Digital Transformation: a Sustainability Enabler

Sustainability is gaining prominence in today's business context. Organizations are increasingly focusing on it considering an expansive view of the triple bottom line that measures profits, people, and planet. The author, in this article, narrates how sustainability attainment can be greatly enhanced with digital transformation.

Sustainability is emerging as a crucial business topic these days as many companies focus on the resources toward lowering the emissions, waste, and energy usage in their production processes. This important concept can be broadly applied to company operations, especially while considering the expansive view of the triple bottom line that measures the impact of company operations on profits, people, and the planet.

Digital tools have been helping in attaining sustainability goals for decades with a targeted effort in efficiency improvement, more so for energy consumption. Traditionally, it was more about cost savings; but now the industry is slowly moving toward the more specific process metrics and the extent of energy savings. Additionally, companies are also increasingly focusing on – waste-and-discharge reduction from production units, easy task execution with visualization, and efficiency capability enhancement through digital solutions.

Mostly, the digital transformation and advancements tend to result in tangible benefits across a variety of areas. Processes that lead to reduced energy consumption can lead to more business profit. Processes (as for example, knowledge automation) that promote better employee onboarding or more technical guidance will not only attract and retain the talent, but will also help in curbing unintended manual mistakes on the factory floor.

The sustainability metrics often force businesses to take a strategic look across the entire length and breadth of the business to fundamentally shift their activity focus. In addition to enhancing process efficiencies, sustainability activities can also impact the business success by boosting operational flexibility and workforce engagement.

Process efficiency

Digital technologies enable unique measuring tools for operators to gain insight on process operations. Visibility on raw material and energy usage has been the primary focus; however emission is also an increasingly important metric. Companies can record carbon dioxide (CO_2) and other emissions for different process options, so those can be included as part of the process selection. A view toward the "greener" side of business is growing; and organizations increasingly look for more visibility on important targets, as well as they ask for CO_2 metrics on their operating and reporting dashboards. Company Executive Boards are giving due consideration to this type of process and measurement beyond a solely financial metric for Company's success.

CO_2 emission, related to energy part of the processes, is the most common metric. However, other efficiency measures often include factors like on-spec or production quality. Cutting the emissions is important; however poor-quality product can also lead to the wastage of both energy and raw material. Any technology that can improve the product quality or the batch quality ultimately improves the Company's sale to their customers, and also the process efficiency which in turn creates less waste.

A great example of this is the scheduling tools, which help the companies to increase their efficiency in production planning to eliminate the waste further down the road. Scheduling tools can also help the companies to decide on when to make which product and in which order, based on their customers' demand, thus resulting energy savings and waste reduction in the production phase.

Digital simulation tools can also drill down into specific emissions that are tracked, correlating with certain other emissions in various steps for a particular reaction. For example, digital transformation solutions

Traditionally, the implementation of digitalization to attain sustainability goals was more about cost savings; but now the industry is slowly but gradually moving toward the more specific process metrics, the process emissions, and the waste reduction.

will help organizations to notate specific correlations and will help to uncover specific data about each of the processes. This is not something that can possibly be done on a manual level, as because the industrial processes are majorly too complex to track and adjust. In such situations, advanced digital tools help the workers to see the value in adjustments and also to guide them in how to do such adjustments.

Business economics

In volatile industrial markets, making sustainable business profit is crucial. Because, profit remains an important metric for success; and digitalization directly contributes to this success. Let's consider a bad batch example: processes that prevent producing a bad batch help an organization to make back-end cost savings for raw materials with waste reduction. Additionally, many digital solutions enable better operational flexibility, so that the assets can more effectively respond to the market changes.

Another key technology advancement that helps to keep the businesses more sustainable, from a financial perspective, is – using reliability software that predicts equipment breakdowns well in advance, or any unplanned or unforeseen event. Such advance warnings enable the companies to avoid event-breakdowns, which in turn saves the major potential profit loss that otherwise could be resulted during the production downtime and could add up to million dollars of profit-loss per day. Some outages can lead to an increase in emission and discharge too.

Predictive maintenance is not just a digital transformation tool, helping plants to attain operational efficiencies. Most importantly, it has a direct impact on an organization's bottom line by keeping machines running at their optimum performance limit, thus avoiding maintenance and capital costs from unexpected failure.

In that sense, reliability software is a value creator in the maintenance process. It knows the limits of equipment, and therefore it enables the organizations to get the most out of them from a production standpoint, knowing they are not going to cause any damage or breakdown.

Talent

Ensuring the safety for the factory workers along with the surrounding community is paramount, and the technology that leads to more reliable plant processes is the key factor in making it a reality. This also bleeds a bit into the topic of talent sustainability. Making factory jobs safer and protecting the workers better through increased plant reliability make industrial careers more attractive to young talent. This will undeniably contribute to the serious talent gap we are facing in the industrial world.

Apart from the technology making plant-work safer, it is also helping to improve workflows – especially through operation training & simulations - thus allowing fresh hires to get a feel for their responsibilities, plant operations, and the different challenging circumstances that may arise during those operations, in a totally simulated setting. It allows them to grow, to learn, and to make mistakes in a closed environment that does not have real-world impact. Using technology to train the talents better is a huge value addition to a company. Not only is that, it also helps to make the work and onboarding processes easier as well as more attractive to fresh hires.

In addition to this, software that helps to guide the talent to make better decisions and to be more work-efficient, completely changes the nature of these industrial roles by bringing them into the modern age; and thus removing a layer of complexity that has typically been part of the workplace.

Digital transformation provides the solutions to address all of these challenges, enabling better control of the manageable business aspects as well as imparting the flexibility to respond to market changes. ■

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