



THE DYNAMICS AND IMPACT OF GLOBALIZATION IN THE FIELD OF SCIENCE AND TECHNOLOGY

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ABSTRACT

Globalization has become a major force shaping various aspects of human life, including in the fields of science and technology. Globalization makes technology easier to access and exchange between countries and accelerates the development of innovation. But not everyone benefits equally from globalization, and some countries or regions lag behind in adopting new technologies. In Indonesia, we can see the physical impact of globalization through the development of cities that are part of the urban network. This can be seen in the telecommunications infrastructure, transportation, and the presence of international companies and their branches. Globalization has brought negative and positive impacts to Indonesian society. The positive impact is that we can see changes in values and attitudes, advances in science and technology, and an increase in the level of life. But there are also negative impacts such as consumptive lifestyles, increased individualism, and the influence of western lifestyles that are getting stronger, as well as increasing social inequality. By understanding how the dynamics and impacts of globalization affect science and technology, we can work together to create a more just and inclusive country where knowledge and technology can be used for the common good.

Kkeywords: *globalization, impact, dynamics, science, technology*

A. INTRODUCTION

Globalization represents an intricate and multifaceted process that entails the interconnection of nations across the globe in a myriad of domains, which encompass, but are not limited to, political dynamics, social issues, cultural exchanges, technological innovations, and economic interactions, collectively referred to as globalization. In the scholarly perspective articulated by Anthony Giddens, the phenomenon manifests in such a manner that social relationships among individuals worldwide intensify significantly, thereby facilitating the linkage of disparate events, which subsequently engenders a reciprocal influence between various regions; this complex interplay ultimately broadens the developmental spectrum of life across different geographical locales. Furthermore, as noted by Srijanti in the work of Sajidiman (2014:278), globalization can be succinctly defined as the process through which influence permeates from one geographical area or nation to another, alongside the broader phenomenon of a nation engaging in intricate global relations. When approached from this analytical viewpoint, it becomes evident that globalization fosters an increasingly interconnected and interdependent global community, wherein alterations that transpire in one locale can propagate with unprecedented velocity to other parts of the world.

The pervasive influence of globalization extends to all significant facets of human existence, thereby generating a plethora of novel challenges that necessitate deliberate attention and strategic resolution in order to harness the potential of globalization for the overarching advancement of humanity as a whole. The nomenclature "globalization," which has emerged into the academic and social lexicon, first gained prominence approximately two decades ago, and it is only within the last decade that it has metamorphosed into a

comprehensive philosophical framework. In essence, this indicates that the concept of globalization has garnered widespread recognition and understanding among various segments of society. When engaging in discourse surrounding globalization, it is imperative to recognize that we are referring to a dynamic process characterized by the swift progression of scientific inquiry and technological development, both of which possess the capacity to fundamentally alter the trajectory of human history.

In the contemporary milieu of globalization, the rapid acceleration of knowledge acquisition and technological advancements is undeniable, and this phenomenon is poised to exert an impact on every conceivable dimension of human life. There exists the potential for these impacts to manifest in both advantageous and adverse forms, contingent upon the preparedness and willingness of stakeholders to embrace and implement dynamic reforms, particularly within the realms of scientific and technological innovation. Moreover, given that we inhabit an era defined by globalization, which has fundamentally transformed the way individuals conduct their lives and, at times, heightened their mobility, it is crucial to acknowledge that such circumstances can precipitate significant shifts in societal behaviors and lifestyles. This transformation, while providing opportunities for growth and development, can also yield negative repercussions, particularly concerning the trajectory of youth development and the preservation of established social norms.

B. RESEARCH METHOD

Qualitative descriptive research represents a significant methodological approach within the realm of social sciences. In the context of this particular study, the author meticulously applies a qualitative descriptive methodology as the primary framework for investigation. As articulated by Sugiyono (2016:9), it is incumbent upon the researcher to assume a pivotal role, serving as the principal instrument for gathering insights and conducting comprehensive examinations of natural phenomena, distinctly avoiding any experimental manipulations, and adopting a qualitative descriptive approach that is firmly rooted in post-positivist philosophical tenets. The findings emerging from this study distinctly emphasize that qualitative research fundamentally prioritizes the exploration of meaning, thereby placing less emphasis on the quest for broad generalizations that characterize quantitative methodologies

To effectively collect data, a triangulation approach, which incorporates multiple methods or perspectives, is utilized, while the analysis itself is grounded in either inductive reasoning or qualitative methodologies, thus allowing for a nuanced interpretation of the data gathered. The overarching aim of qualitative descriptive research is to thoroughly describe, illustrate, elucidate, and furnish detailed responses to the intricate problems being investigated, which entails an exhaustive examination of an individual, a collective group, or a specific event in a manner that leaves no stone unturned. Within the framework of qualitative research, human beings are inherently regarded as the central subjects of inquiry, and the resultant written documentation consists of statements or expressions that accurately and faithfully capture the essence of the events under scrutiny, thereby ensuring a high level of authenticity.

In accordance with the insights provided by Nana Syaodih Sukmadinata (2011:73), qualitative descriptive research seeks to meticulously characterize and delineate actual occurrences, whether these events transpire naturally or are instigated by human agency. This endeavor is primarily achieved by concentrating on the quality, inherent nature, and interrelationships among various activities, thereby providing a rich tapestry of understanding. Furthermore, it is essential to note that descriptive research does not

engage in altering the subjects under observation nor does it aim to provide therapeutic interventions; rather, it is fundamentally committed to portraying the subjects' conditions in their original, unaltered states. The therapeutic aspect that is occasionally mentioned is essentially embodied within the research process itself, which is conducted through meticulous documentation, insightful interviews, and careful observations, all of which contribute to a comprehensive understanding of the phenomena being studied.

C. RESULTS AND DISCUSSION

The Relationship Between Science and Technology

Definition of Science

Science represents a sophisticated and multifaceted form of knowledge that transcends the mere accumulation of information by individuals and instead embodies a profound understanding coupled with a meticulously organized systematic approach to inquiry. As articulated in the Indonesian Dictionary, the concept of science is defined as a body of knowledge that is contextualized within a specific domain and is structured through the application of particular methodologies that facilitate the elucidation of distinct phenomena pertinent to that domain. This notion is further substantiated by the insights of Mulyadhi Kartanegara, who posits that while knowledge and science share foundational similarities, they are distinguished by their respective scopes and areas of concentration.

Historically, prior to the 19th century, knowledge and science were often viewed as largely overlapping entities; however, in the subsequent years, the domain of science has increasingly been confined to the realm of physical research or those aspects of inquiry that can be empirically measured and quantified, whereas the concept of knowledge has come to embrace a much wider spectrum, including metaphysical dimensions that elude material comprehension. Consequently, it can be argued that knowledge not only serves to broaden the horizons of human understanding but also encourages individuals to delve into the intricate and multifaceted nature of reality, which encompasses dimensions that often lie beyond the purview of traditional scientific investigation. Therefore, the interplay between knowledge and science is complex and dynamic, as it reflects the evolving nature of human thought and the ongoing quest for meaning and understanding in a world that is continually revealing its layers of complexity and depth. Ultimately, this relationship underscores the necessity for an integrative approach that values both empirical inquiry and the pursuit of knowledge across diverse fields of study, thereby enhancing our grasp of the universe and our place within it.

According to the scholarly insights presented by Jacob, it can be posited that science constitutes a meticulously structured framework, which has been conceived and developed by human beings with the explicit aim of gaining a profound understanding of both their own identity and the intricate complexities of their surrounding environment, as well as equipping themselves with the necessary tools to either adapt to that environment or modify it in accordance with their fundamental requirements for sustaining life. In a complementary manner, Baiquni (1994) articulates that the essence of science emerges as a collective outcome stemming from a consensus reached among specialists in various fields, predicated upon logical reasoning that is systematically derived through a rigorous critical analysis of empirical data accrued from natural observations.

The evolution of scientific knowledge unfolds through a methodical process that involves the formulation of conclusions based on sound analyses of observational data, which are subsequently organized in a logical manner to create a cohesive and comprehensive framework that enhances our understanding of complex phenomena. Furthermore, the veracity and integrity of scientific knowledge are subject to ongoing

scrutiny and validation by the broader scientific community, which engages in a continuous process of testing and retesting hypotheses and theories. Consequently, one can infer that knowledge itself represents a sophisticated form of understanding that necessitates not only a deep comprehension of various concepts but also a systematic approach to organizing that knowledge in a coherent fashion, while science emerges as a product of rigorous critical and rational analyses conducted by knowledgeable experts in their respective domains. In essence, the pursuit of scientific inquiry serves as a crucial instrument that empowers humanity to gain insights into their own existence as well as the multifaceted environment they inhabit, thereby enabling them to either adjust to the conditions of that environment or enact changes that align with their essential requirements for a sustainable and fulfilling life.

Definition of Technology

The term "technology" is derived from the Latin word "texere," which translates to the act of arranging or constructing something in a systematic manner. While in common parlance it is frequently linked to the advancement and creation of mechanical devices and electronic gadgets, the underlying concept of technology encompasses a significantly wider array of phenomena and practices. According to the insights provided by Roger (1983), technology can be defined as the meticulous design process or the systematic arrangement of tools and instruments that are specifically intended to mitigate uncertainties related to cause-and-effect dynamics, thereby facilitating the attainment of particular objectives and aims. In essence, it can be understood that technology assists human beings in strategizing and executing their actions with a heightened degree of efficiency and effectiveness. Conversely, Jacques (1967) offers a perspective that characterizes technology as a comprehensive set of methodologies that are geared towards imparting a rational and efficient framework within which every human endeavor can be directed and managed.

This perspective further elucidates the notion that technology transcends the mere focus on physical tools and machines, as it also encompasses organized strategies and systematic approaches that are employed to realize desired results. Iskandar Alisyahbana (1980) underscores the idea that, despite the term "technology" not being explicitly utilized throughout history, the underlying concept of technology has been an intrinsic part of human existence for millions of years, deeply embedded within our evolution. It is a fundamental aspect of human nature to be driven by an innate desire to invent and construct tools and systems that can significantly enhance their comfort, well-being, and overall prosperity throughout their lives. Within this context, technology can be interpreted as the manner in which humans apply their intellect, creativity, and available tools to satisfy their various needs, functioning as a means to extend or augment human physical, sensory, and cognitive capabilities in a multitude of ways. Therefore, when considering the broader implications, technology encompasses far more than just tangible hardware or intricate software, as it also includes an array of concepts, innovative designs, and systematic methodologies that collectively aid humanity in achieving their goals with increased efficacy and productivity. This expansive definition of technology embraces numerous dimensions of human life, ranging from the rudimentary development of simple tools during ancient epochs to the implementation of sophisticated technological advancements that characterize contemporary society.

The Interconnection of Scientific Inquiry and Technological Advancement

The domains of science and technology, which are often amalgamated into the overarching framework referred to as S&T, represent two fundamentally interlinked

components of human endeavor that are, indeed, inextricable from one another in their essence and application. Science serves as a vital source and foundational pillar for the advancement of technology, offering the potential for the inception of groundbreaking technological innovations that possess the power to fundamentally transform and significantly enhance the quality of human existence in myriad ways. In contrast, technology functions as the practical application of the scientific knowledge that has been meticulously cultivated through rigorous research, yielding an assortment of increasingly sophisticated instruments and systems that expedite progress across diverse scientific disciplines and fields.

The dynamic interplay between science and technology fosters mutual support and amplifies the development of both spheres, creating a synergistic relationship that propels them forward. Science meticulously unravels the fundamental principles and inherent laws governing the natural world, and these discoveries are subsequently harnessed in the innovative development of technological solutions, while technology, in turn, injects a breath of innovation and rejuvenation into the scientific community by devising tools and systems that facilitate more advanced experimental methodologies and extensive research endeavors. The intricate relationship between science and technology is evident, as the former serves as the primary reservoir from which technology draws its essential knowledge, while the latter represents the tangible manifestation of the scientific discoveries that have undergone thorough investigation and analysis. It is crucial to acknowledge that without a robust and well-established scientific foundation, the pace of technological development that we witness today would not be attainable, as the progress in technology is inextricably linked to the advancements achieved within the realm of scientific inquiry.

The concept of globalization

encompasses a multitude of definitions that are proposed by a variety of scholars and experts in the field. For instance, Tomlinson articulates that the term "globalization" serves to characterize the swift and profound expansion of interconnected networks that fundamentally shape the fabric of contemporary social existence. This phenomenon culminates in a plethora of intricate and multifaceted relationships that permeate various aspects of life. Tomlinson (1999:1–12) underscores the notion that globalization significantly alters human perception and the modalities through which we comprehend our world, a transformation that can yield both beneficial and detrimental outcomes. This theoretical framework underscores the robust and sustained intensification observable across an array of domains, encompassing societal structures, consumer goods, fashion trends, technological advancements, the dissemination of knowledge, and medical practices. He posits that globalization constitutes a critical element of global modernity, a driving force behind the advancement of global progress. This assertion is grounded in empirical evidence and remains immutable.

Moreover, Robertson offers a distinct perspective on globalization, defining it as a conceptual framework that accentuates the conditions of globalization while simultaneously fostering an enhanced collective awareness on a global scale (Robertson, 1992: 8). He contends that the term "globalization" encapsulates the swift and widespread development that influences the beliefs, aspirations, and lifestyles of societies that are in a constant state of flux. Viewed as a more sophisticated phase of modernization, globalization encompasses interconnected components that engender a novel configuration of the global order, thereby radically reshaping numerous facets of human life.

On the other hand, Anthony Giddens presents globalization as a dynamic process characterized by the expansion of social connections originating from a singular local context and extending to both proximate and distant locations on an expansive global scale. This phenomenon is understood as a dialectical process, wherein an occurrence in one locale precipitates an event in another, often far-flung area. The process of globalization, initiated by the development of social connections that transcend both spatial and temporal limitations, encompasses local transformations that are both a consequence of and a catalyst for modernity. (Giddens, 1990). Herein lies the articulation of globalization as it pertains to social theory. According to Giddens, globalization signifies a progression towards the deepening of global social connections that continually link diverse locales through a shared experience and mutual impact.

As a distinct social phenomenon, globalization has engendered a more intricately connected global society characterized by a global culture that exhibits shared preferences, collective understandings, and uniform worldviews. In light of this transformative occurrence, authority has transitioned from a previously centralized structure to a more decentralized configuration. This shift manifests itself from the individual level to collective dimensions, traversing from the direct to the indirect. The nature of cultural influence has evolved, with cultural control supplanting coercive mechanisms of control. In summary, globalization has facilitated the integration of the world's social systems, resulting in characteristics that stand in stark contrast to those of previous societal structures. Both traditional and modern societies have undergone significant transformations, and these developments have further reinforced the global social networks that interconnect diverse locations, creating a reality where any event unfolding in one area is simultaneously perceived and experienced in another, irrespective of distance (Giddens, 1990: 63–64).

Globalization Developments in the Field of Education

The continuous progression and enhancement of scientific knowledge and technological advancements within the educational sector have significantly contributed to the processes of modernization and the overall progress of educational methodologies, thereby transforming traditional paradigms into more contemporary frameworks. Over the course of time, the impact of technology has instigated a myriad of changes that have redefined the educational landscape. Among the numerous transformations, one can observe notable shifts in the ways students engage in learning, the pedagogical approaches adopted by instructors, and the accessibility of an ever-evolving array of learning resources that are consistently updated in response to new information and societal needs. Traditionally, educational activities were predominantly conducted in face-to-face settings, confined within the walls of classrooms; however, with the advent of modern technological tools such as Google Classroom, Zoom, and a plethora of other innovative media platforms, educational experiences can now be delivered remotely from the comfort of one's home, thereby expanding access to knowledge in unprecedented ways.

As articulated by Abdulhak (2005: 4130), the application of Information and Communications Technology (ICT) within educational contexts can be categorized into three distinct classifications: the first category pertains to the use of ICT as a medium or educational tool, which functions primarily as a supplementary resource designed to elucidate and enhance the explanations offered by educators. The advantages afforded by this revolutionary information technology are manifold and serve to enrich the educational experience. The second classification identifies ICT as a source, signifying its role in facilitating the pursuit and provision of information that is essential for

effective learning. The third and final classification frames ICT as an integral component of a comprehensive learning system that supports and enhances educational outcomes. As the passage of time has unfolded, humanity has witnessed a remarkable evolution from the archaic methods of communication that relied heavily on paper and pen for long-distance interactions between educators and students, to the instantaneous and seamless communication capabilities offered by modern telecommunication devices, which transcend the limitations of both space and time. This evolution is particularly pronounced in the context of the fourth industrial revolution, an era characterized by the pervasive influence of technological advancements that permeate every aspect of human endeavor. According to Rosemberg (2001), a variety of significant transformations in the learning process have emerged as a direct consequence of the increasing integration and utilization of ICT in educational environments, including:

1. The phrase "From the classroom to anywhere and anytime" encapsulates the transformative reality that the scope of learning, which was once confined to the physical confines of educational institutions, has now expanded to encompass virtually any location and time, facilitated by the vast resources available on the internet. This paradigm shift is typically realized through the employment of platforms such as Google Classroom, Zoom, and numerous additional resources that foster a more flexible and accessible learning environment.
2. The expression "From paper to online or channels" underscores the transition experienced by both educators and students, who previously relied on traditional textbooks and printed materials for their learning, but can now effortlessly engage with a variety of digital media, including Google Docs and Microsoft Word, which enable a more dynamic and interactive approach to the learning process.
3. The phrase "from physical facilities to network facilities" highlights the evolution of educational infrastructure, illustrating how learning environments that once depended on tangible elements such as blackboards or whiteboards have now adapted to utilize virtual boards equipped with advanced technologies like LCD screens or televisions, thereby enhancing the overall quality and effectiveness of the educational experience.

In the Field of Technology

The term "technology" is etymologically derived from the Greek word "tecnologia," which can be translated into Indonesian as "systematic discussion of the whole world and kingdom," thereby implying a comprehensive exploration of various domains of knowledge. The foundational element of the word "technology" is the Greek term "techne," which refers to art or craft, and this etymological lineage underscores the significance of creativity and skill in the understanding of technological processes. Within this conceptual framework, it becomes evident that technology can be interpreted as the artful and systematic creation, as well as the strategic utilization, of production tools and methodologies that serve human purposes and aspirations. As we witness the relentless advancement of technology in contemporary society, its definition has evolved dramatically to encompass the practical application of modified and refined knowledge systems aimed at fulfilling the diverse and dynamic needs of humanity.

Furthermore, an alternative perspective on technology posits it as a procedural framework that systematically enhances the processes involved in the utilization or production of various products. In this intricate process, pre-existing products undergo a transformation whereby they become fundamental components integrated into a specific system designed to achieve desired outcomes. (Miarso, 2007). The trajectory of

technological development has been characterized by an initially gradual pace, yet as human culture and civilization have progressively advanced, the rate of technological evolution has accelerated significantly and continuously. Given that technology is inherently a byproduct of rapid cultural advancements, it stands to reason that technological growth manifests at a much more accelerated pace within societies that are more developed and culturally enriched. (Adib, 2011: 245).

In the contemporary epoch defined by globalization, technology emerges as an indispensable pillar that profoundly transforms the very fabric of human existence and societal interactions. The astonishing advancements observed in the realms of communication and information technology have exerted a substantial influence across myriad aspects of daily life, shaping the way individuals interact and exchange information. In the distant past, early humans may have depended on natural elements, such as the wind, as rudimentary mediums for communication; however, through the relentless progress of science and technology, humans have successfully engineered far more sophisticated and intricate means of communication that transcend previous limitations. The increasing prominence of communication technology in today's globalized landscape is a phenomenon that warrants significant attention and cannot be overlooked, given its pervasive impact on human interactions and relationships. The swift and uninterrupted flow of information, coupled with the burgeoning demand for instantaneous information exchange, has propelled the development of increasingly advanced communication technologies that facilitate seamless connectivity among individuals worldwide. With the advent of such technologies, individuals now enjoy unprecedented levels of access to a vast reservoir of information from across the globe, alongside the capability to engage in direct and efficient communication, all without the constraints imposed by temporal or spatial boundaries.

According to the research conducted by Ameliola & Nugraha (as cited in the Nursing e-journal (e-Kep), 2015), there are observable and significant strides made within the domains of information and technology, which collectively indicate the rapid pace of advancements in technological development that are shaping contemporary society. Indonesia, as an integral part of the global community, is not insulated from the repercussions and influences of this widespread technological growth phenomenon. In response to these global developments, Indonesia has embraced a proactive stance in harnessing and optimizing a variety of ICT resources, which encompasses the internet, smartphones, and an array of other technological devices that facilitate connectivity and information sharing.

The progress associated with technological advancement is accompanied by a multitude of complex impacts on human life, which necessitates a nuanced understanding of its multifaceted nature. On one hand, technology undoubtedly simplifies numerous processes, rendering them more practical and efficient, thereby expediting various activities and enhancing overall productivity. However, it is essential to recognize that technology functions akin to a double-edged sword, wherein its benefits are counterbalanced by potential drawbacks. The improper or unethical use of technology can lead to detrimental consequences that may undermine individual and societal well-being. As articulated by Munir (2008), while technology undeniably contributes positively to human existence through its innovations and advancements, it simultaneously introduces negative ramifications by altering established norms, legal frameworks, societal values, and moral principles that underpin human interactions. Consequently, it becomes imperative to exercise responsible stewardship in the utilization of technology, as failure to do so could result in significant disruptions to both our material and spiritual ways of life. This

observation highlights the critical importance of a conscientious approach to technology, whereby individuals and societies must meticulously contemplate and regulate its impacts in order to derive the benefits of technological advancements without compromising ethical standards or overall well-being.

Positive and Negative Impacts

The prevailing mindset of society regarding the role and significance of technology has increasingly become a widespread and accepted phenomenon, largely due to the pervasive influence that technology exerts on various aspects of community life. In contemporary existence, one could argue that our daily lives are almost completely enveloped by technological advancements, which range from fundamental tools to highly sophisticated devices and systems. A pertinent illustration of this can be found in the realm of communication, where telephone services have revolutionized the way we convey messages and interact with one another, enabling individuals to exchange important information over vast distances with remarkable ease and efficiency. Indeed, the advent of mobile phones has not only facilitated long-distance communication but has also simplified the process of sending and receiving messages, thereby enhancing our ability to connect with others regardless of geographical barriers.

Moreover, it is imperative that we acknowledge the profound impact of information technology within the educational sector, as this innovation has increasingly streamlined the processes through which we verify and manage student data, particularly when compared to previous eras that relied predominantly on handwritten records meticulously maintained in physical books over the years. The transition to digital platforms has rendered these tasks significantly more manageable and efficient. Consequently, it is evident that computers have become an integral component of modern educational practices, being utilized extensively across various academic institutions to support both teaching and learning activities.

The Influence of Science and Technology in the Field of Education A. Positive Impact

1. The widespread emergence of mass media, particularly in the form of electronic media, has established itself as a pivotal center for educational resources and a rich source of knowledge, which effectively positions it to displace traditional teachers as the primary conduits of information dissemination.
2. The introduction of a multitude of innovative teaching methodologies has been specifically designed to simplify and enhance the educational experience for both educators and learners alike. In this manner, technology presents novel approaches that empower students to grasp intricate and abstract concepts with greater clarity and understanding.
3. The necessity for face-to-face interaction has been fundamentally transformed within the learning process. Given the remarkable advancements in technology, the traditional requirement for students and teachers to convene in person for educational purposes has been largely alleviated; instead, online communication platforms can be effectively employed to facilitate learning. This evolution is closely related to the optimization of study time and productivity among learners.

Negative Impact

1. The confidentiality and security of testing materials have become increasingly compromised in today's digital age. In this context, intelligence testing programs,

such as the Raven's Progressive Matrices, exhibit varying degrees of accessibility. The challenge lies in identifying where such sensitive materials, like compact disk tests, can be securely accessed. This situation raises significant concerns regarding the potential for psychological assessments currently in use to be easily leaked, thereby necessitating that the development of new psychological evaluation tools address the critical issue of safeguarding against online breaches.

2. The potential for the misuse of information has risen dramatically, enabling certain individuals to exploit this knowledge for illicit activities. It is widely understood that education is intended to cultivate a generation characterized by high levels of knowledge and moral integrity. For instance, an individual with advanced computer skills might attempt to circumvent established banking systems, thereby engaging in fraudulent activities that undermine the integrity of financial institutions.

The Influence of Science and Technology in the Field of Information and Communication A. Positive Impacts

1. The utilization of the internet has empowered individuals to acquire current and precise information from all corners of the globe in a remarkably expedited manner.
2. Our mobile phones have become invaluable tools, allowing us to maintain communication with friends and family members who reside at considerable distances from us, thereby fostering personal connections that might otherwise be strained by physical separation.
3. The accessibility of banking services has been greatly enhanced, leading to a more straightforward and user-friendly experience for consumers engaging with their financial institutions.

Negative Impacts

1. The rise of terrorist networks has been facilitated by the exploitation of various communication services, which enables these groups to organize and execute their operations with alarming efficiency.
2. It has become exceedingly convenient for careless individuals to harness information obtained from the internet for their own self-serving purposes, often at the expense of others.
3. The anxiety and concern surrounding technology have escalated, particularly in relation to potential computer malfunctions caused by virus attacks, which can result in the catastrophic loss of vital documents, or disruptions in network connectivity triggered by unforeseen events, such as lightning strikes adversely affecting the network infrastructure.

The pervasive influence exerted by advancements in science and technology within the realms of economics and industry is profoundly significant.

A. Positive Impact

1. The result of these advancements has been an increasingly higher rate of economic growth, manifesting in various sectors and providing a robust framework for the expansion of fiscal prosperity across diverse populations and communities.
2. Additionally, the presence of industrialization, which has been markedly accelerated through technological innovation, has transformed traditional production methods, leading to the establishment of modern factories and manufacturing processes that promote efficiency and scalability.

3. Moreover, it is evident that the productivity of the industrial world is continuously increasing, driven by the integration of sophisticated machinery and automation, which collectively contribute to a more streamlined operation and enhanced output capacity in various industrial sectors.

B. Negative Impact

1. However, it is crucial to acknowledge that unemployment occurs among workers who do not possess the requisite qualifications or skills necessary to thrive in this rapidly evolving job market, leading to significant socioeconomic disparities and challenges in workforce adaptation.
2. Furthermore, the consumptive nature of humans, fueled by relentless advertising and a culture of instant gratification, gives rise to a generation that experiences a moral decline, which is characterized by consumerist behavior, extravagant spending, and a pervasive tendency to seek shortcuts in pursuit of immediate satisfaction rather than long-term fulfillment.

The impact of science and technology is equally pronounced in the domain of social culture.

A. Positive Impact

1. One of the most notable positive impacts has been the empowerment of women, who have gained unprecedented levels of freedom and autonomy; indeed, every woman now has the inherent right to choose her own path in life and career, which is evidenced by the increasing number of women occupying professional positions across various industries and sectors.
2. Additionally, the intensity of competition that arises due to globalization in numerous aspects of life serves to cultivate a generation that is not only disciplined and diligent but is also characterized by a strong work ethic, which is essential in navigating the complexities of the modern economic landscape.

B. Negative Impact

1. Conversely, it is imperative to recognize the occurrence of moral degradation among society, particularly within the younger generation and among academic circles, where some individuals have become "materially rich but spiritually poor," a phenomenon that stems from an economic progress that is excessively focused on satisfying various material needs at the expense of deeper ethical and spiritual considerations.
2. Moreover, there is a discernible decline in humanity as a whole, accompanied by a diminishing sense of connection and community, as evidenced by the rising incidences of teen delinquency and other deviant behaviors; this troubling trend underscores the erosion of the centripetal forces that are crucial for fostering social cohesion, which are increasingly undermined by the fading influence of traditional community habits such as mutual assistance and collaborative efforts towards common goals.

The profound and multifaceted influence that the realms of science and technology exert upon the health sector is undeniably significant and merits extensive examination.

Positive impacts

1. The advent of advanced medical instruments and technologies designed to serve as replacements for damaged or dysfunctional human organs has revolutionized the

approach to healthcare and patient treatment. For instance, the development of artificial kidneys, synthetic hearts, and prosthetic eyes has not only provided hope to numerous individuals suffering from organ failure or severe injuries but has also opened new avenues for medical research and innovation in regenerative medicine, thereby enhancing the quality of life for countless patients worldwide. The emergence of both donor organs and artificial alternatives has led to a paradigm shift in how we understand the capabilities of medical science in restoring bodily functions that were once deemed irreparably lost.

2. The identification and refinement of specialized skills within the domain of plastic surgery have led to a significant transformation in societal perceptions of physical appearance, allowing for features such as a flat nose to be redefined and normalized as part of everyday human diversity. In the wake of the discovery and subsequent popularization of these surgical techniques, there has been a marked increase in the number of individuals who have begun to incorporate vitamins and essential nutrients into their daily diets, with the explicit aim of decelerating the natural decline of their bodily organs and thereby extending their overall lifespan and enhancing their well-being. This phenomenon underscores the interplay between aesthetic aspirations and health consciousness, as individuals increasingly seek to align their physical appearance with their health goals.
3. The advancement of specialized equipment and technologies capable of effectively processing waste and refuse has significantly mitigated the threats that such materials pose to human survival and environmental integrity. Through innovative approaches to waste management, including recycling, composting, and waste-to-energy conversions, society is now better equipped to handle the immense challenges posed by pollution and environmental degradation, thereby fostering a safer and healthier living environment for all.

Negative Impact

1. Despite the myriad of benefits that scientific progress has brought to the health sector, it is crucial to acknowledge the detrimental consequences associated with certain technological advancements, particularly in the realm of contamination. Numerous scientific studies have elucidated the harmful effects of mobile phone radiation on human health, revealing that prolonged exposure can lead to significant health complications, including a reduction in sperm count by as much as 30 percent. Furthermore, the correlation between mobile phone usage and the development of serious conditions such as meningioma, acoustic neuroma, and various cancers affecting the salivary glands has been established, thereby raising alarming concerns regarding the long-term implications of ubiquitous mobile technology on male reproductive health and overall wellness.
2. The incidence of oral tumors has been notably associated with excessive and prolonged mobile phone use, particularly among individuals who engage in this behavior for extended periods. Research indicates that frequent users of mobile phones face an elevated risk of developing tumors in the parotid glands, which are crucial components of the salivary glands located within the oral cavity near the ears. This alarming trend highlights the urgent need for further investigation into the potential health risks posed by mobile technology, as it has become an integral part of daily life for millions of individuals, thereby necessitating a careful balancing act between technological convenience and health safety.

The ramifications of globalization are profoundly impactful on the trajectory of social transformation across different societies and cultures. As articulated by the esteemed scholar David Held in his seminal work from the year 2005, there exists a widespread agreement among intellectuals and researchers that globalization is indeed a tangible phenomenon that encompasses various dimensions, including the concepts of proximity, the contraction of spatial and temporal boundaries, an accelerated pace of influence that transcends geographical limitations, and a pervasive sentiment that collectively conveys the notion that the world, in its entirety, appears to be shrinking. Nevertheless, despite this consensus on the reality of globalization, experts in the field have yet to reach a definitive and universally accepted characterization of the term itself. Held, David. (2005). The phenomenon of globalization exerts its influence across a multitude of facets pertaining to human existence, significantly impacting critical areas such as political structures, socio-cultural dynamics, technological advancements, and educational frameworks. The manifestations of globalization yield both beneficial and detrimental consequences, which are evident across various domains of life. One of the more conspicuous negative repercussions of globalization is the moral degradation that arises as a result of the inundation of foreign cultural influences that often stand in stark opposition to deeply ingrained traditional values and norms.

Furthermore, globalization plays a pivotal role in shaping the evolution of knowledge acquisition and technological innovation within societies. The ramifications of this influence can be viewed from two distinct perspectives: one that highlights the positive outcomes and another that underscores the negative consequences, particularly in terms of how individuals and communities adapt and respond to the relentless pace of scientific and technological progress that characterizes contemporary life. A pertinent illustration of a negative consequence stemming from globalization is the marked increase in community mobility, which can lead to adverse effects on established lifestyle patterns and the holistic development of younger generations, thereby complicating their social and cultural integration.

The advancements in scientific knowledge and technological capabilities undoubtedly provide enhanced convenience and comfort in everyday living; however, they also give rise to a plethora of unwanted or harmful effects that cannot be overlooked. For instance, while technology has undeniably facilitated positive transformations across various dimensions of life, including but not limited to communication, transportation, and healthcare, it has simultaneously engendered new challenges, such as the pervasive issue of gadget addiction or the detrimental environmental impacts that accompany technological proliferation. Consequently, it becomes evident that the trajectory of scientific inquiry and technological development cannot be disentangled from the broader social, economic, and environmental contexts in which they operate.

Science and technology are inextricably linked not only to the economic and industrial frameworks that govern societies but also play a crucial role in shaping the ways in which humans interact with both the natural world and the intricate web of social relations that define human existence. Therefore, it is of paramount importance to cultivate a nuanced understanding of the intricate relationship between scientific inquiry, technological advancements, and societal dynamics, as this understanding is essential for the effective planning and management of sustainable development initiatives that yield positive outcomes for both humanity and the environment at large.

The Impact of Globalization on Human Resource Management Practices

In conjunction with the advent of numerous innovative developments, the role and function of Human Resource Management (HRM) are undergoing significant transformations and adaptations. The swift advancements in the realms of science and technology, particularly those relating to communication and transportation, have effectively diminished the geographical barriers that once separated nations from one another, thereby fostering a more interconnected global landscape. Consequently, the business environment is evolving into a more intricate and multifaceted arena, characterized by an increasingly competitive atmosphere that is more accessible and transparent than ever before. Organizations functioning within the contemporary landscape of heightened competition are compelled to navigate a more dynamic, competitive, and unpredictable milieu that poses unique challenges. In light of these circumstances, it is imperative that companies possess the agility and capacity to acclimate to the myriad changes and innovations introduced by corporate management strategies in order to sustain their competitive edge.

This necessity is particularly salient when considering the various transformations associated with the trials and tribulations of global competition. The current phenomenon of heightened global business competitiveness has simultaneously engendered both fresh opportunities and formidable challenges for organizations, necessitating a profound understanding of how to cultivate and implement effective management frameworks for multinational enterprises, particularly through the lens of human resource management (HRM). It is widely recognized within academic and professional circles that human resource management is not merely a localized concern but rather a crucial component that is integral to maintaining competitiveness within the expansive realm of multinational corporations. There is an undeniable consensus that human capital represents the fundamental driver of economic competition, as it is only through human intervention that such competition can be effectively managed and resolved. Therefore, the strategic alignment of the appropriate individual in the correct position at the optimal moment gives rise to an emergent international concept that underscores the critical role of HRM in the global context. (Greenberg and Baron, 2003).

Reconfiguring and Transforming the Role of Human Resource Functions

The predominant challenge currently confronting the field of human resources is fundamentally rooted in the significant transformations occurring within the overarching business landscape, which are primarily characterized by rapid advancements in various forms of information and communication technologies. This evolution towards an increasingly competitive marketplace is not merely superficial; rather, it is coupled with a burgeoning complexity in the nature of business challenges, which subsequently brings to the forefront several critical issues that are intrinsically linked to human resources management. As articulated by Schuller (1990), there exist three primary obstacles that organizations must navigate in relation to human resources, including the effective management of workforce diversity to secure a competitive edge in the market, the adept handling of human resources in the context of globalization, as well as the strategic management of these resources to ultimately attain a sustainable competitive advantage.

In light of these challenges, developmental initiatives are undertaken that are closely aligned with the core responsibilities of the contemporary HR manager, which encompass not only the management of talent, interests, and preferences but also the formulation and execution of strategic initiatives, the facilitation of organizational change, and the provision of expert consultation to both the organization and its partners, all with the objective of bolstering HR competencies in the transformation of leadership processes, as well as

enhancing capabilities in cost control and asset management (Schuler, 1990). Within this complex scenario, the fundamental obligation of the HR manager is to meticulously plan and supervise the rollout of various developmental, educational, and training programs that are essential for the workforce, with the ultimate goal of optimizing the existing human capital that the organization possesses. Thus, the role of human resources is not only evolving but also becoming increasingly pivotal in driving organizational success in the face of rapid changes and competitive pressures. This necessitates that HR professionals become more strategic in their approach, integrating their functions into the broader business objectives of the organization to ensure alignment and effectiveness. As such, the transformation of human resource functions is essential for fostering resilience and adaptability in the workforce, thereby equipping the organization to meet the challenges of the contemporary business environment with greater agility and foresight.

Human Resource System in International Alliances

Due to the increased competitiveness arising from the globalization of the economy, there is now a need for businesses to have unique and competitive advantages in order to thrive in the face of unstable environmental conditions. Global alliances, or cooperation between businesses on an international scale, are crucial for achieving a company's goals and targets. Collaboration between two or more multinational companies within one country or between different companies in one. The complexity of human resource issues increases along with the level of competition in the market, leading to related business problems. Among the human resource issues in multinational coalitions are:

1. Combining management and culture; this is done to foster teamwork, continuously improve two-way communication, and give employees time to get to know each other's differences. Because culture and management style have a significant impact on the integration and cooperation of human resources from diverse national and cultural backgrounds. Their failure to unite can hinder the success of cooperation in international alliances.
2. Work design is an important tactic for enhancing productivity and quality. Because each party believes that they are better at using technology and manufacturing techniques than the other, conflicts may arise during the design and redesign process.
3. Recruitment and placement methods aimed at providing the best human resources with expertise in technology, knowledge, and other fields necessary to run a modern business. In other words, the business world will place greater emphasis on the knowledge and skills of their workforce, particularly regarding their capacity to solve problems and make decisions. Covering extroversion, emotional stability, agreeableness, conscientiousness, openness to experience, and putting the research into practice. The five dimensions known as The Big Five Personality Dimensions are several personality traits that influence employee attitudes. In the end, how well a balanced relationship in various aspects of performance will determine how well the company performs overall.
4. Orientation and training to introduce new and existing employees to the business and culture, covering topics such as the management model used, company values, traditions, and history. The ability of the workforce to address social issues and manage their anxieties and dissatisfaction in a new cultural environment will play a crucial role in the success of this international alliance.

Cultural Context in Human Resource Management Issues

In the highly competitive landscape of contemporary business, every organization that engages in market activities undoubtedly aspires to achieve a singularly important objective, which is to effectively leverage its competitive advantages in order to emerge victorious in the relentless arena of commercial competition. While the process of corporate transformation can indeed be executed through a myriad of strategies and methodologies, the degree to which an organization can adapt, along with the competencies of the human resources that are integral to this transformation, remains an essential factor that significantly influences the ultimate success of such endeavors. The intricate nature of the business environment makes it exceedingly challenging for organizations to implement transformative changes within their companies and human resource functions without the invaluable support and collaboration of both these critical components.

Human resources that are endowed with not only extensive knowledge and relevant skills but also the agility to respond effectively to innovations characterized by the increasingly rapid pace of development must be conceptualized as workers who operate within a boundaryless organizational framework. Such employees should embody the KSA (Knowledge, Skills, and Abilities) model, which signifies their possession of the requisite knowledge, skills, and abilities that are imperative to facilitate the transformation process while simultaneously ensuring a degree of flexibility that is critical in the context of an organization that is becoming progressively sophisticated in its use of information and communication technologies. These advancements necessitate a workforce that is not only technically proficient but also adaptable to the evolving demands that arise from the integration of cutting-edge technologies and practices within the corporate structure, thereby allowing for a more seamless transition during periods of change. Ultimately, the interplay between cultural context and human resource management emerges as a pivotal theme that underscores the fundamental importance of aligning organizational objectives with the capabilities and strengths of human capital to navigate the complexities of modern business successfully.

Cultural Context in Human Resource Management: A Study of East Asian Countries

The nations situated within the East Asian region, which encompass a diverse array of cultures and traditions, provide an exceptional platform for conducting in-depth cultural studies and analyses, and this includes countries such as Brunei, Cambodia, China (inclusive of the Special Administrative Region of Hong Kong), Japan, Laos, Malaysia, Myanmar, the Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam. These specific nations collectively illustrate a vivid spectrum of characteristics that not only serve to highlight the distinctive cultural attributes that may either differentiate or create similarities among these nations but also present intriguing opportunities for comparative analysis in cultural studies. In his comprehensive examinations of various divisions within IBM, Hofstede (1980; 1991) meticulously identified four fundamental dimensions of culture that serve as critical variables in understanding the interplay between cultural contexts and organizational practices.

As articulated by Black et al. (1992), there exist three primary methodologies utilized for evaluating the host culture: (1) Cultural toughness, which quantitatively measures the challenges faced by expatriates in their efforts to adapt to a new cultural environment in comparison to their native cultural context; (2) communication toughness, which qualitatively assesses the linguistic similarities or differences, as well as the nature and extent of interpersonal engagement required to perform effectively in a professional setting; and (3) job toughness, which examines the degree to which the expatriate's role

diverges from their previous occupational experiences and evaluates whether this role provides greater autonomy or restricts it.

Given the profound influence exerted by a multitude of internal and external factors on organizational dynamics, including the complexities associated with job toughness, it becomes increasingly challenging to formulate generalized conclusions regarding communication toughness across diverse cultural landscapes. Consequently, it follows that the greater the degree of cultural divergence between an expatriate's country of origin and their host nation, the more formidable the array of challenges that expatriates are likely to encounter in their professional endeavors. Empirical research focusing on the adaptability of expatriates has reached the conclusion that, even within the same geographical region, expatriates frequently confront a wide variety of challenges that are influenced by their unique backgrounds and experiences. In light of the extensive range of differences and the rich cultural diversity that expatriates encounter throughout East Asia, it is imperative for multinational corporations to implement comprehensive cross-cultural training programs that are designed to enhance managers' cultural sensitivity and to prevent the simplistic transfer of management philosophies and practices that may not be suitable for integration into different cultural contexts.

D. CONCLUSION

The influence of globalization on the domains of science and technology presents a multifaceted and intricate scenario that is rich in complexity and variation. In a multitude of dimensions of modern social existence, the phenomenon of globalization has engendered a profound dependence on external factors as well as a transformation in cognitive frameworks and ideological perspectives. The ramifications of globalization can manifest in either advantageous or adverse outcomes, contingent upon the manner in which societal structures and individuals choose to engage with these changes. The proliferation of urban centers that are integrated into the global urban network within Indonesia serves as a concrete illustration of the profound effects that globalization has exerted on local and national contexts. As a consequence of globalization, there has been a notable enhancement in living standards, significant advancements in knowledge and technological capabilities, and a marked evolution in the values and attitudes that permeate society.

Nevertheless, it is crucial to acknowledge that the adverse repercussions of globalization include the proliferation of individualistic tendencies, the entrenchment of a consumer-driven lifestyle, a pronounced impact of Western cultural paradigms, and the exacerbation of socioeconomic disparities across various strata of society. Furthermore, globalization acts as a catalyst for the rapid progression of scientific inquiry and technological innovation. Consequently, it has indelibly transformed various facets of our daily existence and interactions. This underscores the paramount importance of equipping society with the necessary tools to be both proactive and adaptable in the face of the ever-evolving dynamics of globalization, thereby ensuring that the positive repercussions are fully harnessed while concurrently mitigating the negative consequences that may arise.

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