

TECHNOLOGY: A PATHWAY TOWARDS SUSTAINABILITY

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ABSTRACT

Sustainability development is the need of the hour. Organizations cannot neglect the importance of sustainability in different domains. Either it is marketing, finance, human resource, operations, or supply chain. In each field, sustainability is required. In this discussion paper, the authors will talk about different types of technology that helps in achieving sustainability. There will be a discussion on e-commerce, e-banking, blockchain, artificial intelligence, social media tools, etc. How are these technologies helping in reaching out the goals and objectives of sustainable development?

Keywords: E-Commerce, Sustainability, Artificial Intelligence, Blockchain, Social Media.

INTRODUCTION

Sustainability is a much-talked imprecise term in the last 10-15 years. Businesses are looking to achieve the goals of sustainability because it is linked with better corporate social responsibility too. Profit-making cannot be the sole aim of the business in the present scenario. In fact, COVID-19 has increased the responsibility of businesses towards their employees much more than before. Sustainability is no more related to only population and environment. The triple bottom line approach of sustainability has defined three pillars of sustainable development. Those pillars are people, profit, and the planet. Initially, businesses were only concerned about profit, but now they need to show equal concern for the planet and people too. In this paper, the researchers will talk about the importance of sustainability in different domains of management-human resource management, marketing, and finance.

Sustainable Hrm

The first domain of management is human resources. It is a challenging and arduous task for human resource managers to manage employees from diverse cultural backgrounds. The task of human resource managers is much more tedious during COVID-19 as they need to frame different types of policies for working from home. How have HR practices been evolved? In the past, there were only human resource practices. The term HRM-related to the management of the employees working in the organizations (Boxall & Purcell, 2008).

Slowly, organizational leaders identified that HRM is not only linked with the direction of the employees working in the organization, but there are also many outside stakeholders too which need proper attention. So human resource managers also need to manage the contractual employees, contractors, and suppliers issues. HRM has been evolved into SHRM. The focus of strategic human resource management was to align the organizational goals and objectives with the human resource practices. The traditional human resource management was static and for the shorter term. It was reactive in nature, while strategic human resource management is more dynamic and longer-term. SHRM is much more proactive in nature (Becker & Huselid, 2006). SHRM failed to address all the inconsistencies of HRM practices. In the last decade, a new concept of sustainable HRM has been evolved. Sustainable HRM practices focused on the impact of HRM policies on the social, human, and environmental aspects of society. There are terminologies like Green HRM practices are coming on the surface, which is part of sustainable HRM only.

How can sustainable HRM be achieved? Kramar (2014) argued about the three categories of sustainable HRM. The first category is capability reproduction. Human resource managers need to focus on regenerating its resources as soon as it consumes (Kramar, 2014). The human resource managers have the responsibility to reproduce the organizational social and human resource base. They should take care of economic outcomes, corporate sustainability, human and social outcomes. The second category is the promotion of social and environmental health. Human resource managers should develop their practices in a manner that promotes the social, human, and ecological health of the organization. It is a must for the organization that they need to think about the economic profit, but they also need to give equal weightage to the ecological and social practices. The third category is connections; if an organization wants to achieve the goals of sustainability, then it should develop connections between environmental, social, and financial outcomes. The development of environmental policies is necessary, but a sense of trust needs to create among the organization.

Chams & García-Blandón (2019) also argued about sustainable human resource management. He focused on three antecedents of sustainable human resource management. These three antecedents are green behavior, green values, and green competencies. Green behavior is how employees are behaving inside the organization, their stand on communities and environment. Green competencies can be developed in the employees by the organization. The organizations should develop such skills in the employees that they show concern towards the environment friendliness. Green competencies develop problems in the employees towards environmental awareness and green consumer behavior. Transformational leadership can help the employees in inculcating green values in the employees. It motivates them towards their social and environmental responsibility. (Järlström, et al., 2018) Sustainable HRM is not only about green ecological practices. The scope of sustainable HRM is much broader. It includes overall HR development, employee participation at various levels, transparent communication, performance evaluation of employees, and developing a smooth relationship with all the stakeholders. Wherever diversity is visible in the organizations, the employees should be treated with fairness and justice. There should not be any biasness towards the employees. The human resource managers need to think about profitability, but at the same time, they need to think about the employees' well-being too.

Mefi & Asoba (2021) also argued about the sustainable HR practices adopted by human resource managers during the COVID-19 pandemic. There are different themes discussed by the researchers which lead human resource managers towards sustainability.

The cyber influence has been increased; the human resource managers are using more digital platforms. They are also using the human-machine interface for employees' retraining and development. The HR managers are increasing their techno competencies. The HR resource managers are not only developing their technical competencies, but they are also building up the technical competencies of employees. Prior many employees were reluctant to use the technology at the workplace, but the COVID-19 pandemic forced them to use the technology because technology is the only mode of connection and communication. Human resource managers have used this pandemic time to train employees on different meeting applications and their usage. If more and more employees will be technically efficient, then sustainable HRM practices can meet their goals. Sustainable HRM can often be seen as the extension of strategic human resource management only. In modern times, the organizations' goals are not only profit earning, but they also need to meet the targets of corporate social responsibility and corporate governance, etc. Aligning sustainable HRM can be seen as a part of the strategy of strategic human resource management only.

E-Commerce for Sustainability

Hossen & Uddin (2014) argued about the usage of e-commerce for achieving environmental sustainability. The use of e-commerce is increasing day by day. As the usage is growing, it is making the system eco-friendlier. Because of the increased usage of e-commerce, the organization's dependency on technology is advancing. There are different dimensions of e-commerce the organizations are using. It makes them environmentally sustainable because it focuses on optimum utilization of resources. The usage of e-commerce makes a positive impact on de-materialization, de-carbonization, and de-mobilization. The more and more usage of e-commerce will help organizations in shifting from books to bytes. The usage of technology will be less. If the use of technology will be less, then carbon emission will also reduce, and it leads to deduction in greenhouse gases. The layman meaning of e-commerce is to do business with the help of technology. Transportation is adding more carbon dioxide to the atmosphere because there is a large flow of carbon-rich gases. The usage of e-commerce applications will reduce the transportation and carbon dioxide added to the atmosphere. As the energy efficiency will increase, it will make a positive impact on the global warming and waste management of the organization.

Chaudhary (2017) has argued that e-commerce makes a positive impact on all the domains of sustainability. The different domains of sustainability are the environmental domain, economic domain, public domain, and social domain. From the perspective of the ecological domain, there will be a reduction in energy consumption, usage of natural resources, reduction in wastage, and optimum utilization of resources. From the perspective of the economic domain, it can be said that the better utilization of e-commerce will enhance the technical efficiency and cost-efficiency of the organization. It will provide a competitive edge to the organization. In the social domain, it can be said that it will further increase the chances of finding a job and job security afterward. By using e-commerce resources, an employee can apply from any corner of the world; the physical presence is not required. It will also improve the ethical behavior of employees inside the organization. It can be judged that e-commerce will help in achieving sustainability equally in all the domains.

It is justified that the usage of e-commerce takes organizations towards sustainability. It also provides a competitive advantage to SMEs (Chen & Zhang, 2015). The SMEs need to brainstorm on the implementation and usage of e-commerce at the organizational level.

SMEs do not have an excess of funds. E-commerce adoption will help them in achieving sustainability goals (Kumar & Ayedee, 2021), but they need to think about improving the software and hardware facilities for better utilization of e-commerce applications (Kumar & Ayedee, 2019). With a limited budget, SMEs should address the concern of training and proper infrastructure for e-commerce applications. Long-term planning is needed for better utilization of e-commerce resources. The SMEs do not have excess, so the government role is essential here. Government should take the lead in providing critical support to the SMEs for the utilization of e-commerce resources.

Oláh, et al. (2018) also argued about the role of e-commerce in achieving sustainability through the dimensions of environment, social, and economy. The researchers have discussed how companies are using e-commerce to achieve sustainability. The carbon emission on roads is a big concern from the lens of sustainability. To reduce the carbon emission and traffic on roads, the companies have taken some initiatives. The first such initiative is to choose electric bicycles for shorter distances. For the home delivery, companies are also preferring public transport too. Similar to big businesses, small enterprises are also facing challenges of sustainable development. The usage of e-commerce can help in the sustainable development of SMEs through increased operational efficiency, better utilization of resources, and reducing the costs of products (Ingaldi & Ulewicz, 2019).

E-Banking: Sustainability In Finance

Suppose we talk about sustainability in the finance domain; then e-banking practices can be reviewed. E-banking practices help to improve sustainable development in organizations. Chmielarz & Zborowski (2020) argued about the role of e-banking websites leading towards sustainability. There has been a shift from traditional banking to e-banking. Banks have a significant role in sustainable development, and many banks nowadays are opting for green banking to achieve the goals of sustainability. Green banking refers to the change in traditional banking practices to environmentally responsible banking. Green banking promotes the usage of electronic sources in the banks in such a manner that it will reduce the use of carbon emissions and pollution. The e-banking and green banking practices promote the adoption of new technologies. These practices not only increase the profitability of the business but will also increase social acceptability. E-banking is preserving the environment through the conservation of energy by promoting technology-based operations (Khan, et al. 2016). It also updates customers in run-time and eliminates the wastage of paper. In all the three dimensions, environment, societal aspect, and governance, e-banking is leading towards sustainability. From the environmental perspective- e-banking has the ability to introduce a variety of electronic devices. It also has the ability to improve the quality of operation and technical efficiency. E-banking operations can increase the trust in the general public because they get an instant update for all the transactions. From the social perspective- e-banking has the ability to include customers from various geographical locations. It also improves the education and skill set of people in the IT area (Sakalauskas, et al. 2009). There is a reduction of poverty risk and an increase in the number of users.

Online banking or e-banking is a much desired and discussed trend even during a pandemic because customers don't need to be physically present at the bank. E-banking can save paper and reduce the harm to the environment. According to a marketing charts report, e-banking can save 17 million trees and 4 billion tons of greenhouse gases (Nastu, 2007). E-banking has eased human life to the extent that it has become difficult to remain out of its touch.

The services of e-banking include ATM cards, debit cards, credit cards, etc. These all are an essential part of human life. Both the developed and developing countries are purchasing themselves towards sustainable finance, and the banks have an indispensable role to play in that. The countries are also looking to achieve the UN's Sustainable Development Goals. E-banking can be an essential factor in reaching out to the Sustainable Development Goals because it will make a positive impact on the ESG factors. E-banking is not only the requirement of the UN's Sustainable Development Goals or Paris Agreement (Sadr, 2013). Banks are facing pressure from all the stakeholders, including the general public, investors, regulators, employees, and clients, for the adoption of e-commerce or technology in banks.

In the above discussion, the researchers have argued about sustainability and the various measures to achieve that sustainability in the human resource, marketing, and finance domain. One important conclusion which can be drawn out from the discussion is that technology is the prime component for achieving sustainability in every discipline. Technology is not stagnant, it is continuously evolving, and advancements are going on. During the COVID-19 pandemic, industry 4.0 based technology has come up as a solution. Industry 4.0 is the future, and various technologies embedded in that can help in achieving the sustainability goals. In the next section, the researchers will talk about emerging components of industry 4.0 for achieving sustainable development goals.

Blockchain Technology: Sustainable Supply Chain

From the operations perspective, the supply chain is an integral component for any organization. Blockchain is an essential component of industry 4.0 and emerging technology as well. The usage of blockchain technology can lead the supply chain system of the organization towards sustainability. As argued by Park & Li (2021), blockchain technology can provide digital systems and databases for the records of transactions. Blockchain technology is making visibility easy in the supply chain system. It is easy to trace the material. All the information related to the containerization process and documentation is easy to delineate with a real-time tracking system. The decentralization and dissemination of information are easy with blockchain technology. This technology brings more reliability and security to the system with better cost-efficiency. Another significant usage of blockchain technology is in the transaction process. Previously, it was difficult to maintain documents of a contract between buyer and seller. Blockchain technology has reduced the unnecessary hurdles in the contract between buyer and seller. It has made the overall procedure uncomplicated and easy to understand for all. Blockchain technology has reduced the overall costing of inventory management, logistics, and transportation.

The impact of blockchain is positive on all three components of sustainability. It will make supply chain management environmentally sustainable because the technology will reduce unnecessary carbon emissions and toxic pollutants (Kouhizadeh & Sarkis, 2018). It will also stop the excessive extraction of natural resources, or one can say that the exploitation of natural resources will be destroyed. Blockchain technology can make managers efficient in monitoring the origin of the raw materials. Since the technology is efficient in tracking, it is also possible to manage waste management. The second component of sustainability is social sustainability. Blockchain can also help in improving social sustainability. For example- the whole procedure of the supply chain is based on the functional relationship between the buyer and the seller. The visibility and traceability aspect of blockchain technology can help the managers in tracking the ethical suppliers (D'Eusano, et al., 2019).

By ethical suppliers are those suppliers who are following sustainable measures at their end, and they are not following and unethical practices. They should not be involved in any child labor issues or human rights issues either directly or indirectly. The third component is economic sustainability (Venkatesh, et al. 2020). It is possible to achieve the standards of supply chain corporate governance because blockchain technology can provide detailed information about historical and current transactions. If the errors in the supply chain process can be tracked at the desired time, then it can add to the effectiveness of the whole system. With the help of blockchain technology, it is possible to eliminate the errors at the time they occurred because it provides run-time information about the entire system. The early detection of fraudulent activities can help in making the system more sustainable.

Artificial Intelligence

Artificial intelligence is also an essential component of industry 4.0 which is contributing towards sustainability. Nowadays, firms are developing products based on artificial intelligence technology. The AI-enabled products are different from traditional products as they have the capability to identify environmental problems and find a solution to tackle those problems. There are several autonomous ecological benefits that arise from the usage of artificial intelligence. Artificial intelligence has the potential to improve traditional marketing and take it towards sustainability (Frank, 2021). Artificial intelligence helps in connecting with customers in real-time. The data leaks in marketing can be judged with the help of artificial intelligence. It helps in establishing a continuous conversation with the customers. The marketers need to identify the shopping behavior of the customers. Artificial intelligence allows marketers to collect data from various platforms. Since the time a customer started browsing the internet for purchase, artificial intelligence starts collecting data. It is always a concern for marketers to find the targeted customers. Artificial intelligence can help in locating the ideal customers from the piles of data. It makes the basic search easy. Chatbots are also an additional interactive feature of artificial intelligence (Murgai, 2018). Chatbots help digital marketers in providing services to customers at a personal level. The other applications of artificial intelligence in image recognition and content creation. It is essential to know the exact place and time of advertising to make marketing more sustainable. It reduces the cost of operation for an organization. Artificial intelligence embedded with machine learning can help in intelligent advertisement targeting. The marketers can trace out better time, place, and relevant customer segments for the advertisement. The modern generation of customers likes to have a more personalized marketing experience—for example—printing names on mugs or t-shirts, etc. Customers want to see themselves in their choice of brand. Artificial intelligence-based technology can help in creating personalized content for customers. Artificial intelligence-based algorithms can also help in judging the customers' pricing preferences. Those algorithms show the trends of attractive pricing opted out by the customers. Artificial intelligence can leverage the four Ps of marketing pricing, place, promotion, and product. Those four Ps can be leveraged on the basis of sustainable development (Hermann, 2021). AI can also help in achieving demand and supply sustainability. Artificial intelligence helped digital marketing in the transition towards intelligent marketing. The keywords can be determined for sustainable business, and their visibility can be tested using SEO technique—artificial intelligence help in deciding those keywords (Hall, 2019). AI has the capability to streamline whole marketing operations and reduce human error as much as possible.

Social Media Tools

Social media tools come under the category of technology 2.0. Social media tools include Facebook, Instagram, Twitter, YouTube, etc. In this era of digital marketing, social media tools are the new hybrid of the promotional mix of the company. Social media tools helped the organizations in establishing two-way communication with the customers by allowing them to comment on the visuals (Kumar & Ayedee, 2019). SMEs segment is gaining a lot of advantages by using social media tools for marketing. It has increased their reach and reduce the cost. Many small organizations are thinking of going global since the time of their inception because of their dependency on SMEs. In comparison to traditional measures, social media tools are cheap. These tools increase the reach of the companies. These tools save the time of business professionals. Prior, for the lead generation, marketing professionals need to visit physically to the customers. Social media tools are saving the time of marketing professionals by converting the whole process online (Onete, et al., 2013). Social media tools help in gathering complete information about the customers before they purchase the product. It is easy to float the news through social media tools. The information gathering is also easy with the help of social media tools (Bhalerao & Patil, 2021; Bhalerao & Patil, 2021). Social media tools help manufacturers to showcase their products and services to a mass audience within a limited budget. During the COVID-19 pandemic, many SMEs have opted out of social media tools for effectively running their business. Even in the education domain, trends of online conferences and the webinar is prolific during COVID-19 (Ayedee & Kumar, 2020).

3D-Printing

Manufacturing is also an essential part of the supply chain. Many technologies are coming to automate the manufacturing process. In this section, the authors are talking about 3D- printing technology which is leading manufacturing towards sustainable manufacturing. 3-D printing technology is also renowned as additive manufacturing. It is leading towards sustainable development because this technology is dramatically reducing wastage. In comparison to traditional manufacturing methods, 3-D printing has the capability to reduce wastage by up to 90%. 3D printing technology is helpful in reducing carbon emission to a great extent, and the application of reuse, recycle, and lower can be seen in 3-D printing technology (Reichental, 2020). Due to human error, a lot of plastic has been wasted. 3-D printing technology helps in increasing the chances to reuse the waste plastics again. It can be refilled and recycled for better usage. 3-D printing technology has the capability to streamline the whole production. Through this technology, designing is much more accessible and practical. The wastage of material is less, and at the same time, the usage of raw material is also less while manufacturing through 3D technology. 3D technology is portable in use. During COVID-19, many organizations whose supply chain was disturbed used 3D technology to increase their production further. With 3D printing technology, the real-time display is possible. The industries can produce as per the demands of the customers. The unnecessary usage of inventory will be reduced.

CONCLUSION AND RECOMMENDATIONS

Based on the overall discussion, it can be stated that technology has the ability to lead the path of sustainable development. Organizations are using different types of technologies at various levels, but there is broader scope to increase the usage of technology in all the

departments of the organizations. Technology can help in achieving the goals of sustainable marketing, sustainable finance, and sustainable human resource management. The recommendations for the managers are given below.

Managers should train and educate the employees on the practical usage of technology in each domain.

Managers should start exploring more about industry 4.0 components for sustainable production and marketing.

Different types of technology, i.e., e-commerce, social media, ICT, or artificial intelligence, should be operative in the organizations as per their applicability.

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