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In a complex interplay between product quality and process quality, the output's excellence heavily relies on the production process's standards. Factors such as manpower alongside process quality impact both processing time and final end product quality. A case study of Scharffen Berger Chocolate Maker reveals that, in 2005, Harris faced the challenge of maintaining product quality while expanding production capacity due to anticipated demand increases for chocolate. Despite efforts to optimize each processing step's duration, introducing the new ball mill machinery addressed this issue by multiplying conching process speed and improving product texture and flavor through reduced sugar loss during long processing times. Scharffen Berger Chocolate Maker consists of seven key stages, with slight changes in time allocation or settings being detrimental to the final product. The bean cleaner stage is critical as poor working conditions can lead to dirt leakages affecting chocolate flavor. The roasting stage introduces caramel flavor, while poor temperature control can result in burning, compromising product quality. The melangeur stage refines cocoa into a smooth paste defining texture, a major quality parameter in chocolate production. Conching further refines the chocolate mass and incorporates air for better taste. Tempering involves hardening the chocolate mass to maintain gloss and viscosity, while packaging ensures attractive presentation for customers. However, capacity bottlenecks within the process hinder output levels, including expansion needs, bottlenecks, and economies of scale. A bottleneck occurs when one processing step restricts output or raw materials. In Scharffen Berger's case, the conche stage is a bottleneck, with its production capacity limiting demand fulfillment. A high-capacity ball mill can resolve this issue by reducing throughput time to 15 hours from 40-60 hours, tripling production efficiency and minimizing sugar degradation for enhanced flavor. The melangeur stage will also be able to handle the increment in the production capacity at the conching stage. The increasing demand can only be met by introducing three of such melangeurs. The costs of introducing the three melangeurs will surpass its benefits and therefore outsourcing this kind of services should be considered. Tempering and molding stages should also be considered to see whether they can sustain the processing efficiency. These considerations may call for an expansion in the company's premises making it to incur more costs. Get your first paper with 15% OFF Learn More The costs can then be transferred to the rest of the distribution channel and the greater impact is therefore felt by the consumers. Another hurdle to be solved is the outsourcing of the packaging materials. 65% of the chocolate is packed by co packers. This poses a problem of the quality management for the product. Quality control is made easier when products' processing lines are continuous. The packers would also re-temper and re-melt the chocolate hence the need for quality control. This also adds on the processing time and the costs as some of the processes have to be done twice. This could be solved by transporting the liquid chocolate to avoid reprocessing of the chocolate mass but this too is difficult due to the problems posed by the transportation of the liquid chocolate to the packers. Assess the attractiveness of a high quality process development for a premium quality product. A high quality process development for a premium quality product is vital as best products are basically bought for their prestige. The development of a high quality process is advantageous to the organization, the whole distribution channel and the consumer at large. Coupled with other factors such as ingredients quality, the effectiveness and the standards of formulation, development of a quality process determines the quality of end product. The attractiveness of the end product determines its market value. A high quality premium product fetches more money and attracts quick sales. This translates to voluminous sales and high profits to all the members of the distribution channel. Quality products from quality processes also build up the company's name and this is the aspect of branding. Superior brands attract a lot of money in return as they are associated with quality and prestige. Also branding will help in product differentiation, which will ensure that the product stands the tests of time. A quality process minimizes loss of products and raw materials due to failures. This ensures that profits are maximized and that less money is spent on the raw materials. The savings in the cost of raw materials could be used to develop the company's premises. Quality processes also increase efficiency of the production meaning that the output per any given time is maximized. Another attracting feature on developing quality process is the aspect of reducing the manpower required. Some processes require a great number of people who can be reduced by developing of the processing lines. Finally, a quality process ensures uniformity in products produced giving its customers a continuous and even taste. The satisfaction of every consumer is the main goal of any processor hence quality products are able to meet this goal. Conclusion From the case study it is evident that quality is core when it comes to any organization. The expansion of throughput by Scharffen Berger chocolate maker is mainly the quality variations upon reducing the process's time of production in order to attain maximum output. The conching stage of the Scharffen Berger Chocolate maker is the major bottleneck for capacity increment and the solution lies in the adoption of a ball mill. Process quality is equally important for quality products. Premier products, which are associated with prestige, need to be of superior quality. The quality can only be ensured through development of a quality process which also serves to ensure maximum throughput of the company. References Axelrod, K., & Brumberg, B. (2006). Watch it made in the U.S.A.: A visitor's guide to the best factory tours and company museums. New York, NY: Avalon Travel Publication. Leff, J. (2005). The chowhound's guide to the San Francisco Bay. New York, NY: Penguin Publishers. Perry, S., & Ruffenach, F. (2008). Deep dark chocolate. New York, NY: Chronicle Books Publications. Thompson, F. (2006). Hot chocolate: 50 heavenly cups of comfort. New York, NY: Harvard Common Press Publications. Study Documents On April 26, 2003, Scharffen Berger Chocolate Maker opened its second retail store in the newly renovated San Francisco Ferry Building. It joined a number of other Scharffen Berger, a premium chocolate brand, has expanded rapidly and must determine where and when to increase production capacity along with the appropriate technology. The company needs to evaluate marketing demands, impact on quality and reputation, and economic aspects of various approaches to boost output both short and long term. Students can analyze existing process technology and flow, understand factors influencing product quality, and suggest changes to expand the firm's ability to supply premium products to a growing market. Scharffen Berger Chocolate, produced by Artisan Confection Industry, changed its management team in 2005 and now operates under the name Hershey. The brand, known for its reputation, was founded by Steinberg and Scharffenberger, who crafted chocolate from cacao beans sourced globally. Unlike others, the company processes beans to bars, using raw materials rather than purchasing finished products. The founders, John Scharffenberger and Robert Steinberg, launched the product in 1996, gaining national attention for their artisanal methods. Their dedication to quality made them media darlings in the gourmet chocolate industry. Balancing reputation while scaling production remains a challenge. OB50 is a condensed version of the case. This material is available for download by Stanford OSB students, faculty, staff, and alumni. For inquiries, contact the Case Writing Office. Download By: Daniel C. Snow, Steven C. Wheelwright and Alison Berkeley Wagonfeld Scharffen Berger Chocolate, a premium brand, is growing rapidly and must decide where and when to add capacity in the production line and with what technology. The company must consider the demands of marketing, the impact on quality and reputation, and the economics of alternative approaches to increasing output in both the short term and long term. Provides an opportunity for students to examine the existing process technology and flow, to understand the determinants of product quality, and to make recommendations about changes that will expand the capabilities of the firm in supplying its premium products to a rapidly growing market segment. Scharffen Berger Chocolate is a brand of chocolate manufactured by Artisan Confection Industry. In 2005, the company changed its management team and currently operates under the name Hershey. Scharffen Berger Chocolate is a pioneer in this industry and has maintained its reputation for ages. The product was founded by Steinberg and Scharffenberger, hence the name Scharffen Berger chocolate. They manufactured and launched this product in the market using cacao beans imported from different parts of the world. They were engaged in the production of chocolate from beans to bar. Among the many companies engaged in the production of chocolate, Scharffen is the only one that was able to manufacture chocolate by turning beans into bars. In other words, the company (unlike others in the industry) uses raw materials to manufacture chocolates rather than purchasing from other chocolate manufacturing companies. Get your customized and 100% plagiarism-free paper done in as little as 1 hour As already mentioned earlier in this paper, the company was originally founded by John Scharffen and Robert Stein,berg. In 1989, Robert, who was a doctor, was later diagnosed with cancer. He got discouraged with his profession and later resigned to explore other areas, among them reading chocolate books. He applied for an internship in Bernachon Chocolate Company and worked there for two weeks. After the short tour, he went back and met with John Scharffenberger. He shared with him the idea he had. He gave him a piece of chocolate that he carried in his pocket. John admitted the chocolate was wonderful and the two decided to start a small enterprise involved in making chocolate. Question 1: Explore the interaction between Product Quality and Process Quality Production Overview The interaction between product quality and process quality is a complex one whereby the quality of output is highly dependent on the process quality. Process quality together with other factors, such as manpower, affects the processing time and the final end product. The case study shows clearly the link between quality of process and quality of products. All the steps in the processing stage are equally important, and slight changes in the time allocated to each or even some other settings will have significant effects on the end product. For example, a poorly maintained and leaking bean cleaner can lead to chocolates with poor flavour due to dirt leakages. The quality of the process of making chocolates is very important to the product quality. To this end, all steps are carefully controlled by Scharffen Berger and his machine operators. Scharffen Berger's Seven-Stage Process of Creating High-Quality Chocolate ===== The production process of Scharffen Berger's chocolate involves seven primary stages: bean cleaning, roasting, winnowing, melangeur, conche, temper-molding, and packaging. Each stage plays a significant role in producing high-quality chocolate products. Bean Cleaning Stage Scharffen Berger uses the highest quality beans for this stage, blending up to nine different types of beans. This is a departure from other companies that typically use only two or three types of beans. Roasting Stage The company roasts each type of bean separately to optimize flavor and introduce caramel flavors into the cocoa beans. Improper roasting temperatures can result in burnt cocoa beans, leading to poor-quality products or complete loss of the product. Melangeur Stage This stage is necessary for creating a smooth paste of cocoa, defining the texture of the finished product as a major quality parameter in chocolate production. Conching Stage Conching refines the chocolate mass further while incorporating air into the mixture for better taste. This process significantly influences the quality of the end product. Tempering Stage Tempering involves hardening the chocolate mass while maintaining a well-glossed finish. The tempering stage must be fully controlled to achieve the desired level of viscosity. Packaging Stage The final step in the production process is packaging, which involves holding the final product for display purposes. Quality packaging attracts more customers and increases sales volumes, with 65% of the packaging outsourced and 35% done in-house, ensuring regular inspections and selection of high-potential co-packers. Significance of Process Quality Management Process quality management is crucial to maximizing product quality and reducing waste due to significant positive interaction between process and product quality. Scharffen Berger's focus on standardization processes ensures that the company lives up to its reputation as 'America's Finest Dark Chocolate' in a competitive market, where customer loyalty can quickly shift to competitors if standards are not met. Scharffen Berger's commitment to excellence is paramount. Their premium cocoa beans are cultivated at the finest locations worldwide. By partnering with multiple countries, they select high-grade beans and collaborate with farmers to maintain quality throughout production. Furthermore, they carefully choose beans for diverse chocolate varieties, a crucial step in their ingredient selection process. ===== Several companies that manufacture high-quality chocolates struggle to replicate this quality due to subpar production processes. These mass manufacturers often rely on pre-mixed chocolate blends, which they then customize into their own products using branded molds. This approach limits the control they have over the quality of the beans and add-ins used in the final product. In contrast, companies like Scharffen Berger prioritize maintaining high standards throughout their manufacturing process. The company conducts regular "blind taste testing" to calibrate the perceptions and standards of acceptable quality. This attention to detail enables them to produce premium chocolate with distinct characteristics. As a result of the growing demand, Scharffen Berger is facing challenges in increasing production capacity without compromising quality. To address this, they are experimenting with new equipment, such as a ball mill, which has improved the efficiency and texture of their products. Scharffen Berger recognizes that producing high-quality chocolate requires a top-notch manufacturing process. They acknowledge that developing such a process is deeply intertwined with achieving the desired product quality. The holding tanks are filled to capacity until there is enough space for a 1400kgs conche recipe. This leads to around 15 hours of inactivity, as the melangeur completes 12 cycles to produce 1400kg of paste. Once operational, the conche processes a batch in approximately 40-60 hours. This presents a potential bottleneck, with up to 3-4 batches waiting at the melangeur while the conche is processing one batch. The implementation of new equipment at Scharffen Berger's chocolate factory has brought significant changes to their production process. The melangeur, which is used to grind the nibs, will now be operated with a new batch size, resulting in a substantial reduction in processing time. In an effort to improve efficiency and meet growing demand, the company recently installed a ball mill machine. This innovation aims to decrease the required time at the conche stage and subsequently reduce production bottlenecks. However, implementing this new equipment also presents challenges. The current system's limitations become apparent once the ball mill is operational, highlighting the need for additional upgrades to other stages of the production process. Despite these complexities, Scharffen Berger remains committed to its goal of producing high-quality chocolate. To achieve this objective, the company must carefully consider its long-term strategy and allocate resources accordingly. The recent addition of a new facility and hiring experienced personnel have helped the company expand its operations. Nevertheless, challenges persist due to the constraints imposed by existing equipment and infrastructure. To address these issues, Scharffen Berger's management is exploring alternative solutions. One potential approach involves outsourcing certain production stages to external partners with sufficient capacity. However, this option also carries risks associated with maintaining consistent quality standards during the re-tempering and re-melting processes in third-party facilities. ===== As part of Scharffen Berger's growth strategy, James Harris was tasked with overseeing various aspects including revenue, profit, market penetration, and production expansion. Harris, a former employee of a private equity firm specializing in manufacturing businesses, brought a wealth of experience to the role. He immediately addressed the issue of working hours, which had been neglected due to the misconception that overtime did not pay. By optimising equipment usage and increasing working hours from five to seven days for all stages except packaging, Harris significantly boosted productivity. With the Conche operating 24/7 and other machines running in dual shifts, SB achieved a projected 40% increase in sales. The capacity of the Conche increased from 18 batches per month to 29, while processing time was reduced by nearly half. However, it became apparent that upgrading equipment was essential for further growth. The main bottleneck at this stage was the Conches, which took significantly longer than other equipment to process product. Harris identified a suitable solution in the ball mill, capable of cutting down grinding time and replacing the conche's task. This new method would reduce operation time from 40 hours to 15 hours and boost capacity by an estimated 75%. The \$300,000 investment was deemed well spent. Following the successful implementation of the ball mill, Harris turned his attention to the Melangeur, which had become a bottleneck in its own right. SB located a second Melangeur similar to the existing one, trusting that this would halve processing time. Additionally, Harris explored packaging options for the increased chocolate output, considering whether to hire more staff or allocate more products to partners. Ultimately, developing high-quality processes is crucial for premium quality products, as they are often consumed for their prestige value rather than just taste. This benefits not only the organisation but also the distribution channel and consumers at large. High-quality ingredients, effective formulation, and well-established standards for production are crucial factors that determine the overall quality of a product. A high-end product's attractiveness directly impacts its market value, leading to higher sales volumes and substantial profits across all stages of the distribution chain. Furthermore, a company's premium products foster a strong brand identity, which is vital in establishing trust with consumers. The development of a quality control process significantly boosts profitability by minimizing losses due to defective products or wasted raw materials. This enables companies to allocate resources more efficiently, potentially leading to investments in infrastructure upgrades and increased production capacity. By enhancing their manufacturing processes, businesses can optimize output within a given timeframe, reducing the need for excessive personnel. Uniformity in product quality ensures a consistent consumer experience, which is essential for meeting the satisfaction goals of every processor. In chocolate production, factors such as raw material quality and processing precautions play a pivotal role in determining the final product's quality. Effective process control measures are necessary to maintain high standards, particularly during critical stages like Melangeur and Conche. A well-orchestrated balance among three key principles of quality control - raw material control, process control, and finished product inspection - is crucial for achieving optimal results. By streamlining production procedures, manufacturers can enhance efficiency, reduce waste, and increase production capacity. This can help companies expand their market share and dominate the industry more effectively. Moreover, implementing high-quality process control can lead to significant cost savings throughout the entire production line. Reduced quantities of low-quality raw materials and efficient operators contribute to improved packaging quality. Furthermore, the guaranteed preservation of chocolate taste and the development of a premium brand are critical factors in attracting consumers. The S&B Chocolate Maker's commitment to producing "from bean to bar" has helped establish its reputation for excellence, with its products consistently ranked among the finest dark chocolates available. The company's focus on maintaining product quality has enabled it to build a loyal customer base and establish itself as a leading premium chocolate brand. High quality product development is essential to ensure superior product quality. The high-quality process development can define objectives and carry out enterprise development strategy or goals. According to goal-setting theory, goals are effective because they indicate the level of performance that is acceptable. Experts believe that a clear set of business objectives is an essential requirement in the process of aligning performance with business goals. Goals serve as regulators of human action by motivating project improvement teams. Since specific goals are necessary in aligning performance measures with strategy, quality-related goals incorporated in the production process may affect product's quality. In this case, Scharffen Berger's goal to produce high-quality chocolate prompts the process not to neglect important details, including those imperceptible to many consumers, such as the taste of beans. The high-quality process helps provide feedback to employees, which is a fundamental means of learning for them. This increases their understanding of the process and improves their ability to solve problems. Feedback derives its motivating power almost exclusively from information provided on an employee's performance. It enhances role clarity and helps identify the task performed. The chocolate industry is segmented into two categories: mass and premium markets. Mass market accounts for 75% of the market, while premium accounts for 25%. Scharffen Berger belongs to the premium market. Premium chocolate is characterized by an emphasis on sourcing and production process more like wine. A premium price tag also tends to accompany quality pursuit. The mass market does not always select, roast, and grind their own beans to produce chocolate. Most processes are outsourced, resulting in a less controlled process quality. Scharffen Berger pays attention to the process by developing and manufacturing chocolates from "beans to bar" to maintain premium quality. Their management strives for pure, delicious chocolate flavors. The continued improvement and development of these processes have made it possible to maintain premium product reputation. However, some processes have become outdated, uncompetitive, and ineffective for the current premium market. Innovative methods can bring many benefits to the development process as a whole. The ball mill, a piece of equipment used to enhance efficiency in production lines, can indeed make SB's factory more competitive by upgrading machines and processes. These high-quality yet low-volume processes have an advantage over modern machines due to their novelty factor. Running a factory using these traditional methods is appealing, especially when marketing the product as artisanal and hosting tours to legitimize the craft. However, optimizing current processes to match increasing demand and market opportunities can improve benefits. The use of outdated equipment has marginal benefits if not paired with innovative quality-equivalent processes. Recommendations include adhering to competent manufacturing protocols to guarantee product quality and incorporating controlled procedures for smooth and efficient production. To manufacture and meet huge market demand, companies must consider introducing modern equipment to increase production capacity. Upgrading machines can improve product quality and surpass current production rates. ===== The bean cleaner processes about 200kg every 15 minutes and sends approximately 192kg of clean beans to the roasting process every 15 minutes. This indicates a potential bottleneck, as during one batch processing cycle (with zero waiting time), 1152 kg of beans are cleaned and ready for roasting. ===== Calculations show that processing 1,400 kg of unsweetened chocolate at each stage in the chocolate making process at Scharffen Berger takes approximately 40 hours for the conche, 1.5 hours for the molding machine, 1 hour for tempering (or 200 kg/hr), and 15 minutes for winnowing. ===== The company is considering purchasing a customized ball mill to increase production capacity, as expanding without new equipment is challenging. The ball mill can process almost 1400 Kilograms in three hours. However, it has limitations since it only grinds and requires an additional conche for aeration, resulting in a longer overall processing time of 13-15 hours instead of 40-60 hours. ===== The company's main concern is product quality, which will not be affected by this alternative solution. Ball mill would increase production capacity by at least 75%, and the goal is to reach 100% capacity utilization. Another option is purchasing or outsourcing the molding process, but this increases expenses due to equipment costs, transportation of liquid chocolate, and potential decreased product quality. It's recommended that ball mill be considered for its increased efficiency and reduced processing time. ===== To address growing demand, companies must assess their overall production processes. Scharffen Berger faces a significant challenge meeting the excessive capacity required by expected demand growth (50% in 2005 and 150% later). To improve this, the company should consider introducing a ball mill to decrease grinding time from 60 hours to 15 hours, thereby increasing production capacity up to 75%. By upgrading equipment, companies can avoid potential bottlenecks and enhance overall production efficiency. Looking forward to see everyone at the meeting tomorrow and discuss our strategies in more detail. =====