology.

At the end of May 2014, POSCO signed a basic agreement on "Transfer License and Joint Marketing of CEM Technology" with SMS Group. According to this Agreement, POSCO will transfer the innovative CEM Technology self-developed by himself to a globally well-known equipment and engineering company. POSCO will implement the necessary management supervision and education and training for CEM technology transfer, and charge technology transfer fees from SMS Group. Group subsidiaries such as POSCO Construction and POSCO ICT will also participate in the project construction. The cooperation indicates the market competitiveness of the SMS Group, and the technical strength of POSCO will be seamlessly connected. In order to fully promote CEM technology, two enterprises will continue to carry out in-depth technical cooperation.

In order to build a new technology sales platform, POSCO has classified the existing 221 technologies according to different levels to distinguish between strategic sales and common sales. There are three levels of these related technologies: strategic sales (grade S) include 50 items of technologies such as Slim and FINEX, strategic sales (grade A) include 76 items of technologies such as continuous ultra-thin sheet hot rolling technology, and common sales (grade B) include 95 items of technologies such as efficient sintering operation technology.

POSCO has always attached importance to significantly increase revenue by improving the market competitiveness of high-end products and high-value-added products while implementing "solution-based marketing" activities. Pohang not only participates in the research and development process of products, but also provides customers with product application technology and even necessary financial support. This all-round, customer-oriented, and "solution-based" marketing campaign has achieved remarkable results and greatly promoted the growth of sales of high-value-added products. Despite the decline in the average selling price of steel products, the profitability has improved significantly as a result of increasing the proportion of sales of high-value-added products. In recent years, POSCO has accelerated the pace of exporting FINEX/CEM technology. It has successively signed cooperation agreements with enterprises in China, India, and Germany to obtain a new source of revenue through the transfer of high-value-added technology.

9.3.6 Control Differentiation—POSCO

In 2017, World Steel Dynamics (WSD) released the list of "world's most competitive iron and steel enterprises", and POSCO once again ranked on the list, with high

scores in terms of technological innovation, cost savings, labor skills, structural restructuring, and investment environment, reflecting a high core competitiveness. Since 2010, POSCO has been continuously ranking the world's most competitive iron and steel enterprises for eight years.

In order to achieve the goal of "becoming a leading iron and steel enterprise in the world", POSCO pays great attention to product technology research and development and boldly innovates existing production processes and operating procedures to enhance the competitiveness of high-value-added products and save production costs. In recent years, POSCO has identified cost reduction, manufacturing competitiveness improvement, and the creation of new industrial demands ("3C" strategy) as the basic development direction, launching a new round of reform and development.

1. Cost Control

The per capita steel output of POSCO is more than twice that of China's iron and steel enterprises. Although the wage level in China is low, the total labor cost is very close to that of POSCO. POSCO's steel plants in South Korea have a relatively simple layout, only including two steel plants in Pohang and Gwangyang. Among them, the annual crude steel output of the steel plant in Pohang is 21 million tons, which consists of BF, two FINEX furnaces, two stainless steel plants, and one electric furnace steelmaking plant; the annual crude steel output of Gwangyang steel plant is 19 million tons, which consists of five BFs. This simple layout structure allows POSCO to reduce logistics costs, which generates significant economic benefits.

From the perspective of cost indicators, POSCO has advantages in terms of equipment, energy, and fixed costs. The utilization rate of CHP facilities in POSCO is 70%, and its energy cost is only USD 23/ton due to its long-term LNG procurement contract with Tangguh Indonesia at a low price. The new technology developed by POSCO will allow the application of low-quality coal with a percentage up to 50%, which will make the large-size coke oven run more economical. The increased use of cheap iron ore and coal and combined with the use of FINEX-economic ironmaking technology give POSCO a significant advantage in the competitiveness of production cost.

In terms of entire cost of the company, POSCO is more competitive than Japanese enterprises, except for the raw materials, labor, and depreciation cost. In recent years, in order to save costs, POSCO has also been implementing the "Simplification Plan". In 2014, the company adopted effective measures such as low-cost raw materials and fuels, energy recovery, equipment efficiency, and by-product gas and set a cost reduction target of 603 billion won, with an increase of about 20% year-on-year. Among targets, the raw material cost is 355 billion won, the maintenance cost is 57 billion won, the energy cost is 78 billion won, and the material cost is 113 billion won.

2. Product Competitiveness Control

POSCO is pursuing high-value-added products and seeking survival and development by entering emerging markets. Its high-value-added steel products have a profit margin of 15–20%. In 2015, POSCO's high-value-added products accounted for

38.4%. The automotive plate is representative of POSCO's high-value-added products. The company has been committed to manufacturing the world's best automotive plates and expanding sales in emerging markets, including 450,000 tons in India, 450,000 tons in China, and 500,000 tons in Mexico. At the same time, the company's sales of other high-value-added products as energy service steel continued to increase.

POSCO's R&D system on iron and steel business is strong, forming the "Industry-University-Research Cooperation System over POSCO-Involving Field" consisting of Technical Management Committee, Technology Strategy Committee, Pohang Engineering University, Pohang Industrial Technology Research Institute, Pohang Technology Research Institute, Global R&D Center, overseas research institutions, and their cooperative R&D institutions. POSCO's investment in research and development continues to increase, taking the leading positions in iron and steel enterprises all over the world, and its share of total sales is expected to increase to 2% by 2020. The company's core iron and steel department has a total of 1085 researchers, and its research and development direction is mainly focused on automotive plate, TMCP steel, electrical steel, etc. The recent research and development results mainly include ultra-high-strength tensile steel plate for automobiles and advanced high-strength automotive plate, strength control technology, as well as welding technology for polymer polyester coated automotive plate and high-strength TMCP super thick plate.

3. Market Control

Since 2010, in order to reduce the impact of Hyundai Steel's entry into the Korean HRC market and improve its profitability, POSCO has adjusted its production and sales pattern in a timely manner, gradually reduced its proportion of HRC products, and increased its proportion of downstream high-value-added products.

While getting its competitiveness in the domestic market continues to increase, POSCO has been paying close attention to overseas markets. Its exports have achieved rapid growth in the past five years, and its exports accounted for more than 40% of total freight. The primary exporting countries and regions of POSCO are Japan and Southeast Asia, accounting for 60% of its total exports, and the rest 40% are mainly flowing to North America, Europe, and the Middle East. In order to establish close contact with its terminal customers, POSCO has established a series of production bases in its overseas markets around the world, including one steel complex, 10 downstream plants, and 47 machining centers. 20% of POSCO's automotive plates are supplied to POSCO's overseas downstream plants as raw materials, and this proportion will further increase as POSCO's large-scale expansion in overseas markets.

9.4 Prospects and Path Analysis of Differentiation Trend

9.4.1 Prospects of Differentiation Trend

1. Market Needs Differentiated Competition

Differentiation strategy means that the strategies taken by the iron and steel suppliers to provide customers with more product added value or to meet the unique functional needs of customers in a certain aspect, relying on some of their own advantages, in order to make the company's products, services, technology, image, marketing, channels, brands and other aspects, have obvious differences with competitors, thus obtaining a competitive advantage. The goal is to get a "premium" that is higher profit by investing additional costs to make the product unique.

After stopping to pursue pure production expansion, differentiated competition will be an important strategy for iron and steel enterprises adapting to the market environment under the new situation. In terms of differentiation strategy, iron and steel enterprises should consider differences in technology, region, service, industry chain, and specialization. It shall be enhanced that the non-repeatability of high-value-added products to create core competitiveness by means of core technology. The regional characteristic demand of iron and steel shall be found out, and regional differences are the easiest way to form the core competitiveness of enterprises. By providing solutions to customers and improving service competitiveness by means of service differences, the transition from material suppliers to comprehensive service providers is completed. Differentiation strategies can be found out from all aspects of the industry chain. The professional and distinctive strategic orientation shall be put into all aspects of product development, standards, and customer specifications. The enterprises will be able to gain great benefit from production of non-mainstream products and produce high efficiency by low-end equipments if the research on differentiation has been implemented well.

There is an iron and steel enterprise in Germany that has been in operation for hundreds of years, whose product positioning is to produce only super thick steel plates. More than 100 years ago, its annual production output was 200,000t. Up to now, its annual production capacity has only expanded to 300,000t. In the economic tide of global integration, the company has created two miracles: First, the company has not been merged in the face of numerous iron and steel enterprises that have expanded, and second, since the outbreak of the global financial crisis in 2008, the entire iron and steel industry has generally suffered losses and reduced output, but the company still operates in good status. The secret of the development of this company lies in its globally differentiated market strategy.

First, its differentiation strategy follows the basic rules of "survival of the fittest". Any business operator will definitely choose the industry and products that he believes to be the most promising for his development. However, the rationality of the enterprise itself is limited, so it often cannot make correct judgments on itself and the market and it is easy to blindly enter the industries that appear to be lucrative and

behave as a bee colony effect in the competition. As a result, the market quickly reached saturation, profits fell, and thus enterprises and even the entire industry suffered losses. This shows that the company is doomed to fail in the fierce market competition if it does not have the advantage of differentiation. If one company wants to gain a foothold in the market, it shall play its own advantages in an appropriate environment by making its own differentiation comparison, thus clarifying its own advantages.

Second, the differentiation strategy fits into the sustainable development strategy. From the perspective of world development trends, the booming of the new technological revolution has brought about tremendous changes in the living environment of enterprises. In the industrial society that enterprises will sustain with unique technologies and unique products as its core competitiveness, the enterprise survival competition mode is gradually changed, which means that under the new technology ecology, new technologies and new products are constantly emerging, any product and technology can be imitated and surpassed, and no enterprise can rely on some specific technologies and specific products to dominate the competition. Therefore, grasping the differentiated strategic thinking and marketing means is an important path for current enterprises to get rid of the fierce competition of product homogenization and win the future market. With the changes in the external environment and internal conditions, enterprises should adjust their business strategies at any time, find differentiated advantages, and create differentiated advantages, so as to achieve sustainable development and survive in disorderly market competition.

2. Correct Understanding of Differentiation Strategy

In recent years, the constraints on the environment and resources faced by the iron and steel industry have become tighter. Moreover, because of the cyclical adjustment of upstream and downstream industries, the unreasonable industrial layout, and the disorderly competition due to the overcapacity, all kinds of chaos and drawbacks are concentrated in the iron and steel industry. “Homogeneous competition” is the culprit of the situation. Not only at the micro-level, product homogenization has caused vicious competition among enterprises and made them suffered losses, but also at the macro-level, enterprise homogenization competition has made the development of the iron and steel industry increasingly uncoordinated, unbalanced, and unsustainable. To this end, if China’s iron and steel industry wants to complete the transformation and upgrading, its way out is to vigorously promote the differentiation strategy. At present, the understanding of iron and steel enterprises on the differentiation strategy needs to be further strengthened.

First, the differentiation strategy is not the same as the diversification strategy. Diversification strategy is also called diversified operation and cross-industry operation in China and means the business strategy of expanding the scale and obtaining market profits in a number of related or unrelated industrial fields after the company has developed to a certain extent. According to the degree of association between the existing business field and the new business field, the diversification strategy can be classified as two types: related diversification and unrelated diversification. The

diversified practice of iron and steel enterprises is essentially the development of non-steel-related business, but the diversified development solves the problems between main business and auxiliary industry or in the multi-business of the enterprise. It is the expansion of the business field or the adjustment of the business direction of the enterprise.

Second, the differentiation strategy is not necessarily a low-cost strategy. Achieving product differentiation sometimes contradicts the struggle to occupy a larger market share. It often requires enterprise to be mentally prepared for the exclusiveness of this strategy, that is, this strategy and the increase in market share cannot be balanced. The more common situation is that costs will increase in the process of establishing differentiation, such as extensive research, updating product design, developing high-quality materials, or providing thorough customer service. But even if customers across the industry field understand the unique strengths of the enterprise, not all customers are willing or able to pay the higher prices that the enterprise requires. Therefore, the essence of the differentiation strategy is not the oddity or novelty of the form, the key of that is to provide more value to customers, or to create comparable value at a lower cost.

The differentiation put forward by Michael Porter, who is the US strategic management master and the "father of competitive strategy", is to manufacture scarce products from the aspect of economic significance, which means the enterprise shall manufacture the scarce product that is different from competitors in a certain aspect or a certain link of the business process under the market structure where supply and demand are balanced or oversupply, namely "partial short supply", so that the enterprise will have their own competitive advantage and gain excess value of innovation. The enterprise only can stand out from the competition by having strong differentiation capabilities.

3. Vigorous Implementation of Differentiated Competition Strategy

To eliminate the increasingly deteriorating homogenization competition, the main responsible body is the enterprise with the method of innovation. A variety of differentiation, including brand differentiation, quality differentiation, and scale differentiation, are the core and foundation for achieving differentiated strategies.

Brand Differentiation. The cultural traditions and orientations in the brand are important factors that evoke people's psychological identity, sometimes even as a symbol going deep into the consumers' mind, and thus being able to win consumers. At present, the brand awareness of China's iron and steel enterprises is still very weak, and most of them are identified by the company name lacking individuality. In building a competitive advantage in brand image, first is to create differences and establish a prominent image for the brand in the homogenized market, which will help manufacturers to obtain higher market share and more profits in the market. Second is to establish individuality, namely the creation of brand individuality must be based on the overall master and careful application of a variety of factors, including the factors related or unrelated to products, so as to get prominent and distinct brand individuality and enhance customers' perception of brand individuality. Third, it must be consistent with the long-term goals of the enterprise. Brand image is a long-term

strategy. Therefore, it is necessary to make long-term investment in brand image so that the image can continue to grow and become full, thus accumulating brand assets.

Quality Differentiation. To create differentiated quality, first is to establish a correct quality concept. The company must pay attention to both the inherent quality of products and the external quality of products as well as to the development of service resources and the simultaneous launch of brand services and brand products. Second is to create high-quality products, develop new products according to the actual needs of customers, create quality characteristics of products, continuously introduce new products with high technological content, establish a new brand image, and create their own brand advantages. "High quality is sourced from the production, not from the testing". The highest standard of Baosteel's product quality is not the national standard or the enterprise standard, or even the technical parameters specified on the contract, but whether the product is suitable for actual use of customer, and whether it can create good benefits for customers [4].

Scale Differentiation. In the fierce market competition, it is not enough for enterprises to create brands only. It is also necessary to increase their market share on the basis of high quality. It is necessary to selectively and specifically expand the competitive brands according to the situation. At the same time, enterprises shall continue to develop high-tech and high-value-added products and continuously extend to related products and industries, by taking brand advantage as the core and adopting merging and reorganization and other means, thus stimulating the expansion of tangible assets with the advantage of intangible brand assets. Through reorganization, the large-scale iron and steel enterprises can concentrate more production capacity, facilitate unified planning within the enterprise, coordinate industrial layout and product structure, and avoid repeated competition, thus achieving coordinated development.

The significance of a company's advantages or disadvantages ultimately depends on the extent to which the company can respond to the market with relatively low cost and differentiation. By implementing differentiated strategies, with innovative products, innovative brands, and innovative markets, opening-up their own exclusive market space, maximizing value and winning lucrative market returns should be the goals of each iron and steel enterprise for transformation and development.

9.4.2 Path Analysis of Differentiation

1. Differentiation of Development Strategy

There is a saying that "not rushing in case of short supply, and not losing in case of recession", which means that when a certain product is popular, it shall not blindly follow the trend; when it is unsalable, it shall not abandon it because of its low price. The scientific connotation reflected by that saying actually lies in the fact that it shall not follow the trend and the road of differentiation shall be taken. There is a business strategy terminology in China: "providing the product that others do not have and providing the better one if others have" and it also reflects the differentiation strategy.

The same is true for the iron and steel industry. While adhering to the operation in a moderate scale, the enterprise shall constantly adjust the product mix, expand the differentiated competitive advantage, and manufacture the scarce product that is different from competitors in a certain aspect or a certain link of the business process under the market structure of supply and demand balance or oversupply, namely "partial short supply", so that the enterprise will have their own competitive advantage and gain excess value of innovation.

Grasping the differentiated strategic thinking is an important path for the current enterprises to get rid of the fierce competition of product homogenization and win the future market. With the changes in the external environment and internal conditions, enterprises should adjust their business strategies at any time, find and create differentiated advantages in order to achieve sustainable development. Differentiation strategies are not the same as diversification strategies, and differentiation strategies are not necessarily low-cost strategies. The key for differentiation strategy is to provide more value to customers or to create comparable value at a lower cost.

The essence of vigorously implementing differentiated competitive strategies is to create products and services with outstanding personalities. First, it shall continue to innovate in technology, create an atmosphere of innovation for all employees, and adopt "technical differences" to create core competitiveness; second, it shall find out the characteristic demands of steel products in the region by studying market and form core competitiveness of enterprises based on "regional differences"; third, it shall establish a customer-oriented business operation mechanism, provide complete solutions for customers, improve competitiveness with "service differences", and complete the transition from material suppliers to integrated service providers; fourth, it shall seek differentiation strategies from all aspects of the industry chain, jump out of the steel production sector, and through the improvement of product development, raw material procurement, warehousing and transportation, processing and distribution, customer services, and other links in the industry chain to obtain higher added value; fifth, it shall implement the professional and distinctive strategic orientation in all aspects of product development, standards, and customer specifications, explore the operation mode of steel and customer's industry from product development to large-scale application, and promote competition with "professional differences".

2. Product Differentiation

Product differentiation means the incompleteness of alternatives between products produced by competitive enterprises in the industry. Specifically, it refers to the conditions by which a company provides products to the market or sells products, and its distinguishable characteristics compared with other companies in the same industry. The existence of product differentiation determines the unequal market segmentation between enterprises with competitive relationships, and the market share of enterprises in differentiated markets is different regardless of the same price or different prices. The degree of differentiation also has an impact on the content and the degree of competition among enterprises. The greater the difference in products

is, the enterprises with differentiated advantages can sell products at high prices and obtain excess profits, so the non-price competition among enterprises is fierce.

If the enterprise wants to make product differentiation, it needs to put in more effort on technological innovation, product quality, product serialization, brand image building, and other aspects.

(1) Enhancing technological innovation. Product differentiation is a manifestation of technological innovation. Therefore, enterprises should increase their investment in research and development, actively track the development trend of world technology and the technology in the same industry, study the latest technological development trends of equipment and raw materials required by themselves, correctly make technical decisions, product decisions, and determine type of new product to be developed.
(2) Paying attention to the realization of product serialization and improving the "one-stop" supply capacity. Product serialization means the supply of serialized products with different performances according to different consumption requirements of customers. For example, the products will become luxury products (or high-end products) by adding some functions and will become middle or low-end products by disabling some functions. Consumers can choose the products with corresponding functions according to their habits and affordability.
(3) Improving product quality. Quality means not only the narrowly defined quality of natural attributes such as product suitability, durability, reliability, safety, and economy, but also its social attributes, such as the subjective feelings of consumers, the gap between the ability to meet specific needs and expectations, and the social attributes of quality, which play a very important role in product differentiation.
(4) Optimizing brand image. Although the brand is at the level of product form, its meaning to the product has surpassed the simple mark that distinguishes the product from others. It more represents the product image, and it is the external appearance of product differentiation. If some products want to attract consumers' attention and awareness out of many similar ones, thus attracting them to purchase, enterprises are required to enhance and shape the brand image through CI design and brand strategy, thus highlighting its personalities and creating its brand image differentiation advantages.

3. Production Line Differentiation

Since the twenty-first century, China's iron and steel industry has witnessed the phenomenon of homogeneous construction of technology and equipment and repeated introduction of foreign technology and equipment, resulting in the similar technical structure and product structure among enterprises. It is necessary to achieve the production line differentiation through technical transformation and improve the level of smart manufacturing to greatly improve production efficiency and reduce production costs, thus achieving specialized production.

(1) Improving production efficiency. The production efficiency of iron and steel enterprises in China is still very low compared with that of foreign advanced enterprises such as POSCO. The per capita steel output of enterprises is generally less than 500 tons per year. It is necessary to combine the development opportunities of "Made in China 2025" to vigorously develop smart manufacturing and greatly improve the production efficiency of the production line in the meantime.

Therefore, how to improve the production efficiency by the production lines differentiation, the key is on the development of smart manufacturing technology. Promoting the smart manufacturing in the iron and steel enterprises meets the overall requirements of "Made in China 2025", and the integration of informatization and industrialization is the basic support for realizing the smart manufacturing of the same. At present, the integration of informatization and industrialization in iron and steel enterprises such as enterprise resource planning (ERP) and manufacturing execution system (MES) has been applied on a large scale and from individual applications to integrative applications. Baosteel and other enterprises are gradually transforming into intelligent enterprises. The *13th Five-Year Plan* will be the period for rapid development of smart manufacturing, which shall be paid attention by all the enterprises. The key tasks include continuing to improve and integrate ERP and MES systems and develop the product lifecycle management (PLM) technology, intelligent control system of main process, real-time production management system based on network platform, and intelligent decision-making system.

(2) Striving to reduce production costs. The implementation of low-cost strategy is a strategy that all enterprises should attach great importance to during the difficult period of industry operation. In a certain sense, low-cost manufacturing depends on the efficient operation of the production line. Therefore, to reduce production cost by the upgrading of the production line, at least the following aspects should be prepared: First, a more reasonable, more efficient, and low-cost production process operation system shall be developed by tapping potential from the whole process; second, energy and resource utilization shall be diagnosed to maximize energy and resource utilization benefits based on the entire process; and third, the diagnosis and optimization for the whole process shall be carried out, combined with the brand and market competitiveness, to decisively abandon uncompetitive products, processes, and equipment.

(3) Striving to achieve specialized production. Achieving specialized production has become the consensus of iron and steel enterprises, especially special steel enterprises. How to optimize existing production lines to help enterprises achieve specialized production: First, by taking necessary technological innovations or small-scale technological transformation measures, the production line can fully adapt to the production needs of specialized products and can improve the product quality to a certain extent, especially to improve the stability of product quality, and second, by combining with the development strategy of

enterprises and investment shall be made for construct and develop new products for professional development, thus greatly increasing the added value of the product.

4. Service Differentiation

The traditional steel product service is petal-style, providing only basic services. Evocatively, pre-sales service is "self-boasting", and after-sales service is "firefighting by firefighters". The core idea of traditional services is: service ends if the produce can be used. "The objection about quality shall be immediately dealt with in case of any product problem" is an incomplete understanding of after-sales service; no quality objection or less quality objection means good product. This service, which is limited to dealing with quality objection, has no intrinsic value connection with the product itself. It is only a remedy for the loss caused by the application problem of the product. This service is indispensable, but does not have any added value.

The advanced model and future model of services provided by the iron and steel enterprises lie in the continuously providing the product to meet the new needs of customers. How to make good use of steel products and bring into play the potential of steel products to enhance the competitiveness of customer is what customers really care about and need. The advanced service model is to help customers use steel products well, improve their production technology, and further increase the added value of products, so that customers can consume the minimum resources to create the maximum value. The vision for advanced and future service models is: "achieving high efficiency, benefit, and energy efficiency of steel products, which is associated with the services characterized by soft and hard integration, networking, and full lifecycle". Service is not only for the sale of products. The value of the service is to make the customer transferring from the loyalty of the product brand to that of the company's brand. Products can only capture customer's sight, but good service can capture customer's heart.

5. Sales Differentiation

In general, the differentiated sales strategies for steel products are mainly classified into three types, including steel product differentiation, price differentiation, and payment differentiation.

(1) Product differentiation. Product differentiation mainly means the performance, and quality of the steel products sold by the enterprise is significantly better than that of competitors. In order to be able to differentiate from competitors and provide customers with differentiated products, the enterprises shall change the previous single product sales and provide customers with different products according to their needs, thus meeting the diverse needs of customers. For the appearance of products, corresponding adjustment shall be made according to the different requirements of customers, in order to expand the sales of steel products. Finally, for the delivery of products, the traditional product delivery only means transporting the original products to the customers and the customers have to process them before use after they got the products. In order to meet the requirements of differentiation, manufacturers now will process the products

to facilitate customers before delivering the products. Such product sales will meet the needs of customers and will be greatly in favor of the steel product sales.

(2) Price differentiation. Different price strategies should be adopted for different customers and at different stages of sales. For example, for the customers with long-term cooperation relationship and relatively large demand, appropriate price reduction measures can be adopted to make product price lower than market price, which can consolidate long-term cooperation with customers and strengthen the trust between them; for the customers with less demand and importance, the product prices can be increased based on product quality. Reasonable price differences can greatly increase the sales of steel products.

(3) Payment differentiation. Payment is a very important link during the sales of steel products. Whether an enterprise will have a long-term cooperation with customers, right payment method is the key. When the long-term customers face difficulties in capital turnover, the enterprise can allow customers to pay installments or even credits, which is based on the trust to quality customers, and that is the prerequisite for cooperation between two parties. But other types of customers are not allowed to pay installments or credits in advance, because the products cannot be easily handed over to the customer without a thorough understanding to it, and the customer is required to pay in cash. Because the funds are the key to a company's normal operation, when the company's funds cannot normally turn over, the company will fall into a huge crisis. Therefore, different payment methods should be adopted for different customers.

6. Control Differentiation

Control differentiation is involved in two aspects, namely low-cost production strategy shall be vigorously implemented for ordinary products to improve its competitiveness; while for high-quality special steel, its product quality shall be strengthened to open up the market and improve the recognition by customers. The implementation path of differentiated control can also be achieved from two aspects: "Scale + Cost" and "Variety + Quality + Service".

"Scale + Cost" control can be implemented for ordinary products. Under the homogenization competition, the low-cost competition strategy is a conventional option for enterprises to expand market share and improve their competitiveness. According to the formula, total profit = scale × specific product profit rate, it can be seen that the only way for enterprises to become stronger and bigger is to expand its scale and tap the potential of its internal costs. In the fierce market competition, according to their own circumstances, enterprises can selectively and targetedly expand their competitive products and reduce the proportion of costs invested in products through mass production, thus getting "scale effect"; by taking the measures of mergers and reorganization, the large-scale iron and steel enterprises can concentrate more production capacity, thus facilitating unified planning within the enterprise, coordinating industrial layout and product structure, avoiding duplication of competition, and achieving coordinated development. For the iron and steel industry, as a major task to enhance the competitiveness of enterprises, cost reduction

can be implemented by reducing external costs such as transaction costs, tax burden, financing costs, and social costs, as well as improving labor productivity, further tapping potential and increasing efficiency and reducing internal costs.

"Variety + Quality + Service" control can be implemented for high-quality special steel products. In response to the customer's personalized and differentiated needs, the marketing philosophy of common steel product shall be weakened, while that of high-quality special steel products shall be strengthened, and more resources shall be put into research and development, marketing, and service, thus improving product profitability. On the one hand, technicians develop the market against the production process and participate in from pre-sales, sales to after-sales, so as to provide customers with "one-on-one" personalized and differentiated technical services; on the other hand, enterprises and customers jointly build research and development platform to deeply embedded research and development chain into the research, development, and manufacturing process for strategic customers, thus continuously creating value for customers, creating a service-oriented business model against channels, transferring from producers to comprehensive service providers, and becoming a community of true interests with customers.

9.5 Industrial Practices of Differentiation

Over the years, the China Metallurgical Industry Planning and Research Institute (hereinafter referred to as MPI) has seized the differentiated development direction of the iron and steel industry and adopted different differentiation strategic path such as development strategy differentiation, product differentiation, production line differentiation, service differentiation, sales differentiation, and control differentiation according to the characteristics of enterprises, so as to provide customers with customized solutions, including providing diversified development strategy consulting, market research and product structure optimization consultancies, production operation diagnosis and technical transformation scheme research, and management consulting. The details are shown in Table 9.2.

Table 9.2 Practices of MPI in promoting industrial differentiation

No.	Type	Typical practice case of MPI
1	Differentiation of development strategy	It means strengthening the research on market demand and competitors and identifying the enterprise positioning in the "bigger and stronger", "doing the finer", "moderately diversified" and "relatively diversified", and developing corresponding strategy to achieve industry chain differentiation and regional differentiation. Its main work performances include: *13th Five-Year Plan*, development strategy planning, diversified development planning, overall development planning, and industry chain extension planning for iron and steel enterprises. For example: *13th Five-Year Plan for WISCO*, *13th Five-Year Plan for HBIS Group*, *13th Five-Year Plan for CITIC Pacific Group*, *13th Five-Year Plan for Baogang Group*, *13th Five-Year Plan for Ma Steel Group*, *13th Five-Year Plan for SD Steel Group*, and *13th Five-Year Plan for Hebei Jingye Group*
2	Product differentiation	It means optimizing product structure, increasing the share of competitive products, focusing on product serialization, and improving the "one-stop" supply capacity. Its main work performances include: product positioning research, product structure adjustment and market analysis report, product upgrade and adjustment planning. For example: *Product Positioning Research of HBIS Group ShiSteel Company, Product Positioning Research on HBIS Group ChengSteel Company, and Product Upgrade and Adjustment Plan of Angang Group*
3	Production line differentiation	It means achieving specialized production, greatly improving production efficiency, and reducing production costs through the technical transformation of equipment. Its main work performances include: capacity balance and product structure research for main production lines, configuration and product positioning research for production lines, balance research for production lines, etc. For example: *Capacity Balance and Product Structure Research for Main Production Lines of Handan Steel during 13th Five-Year Plan*, *Configuration and Product Positioning Research for EAF Production Lines of Angang Group*, and *Balance Research for Bar Production Lines of Delong Group*
4	Service differentiation	It means improving pertinence and recognition by adopting different service models against different customers and different regions. Its main work performances include: providing iron and steel enterprises with special consultancy regarding merger and reorganization, special technical demonstration, green factory establishment, standardized information service, data information report, and equipment level assessment. For example: *Merger and Reorganization Program for Iron and Steel Enterprises in Hebei Province, Green Factory Establishment of Shanxi Taigang Stainless Steel Co., Ltd., and Standardized Service of Jiangsu Shenyuan Special Steel Co., Ltd.*

(continued)

Table 9.2 (continued)

No.	Type	Typical practice case of MPI
5	Sales differentiation	Common products are mainly sold by e-commerce platform and direct sales to large customers, so as to reduce intermediate links and sales expenses. The high-quality special steel products are mainly sold in the modes of technology sales, strategic customers, early intervention and continuous tracking, keeping up with customer demands, and gradually expanding the market. Its main work performances include: Market Analysis of Steel Products, Analysis and Research of Product Sales by E-Commerce Platform, Regular Analysis of E-Commerce Platform for Iron and Steel Industry, Innovation Research on Sales Models of Some Iron and Steel Enterprises, Advanced Technology Promotion Services for Energy Conservation and Environmental Protection, and Product Agency Conversion Services. For example: *Product Structure Adjustment and Market Analysis Report for Ma Steel* and *Report on E-commerce Development for Iron and Steel Industry*
6	Control differentiation	For ordinary products, low-cost production strategies shall be vigorously implemented to improve their competitiveness. The high-quality special steel products are oriented by strengthening product quality to open up the market and improve customer recognition. Its main work performances include: optimization for cost system of iron and steel enterprises, analysis and evaluation of competitiveness, upgrading and implementation of smart manufacturing systems, upgrading of job and staff design and human resources management, and creation of product quality standards system. For example: *Optimization for Cost System of Reafon steel*, *Optimization for Cost System of Weifang Special steel Group*, *Evaluation of Competitiveness of Shanxi Jianbang Group*, *Evaluation of Comprehensive Competitiveness of Jianlong Group*, and *Standardization Improvement Strategy for Yuantai Derun Pipe Manufacturing Group Co., Ltd.*

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