Impacts of Fourth Industrial Revolution on Cultural Changes: The Challenges Faced in Striking Balance in Innovation and Prevention of Heritage

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Abstract

The Fourth Industrial Revolution (4IR) characterized by technologies like Artificial Intelligence (AI), Robotics, the Internet of Things (IoT), and Blockchain, has brought about significant changes across the world. The study examines the profound effects of 4IR on the economic, social and cultural landscapes of Bangladesh, focusing specifically on education, employment, family structures, and cultural practices. The use of technology has created new jobs and opportunities for growth, it has a number of negative effects on social relations and the cultural practices. This research presents a comprehensive analysis of the opportunities and challenges posed by Fourth Industrial Revolution, emphasizing the need for a balanced approach that fosters innovation while preserving cultural identity. By reviewing the implementations of these technologies in Bangladesh, the study offers strategic recommendations to ensure that technological progress contributes positively to societal development without undermining cultural values.

Key Words: *Fourth Industrial Revolution (4IR); Technological Innovation; Artificial Intelligence (AI); Internet of Things (IoT); Heritage Preservation.*

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Introduction

The Fourth Industrial Revolution in global technological advancement, which originated from a high tech project of the German government in 2011, has taken the modern world to a new horizon (Schwab, 2016). It is primarily through digital innovation and artificial intelligence, robotics, block chain, Internet of Things (IoT), big data analytics and other advanced technologies that have enhanced the mobility and capability of physical and mental work. Through the Fourth Industrial Revolution, technology has reached a level where the use and influence of technology in people's daily lives has become more widespread than in the past (Banik Barta, 2021). It is bringing about fundamental changes in the social structure, cultural identity and way of life of people, not just through increased productivity and economic development. The impact of the Fourth Industrial Revolution has been particularly profound in Bangladesh, where digital technology innovations have brought sweeping changes to state operations, education, health care, communication systems, and even social and cultural relations. The main force of this industrial revolution is the rapid advancement of technology, which has simultaneously transformed the whole world into a new form (Schwab, 2016). As it has brought great changes in western developed countries, its impact in developing countries like Bangladesh has brought new opportunities and challenges. This revolution of technology in Bangladesh is showing a new direction in social and cultural field, but if not properly social and cultural commitment, then it can also have negative impact. For example, technological development in Bangladesh's garment industry is advancing rapidly, but if this change cannot be adapted to certain classes of society, job opportunities may be narrowed, resulting in an employment crisis (Banikbarta, 2021). Therefore, in the context of Bangladesh of the Fourth Industrial Revolution, coordination between the right policies and social culture is crucial for effective implementation and prevention of its effects. The impact these changes are having on the society and culture of Bangladesh and how they will change the different strata of society in the future, needs to be analysed in detail.

Research Objectives

The study aims to analyse the cultural changes in Bangladesh as a result of the Fourth Industrial Revolution. The primary objectives are:

1. To analyse how technology influences traditional cultural practices and values.

2. To assess the challenges of preserving cultural heritage in the context of rapid technological advancements.

3. To explore how the Fourth Industrial Revolution can balance innovation with the preservation of cultural heritage.

Research Methodology

The methodological approach known as qualitative research aims to investigate, comprehend, and interpret social phenomena, human experiences, and behaviours in their natural environments. The focus of qualitative research is on the subjective subtleties, depth, and complexity of human experiences. Improving the impartiality and credibility of research requires the use of suitable research methods and techniques. For the study to be successful and reliable, specific and appropriate procedures must be chosen. Qualitative techniques were applied in this study to methodically gather pertinent data from a range of secondary sources. This method has been very helpful in examining and comprehending the important facets and ramifications of the study results. Such as-

(i) **Published studies:** The study data were collected from various academic journal articles, books, reports or paper that are relevant to our research topic.

(ii) **Government and Institutional reports:** The study data were collected from government agencies, NGOs, or international organizations.

(iii) **Media sources:** The study data were collected from newspapers, magazines, or news websites which are relevant to our study.

Understanding the relationship between cultural change and the Fourth Industrial Revolution (4IR) requires a qualitative study design. Using non-numerical data as its primary focus, it offers comprehensive insights into how digital changes and technical breakthroughs are changing human social situations, behaviours, and experiences. This method focused on analysing cultural changes and delving into the significance of people's lived experiences adjusting to 4IR technologies, like automation, artificial intelligence, and data-driven activities. Scholars can identify patterns in societal structures that indicate resistance, adaptation and transformation, offering key insights into the broader impact of the Fourth Industrial Revolution on cultural changes. By using research methods such as:

(i) Documents analysis: We examine records like industry to find trends about how 4IR technologies affect human behaviour, social structures, and culture through reports, policy papers, and historical documents. This approach sheds light on how organizations, governments, and communities either embrace or reject technological advancements, providing insights into the opportunities and problems brought forth by 4IR's effects.

(ii) Thematic analysis: Thematic analysis enables us to investigate the effects on cultural norms, behaviours, and identity as technologies such as artificial intelligence, automation, and the Internet of Things transform societies. Data from previous studies, media sources, and documents are coded and categorized to uncover recurrent themes that show how communities respond to these changes by innovating, resisting, or adapting. This method offers a thorough grasp of 4IR's impact on cultural landscapes by shedding light on social issues including the labour market shifts and the digital divide.

(iii) Content analysis: Classifying and examining linguistic or behavioural data from textual or visual materials, such social media, news stories, and commercials, requires the use of content analysis. This techniques like artificial intelligence, automation, and robotics reveal trends that show how these technological developments affect society. Content analysis aids in the investigation of cultural narratives, public attitudes, and developing debate surrounding 4IR by looking at how these technologies are portrayed in the media. It provides important insights into how society adapts to and resists these

technological changes by illuminating the ways in which technical advancements impact cultural values, behaviours, and identities.

(iv) Narratives analysis: The goal of narrative analysis is to comprehend how individuals create meaning in the setting of technical progress by examining the stories they tell. We examine interviews, first hand narratives, and media narratives to investigate how people and groups understand new technology like robotics, automation, and artificial intelligence. This approach provides insights into how society adapts to and resists these technological changes by revealing how 4IR shapes cultural identities, values, and social behaviours.

(v) Discourse analysis: Discourse analysis is essential because it looks at how language influences and reflects how society views technology and its effects. We can identify power dynamics, ideologies, and cultural shifts by examining how people and organizations talk about developing technology in interviews, the media, and policy documents. By demonstrating how 4IR affects social norms, beliefs, and behaviours, this approach illuminates how many communities and cultures both embrace and oppose technology innovations.

(vi) The grounded theory: Using grounded theory, new theories regarding the ways in which technology affects social norms and behaviours can be developed. Researchers can find new trends, societal shifts, and reactions to technology development by methodically coding and interpreting secondary data, such as media, reports, or historical documents. By using this method, researchers can create hypotheses based on empirical data, offering new perspectives on how 4IR is influencing societal structures, identities, and cultural values in various places.

Literature Review

Literature review helps in gathering the detailed idea and appropriate information about the research topic, which clarifies the main objective and approach of the research. Various literature reviews on Fourth Industrial Revolution (4IR) have discussed its global impact, changes and challenges in different sectors.

Brynjolfsson and McAfee (2014) described the Fourth Industrial Revolution as the Second Machine Age in their book 'The Second Machine Age'. According to them, this is significantly different than previous industrial revolutions, as current technology is largely replacing knowledge-based labour and human workers (Arntz, Gregory, & Zierahn, 2016; Brynjolfsson & McAfee, 2014; Ford, 2015; Frey & Osborne, 2017). The study focuses on two important aspects of the Fourth Industrial Revolution – digitization and automation of work – that will revolutionize work patterns, business practices and cultural phenomena in the coming decades. The impact of the Fourth Industrial Revolution is particularly evident in the labour market. Arntz (2016), and other researchers have noted in their research that increased automation and digitization in industries may increase the risk of unemployment in the long run. The World Bank (2019) predicts that the rise of automation in China, the United States, and other emerging countries will put millions of jobs at risk by 2030, with major impacts on the economies and labour markets of these countries.

In the context of Bangladesh, Islam (2018) noted that the country's poor infrastructure, availability of cheap labour and high cost of new technologies are hindering the Fourth Industrial Revolution. However, they are optimistic that if the government takes effective steps to adopt new technologies, it can play a significant role in accelerating the economic progress of Bangladesh.

Bakhtiar and Rahman (2022) analysed the potential of the Fourth Industrial Revolution in the agricultural sector and stated that it is possible to increase the productivity of the agricultural sector in Bangladesh through technological development and support.

Kamal and Arfin (2022) have shown that women's entrepreneurial creativity and empowerment have increased after the Covid-19 pandemic. Through e-commerce, women in rural areas are gaining economic independence by selling products using smartphones and the internet, which has opened up avenues for their status and empowerment.

Kundu, Islam, Jui (2018) analysed cybercrime trends and the legal framework of Bangladesh and pointed out that legal and situational preparedness is needed

to deal with growing cybercrime. They have made various recommendations for the development of security measures against cybercrime.

Eni and Yasmin (2019) discussed the possibility of increasing the acceptance of the fourth industrial revolution in the agricultural sector of Bangladesh through smart agriculture. They pointed out that a sustainable and profitable change for the farming society is possible by increasing the production and value of the agricultural sector in Bangladesh through the use of smart farming and modern technology. Besides, the impact of the fourth industrial revolution is also widely observed in the technology and innovation sector.

Elsas and Ramsberg (2017) stated that while automation and robotics are increasing productivity in various industries, the use of these technologies is increasing the need for worker skills and training. They believe that entrepreneurs and adopters of new technologies who are skilled in technical education will benefit from this change, but if workers do not have proper training, they may suffer unemployment.

Dominguez (2020) stated that an important aspect of the Fourth Industrial Revolution is the increase in business speed through digital platforms. Small and medium businesses are gaining momentum, especially in e-commerce and digital marketplaces, which have opened new horizons in online product marketing, service delivery. However, increasing competition on these platforms is also creating new challenges in the business environment.

Furness (2020) stated that the period of the Fourth Industrial Revolution is mainly associated with higher standards of technology and rapid change. In particular, advances in artificial intelligence (AI) and machine learning (ML) and their real-life applications are changing human labour, business structures, and increasing productivity in various fields. Because of this, there is a possibility of creating social and economic barriers depending on the ability of the countries to adopt the technology according to the developing situation.

In addition, a study by Stanford University in the United States (2019) states that the Fourth Industrial Revolution is not only related to technology, but it is also ushering in a global society change, where information technology is widely used and the need for global cooperation is increasing. Therefore,

innovation and change have become a common trend within industries, resulting in massive changes in production processes, business strategies, and every level of society.

Through these studies, we can see that there are researches on the Fourth Industrial Revolution and its impact from different perspectives, but there is a need for more in-depth analysis and appropriate policy adoption in the context of Bangladesh. Bangladesh may be able to reach new heights in its economic and social progress through the proper adoption and application of the Fourth Industrial Revolution.

Theoretical framework

The role of technology is continuously increasing with the change of culture, which is playing an important role in changing different sectors of society. The neo-evolutionist Leslie White depicts culture as an integrated and organized system, where he identifies four main contexts of culture:

1. The ideological context of culture

2. The socialist context of culture

3. The technological context of culture

4. The emotional context of culture

Among these four contexts, the technological context dominates the other contexts. Leslie White's theory of cultural evolution is based on the use and utility of technology and energy. According to him, the combination of technology and energy changes culture, which is the main driving force of cultural evolution. So, the definition of culture can be:

$T \times E = C$

Here, T = Technology, E = energy, and C = Culture

The Fourth Industrial Revolution has resulted in scientific and technological advances, which are changing the various institutions and cultures of society.

The relevance of this theory is particularly important, as the Fourth Industrial Revolution is causing global cultural change, which is relevant to this study. Bangladesh is also preparing to be a part of the Fourth Industrial Revolution in line with the rest of the world. The impact of this revolution was much greater than the previous three industrial revolutions and it happened very quickly. The Fourth Industrial Revolution will affect not only technology, but also agriculture, education, economics, health, belief systems, values and ethics. This is a big challenge for Bangladesh. Achieving the benefits of the Fourth Industrial R evolution in Bangladesh requires extensive preparation. Use of modern technology, IoT, block chain and robotics requires rapid strategic planning. For this, human resource development and radical changes in the education system are required. As a result of this revolution, the income of the people of the country will increase, the quality of life will improve, and life will become more technological. Import-export will be facilitated and new opportunities will be created in the local market.

In anthropological terms, culture is passed from one generation to another. In this process some changes in culture occur, and exposure to one culture may also change another culture, which is known as cultural change. The Fourth Industrial Revolution, viewed from an anthropological perspective, is known as the fusion of new cultures within previous cultures or cultural change. Its continuity will be in every society based on its own culture.

To understand the importance of the Fourth Industrial Revolution from an anthropological perspective, one must first know how relevant it is to each ethnic group and their needs and wants. Anthropologists analyse culture primarily through participatory research and emphasize the traditions and lifestyles of a society. Cultural change generally depends on the needs and potential of technology.

It is necessary to understand from the grassroots level why people are reluctant to adopt new technologies. The changes brought about by the application of new technologies—such as the economy, the environment, religious beliefs, social relations, and ideologies—also change the cultural values associated with them. So it can be difficult to adopt new technology right away.

Anthropologists interpret the knowledge and practices of ethnic peoples in an emic perspective and emphasize the uniqueness of their culture. According to the Western concept, imposing any technology can have a negative impact on cultural life. To successfully embrace the Fourth Industrial Revolution, planned change must be brought about by respecting the true values of local people.

The Fourth Industrial Revolution and indigenous knowledge may be in conflict with each other. Anthropology deals with the internal dynamics, tradition and folk knowledge base of each culture. In new technologies, a bottom-up rather than top-down approach should be followed, where people's initiatives and cultural perspectives are emphasized. Only then can the new technology successfully take place in the society.

Fourth Industrial Revolution and Cultural Change in Bangladesh

The Fourth Industrial Revolution is rapidly impacting Bangladesh, promising significant changes across various sectors, including technology, agriculture, education, economy, health, and culture. Prime Minister Sheikh Hasina has emphasized the challenge of keeping pace with developed nations, and the Government is working on policies to address it (Prime Minister's Office, 2021). To leverage technologies like IoT, block chain, robotics, and artificial intelligence, Bangladesh requires strategic planning and reform in education and human resource development (Schwab, 2016; Brynjolfsson & McAfee, 2014). This revolution will enhance incomes, living standards, and technology-based lifestyles, while making trade processes more efficient (World Economic Forum, 2020).

Culturally, as new technologies emerge, traditional beliefs and values may face gradual shifts. According to anthropological theory, technology can alter society, but these changes should respect local customs (Geertz, 1973; Rogers, 2003). People often resist adopting new technologies due to fears they may conflict with their traditions (Nanda & Warms, 2018). Therefore, technology adoption must be a bottom-up process, driven by the needs and values of the people (Sen, 1999; Smith, 2002).

Combining technological and cultural knowledge is crucial for sustainable development (Castells, 1996). The integration of technology with local culture

should be gradual, respecting the values of the population to ensure long-term success (Latour, 2007). Research and planning are key to achieving this balance, as trust and open attitudes towards technology must be cultivated (Hughes, 2019). Ultimately, while the Fourth Industrial Revolution brings new opportunities, it must be introduced in harmony with the traditions and culture of Bangladesh for it to be truly effective and enduring.

Changing Concepts of Work and Reconstruction of Social Identity

A key feature of the Fourth Industrial Revolution is the transformation of the work environment and its economic impact through the use of automation and Artificial Intelligence (AI). For example, the use of robotics and automation technology in Bangladesh's garment industry has changed the way workers work. For example, many women workers in the garment sector who previously worked with occupational security, now have their occupational security challenged (Jung, 2019).

Globally, such changes have led to massive changes in employment, professional roles, and social identities. As such, automation and the dominance of technology are forcing workers to change their occupations and many are turning to acquiring new skills (Frey & Osborne, 2017).

It has brought great changes not only in the manufacturing sector but also in the education, service and business sectors. The use of digital learning materials, online classes, and automated administrative systems in the education system of Bangladesh has changed the teaching methods and teacher-student relationships (Ng, 2016). Similarly, the use of automation in business is changing job roles and workers are focusing on technical skills (Brynjolfsson & McAfee, 2014).

However, this technological change has brought about major changes not only in the labour market but also in social identity. Where earlier a person's social identity was formed through a specific occupation, now work patterns and technical skills are redefining human identity (Schwab, 2016).

The Fourth Industrial Revolution is profoundly affecting the working environment, social identity and economic structure in Bangladeshi society.

This will change the cultural and social outlook of the country in the long run, where people will be introduced to new identities through their professional skills and technological capabilities.

Effects on Family and Social Relationships

The impact of the rapid advancement of technology as a result of the Fourth Industrial Revolution is deeply reflected on the family and social relations in Bangladesh. Innovations in new technologies and new ways of communication through digital platforms have also led to drastic changes in the patterns of relationships within families. Where earlier family members used to talk and spend time with each other directly, today many are maintaining communication through social media and other online mediums (Sharma, 2020; Hasan, 2022).

While this digital shift brings some benefits to communication, it also has negative effects. Virtual communication is reducing the intimacy of relationships, as it is creating a kind of physical and emotional distance between people instead of face-to-face meeting and interaction (Singh & Gupta, 2021). Due to this new communication style, sometimes the feeling of affection and friendship between family members is also damaged.

In addition, generational differences in technology use are also becoming apparent. As many of the elders are not used to using technology, they are somewhat averse to modern digital platforms, creating a divide between them and the younger generation. Young people are rapidly adapting to changes in technology, but the inability of elders to keep up with this pace is causing strain in family relationships (Rahman & Hossain, 2023). These differences are, at times, creating turmoil and misunderstandings, which are affecting the health of family relationships.

However, positive use of technology and proper utilization of new means of communication is very important to cope with these changes.

Development of Agriculture

The impact of the Fourth Industrial Revolution on Bangladesh's agricultural sector could be massive, especially through technology improvements to increase production, reduce costs and combat the effects of climate change. About 80% of the country's total population and 60% of the labour force are involved in agriculture, with agriculture being a major part of the country's economy. The use of modern technology in agriculture has increased productivity, such that rice production per hectare is currently over four tonnes, a three-fold increase since independence (AIS, 2024). Technologies of the Fourth Industrial Revolution can help reduce the impact of droughts on agriculture, increase production and bring environmental sustainability through the use of smart irrigation systems, drone technology and robotics.

Some of the technologies used in agriculture include smart water, which ensures water-efficient means of irrigation; nanotechnology, which improves yields by increasing soil nutrients; synthetic biology, which helps develop new crop varieties; and genetic engineering, which is used to ensure pest resistant crops and improved nutrition (AIS, 2024; FAO, 2023).

However, for local farmers to successfully use the technology, they need to ensure hands-on training, smart phone skills and internet connectivity. Besides, it is possible to improve the agricultural sector by combining local knowledge and technologies of the fourth industrial revolution. To bring about these changes in the agricultural sector, there is a need to ensure electricity supply and increase the awareness of technology among farmers (AIS, 2024).

Integration and Popularity of Technology in Culture

With the rapid advancement of technology, there has been an unprecedented change in the cultural environment of Bangladesh. While the use of technology has opened up new horizons of cultural practice, a double effect has been created between traditional culture and modern society.

Currently, online streaming platforms such as YouTube, Netflix, Amazon Prime Video, etc. have gained immense popularity instead of television and movies as the main medium of entertainment in Bangladesh. In particular, web

series, online video content and video content created by social media influencers have gained wide acceptance. Through this a new cultural platform has been created, which has increased the international recognition of the cultural arts of Bangladesh (Hossain, 2022).

On the other hand, the role of technology is being clearly observed in traditional cultural festivals such as book fairs, theatre festivals and various folk culture events. Virtual book fairs, digital theatre performances, online cultural events have proven that technology is able to bring traditional cultural activities to people more easily (Rahman, 2023). For example, the Dhaka International Film Festival is now held online, allowing international audiences to participate as well (Ahmed, 2021). Through these digital platforms, the cultural activities of Bangladesh are widely displayed outside the domestic sphere.

However, a double effect is also observed in this change. On the one hand, interest in online and digital media may lead to a slight neglect of traditional culture, such as watching videos online or web series rather than reading books (Karim, 2022). On the other hand, technology has created an opportunity to bring traditional culture to a modern platform, which is helping to generate interest in Bengali culture especially among the younger generation (Mollah, 2023).

Besides, through technology, the culture of Bangladesh has spread not only within the country but also internationally. Bangladeshi movies, plays, songs, and traditional programs are now reaching different parts of the world. These media are not only entertainment but also highlighting the cultural heritage of Bangladesh (Islam, 2022), which has opened a new horizon for the country's culture.

Therefore, the integration of culture with technology has created a new mix in the cultural landscape of Bangladesh, which is paving the way for the creation of new culture on the one hand, while also creating an opportunity to preserve the traditional culture (Sultana, 2023).

Digital Transformation of Education System

The impact of the Fourth Industrial Revolution on the education system of Bangladesh has been particularly noticeable, especially after the Covid-19 pandemic. After the closure of educational institutions due to the pandemic, the use of digital technology has increased tremendously. Students have started attending classes online and new learning platforms such as digital classrooms, virtual courses and e-learning sites have become popular. This change has helped students develop digital skills, the quality of education, enhance students' creativity, critical thinking and problem-solving skills making them more capable of using technology and learning through the Internet. However, there are also some limitations and challenges of taking online education. As such, lack of physical presence has reduced social relationships and peer-to-peer interactions among students. Another problem is the digital divide, where students from different regions of the country do not have equal opportunities.

However, the revolutionary change in the education system of Bangladesh through digital education has opened new horizons of education. In the future, as opportunities and access to digital education increase, it can become more effective and inclusive.

The use of technology at the primary, secondary and higher education level has now increased to a large extent, but it needs to be introduced in a more integrated and effective manner.

1. Primary Level: Digital content should be developed to teach subjects like Bengali, English, Mathematics, Science, and Bangladesh and World Identity using multimedia and digital content in primary education.

2. Secondary level: If secondary level teachers use IT to create digital content, it will be more interesting and productive for students.

3. Higher educational level: The use of technology in universities in Bangladesh has started, but it needs to be expanded. Especially in public and private universities, it is necessary to introduce modern teaching methods through multimedia and internet (Bangladesh University of Professionals, 2023).

The use of technology in the education system will play an important role in the economic, social and cultural development of the country. To take advantage of the Fourth Industrial Revolution, fundamental and technological changes in the education system are essential. For this reason, it is important to take effective steps along with the government as well as public awareness.

Changing Values of New Generation

A significant change in values is being observed among the new generation of Bangladesh under the influence of the Fourth Industrial Revolution. They have become much more tech-dependent than previous generations in their use of technology, which has brought about huge changes in their way of living, thinking and working. Young people are now taking up new initiatives using digital devices and online platforms, such as starting start-ups, freelancing or exploring various opportunities to earn online. Many of them are trying to expand their operations internationally beyond local limitations, thereby becoming more global and liberal in their thinking.

However, there are also some negative effects of technology-dependent lifestyles. As problems such as stress, loneliness, and deterioration of social relationships due to excessive technology use increase, resistance to social and cultural responsibility among young people decreases. They have become so focused on technology that there is a risk of losing the importance of traditional values and social relationships.

Providing social and family support, and proper guidance is essential in these situations. If technology is used correctly, it can help develop the skills and creativity of young people. However, it is also important to ensure the right balance of tradition, social responsibility and values with the use of this technology, so that human values are maintained while enjoying the benefits of technology.

Positive change in Women Empowerment

The Fourth Industrial Revolution created new possibilities and opportunities for women in their lives. Since the corona pandemic of 2020, online employment opportunities have increased, which has helped women become financially independent. Women are now able to change status and position in their personal, family and social life. Technology is creating new jobs through the fourth industrial revolution, where people are dependent on technology for income. A large part of these unemployed will be able to adapt themselves through the fourth industrial revolution and create new jobs, as the country's job market has limited opportunities. Hence, a section of the youth has embraced technology-based employment. Some notable areas are:

(i) E-commerce: E-commerce or online business has created new employment opportunities for many people in Bangladesh. Many have become independent by selling products through websites, Facebook, Instagram or other platforms. Bangladesh's e-commerce business will reach about three billion dollars in 2023 (Prothom Alo, 2023). With e-commerce people can run business from home and sell products with less capital. Rural people are also able to earn by selling rural products like Nakshikantha, jute products, earthenware etc. online. In particular, women are becoming more successful in e-commerce, with almost 80% of e-commerce entrepreneurs in Bangladesh in 2021 being women (Dainik Ittefaq, 2021). Women are not only earning money through e-commerce, but also playing an important role in the country's economy.

(ii) Freelancing: Freelancing is earning money by doing various types of work over the internet. Although it is like a job, its advantages are freedom of work, freedom of time, and the opportunity to fix the salary yourself. 16% of the global online workforce are freelancers (Offord Internet Institute, 2023). About 5 lakh freelancers are working regularly in Bangladesh, and there are 650,000 registered freelancers (Barta24, 2023). Every year freelancers are earning around 10 million dollars. Women in Bangladesh are taking part in freelancing more than men, which is changing their social and family status.

(ii) Blogging: Earn money by writing, publishing articles, or sharing information on your own website. Ads are displayed on websites through

Google AdSense, and people earn money by clicking on them. Blogging has become a popular medium nowadays, where people are gaining knowledge on the one hand, and earning on the other hand.

(iii) Content Creation: Content creators earn by sharing videos and information on various platforms like YouTube, TikTok, Instagram or Facebook. It includes entertaining, educational or analytical content. Rural, urban and tribal community issues can also be promoted through content, which is helpful for promoting fair culture and for educational purposes.

Also, it is possible to earn money from home through services such as graphic design, data entry, online tutoring, translation etc. All in all, if the rural and tribal communities can be included in these opportunities, people in every region of the country will be able to sell their products at the right price and employment will increase, which will also be positive for the country's economy.

Changes in National Identity and Impact of Globalization

The people of Bangladesh are increasingly identifying themselves as global citizens under the influence of the Fourth Industrial Revolution, which has facilitated international communication and trade. As technology advances, they are embracing global opportunities—including global employment, relationships with international organizations, and an increased interest in other countries' cultures (PWC, 2020). As a result, people's lifestyles, thoughts and social attitudes are changing drastically (Bajwa & Kohli, 2020).

However, this impact of globalization is also noticeable on the traditional culture of Bangladesh. The regional and traditional culture of the country is under some threat due to the influence of international culture. In particular, the younger generation is attracted to global fashion, food habits, entertainment and digital platforms, which risks some deviation from their own cultural values and traditions (Ritzer, 2019). As a result, preserving the fundamental aspects and traditions of Bangladesh's culture is becoming challenging, and new strategies for cultural preservation need to be applied (Hassan, 2018).

New Aspects of Cultural Identity

With the rapid spread of technology, a new type of cultural identity is being created in Bangladesh. The country is now transitioning from a traditional agrarian society to a technology-based economic structure. This change is also having a profound impact on cultural life, where traditional arts, folk culture and regional traditions are being integrated with technology. For example, promotion of folk songs, dances, and traditional cultural activities through digital media is now common. In particular, through social media and other digital platforms, Bangladesh's ancient cultural forms such as folk songs, poetry, and dance are gaining global reach (Ahmed, 2021; Sarker, 2022). As a result, a bridge is being created between ancient and modern cultures, creating opportunities for cultural awareness and respect for traditions among the new generation (Hasan, 2023).

Touch of Modernity in Financial Institutions

The impact of the Fourth Industrial Revolution in Bangladesh has brought great changes in the financial institutions sector. Due to the improvement of technology, various financial services including credit and debit cards, mobile banking, internet banking have become available. Mobile banking is a revolution especially for people working or studying in remote areas. They can now easily transact, send and receive money. Opportunities that did not exist in the past, such as the fear of being robbed while walking home, have now been eliminated through mobile banking. Garment workers can easily remit their salary home. Currently popular mobile banking platforms are Nagad, Bkash, Rocket, Dutch Bangla. But there are some problems, like hacking or cheating. General public awareness and strong government action are needed to solve these problems.

Socio-cultural Challenges of Fourth Industrial Revolution

Although the Fourth Industrial Revolution has opened up new horizons in our daily lives through technological advancements and innovations, its cultural and social detrimental effects cannot be ignored. While technology is changing every aspect of society, some of its negative effects are having a profound impact on culture.

(i) Language and culture compression: Globalization and advances in technology have increased the dominance of the English language and the influence of Western culture has increased throughout the world. As a result, small languages and traditional local culture are under threat. In many countries, interest in heritage and culture among the younger generation is waning, leading to the extinction of local cultural heritage (Khanna, 2020).

(ii) Impairment of social interaction: One of the negative effects of the Fourth Industrial Revolution is the deterioration of social interaction. Personal relationships and social bonds are weakening as people spend more time in the virtual world. Instead of direct contact with family or friends, people are now connecting with each other digitally, which is weakening social bonds (Turkle, 2015).

(iii) Commercialization of cultural experiences: Traditional cultural experiences are now being commoditized using Virtual Reality (VR) and Augmented Reality (AR) technologies. As a result, the core values and experiences of traditional culture are diminishing. For example, cultural activities such as dance, music or festivals are now performed on digital platforms, diminishing the depth of the original experience (Pine & Gilmore, 1999).

(iv) Loss of Personality: The dominance of social media and digital platforms is affecting people's personal lives and identities. Many are losing their individuality in following the ideal lives of others on social media, which is damaging cultural identity (Fuchs, 2017).

(v) Depreciation of cultural values: Digital media and social media have led to a growing disregard for basic cultural values such as patience, tolerance and mutual respect among people. Rapid response and self-promotional tendencies are undermining social and cultural traditions (Turkle, 2015).

(vi) Employment Crisis and Unemployment: Increasing use of automation and robotic technology is reducing the demand for human jobs, thereby increasing the unemployment rate. This can become a major problem, especially in developing countries, where income inequality is increasing with technological progress (Brynjolfsson & McAfee, 2014).

(vii) Skill Discrimination: Unable to keep up with technology, people are falling behind in the workplace, resulting in a disparity between skilled and unskilled people in society. This can lead to social unrest and conflict (Autor, 2015).

(viii) Violation of Personal Privacy: The collection and analysis of personal information through big data and artificial intelligence (AI) technologies is leading to privacy violations. The free flow of personal information on social media poses a major threat to people's freedom and privacy (Zuboff, 2019).

(ix) Increase in social inequality: The fourth industrial revolution is widening the technological divide between developed and developing countries. Technology is readily available in developed countries, but lack of technology in developing countries is causing crises in health, education and other services, exacerbating social inequality (Sachs, 2015).

(x) Cyber Security Risks: Cyber security risks are increasing with digital technology and the Internet. The potential for personal information theft and cyber-attacks is increasing, which can be dangerous for individuals and organizations (Anderson & Moore, 2006).

While the Fourth Industrial Revolution opened up new horizons of technological progress and innovation, its proper management is essential to prevent its cultural damage. To protect language, culture, social relations, privacy and social values, it is necessary to adopt a more humane approach to the use of technology.

The Fourth Industrial Revolution and Cybercrime

The Fourth Industrial Revolution has brought unprecedented progress in various fields of human life through continuous development of technology. However, it has also brought with it some new harmful effects, especially in the cyber world. Cyber security threats, such as cyber hacking, cyber bullying, fake accounts, cyber terrorism, scams, black hat hackers, and cyber stalking, are currently a cause for concern. Analysing the nature of these crimes and the risks posed by them, the importance of improving cyber security systems and public awareness is evident in their prevention and resolution.

(i) Cyber Hacking: Cyber hacking is a crime where criminals steal important personal or company information. Hackers can steal information by gaining illegal access to digital devices or networks, which poses the risk of financial loss, misuse of personal information, and leakage of confidential company documents. Cyber hacking can pose a major threat to national security, especially against critical infrastructure (Verizon, 2023).

(ii) Cyberbullying: Cyberbullying is an aggressive behavior of emotionally harassing or humiliating someone over the Internet. It is especially common among young people and often results in stress or trauma. When someone attacks others anonymously on social media or online platforms, it can be extremely damaging (Cyberbullying Research Center, 2022).

(iii) Fake Account: Fake account creation is a harmful trend, where fake profiles are created using someone's name, picture or identity. These profiles are used for fraud, criminal activity and spreading misleading information. As a result, many people become victims of fraud and the breakdown of social relationships (Social Media Examiner, 2023).

(iv) Cyber Terrorism: Cyber terrorism is a crime in which terrorist activities are carried out over the Internet. Various extremist groups or individuals use the Internet to organize organized crime, such as stealing critical data, attacking infrastructure, and spreading terror (United Nations Office on Drugs and Crime, 2024).

(v) Scam: Scammers extort money from people through fake offers or deceptive campaigns online. They ensnare people by spreading various illusions, causing many to suffer financially and creating a form of social injustice (Federal Trade Commission, 2023).

(vi) Black Hat Hacker: Black hat hackers are hackers who break cyber security for unethical purposes. They typically attack commercial organizations, government agencies, and personal data systems, which can cause major financial losses and security threats (Symantec, 2023).

(vii) Cyber stalking: Cyber stalking is stalking or harassing someone over the internet, which is a serious crime. In this, criminals try to psychologically

disrupt a person by monitoring their online activities, personal information or movements. Such incidents pose a serious threat to the security and privacy of individuals (National Cyber Security Alliance, 2023).

As the number and type of cybercrime increases as a result of the Fourth Industrial Revolution, the need to improve cyber security systems and increase public awareness to counter them has increased. While advancements in technology create opportunities, it is essential to focus on its correct and safe use. Proper use of technology and ensuring cyber security will enable us to harness the full potential of the Fourth Industrial Revolution (World Economic Forum, 2023). Raising awareness against cybercrime, improving cyber security systems, and increasing attention to the safe use of technology will enable us to harness the opportunities of the Fourth Industrial Revolution, which will open up new possibilities and avenues for improvement in society.

Limitations

The limitations of this research are:

(i) Dependence on secondary data: Reliance on secondary sources limited the depth and accuracy of findings.

(ii) Lack of specific focus: The study did not explore any particular cultural area in detail.

(iii) No participatory observation: The absence of participatory observation restricted deeper societal insights.

(iv) Time constraints: Limited time reduced the study's scope and depth.

(v) Partial cultural coverage: The research did not fully address all aspects of cultural change influenced by Fourth Industrial Revolution.

Recommendations

Here are some future recommendations to effectively manage the impact of the Fourth Industrial Revolution in Bangladesh:

(i) In order to prepare the next generation for the Fourth Industrial Revolution, it is recommended that digital literacy and STEM (Science, Technology, Engineering and Mathematics) education be integrated into the National Curriculum.

(ii) Increase the amount of Vocational training in block chain, robotics and artificial intelligence to prepare workers for new sectors.

(iii) Create policies that strike a balance between automation and job growth, addressing job losses related to robotics and artificial intelligence, with assistance for retraining and employment.

(iv) Conduct dialogues with communities to make sure that the adoption of technology respects Bangladeshi cultural values and encourages the use of digital platforms for the preservation and exhibition of Bengali literature, music and art.

(v) Provide mentorship, scholarships, and training in digital skills to encourage women to pursue careers in technology.

Conclusion

The Fourth Industrial Revolution (4IR) has had a profound impact on social and cultural change. Advances in technologies such as artificial intelligence, robotics, Internet of Things (IoT), big data and cloud computing have brought changes in social relations and cultural perspectives. First, the automation and digitalization of the work environment has created new skill requirements in the labour market, resulting in the disappearance of some occupations and the emergence of new occupations. This change has redefined the process of education and training, where acquisition of digital literacy and technical skills has become important.

From a cultural point of view, the impact of 4IR is also profound. Cultural diversity has rapidly spread globally through social media and digital platforms, giving rise to new social behaviours, values and attitudes. However, these changes may increase social inequality and intolerance if technology is not readily available to all classes of people. Therefore, adopting the right policy regarding technology, education and ethics is very important to ensure the positive impact of 4IR.

In order to achieve the positive results of the fourth industrial revolution, it is necessary to establish a harmonious connection with every level of the society and culture of Bangladesh. The impact of the Fourth Industrial Revolution is seen in different ways in different societies of Bangladesh.

The use of technology in urban society has increased greatly. People here are easily enjoying the benefits of the fourth industrial revolution due to the extensive application of technology in the city's education, medical, communication, and industrial sectors. The importance of technology is very high in cities, and it is also playing an important role in the development of society. These benefits can be widened by raising awareness.

The benefits of technology in rural society are very limited. Education, health care and communication systems are less developed here than in cities. However, through the use of technology, agriculture can be improved and new possibilities can be created in every sector of rural life. For example, if improved technology is used to deal with crop damage caused by floods, agricultural production will increase and the country's economy will be strengthened. By combining farmers' local knowledge and technical skills, the benefits of the Fourth Industrial Revolution can be effectively reached in rural societies as well. Besides, the quality of rural health care can also be improved by distributing low-cost smartphones and providing first aid training. Through this, the standard of living of the rural people will increase and they will be able to enjoy the benefits of technology.

Tribal society still has some fear and doubt about technology, and they are used to traditional way of life. However, it is possible to improve their livelihood by combining local knowledge and technology. For example, the use of improved

technology and machinery in jum farming can increase production, which will help their products enter the larger market of the country. To make this process successful, the Government needs to take some initial steps, which can bring great benefits in the long run.

Therefore, the benefits of the Fourth Industrial Revolution will not be limited to urban societies; Rural and tribal communities also need to ensure access and training to use the technology if it is to be used profitably. Awareness programs and government incentives can play an important role in the development of rural and tribal communities. The cultural heritage of Bangladesh is very strong, which is reflected in the mindset and rituals of the people. The Fourth Industrial Revolution is causing cultural changes, and it threatens the extinction of local cultures. However, if the fourth industrial revolution is embraced by combining technology and local knowledge, it can contribute to the welfare of the country. Elevating human life beyond the monotony of technology, human resource and anthropological perspectives are considered important. By raising awareness, the benefits of using technology can be brought to the common good.

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