Manufacturing Sustainability

The United Nations estimates that if population growth and resource consumption continue at the current pace, almost three planets could be required to provide the natural resources needed to sustain current lifestyles by 2050 (3). This serves as a huge wakeup call and action must be taken to change course. Luckily, manufacturers have already begun implementing sustainability goals and strategies. 93% of the world's 250 largest companies are now reporting on sustainability (3). Between 2015 and 2019, sustainable products accounted for more than half (54.7%) of the growth within consumer packaged goods (5).

The Environmental Protection Agency (EPA) defines sustainable manufacturing as the creation of manufactured products through economically-sound processes that minimize negative environmental impacts while conserving energy and natural resources. Sustainable manufacturing also enhances employee, community, and product safety (1). Green manufacturing practices have a positive impact on overall company success as well as the environment, and small and midsize manufacturers need to implement strategies to increase sustainability and stay competitive.

"The amount of paper we were using to run our business was inefficient, wasteful and not in sync with our commitment to running a green business. With SAP Business One and Softengine's WMS+, we now have further visibility into our entire process from beginning to end."

- Amy Long, Director, ReNu Medical

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The Impact of COVID-19 on Sustainability Goals

While COVID-19 rocked global food supply chains and resulted in shifting priorities for businesses everywhere, sustainability remained high priority. Over 90% of sustainable indices have outperformed their parent benchmarks during the COVID-19 pandemic [4]. Implementing sustainable business practices even serves to increase resilience against disruption. Companies with a greater commitment to environmental, social and governance (ESG) benchmarking and reporting regimes continue to prove their ability to weather periods of uncertainty in the market better than their peers [4].

Increase Accountability by Measuring Your Impact

To see tangible improvements in sustainability, manufacturers need to set clear, formal goals that address the issue in a coordinated, integrated manner. Modern day executives must now consider the "triple bottom line" which includes monetary worth, social responsibility, and environmental impact. This emphasis also extends to the workforce since millennials want to work for companies that are socially and environmentally responsible.

Empower Customers to Make Sustainable Choices with Supply Chain Visibility

Consumer pressure and brand improvement are the leading reasons why businesses adopt sustainability in manufacturing. Four out of five consumers (79%) are changing their purchase preferences based on sustainability (6). Over two thirds (69%) of executives pointed to an increase in brand value and 77% say their sustainability approaches have resulted in increased customer loyalty (6). Sustainability even beats price point for many consumers, with 59% willing to pay a price premium for products they view as sustainable (6). This preference remains even during times of economic difficulty, with 45% of consumers making more sustainable shopping selections in the wake of COVID-19 (5).

Transparent supply chains empower customers to make more environmentally responsible choices, as well as increasing brand trust and preference. While over two-thirds (68%) of consumers are willing to purchase more sustainable products when made aware of sustainability impacts, close to half (49%) say they do not have any information to verify the sustainability claims of products (6). 44% do not trust product sustainability claims (6). Supply chain technology that allows for total traceability, from raw materials sourcing to end-consumer, means customers can see the environmental impacts of the products they purchase. This empowers them to make sustainable choices, and ultimately increases sales, consumer trust, and brand loyalty.

Decrease Power Usage with Cloud Technology

The federal government estimates that manufacturing operations use about one third of the total amount of energy consumed in the U.S. annually (2). Technology can be a powerful tool in reducing energy usage. Research by Google and Lawrence Berkeley National Laboratory says that transitioning commonly used software applications to the cloud can cut an organization's energy use by 87% (6). ERP technology allows green manufacturers to monitor all production processes in real-time, and even make live updates to production schedules, ensuring that all manufacturing equipment and energy is being used as efficiently as possible.

Sustainable energy is being adopted exponentially due to decreasing costs. Based on the levelized cost of energy, the cost of solar panels per watt produced in 1977 was $77; in 2020 it is $0.14 (4). While some SMBs may view renewable energy options like solar, wind, and geothermal as costly, long-term savings are quite significant. Tax credits can amount up to 30% for renewable energy usage (5), and these types of sustainable energies in manufacturing tend to be less expensive to maintain. Reducing energy usage by implementing efficient production processes and utilizing renewable energy allows green manufacturers to cut down on fossil fuels and reduce overall carbon footprints.

Optimize Logistics to Reduce Carbon Footprints

Over 70% of the products in the United States are transported by truck, and each of those trucks generates CO2 and greenhouse gases (7). There are multiple ways to increase sustainability in manufacturing logistics models. One method that has been heavily adopted to reduce carbon footprints and increase resilience is shifting to local suppliers. As of June 2020, 69% of manufacturers indicate they are "likely to extremely likely" to re-shore in the future and 72% of industrial/B2B buyers "always or generally" prefer to source locally (5). The localization trend is also being adopted by consumers. 68% of consumers plan to purchase more locally made products rather than imported or non-local products in the next 12 months (6). Technology that allows you to create partnerships with local suppliers and create digital contracts can contribute to sustainability goals.

Systems that allow green manufacturers to view all sales and inventory information in one place also allows for optimized delivery routes and shipping container usage. Artificial intelligence (AI) and cloud computing can help identify the most energy and time efficient logistics route and help group orders to maximize container usage, reducing emissions and increasing profits..

Increase the Use of Sustainable Materials and Packaging with Upcycling

Like environmentally conscious consumers, manufacturers can seek suppliers who source their products sustainably and provide supply chain transparency. Passing this information to customers increases credibility and sales. Green manufacturers can also upcycle waste products or byproducts created during production processes and use them to create new products or packaging materials. Supply chain technology traces which byproducts are produced by which processes and identifies ways to reduce or potentially repurpose byproducts.

Symbiotic relationships increase sustainability in manufacturing. Partnered companies may be able to utilize otherwise wasted byproducts, resulting in less waste and additional revenue streams. For example, by collaborating and exchanging material, water, and energy streams between 11 partners, the Kalundborg network increases resilience and economic gains while meeting ESG goals. Annually, combined benefits are 100GWh of energy, 635,000 tons of CO2, 3.6 million tons of water, and bottom-line savings of $24 million (4).

75% of executives believe they have a strategy, infrastructure, and resources in place to drive sustainability and circular economy efforts (6). Green manufacturers use technology and innovation to take a deep look into their operations and perform strategic analyses and scenario planning. This allows leadership to make informed, actionable decisions and set clear-cut, measurable benchmarks to increase sustainability in manufacturing. Enterprise Resource Planning (ERP) systems allow for collaboration and visibility across the entire business, enhancing accountability and making sustainability an integrated goal across all business functions.

Increase Operational Efficiency & Reduce Waste

63% of business leaders have even seen a direct revenue uptick due to sustainability in manufacturing practices (6). Technology that traces the entire production cycle and bill of materials from beginning to end identifies the exact impacts of these materials and processes. Identifying various methods of production that use resources and labor more efficiently improves the bottom line and environmental impact. Green manufacturers can improve efficiency from multiple standpoints including energy usage, resource consumption, and labor.

97% of America's waste is produced through industrial processes (7). Demand planning systems and technology that analyzes real-time sales data enables companies to adapt to changing demand and produce optimum inventory levels, resulting in less waste. This has a twofold benefit since it results in decreased costs and a positive environmental impact.

Conclusion

Green manufacturing has been widely adopted across the globe, but there is still much work to be done. A common misconception is that increasing sustainability in manufacturing is costly and inefficient. However, small and midsize manufacturers can benefit from adopting more sustainable business practices not only from a corporate responsibility standpoint but also in terms of cost savings and brand recognition. Integrated business technology can assist green manufacturers in reaching sustainability benchmarks that benefit the environment and the bottom line.

Sources

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