



Article

# Indian Approaches to Sustainability; Lessons from IKS

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**Abstract:** This study attempts to explore the sustainable practices followed in the businesses during ancient India. We have examined businesses like mining, textile, metal works, construction, farming, and trade. Indian craft, metal works and Agri-products were globally renowned, and this feat was achieved by following sustainable practices like efficient utilization of resources, proper production processes, with less distress to the ecology. The key feature of the Indian Knowledge System (IKS) is that it promotes harmony with nature and fosters compassion, discourages the exploitation of natural resources, advocates sustainable resources management and good governance. The present businesses encompassing these practices are discussed.

**Keywords:** Indian Knowledge System, Sustainable Practices, Artha sastra, Ancient Trade Practices, Sustainability, Trade Guilds.

## INTRODUCTION

It is recorded that during the 15th century foreign trade in India accounted for approximately 24% of the total global share (Chaudhuri, 1983). Evidence indicates that the trade practices followed in ancient India were guided by the principles of sustainability. Sustainability is a long-term perspective that involves the prudent use of capital, namely, physical, natural, human, social and cultural resources. Blending traditional Indian knowledge systems into the current business practices can ensure a sustainable and significant growth. Without doubts, a major cause for the deteriorating ecological conditions and depletion of the various forms of resources is the result of the industrial revolution.

Garret Hardin (1968) in his book titled, 'Tragedy of

commons and sustainable development' points out that the outcome of a society that pursues and competes on individual interest and gains, sidelining collective interest, will exhaust all kinds of resources. Resources are limited, whether it is fossil fuel, fertile land, forest, rivers and other water bodies. Overexploitation and erratic use will lead to depletion of these resources, many of which cannot be restored and are irreversible. Meadows et al. (1972) researched the inter relations between five factors that are considered to have an impact on resources, namely, population growth, industrialisation, effluence, food production, and non-renewable resource depletion. While these factors are said to grow exponentially, the technology required to increase the resources will follow a linear

growth and so nations will fail to adequately replenish the consumption of these resources. The study predicts that there will be a collapse of economic and social welfare globally.

Modern literature defines sustainability from different perspectives. Businesses talk of different approaches to sustainability, like, Sustainable Development (SD), Corporate Social Responsibility (CSR), Green philosophy, Environmental – Social – Governance (ESG), the triple bottom line approach (TBL): the 3E's approach – the Economy – Environment – Equity, and the 3P's approach – Profit, Planet, People. Regulatory frameworks are developed by the government to check on the sustainable business practices and there are various certifying agencies. Green audits, environmental audits, water and energy audits, ISO certifications, the Life Cycle Assessment, ESG rating are some of these frameworks used to measure sustainable practices.

When we examine the current business practices, we find that the practices adopted by a majority of the corporations are unsustainable and are built on what is commonly referred to as a 'Take – Make – Waste' model. Businesses are accused of over exploitation of resources, often producing in excess by over estimating the demand for their products and often the result is wastage and careless disposal. On the contrary, the proponents of a sustainable model advocate a 'Borrow – Use – Return' model. The model suggests that resources of any kind can be borrowed from where it is available in excess, used and then returned or recycled or disposed of, as the case may be. If businesses are ready to borrow, then they do not have to create additional facilities, instead, it leads to a mind-set of sharing of the resources thus avoiding over-production. Today we have many business operations run on this model, but in order to witness good results we need the commitment from the government, institutions and the common people. The model can be applied in many instances like, when two competing industries decide to share their facilities, when commuters use the public transport system instead of using their own vehicles, when companies share office space, when one company decides to borrow the facility of another. Further the model encourages businesses to think of effectively reuse the product leftovers.

Companies are becoming more and more responsive towards sustainable practices in businesses. The researchers feel that a fusion of our traditional practices can give us a better understanding of the manner in which our forefathers handled the issues of sustainability. Through the study, we attempt to answer whether sustainable practices were exercised in business during ancient times and the extent to which it can be infused to current practices.

The following research questions are being examined.

1. Did the Indian Knowledge system advocate sustainable practices in ancient business?
2. What types of industries were engaged in sustainable business practices in ancient India?
3. Are Indian companies currently adopting sustainable practices similar to those recorded in IKS?

### Literature Background

Our examination of various literatures leads us to cite two cardinal thoughts that claim that the Indian knowledge system was fundamentally about sustainable living. One, travelling across India one can experience the reverence the society had for the earth, its flora and fauna. It can be argued that these are spiritual practices that were followed for centuries and are expressions of animism but we find that these practices have helped the society to have a moral framework based on which our businesses are built. One of our ancestral practices was to bow to earth before they placed their foot on earth, as they woke up in the morning (Easwaran, E., 2007; Bose, J. (Translator), 1995). This was an act of reverence, seeking permission to step on 'mother earth', as the earth was believed to sustain all kinds of life. In the Indian epics we find that many of the gods had their vehicles as animals – rats, elephants, lions, and birds. For a good majority of us, the cow is revered as holy. Our ancestors did not hesitate to see divinity in these creatures. Fundamentally, the Indian knowledge system, unlike its western counterparts believed all life is important and did not recommend establishing human dominance over other living beings. This we believe is the cornerstone of sustainability.

Two, our ancestors gave reverence to all forms of energy in the cosmos, and there arose the practices of offering prayers to the sun, moon and other celestial bodies in the galaxy. The tree, 'Kalpavriksha' mentioned in the Vedic scriptures is revered as the tree of life (Boesche, R. 2002). It was a common practice for people to offer rituals around the trees, like banyan, bel, bodhi, and to chant prayers by walking around the trees that were symbolic of praising and worshipping the universe. The banyan tree was associated with eternal life, and attributed to Lord Vishnu; the neem tree is associated with goddess Durga, the Bel tree associated with Lord Shiva, and buddha is said to have been enlightened by meditating under the bodhi tree. It is said that a wood cutter used to take permission of the trees before its branches were cut off or before the tree was uprooted. Once again, we believe that the understanding of our universe and practices woven around these thoughts were key to the mindset of sustainable living.

Further, these practices have helped the nation as a whole to be tolerant to all forms of life, and to show reverence to the substances that provided life to thrive. Though some of the practices may be classified as spiritual, these were the guiding principles that

supported a sustainable ecosystem even when people were engaged in trade both within and outside the country. As we explore, we find that these ancient practices had a significant impact in the manner in which businessmen, traders, and rulers engaged in business and economic activities.

The Upanishad speaks about the Indian way of life, which is summed up in the Sanskrit phrase 'Vasudhaiva Kutumbakam' (Frawley, D., 2001; Radhakrishnan, S, 1953). Our ancestors had the open mindedness to consider the world as one family, and viewed matters in a global perspective. They were able to prioritise the collective well-being over individual or family interests. Such thought instals in us a responsibility to strive for global solidarity and reminds us that our words, acts and deeds should be aligned towards the collective well-being of the society and the ecosystem. In other words, issues like climate change, sustainable development, and tolerance of differences need to be evaluated on the framework of cooperation, harmony and common wellness. In a world dominated by trade and market forces, the thought that 'the world is one family' should serve as a guiding principle for business activities.

In the Arthashastra, Kautilya advocates a controlled use of natural resources, particularly, the use of water, land and preserving the forest (Kangle, R. P. ,1965). It reminds us of engaging in economic activities in harmony with ecological preservation. The infrastructure facilities available in the factories of those days were based on 'vaastu' which takes into account the lighting, air flow, ventilation, direction, ergonomics, roof height, and other factors while constructing a commercial structure. The ancient script of Arthashastra explains the means of acquiring material well-being and protecting nature (Boesche, R., 2002). Kautilya considers arjana (creation), vardhana (increase) and raksana (protection) as the three important aspects of the Artha.

The practices prevalent in ancient India worked in harmony with nature and society as a whole. One of the philosophies of sustainable practices is the triple bottom line approach, that encompasses the planet, people, and profit. In this article, we look at the moral standards set in the Sanskrit phrase, 'vasudhaiva kutumbakam'. Sustainability is achieved when mankind learns to respect the order of the universe, and when there is a place for both living and non-living creations in our day-to-day life. Businesses and individuals should see themselves as stewards or caretakers of the earth and the resources available in it. These sustainable practices are well depicted in the Indian Knowledge System in terms of trade, knowledge, skills, environmental concerns, culture, moral and society which are discussed in the paper.

The ancient texts remind us of the importance of preserving natural resources. During those days the society was mainly agrarian, and there

were restrictions in using such land for commercial purposes and town development. Water bodies were preserved and many were considered to be sacred, and precious. Sacred groves were common throughout the length and breadth of the nation. The Brihat Samhita written by Varahamihira (1996) in the 6th-century offers detailed guidelines on architecture, urban planning and construction. The transcript includes sections on the principles of vastu, site selection, orientation, and the design of buildings. Many of these measures are being used at construction works by our architects and engineers today.

Trade and commerce can be studied by categorising it into agriculture; forestry & fishing; mining & quarrying; manufacturing; construction and services. A brief examination of each of these categories is made subsequently. There is ample evidence to show that, in ancient India, agriculture was practiced in complete harmony with nature. Agriculture was the mainstream activity of people in ancient times and farmers relied on natural fertilizers, cow dung, and compost for their crops. Crop rotation and intercropping was practised so as to maintain the fertility of the soil. Irrigation was done with the help of step wells, canals and catchment area (Singh, R., 2011). Farming was a sustainable practice, where farmers used natural fertilisers like cow dung and compost, and engaged in crop rotation that ensured that the fertility of the farmland was maintained. In ancient times, it is recorded that the farmer grew two crops in a year and the choice of crops ensured the fertility and nitrogen fixation. Sadly, current day practices have shifted to the use of chemical fertilisers, and growing more crops annually that have resulted in over- exploitation of the farmland. Often the green revolution is criticised for this reason where greed took over and, in an attempt to produce more, the focus shifted to high yield crops, cash crops, use of chemicals, and other factors that led to polluting the land. The emphasis drastically shifted from sustainable production to consumption. Archaeological excavations reveal the manner in which our forefathers managed the irrigation systems, by the construction of stepwells, tanks, and canals (Singh, U., 2008).

Further, people depended on the forest for their livelihoods. Hunting, collecting fruits, medicinal plants, honey, firewood, and others were very common practices. Timber was also widely used for various purposes like construction of houses, boats, farming, and for making warfare items (Bühler, G. (Translator), 1886). However, our forefathers considered forest as their adobe and never indulged in exploitation of these resources. Even today we witness communities and large households maintain groves that encourage biodiversity. Animals were domesticated for tiling the soil, for transportation and for dairy and they were treated ethically. Though

our forefathers indulged in hunting, they did not kill the animals just for fun. They felt that animals were integral to our ecosystem.

Mining of metals and minerals, and metal works were practiced in an orderly manner. Living a simple life was promoted and accepted in our culture and so the principles of respect, ahimsa, dharma and sustenance were embedded in all economic and social activities (Gupta, A., 2016).

In the case of manufacturing, resources available locally were used for production and mostly consumed in that region, thus minimising the need for transportation. Natural fibres like cotton and silk were used for weaving cloths. The village and micro industries flourished during the time. Ancient Indians were prudent in identifying the use of herbs as medicines and spices. India was also well known to the eastern world and maritime trade flourished during the ancient times. Industries like textiles, pottery, and metallurgy utilised natural and renewable materials like cotton, jute, and bamboo, minimising environmental impact. One may argue that those days machines and technology were minimal, and may borrow the argument of the west that industrialisation started in the 15th century. However, we find that India was world renowned for its textile products, metal works, colour dyes, pottery works, its spices and Agri products even during the pre – industrialisation era.

Indians excelled in construction of temples and making sculptures. The construction of the seventh and eighth century temples like the Brihadeeswarar temple, Badami cave temples, Khajuraho temple, Madurai Meenakshi temple, and many more, some of which are listed in the UNESCO World Heritage site list (Pattanaik, D. 2003) are a marvel and challenge to today's technology and machineries as it is very difficult to replicate these designs and works to such minute details (Deo, S. B., 1988). These monuments are preserved without causing harm to nature and thousands of pilgrims are seen to visit these shrines. It is frequent to see animals lazing in and around these temples, say, monkeys, cats, dogs, crows, pigeons, deer, or elephants. Plants and shrubs that are believed to have a cleansing effect and radiating positive energy are planted in the temple compounds. Many of the temples and shrines are erected near to the rivers and water bodies and often during the rainy seasons they are flooded. Thus we find an ecosystem where man-made structures blend well with nature and other life on earth. The Indian knowledge system is largely derived from local wisdom and indigenous practices. Businesses have thrived around these shrines because ancient India had an interconnectedness of spirituality integrated into business practices, and communities were built around these beliefs. Notably, the business practices fostered environmental health along with financial success.

Many of our current trade practices can be referred back to the ancient Indian trade practices recorded in the texts, like the barter system, negotiations and contracts, guilds, forming partnerships, word-of-mouth publicity, reputation building by branding, having the right weights and measures, quality control, maintaining trade routes, and ensuring foreign trades. The practices have found new forms and presented in the form of concepts like e-commerce (online bartering), social media (word of mouth marketing), industry associations (guilds), standardisation (weights and measures), partnerships (joint ventures), logistics (trade routes) and so on.

The Indian Knowledge System (IKS) has engulfed various aspects of sustainable business practices which the present businesses are aspiring for. The sustainable business practices in this paper focuses on environmental concerns, human values and ethos, and strategic management. The study emphasises on the environmental concerns related to trade practices in our country followed during the early centuries. Direct textual references may not be available to correctly link these practices and one need to rely on the quotes in the Vedic texts, translations and archaeological evidence from where we can infer sustainable practices.

### **Ancient Trade Practices**

We will now examine the first research question on whether the Indian Knowledge System supported sustainable practices during ancient businesses.

Ancient Indians followed many trade practices that were sustainable. The ancient trade practices like bartering, negotiation, word-of-mouth, guilds, weights and measures, quality control, supply chain management, partnerships, reputation building (branding), oath-taking (contracts), as its roots in our soil. These are recorded in the Arthashastra, aparigraha and manusmriti (Kumar et al., 2017; Sinha, J. B. P., 2013). Some of the ancient practices recorded in our text are related to

- (1) Bartering: It is well known that ancient trade happened on a barter system where goods and services were exchanged based on their values. Later on, precious metals and coins were also used as currency in the country.
- (2) Negotiation: Bargaining over material and its prices were common in olden times. Kumar et al., (2017) talks about the traditional negotiations that were based on long term relationships, willingness to agree (Sinha, 2013) and the respect given for social status and hierarchy (Tandon, 2014).
- (3) Word-of-Mouth: Much of our foreign trade was based on our popularity with the craftsmanship and natural resources that are recorded in both the eastern and western documents. In ancient India, the Arthashastra, a treatise on statecraft



and economic policy, emphasized the importance of building a good reputation through word of mouth (Kautilya, 4th century BCE). Word of mouth has played a vital role in promoting Indian businesses. Today, the kirana stores and street vendors rely on word-of-mouth marketing (Kumar et al., 2017; Bhowmick, 2015).

- (4) Guilds: Merchants and craftsmen formed their own groups in order to protect their interest which are evident from the formation of artisan guilds and merchant guilds. Guilds were organizations of craftsmen, merchants, and traders that regulated and promoted their respective industries. They were typically formed to protect the interests of their members, to maintain quality standards, and to provide training and support.

1. Weavers' guilds in ancient India: Guilds of weavers, such as the "Saliya" guild, played a significant role in India's textile industry.
2. Merchant guilds in medieval India: Guilds of merchants, such as the "Mahajan" guild, regulated trade and commerce in medieval India.
3. Artisan guilds in Mughal India: Guilds of artisans, such as the "Karkhanas" guild, played a significant role in the crafts and industries of Mughal India (Chandra, B., 2004).

- (5) Weights and Measures: Standardized units for measurements were in use for land measurement, weighing items, measuring length and so on. Kautilya's Arthashastra describes units of measurement used in ancient Indian business. He talks about rati, masha, karsha for weighting. Length is measured as angula, vitasti; Capacity is measured by prastha, adhaka and Currency as rupya and karsapana.

- (6) Quality Control: There were indigenous processes that could ensure the quality of the products. The quality was measured by using the five senses of visual, touch, taste, sound and smell. Defects were detected by sight (Kumar, S. 2013), textiles were hand touched to ensure fine use of fabrics (Ray, R. K. 2013), food items were tasted or smelled for its flavour and freshness (Achaya, K. T. 1998). The guilds and government officials confirmed the quality through seals and certificates (Habib, I. 2011).

- (7) Supply Chain Management: There were well defined trade routes connecting Bharath to other continents for the supply of products and raw materials. During the ancient Indian period (1500 BCE - 500 CE) the merchants had established trade routes with China and Southeast Asia. They maintained written records to track supplies and manage inventories. They developed logistics through roadways, rivers and established warehouses to store and transport

goods. Dr. Archibald Henry Sayce in his lecture at Hibbert lecture series in 1887 provides evidence that supports the notion that trade between India and Babylon existed during 3000 BC (Sayce, A. H., 1887). Archaeological findings, paintings and artifacts found at Deir El-Bahari, an Egyptian archaeological site, suggests that the animals depicted in the paintings were not native but of Indian origin. These evidences take us to 2000 BCE (Das, S. K., 1944; Das, S. K., 2006)

- (8) Partnerships: India was made up of many princely states and they collaborated with each other as well as with foreign traders since the BC era. The ancient merchants formed joint ventures with China and Southeast Asia (Ray, 2013). The partnerships were mainly to operate ships or own it. They also shared the risks and profits from the maritime trade (Kumar, 2013). Indian guilds like Shreni and Panchayat regulated the artisans trade and commerce (Habib, 2011). The merchants had formed their own trade associations to negotiate with the government officials and the other traders (Chakravarti, 2013).
- (9) Reputation building: The ancient kingdoms like the Gupta kingdom introduced seals and logos to earmark their products which gave authenticity for the products. Moreover, they emphasized maintaining personal relationships to build trust. Building trust and reputation helped in branding. Seals, logos and trademarking of products were introduced to identify the goods and to build their own brands (Kumar, S. 2013; Ray, 2013). The merchants also maintained personal relationships to build trust and reput (Chakravarti, 2013).
- (10) Contracts: Trade agreements were made to bind parties. Trade was carried through verbal agreement with an oath to establish partnerships (Kumar, 2013). They also used Sattyapuri agreement to ensure accountability (Ray, 2013). Penalties for non-compliance was framed and the contract was confirmed with parties of witnesses (Chakravarti, 2013).

Thus, we find that Indian businesses framed many policies and procedures for the smooth and sustainable functioning of the businesses. The principles that were followed were simple and well monitored.

### **Ancient Businesses and Indian Knowledge System**

We further probed into the second research question that sought to identify the different types of industries that were engaged in sustainable business practices in ancient India. Science and technology were well developed in India as proved by archaeological studies that dates back to 6000 years

and more. Mahadevan B, et. al (2024) in their book titled 'Introduction to Indian Knowledge System: Concepts and Applications', has quoted examples of the extraction of metal ores and manufacturing of various products like utensils, hammers, chisels, scraping tools, weapons, statues, coins, plates, swords, and others. The study illustrates three groups of people, one, who were engaged in the mining of the ores; two, those engaged in the process of extraction or smelting of the metal; and three, those engaged with manufacturing the final products. Archaeological excavations reveal that underground mining in India can be traced to the 13th century BCE like the south Lode of Rajpura - Dariba mine. Metals like Zinc, Gold, Silver, Copper, Mercury, and Iron have been extracted since olden times. Indians had mastered the manufacturing of different alloys by advanced metallurgy. The experts involved in the extraction were engineers, ayurvedic practitioners and alchemists and they used different types of tools (upakaranas) and equipment (yantras) for extraction of the metal. The crucible (musa) was made of earth, the mud of anthills, rice husk, iron rust, human hair, chalk and goats' milk that were mixed in the right proportion and it was sun dried. Often cow dung and wood served as the source of fire. Cow dung was used widely for preparing the slag that would bind the metal powder for the smelting process. We had mastered the art of making coins, ornaments, temples, sculptures, large cannons and stupas that were known for metal purity and craftsmanship. The corrosion free iron beams, and the large sized pillars carved out of single piece stones that are erected in many of the temples also point out that precision tools, saws and chisels made of steel were used as early as the 4th century BCE. Surgical instruments made of carbonised iron were in use during the time. The natural elements used and the method of manufacturing can be related to sustainable practices. Indians were known for their maritime trade and ship building expertise tracing back to the Chola dynasty, 200 - 848 CE. Also, the irrigation system was well advanced with tanks, canals, channels and wells constructed during the first millennium by the cholas and pandyas of tamilnadu. Different committees were formed to supervise the tanks, collect taxes, maintain the irrigation and water supply. Control mechanisms were also planned to mitigate natural calamities. These facts are recorded in books of the sluice committee (Mahadevan B, et. al, 2024; Srinivasan, T.M., 1997; Prakash, B., 1977). While probing into the sustainable business practices in ancient India our study suggests that the ancient business practices prevalent in India were overshadowed by new technologies, or destroyed by the invaders and colonisers. Industrialisation led to mass production and by itself had disrupted the sustainable practices that were followed. In earlier times, production was based on market

requirements, and hence products were customised to the needs of the customer. Craftsmanship was the pillar of trade and economy, and machines were less used those days. The raw materials and colour dye were of natural biodegradable materials, and so were the packaging materials. We will now examine some of the commerce and trade practices of ancient India.

### Ship building

Ancient India was once the maritime champions sailing across the Indian oceans and beyond. The materials and technology used for ship building were indigenous and we relied heavily on human skills. The Ministry of Culture, GoI is currently funding a project to build a 5th century AD design ship made of wood, about 21 meters long, based on the know-how obtained during the Gupta period ([www.youtube.com/watch?v=d71sGnije6Q](http://www.youtube.com/watch?v=d71sGnije6Q) ). The ship is being stitched together, without the use of nails. The first sail is to Oman which is to be followed by a sail from Odisha to Bali, recreating a very ancient voyage called the Bali Yatra. The ship is currently under construction in Goa.

Trade between India and other countries can be traced back to the BCE era and the seaways were a preferred route. During the CE era the international trade via the sea route grew immensely. Ship building was a well-established trade and the reminiscence can be witnessed at Lothal, Gujarat, which houses the remains of an ancient dockyard. At Feroke, Kerala large traditional ships, called 'Uru' are still being built. The place boasts of a 1500-year-old tradition of ship building and centuries ago, the Arabs and Europeans traders used to place orders for the Uru ([www.keralatourism.org](http://www.keralatourism.org), [www.youtube.com/watch?v=KfCWUBXGztl](http://www.youtube.com/watch?v=KfCWUBXGztl)). These 'uru' are said to be made of high-quality timber available in the forest of Malabar region. The fact that even today these giant 'uru' are handmade, using minimal machinery tells us how high-end craftsmanship could be achieved with less damage to the environment.

### Wootz steel

India is said to have produced the world's finest steel which was used for making weapons, armours, the famous Damascus steel and a variety of other products. The Arabs, Chinese, and the Europeans are said to have traded with India from the BC era (<https://dtrinkle.matse.illinois.edu> ). It is said that Alexander was gifted with talents of Indian steel which is also recorded in the third century BCE. By late 1600s it is believed that tonnes of wootz ingots were shipped from the Coromandel coast to Persia on a commercial scale (Srinivasan, S., & Ranganathan, S., 1997). Though it is difficult to judge whether the production processes were sustainable, a few facts are noteworthy. The wootz steel was produced from

the locally available iron ore resource and the crucibles used for the treatment were made of clay. The residues generated were recycled or used for other purposes. Charcoal was the major source of fuel, which is obtained by burning wood. Since ancient communities depended heavily on their natural environment, they are likely to replant as well as prevent exploitation of forest resources. Moreover, though commercially produced, it was a small-scale operation compared to the scale of operations in the current era. The local mining of iron ore, use of clay, recycled residues and efficient forest management suggest that the production was carried out in a sustainable manner.

### Gold coins

During the Gupta era, between the fourth and sixth CE we find that gold coins, called 'dinaras' were being used for facilitating trade, and it symbolised the economic, political and cultural structure of those times (Agrawal, A., 1988). These coins were given as a tribute or gift that fostered goodwill and alliances between kingdoms. The consistency in purity and weights of the coins signified trust and value among the domestic and foreign traders which facilitated fair and genuine business practices. While records on the methods of mining the metals and metal works are not available, it is fair to believe that these were done with minimal environmental degradation, and in line with the principles laid down by the ancient scripts. The circulation of the dinaras as a currency signifies the economic aspects of sustainable practices.

### Muslin

Dacca muslin was a renowned textile product from Bengal and its origin can be traced to the 16th-18th centuries Mughal Empire. The production process includes cultivating high-quality cotton, and the fibers were carded and spun into yarns, which were then woven into fine fabric that underwent a process of bleaching, dyeing and the finishing treatments. The Dacca muslin was exported to the middle east countries as they preferred its exceptional fineness, transparency, softness and durability (Kumar, D. 2017; Raychaudhuri, T., 1982; Sarkar, J., 1907). The weavers used handlooms which were made of wooden frames, horizontal warp beams and vertical shaft, and the spinning wheels spun the cotton fibers into yarns and other tools like carding bows, combs, dyes and printing materials were used. The production process demonstrates how high-quality muslin clothing could be made, unlike the toxic production processes involved in modern day power loom method of manufacturing.

### Aranmula kannadi

The 'aranmula kannadi' or 'aranmula mirror' is a mirror made of metal unlike the glass mirror

(<https://aranmulakannadi.net/>). It is a handmade metal work, and the secret composition of the metal mirror is presently known only to a few people living in a small village at Aranmula, kerala. This craft work is patent protected with a geographical indication tag. Metal mirror making may be assumed to be known craftwork since we can see a sculpture of a woman looking into a metal mirror at the khajuraho temple that was built between 885 CE and 1000 CE. Also, excavations at Harappa unearthed a mirror made of copper which also signifies that metals were used to make mirrors from ancient times. The makers of the aranmula mirror claim that the metal mirrors have an average life of a thousand years. Compare this to the modern mirrors and we find that these are often made of toxic materials and the glass itself is harmful when disposed carelessly.

### Kancheepuram silk

The textile industry flourished during the ancient and medieval period. The Benares silk saree, the Patola from Patan and Kancheepuram silk sarees are well known for their quality and craftsmanship. For example, the Kancheepuram silk saree is world famous and has a geographical indication tag. The small township where this is produced depends on the neighbouring states for its silk yarn and thread (Census of India, 1961). The weavers have their own cooperatives to safeguard their business interests. The concept of sustainability encompasses economical, ecological, and social aspects of businesses and it is noteworthy that there was a sense of harmony in the way businesses operated. The interdependence in trade between different regions, and the formation of the weavers' cooperatives illustrates that a social fabric encouraged the sustenance of such businesses. Silk sarees are reused to bring modern ways of clothing which are recycled from one generation to another.

### Sustainable Practices in Present Businesses

The third research question we explored was whether Indian companies currently adopt sustainable practices similar to those recorded in IKS? Drawing from earlier literatures, sustainability encompasses economic, ecologic, and social aspects which takes into account fair jobs and wages, minimal damages to the ecosystem and the well-being of the society. A positive trend is that the present businesses are shifting towards sustainable practices in their operations and production.

For example, organic food items are promoted stating that chemical pesticides are not used in its cultivation, natural dyes extracted from plants are used as colouring agents, natural ingredients are used in the manufacturing of cosmetics, and so on. We wish to consider the example of three companies here. First, Procter and Gamble demonstrate their commitment to sustainable practices by being

transparent about the ingredients they use in their products and by explaining the safety precautions they undertake (<https://in.pg.com/ingredients/>). Second, Nykaa, the online retailer uses eco-friendly materials for packing cosmetic materials, and also uses packaging materials made of steel, copper and glass thus eliminating the use of plastic. Third, Craste, a pune based company converts agricultural crop residues into paper boards, green boards and aims for zero inorganic waste emittance (<https://craste.co/particle-board/>). It can be commented that companies like P & G are self-regulated and take leadership positions in their drive towards greener products; e-retailer like Nykaa embrace eco-friendly packaging solutions; and startups like Craste innovate by making products out of waste materials. These positive trends are to be evaluated in the background of the unethical and careless practices that are currently prevalent in the market today, like the use of toxic materials in food items, detergents, toiletries, the use of plastic for packing, and the burning of crop residuals that pose serious health and climate challenges to the ecosystem.

There are other examples of Indian companies adopting sustainable practices and we noticed that some of these are young startup companies with innovative ideas. For example, Banofi manufactures leather products and sheets from banana crop waste (<https://www.banofileather.com/>). The company practices sustainable solutions by using banana crop waste as its raw material, and the process consumes lesser water and eliminates insignificant toxic waste. The materials used are banana crop waste, natural and synthetic additives and the company claims that 80-90% material are bio-based. The leather sheets are supplied to other businesses for manufacturing various goods including leather items like handbags, wallets, and others.

Manithee manufactures skin and hair care products that use organic ingredients which the company claims to be hundred percent biodegradables (<https://manithee.com/>). The herbs are procured from local areas and the production unit is in the vicinity. The herbs undergo minimal processing and since they are procured fresh, the quality of the ingredients is also retained. Transportation is minimal as the factory is located closer to the procurement of raw materials, thereby reducing the carbon footprint related to transportation. The sustainable practices include packaging, production methods, management of waste and offering fair employment opportunities with fair wages.

Ecosys manufactures cleaning products (<https://ecosyscleaners.com/>). The company's concept of sustainability is to prevent the plastic containers from polluting the rivers and seas. It packs its cleaning products in innovative cleaning pods. The cleaning pods are filled with non- toxic, herbal based

ingredients and are used for cleaning laundry, kitchen, glass, floor and bathroom. The company works to save on tonnes of plastic by using this innovation. Reusable bottles are provided to fill these concentrated pods.

Ecokaari is a company that recycles single-use plastic waste into reusable products (<https://www.ecokaari.org/>). The used plastic covers are collected and converted to yarn with the help of handloom machines and finally converted into products like bags, backpacks, wallets, pouches, fitness and travel bags, home decors and so on. The company is successful in providing a sustainable ecosystem by utilising the plastic waste, using handloom processes and providing employment opportunities to artisans and women folks.

In the service sector, ESAF small bank is said to have done well in the Care ESG rating. It has bagged an overall ESG score of 68.1, much higher than the industrial median score of 51.8. The bank's statistics illustrate that more than two -third of its banking outlets are located in rural and semi- urban areas, and the major portion of its loan is to the agriculture sector, micro banking, and to the MSME sector. Majority of its loanees are women folks and it adds social value by extending loans to the underserved communities. The bank claims that it contributes to alleviation of poverty, and improves on the socio-economic progress of the communities it serves. One – third of its employees are women and it has healthy labour practices. It declares a spending of 5% of its profits on CSR activities (ESAF, 2024).

Some of the other Indian companies that foster sustainable practices are mentioned below. For example, many retail stores and branded outlets use paper packings or recycled materials to pack items, and many public and private offices advocate the use of steel, copper and glass wares over the use of plastic. Cloth and paper materials are reused either to make the same product or some other product. Companies like Pepsi, Coca Cola, Levi have earmarked their strategic goals to reduce water intake, replenish water bodies, and ensure clean water availability in their production vicinity; Nykaa does their cosmetic packings in papers; Car manufacturers like Tata & Mahindra moving towards electric vehicles; two wheelers like Iqube, Ola, Vida, Ampere, Yulu manufacture electric bikes and scooters; most of the quick commerce companies have their packings in reused paper packs, and many others.

The IKS Division of the Ministry of Education, Govt of India in its industry report published by the Department of Heritage Science and Technology mentions that IKS & Heritage should be treated as an industry (Medury R.K., et. al., IKS, 2024). Such measures would pave way for sustainable practices that were prevalent in the IKS. Recently, in May 2024 SEBI approved the CARE ESG ratings on sustainable practices for companies. The ratings are thought to



build a sustainable future as it focuses on the environmental, social and governance (ESG) values of business. These assessments signify the growing importance of non-financial parameters in business enterprise which can no longer be ignored if companies have to stay in business.

### Discussion

Companies pursue sustainable practices in different ways. Some companies do it for their marketing, to fulfil the regulatory mandates, while many other companies contribute meaningfully to sustainable development. Lesser dependence on fossil fuel, lesser exploitation of natural resources, lesser pollution, and lesser depletion of resources are the mantra followed by such companies. Their counterparts engage more meaningfully by preserving and conserving nature and seeking sustainable ways of commerce and business.

During the ancient times, human beings were regarded as one part of the ecosystem living in harmony with other living and non-living beings in the planet and there was seldom a conflict of thought or interest to prove our dominance over other beings in the ecosystem. We cared for the planet, the creatures, the society and efficiently used the resources for our gains. This guiding principle has led to a sustainable ecosystem that can be emulated in modern times. The current businesses are focusing on sustainable practices and we find a surge in discussions on the ill effects of depletion of resources, degradation of the environment, climate change, pollution, acidification of land and water, deforestation, threat to flora and fauna and many other concerns. Companies voluntarily take up sustainable practices as they are able to use it as a competitive strategy and improve their market positions. Today we have companies advocating organic food, natural dyes, green packages, clean energy and sustainable living. At the same time, advancement in science and technology has led to the exploitation of natural resources faster than it can create new resources which may eventually lead to a collapse of the ecosystem. This fact was pointed out by Meadows et al, (1972) in the research paper titled 'the limits to growth'. As opined by Robert Solow there are substitutes to natural capital, some of which are weak substitutes and others that are strong. Humankind should be prudent not to choose substitutes that can cause destruction and depletion of natural capital. It is a relief to see that many of the MNCs have incorporated sustainable practices into their businesses. The quest for renewable energy, waste management, recycling, reuse, reduced use of materials are steadily integrated into business practices. While some companies are content with pollution prevention and proclamations, others adopt a more serious approach by giving an overhaul of their products and processes after assessing its

complete life cycle. Other companies, however, take it a step further and embrace sustainable development practices that examines the whole business operations, from the cradle to the grave, that is, from the early stage of producing the raw materials to the disposal of the product or service, thereby causing the minimum impact to the environment.

### Conclusion

Sustainable practices that are considered to be the main theme of today's living and business practices have been deeply rooted in the Indian system. Our paper has emphasized on the sustainable practices related to environmental concerns, social governance, corporate social responsibility, and economic development. Today businesses have more emphasis on technology and machinery, whereas in ancient times businesses relied on manpower and the creativity of artisans. It was easier to adapt to sustainable business practices in olden times since we were governed by principles of oneness, and coexistence in the universe. The legal, social, environmental concerns were well addressed during the ancient times. The modern-day business practice we examined reveals that the business community is ready to foster traditional practices that are closely aligned to the Indian knowledge system which respects nature and all forms of matter in the universe. We can say that the Indian knowledge system focuses on the holistic way of living and business is to adapt to this mindset in order to achieve great success in business and life.

### Disclosure for the use of generative AI and AI-assisted technologies

*During the preparation of this work the author(s) used OpenAI (chatgpt) in order to find the reference as very few open access literatures were available on the topic. After using this tool/service, the authors reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.*

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