

Nucor – porter's 5 forces

Technology, Innovation



NUCOR AT A CROSSROADS CASE ANALYSIS NUCOR'S SUSTAINED PERFORMANCE RECORD PORTER'S 5 FORCES ANALYSIS • Supplier Power: With the eventual exit of integrated steel companies from buying scrap, the options available with suppliers to sell, reduced. Nucor started several small plants that were close to suppliers ; customers, thereby reducing transportation costs. Also, the sites chosen had inexpensive electricity. Their employee-centric policies resulted in them having lowest attrition levels ; a steady supply of new employees. Thus the supplier power was moderate-low. Buyer Power: Although Nucor employed the latest technology; competitive prices, with imported steel available, the buyers had more options to choose from. However, Nucor's customer service was a differentiator that buyers were willing to pay for. Hence, the Buyer power was mildly unattractive. •

Barriers to Entry: Minimill business was a capital-intensive business for a new player. Also, for existing integrated steel makers, their reluctance to adapt to newer technology ; smaller scale discouraged them to get into the market of the minimills. Thus it was mildly attractive from Nucor's point of view. Threat of Substitutes: With wide availability of substitutes such as aluminum, plastics ; advanced composites, the demand for steel had stagnated. Hence, the threat of substitutes in the future was highly unattractive. • Degree of rivalry: The integrated steel makers didn't threaten Nucor's business. Nucor always had the cost advantage ; efficiency coupled with superior technology ; innovation. However, this was challenged by the global steel makers which resulted in lowering of prices ; lower margins. The only differentiation for Nucor was its highly sought-after customer service.

Thus the degree of rivalry was high. Thus overall, Nucor had sustained performance so far, due to its technology innovation, lean operations, high efficiency, strong employee relations ; superior customer service. However, going ahead, with availability of substitutes ; growing threat of equally good foreign steel makers, the sustainability is in question unless Nucor innovates ; strategically aligns itself to the changing demands of its customers. FUNCTIONAL FIT • Low Cost Focus Strategy: Nucor adoption of organic growth helped in bridging the gap between the company and its customers.

Mills were set up near the Vulcraft operations and Vulcraft in turn ensured speedy delivery of the products to its customers. The company was also able to bring down the fixed order processing costs by using computerized order entry and billing systems. With the help of competent distribution and other measures, the company was successful in raising the willingness of the customers to pay even if the price was increased. Also, the company focused on the low end segment. • Organizational systems / Procedures: Nucor had a flat organizational structure. They decentralized the plant-level decision making to the respective plant managers.

This led to a lot of autonomy ; faster decision making thus providing them an advantage over the competitors. The performance measurement was more quantitative in nature for the plant managers, where they had to meet specific revenue targets. The Nucor management supported creativity ; risk taking as they firmly believed in innovation ; improvisation. There was a relatively high degree of inter-plant communication vis-a-vis consolidation of

orders, sharing of deliverables, etc. Thus the plants didn't entirely work in isolation, although the structure was decentralized.

At the plant level, there were conscious efforts to treat all levels of employees at par ; make all of them feel equally important ; relevant to the organization. • Performance Measurement: The performance of the plant manager was more quantitative in nature. However for those of the other employees, it was a mix of qualitative as well as quantitative. This is because of their emphasis on productivity ; quality. The reward / compensation were more group based rather than individual based, encouraging teamwork. • Values /CultureReview: Employee focus was the hallmark of Nucor.

They encouraged risk taking, creativity ; innovation. Their policies didn't allow for much differentiation between different cadres. Their flat structure had decentralized decision making, they provided employees a sense of belonging / ownership with the organization. The all-cash incentives were regularly doled out ; were directly performance linked – quality ; quantity-wise. Their strong employee-bonding started right from the time the plant was constructed, till retirement. They didn't believe in firing ; during lean times, would rather cut back on working hours, than fire people.

The end result was that they not only had a highly productive, motivated, experienced ; non-unionized work force, but their employee turnover was much below the industry average ; they had many people willing to work for them. Their high human capital was a clear differentiator ; advantage over the competition in the steel industry. Thus, Nucor's approach of controlled growth, focus on technology ; innovation, high employee productivity

coupled with a dedicated workforce, decentralized ; quick decision making, have resulted in a sustained growth ; success of Nucor.

For sustainability in the future, Nucor will have to continue to focus on technology ; innovation as it has been its point of differentiation among its competitors. TETRA-THREAT FRAMEWORK FOR SUSTAINABILITY ANALYSIS:

Threat of Imitation: • The advantage it derived from a flatter decentralized structure ; a motivated workforce, was hard to imitate, as it would mean reorganizing the organization ; it would take much longer to be effective. • Nucor constantly innovated ; used latest technology. Hence, even though a competitor copied its technology, it would take time for it to implement it ; in that while, Nucor would have moved on to a newer technology. • Costs of imitation in this case are the capital investments that would have to be made ; the economies of scale that will have to be achieved. Threat of Substitution: • The internal threat of substitution by means of resource substitution is very little, as the employee attrition rate is very low compared to industry level ; the services offered to customers is of high value for the customers. • External threat of substitution is high due to emergence of aluminum, plastics, etc as cheaper substitutes for steel.

But as Nucor is focused on innovation, it can counter this by itself moving towards these substitutes or coming up with further innovative ways to make steel which can compete with the substitutes. However this would mean further investments in technology ; infrastructure ; training of employees.

Threat of Holdup: • Nucor has a strong vertical integration ; the market for the suppliers is limited as the integrated steel makers are no longer in its

market. So threat of holdup from suppliers is low. • It also adds value with superior customer service, which the buyers are willing to pay for.

But the buyers do have option to opt for imported steel. Thus, Nucor will have to sustain the additional value it generates for its buyers. Threat of Slack: • Nucor has optimized the technology that is available for manufacture. It also has a dedicated skilled workforce. However it has not fully exploited these to venture into newer steel markets or into a Joint Venture with foreign steel makers who could provide newer technology. However its organizational structure ; policies are suited for sustained growth. UNCERTAINTIES AND RISKS ASSOCIATED 1.

Technological threat: CSP would become obsolete in 10-12 years time, as new technology of casting even thinner slab was already under way. This posed risk and uncertainty to Nucor's heavy investment in CSP, but adoption of this technology could give it the first mover advantage also. 2. Quality: SMS's pilot plant ran only 7 minutes and produced 12 tons per charge due to space constraints. It wasn't clear if it could take the load from continuous operations and sustain the wear and tear. The components had to operate with more than 96% reliability for it to be cost-effective. 3.

Raw Material: Nucor used scrap as its raw material, and the uncertainty of the scrap prices could make the project not viable. If scrap prices rose above \$ 140 per ton, Nucor might have to shift to Direct Reduced Iron as raw material which would require major changes in facility and operations. 4. Competition: Other minimills will also adopt CSP in a few years and hence Nucor may not be able to bask in the glory of first mover advantage. It wasn't even clear if first mover advantage would offset the huge costs this

project entails. 5. Company: They didn't have the expertise in flat rolled products which had to be acquired.

Integrated mills adopting CSP were a major threat as they already had the expertise in flat rolled production. 6. Operations: CSP plant was very large and more complex. It couldn't have been located in rural areas, where Nucor have till now established their plants, hence would require new strategy to cater to these plants. 7. Growth: Nucor was concerned that it would have to enter the high end market if it plans to build more plants with CSP technology and that would require products with superior quality ; reliability of delivery, which CSP did not guarantee for such products.

Moreover the high end market demanded relationship based marketing which involved the customers at early level of development of product, which would be difficult. 8. Resources: If Nucor pursued both the projects i. e. CSP and joint venture with Yamato Kogyo, then it would have to stretch its financial resources and raise equity or debt for huge capital expenditures for the initial years. But, according to its policies, Nucor restricted its debt/equity ratio to less than 30 % and did not issue new stock. So the problem of raising funds for the two projects is a matter of concern.

PROJECT FEASIBILITY ? Financial Decisions Assumptions: • The new project technology will become obsolete in 10 to 12 years of time, so assuming that this project will last for 12 years of time including 2 and half years of startup time and two years for full capacity utilization. Assumed that 50 % of capacity will be utilized in 3rd yr, 80% in 4th yr and full from 5th yr onwards.

- The capital expenditure of \$280mn takes place in phase wise manner with

\$70mn today, \$170mn in first year and \$40mn in second year with additional \$30mn in second year for startup cost.

Working capital of \$30mn will also be divided in 3 years based on their capacity utilization. • The revenues and costs are adjusted with an inflation of 3.5% each year. • The rising scrap prices are also taken into consideration. • Assuming that reduction in labor costs and savings in energy will be absorbed by inflation. • Depreciation taken around 13% w. r. t. given data (Done by WDV method). • Tax rate taken around 44%. • Assume salvage value equal to the book value at the end of the project life. • As the industry is stable, so taken beta value (= 0.95) around market beta (= 1). Keeping the Debt/Equity ratio to be around 15%, according to existing capital structure policies. The Capital budgeting of the project leads to the following analysis: IRR= 11.8%, NPV = \$18mn and ROC= 26.5% The Expected rate of return of the project is more than the WACC (10.19%) and NPV; > 0, though it is not very high. The project is therefore financially viable and can be adopted. ? Industry Opportunities: • As the market for low end products was beginning to reach saturation, CSP was a great opportunity for Nucor to enter into flat rolled products.

It could easily enter into the low end of the flat sheet market, consisting mostly of construction applications, where low price was key differentiator. • Its internal sales (Vulcraft division) could be 100,000 tons of flat sheets each year to produce steel deck. • Moreover, it could enter into the high end market after some years by expanding its capacity, which will make it possible for Nucor to compete with US integrated mills and capture their market share. • The threat of ocean freight imports could be mitigated by

the reduced costs. Construction industry offers good opportunity as it takes high priced products from the integrated steel mills and CSP will give Nucor the cost advantage to charge lesser price and hence be able to sell its products. ? Operations: • CSP would lead to savings in casting operations, labor costs and energy costs. • Nucor would be able to achieve economies of scale at a reduced output as compared to the US integrated mills. The yields will be higher and the operating costs will reduce. ? Technology: • Nucor had the drive to embody technological advances.

It invested heavily in upgrading its capacity. Its investment levels were 2.9 times its depreciation charges, wherein the three largest integrated firms had a ratio around 1.6. Through CSP, Nucor will gain the first mover advantage for atleast a few years. • Hazelett Caster wasn't as effective as CSP. Also, there were some operational constraints with Hazelett approach like expensive conveyor belts, reduced product quality and increased maintenance costs. Conclusion: Taking all the business and financial aspects into consideration, Nucor should go ahead with this technology.