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Digital Literacy and Knowledge-Based Economics: An Analysis of Factors and Contributions for Community Empowerment in Age of Society 5.0

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Abstract--This study focuses on the importance of digital literacy and a knowledge-based economy in the context of community empowerment in age of Society 5.0. A comprehensive approach includes literature reviews and analysis of specific communities or organizations. *Qualitative research* is a more suitable method involving non-numerical data collection and analysis. This research uses the Care-Based Adoption Model (CBAM) framework to analyze the factors influencing and contributing to the younger generation. CBAM helps understand individual motivation and ability to adopt innovations, such as digital literacy and the knowledge-based economy. The findings reveal that government factors such as technology and internet access, digital education and training, socio-economic conditions, infrastructure, and motivation influence the importance of digital literacy and a knowledge-based economy in the Society 5.0 era.

Keywords-- Digital Literacy, Knowledge-Based Economy, Community Empowerment, Society 5.0, Care Based Adoption Model (CBAM).

I. INTRODUCTION

In the digital era, adapting and mastering digital technology has become unavoidable[1,2]. This capability is not just an added value but a fundamental and essential ability that must mastered to meet information needs, access services, and pursue opportunities [3]. Society 5.0 [4,5], which emerged in Japan and has adopted worldwide, aims at sustainable development [6]. Society 5.0 carries the spirit of close integration between the physical and virtual worlds through the use of advanced technology, with the main principles of sustainability, inclusion, and human-centeredness [5–7]. Mayumi Fukuyama [5] explains that Society 5.0 views technology not as an end goal but as a means to improve human capabilities [7]. To solve complex social problems and drive sustainable growth, technologies such as artificial intelligence.

To solve complex social problems and encourage sustainable growth, technologies such as artificial intelligence (AI), Internet of Things (IoT), big data, and robotics have become the main pillars [4,8]. According to Amr Adel's research [9], these technologies will significantly impact daily life and are anticipated to balance economic progress and address social issues. Society 5.0 promotes the spirit of using technology to create inclusive solutions. However, significant obstacles, such as the threat of social inequality [10], including lack of awareness, inadequate infrastructure, and lack of resources [11], endangers social inclusion in Society 5.0.

Digital literacy is crucial for realizing Society 5.0 in a diverse digital [12]. Valentina Milenkova [13] emphasizes that digital literacy is not just a concept but a strong foundation that allows individuals and groups to continue learning and developing. Digital literacy uses digital hardware and software to learn, work, entertain, communicate, create digital content, and take action [14]. Essential skills in digital literacy include communication, comprehension, critical thinking, evaluation, problem-solving [15], and ethical use of digital information [16,17]. With strong digital literacy, all levels of society will be able to access various digital services and information responsibly, which in turn will help maintain social inclusion, drive local economic growth [18,19], and ensure sustainability in an increasingly connected and digitalized world. The importance of digital literacy has become increasingly prominent in everyday life. The way we communicate and engage in digital activities has changed due to social networks and mobile devices [20].

Additionally, most jobs today require at least a minimum level of digital skills, which require cognitive and technical skills. Digital literacy will be a trend in the future, influencing various aspects of life, from libraries to business [21]. However, Digital literacy is linked to fostering knowledge-based economic development. Thus, it goes beyond knowing how to use computers or spot bogus news. Since this environment is knowledge-based, the Knowledge-Based Economy is the main engine for competitiveness and economic growth [22].

More than that, Society 5.0 is also closely related to a knowledge-based economy with high technology. Its characteristic enables the development of a knowledge-based economy emphasizing innovation, creation, and knowledge as the primary resources. Knowledge-based economics is a factor that supports the Society 5.0 vision and plays an essential role in achieving sustainable economic growth. Peter F. Drucker [23], a leading management expert, has highlighted that information and knowledge will be critical elements in economic success in the future. Digital literacy and a knowledge-based economy in the context of Society 5.0 can empower society by increasing their understanding of digital technology and economic knowledge. It is possible by increasing productivity and enhancing economic welfare [24].

The knowledge economy, as proposed by Shenaj Hadzimustafa [25], relies on creating and applying new knowledge. Hadzimustafa emphasized that investment in education, research, best practices, and social, economic, and cultural innovation are essential foundations for a knowledge-based economy. In line with this view, Yandi Yusnandar et al. [26] emphasized that productivity growth in a knowledge-based economy is closely related to advances in science and technology. Various previous literature related to the application of digital literacy can support economic growth in various countries such as China [27], India [3,28], dan Russia [29], plays a central role in supporting economic growth.

In order to enable communities to tackle society 5.0, it is essential to consider several vital aspects in the context of digital literacy and a knowledge-based economy. For instance, a 2013 study by Anil Kumar Siwach [3], highlights that digital literacy provides a solid basis for meeting information needs, accessing services, and pursuing opportunities. Furthermore, Ravi S. Sharma et al. [30] highlighted the importance of digital literacy initiatives in achieving sustainable growth and development. Valentina Milenkova et al. [13] emphasized that digital literacy not only focuses on tools and technology but also educational and training approaches that shape digital skills. María-Cristina Martínez-Bravo et al. [31] emphasize that digital literacy and a knowledge-based economy equip people with a variety of skills, including critical, cognitive, operational, social, emotional, and projective skills [22].

In the Society 5.0 vision, collaboration between humans and technology is crucial to building an inclusive and sustainable society. Information and knowledge are the basis of the modern economy, influencing work processes, workforce, and consumer behavior [32]. The concept of a knowledge-based economy, as described by Bertrand Dory [33] and Paul Romer & Joel Kurtzman [34], plays an essential role in generating, distributing, and utilizing knowledge. Furthermore, Yosi Erlanitasari & Andre Rahmanto [24] stated that a lack of understanding of how technology can improve the efficiency of business processes can hinder competitiveness in an ever-changing business world. In an economic context, an inadequate understanding of how technology influences various aspects of the economy can leave communities behind in efforts to empower the economy [35]. Therefore, a comprehensive understanding of digital literacy and the knowledge-based economy is essential in ensuring society can overcome these problems.

This research defines its primary objective in answering two key research questions relevant to current technological and economic developments. First, digital literacy and a knowledge-based economy are connected in the framework of

community empowerment in the Society 5.0 era. Society in the Society 5.0 era has experienced fundamental changes in digital technology that shape how they interact and work [6]. Digital literacy, as an individual's ability to understand, use, and manage information technology [17], is now critical to their economic success. These skills include understanding algorithms, data analysis, and online security [36].

On the other hand, a knowledge-based economy relies on increasing individual cognitive capacity and applying knowledge in various economic sectors. Sectors such as research and development, technology-based services, and innovation all rely on solid knowledge and capabilities in digital literacy [16]. Second, the research question is: What are the key factors in digital literacy that can support knowledge-based economic growth? Digital solid literacy is a foundation for individuals to engage in a knowledge-based economy. These factors include broader access to digital resources, technology-relevant education [13], and the ability to integrate digital knowledge into daily activities.

This research uses a literature examination methodology, focusing on specific cases, such as communities or organizations, to understand the factors and contributions of digital literacy and the knowledge-based economy to society. This study will also use the Concerns-Based Adoption Model (CBAM) [37] as a research framework to understand the factors and contributions of digital literacy and the knowledge-based economy to society.

II. LITERARTURE REVIEW

2.1. Digital literacy

Digital literacy is an individual's ability to use digital media wisely, responsibly, and effectively to find, utilize, process, evaluate, and disseminate information [15]. In this concept, Baron [38], states that digital literacy includes several essential skills, including the ability to use modern technology, surf the internet, and interpret messages in digital media. Digital skills, ethics, culture, and security are the four primary components of the framework to implement digital literacy [12,39]. Digital literacy is an essential foundation in producing human resources who are competent, knowledgeable, and proficient in technology while playing a central role in realizing economic and social progress [40].

2.2. Knowledge-based economy

A knowledge-based economy refers to a concept where knowledge is the main factor in the economic production process. Knowledge and information and communication technologies (ICT) are becoming a central element in knowledge activities that drive innovation and technological progress [31]. In a knowledge-based economy, knowledge, technology, and human capital are the main drivers of economic growth [25]. The success of developed countries in adopting the knowledge economy shows the importance of having high technology, innovation, expertise, and adequate ICT infrastructure [3,41].

2.3. Community Empowerment

Community empowerment refers to a series of efforts to increase community capacity and skills in managing resources [42,43]. Community empowerment is used to help people overcome significant challenges, including high tuition expenses and low graduation rates, and assist them in finding employment [44]. According to Kanwar et al. [45] and Siwach [3], this is one strategy to increase social capital, develop a skilled workforce, and enhance well-being. Training, commercial growth, and scientific and technological research can all contribute to community empowerment [31].

III. RESEARCH METHODS

The knowledge-based economy and its vital role in community empowerment are the specific focus of this research. We thoroughly examined the literature and an in-depth investigation of specific communities or organizations we conducted to accomplish this research's goals properly. The qualitative approach, which involves acquiring and analyzing non-numerical data, was the most effective in this case.

This study also used the Concern-Based Adoption Model (CBAM) framework, which has three essential parts: Stages of Concern, Levels of Use, and Innovation Configurations [37]. TCBAM will be used to study the contributing factors and their effects on community empowerment. By utilizing the CBAM framework, this research will help us better understand people's attitudes and concerns regarding embracing advancements like digital literacy and the knowledge-based economy. By doing so, this study will provide further light on how these elements affect community empowerment in the age of Society 5.0.

IV. RESULTS AND DISCUSSION

Detailing the variables that significantly impact digital literacy and how they affect the knowledge-based economy and the tenets of Society 5.0 is vital to comprehend the more significant function and impact of digital literacy in the current digital era. It is necessary to detail the factors that significantly influence digital literacy and how they influence both the knowledge-based economy and the principles of Society 5.0. These factors include access to technology and the internet, education and digital skills training, socio-economic conditions, demographic characteristics, infrastructure readiness, motivation, and individual attitudes towards technology, as shown in Table 1. below.

Table 1. Analysis of Factors and Contributions Digital Literacy and Knowledge-Based Economics for Community Empowerment to Face Society 5.0

Factors Influencing Digital Literacy	Impact on Knowledge-Based Economy	Impact on Society 5.0
Access to Technology and the Internet	Increased access to information and resources	Improved access to education and job opportunities
Education and Digital Skills Training	Enhanced digital competencies and skills	Increased productivity and innovation
Socioeconomic Conditions	Limited access to technology and the internet	Perpetuation of inequalities and limited opportunities
Demographic Characteristics	Shaped attitudes and anxieties towards technology use	Tailored digital literacy programs for diverse populations
Infrastructure Readiness	Hindrance to digital participation and limited online learning opportunities	Limited access to digital resources and services
Motivation and Attitudes	Willingness to engage with technology and adopt new digital skills	Successful digital literacy initiatives and adoption of technology

Table 1. graphic displays the factors affecting digital literacy on the left. In addition, their impact on Society 5.0 and the knowledge-based economy is highlighted in the relevant subheading, which we will discuss in the following discussion.

4.1. Access to Technology and the Internet

A critical factor in ensuring equitable digital literacy is the availability of technology and equitable internet access—these gaps in access impact educational opportunities, employment, and social inequality. In-depth analysis shows that this inequality of access has the potential to increase digital literacy inequality. Therefore, there is a need for solid arguments to increase affordable internet access and equitable technological infrastructure. Governments and the private sector must work together to overcome the digital divide, which aligns with the basic principles of Society 5.0, where inclusion and expansive technology are essential.

In this context, it is essential to understand that "Access to Technology and the Internet" is not just a matter of hardware and connectivity but the essence of inclusion in the digital era. The availability of equal access to technology and the internet allows access to unlimited resources and information and influences social and economic inclusiveness.

Gaps in technology access create negative consequences that impact information, education, and employment opportunities. Groups with limited access to technology and the internet can be isolated from essential resources, such as online learning platforms, access to health services, and employment opportunities. The impact is not only on digital literacy but also on the knowledge-based economy.

In a knowledge-based economy increasingly linked to technology, unequal access creates conditions where some

communities are left behind, potentially impacting job opportunities and economic growth. With jobs increasingly requiring digital skills, unequal access to technology creates inequalities in individual preparation for a world of work that increasingly relies on digital skills. Therefore, efforts to reduce access gaps and increase digital literacy are more important than ever.

Given the severe impact of this inequality of access, strong arguments supporting efforts to increase affordable internet access and equitable technology infrastructure are essential. These efforts not only support increased digital literacy but also contribute to alleviating economic and social inequalities that may deepen without action. In a Society 5.0 environment, where technology and inclusion are fundamental principles, these steps are more critical than ever. There must be a solid commitment to removing obstacles to technology access and closing the digital divide if we are to create a more developed, inclusive, and digitally adept society.

4.2. Education Skills in Education and Training

Digital Skills in Education and Training plays a crucial role in improving digital competence. By creating a workforce proficient in digital technology, society can increase productivity and encourage innovation, which benefits the knowledge-based economy. Individuals highly skilled in digital technology are better able to create, adapt, and use technology in their work, thereby driving economic growth. The relationship between improving skills and increasing productivity is highly relevant to the principles of Society 5.0, where technology enhances human capabilities, leading to improved quality of life.

Education and Digital Skills Training are critical elements in facing digital literacy challenges. In an increasingly complex digital era, solid digital skills are a prerequisite for success in work and influential contribution to broader society. Training in digital competencies boosts individual competence and equips the workforce to develop, modify, and embrace the technology. This has a significant positive impact on the knowledge-based economy. Digital technology experts may improve business operations, create novel solutions, and contribute to the innovation that spurs economic expansion.

Additionally, enhancing digital literacy is very important to the tenets of Society 5.0. People with good digital abilities can better use technology to enhance their quality of life in a society that is more reliant on it. Additionally, improving digital skills is highly relevant to the principles of Society 5.0. In a society increasingly integrated with technology, individuals with strong digital skills are better able to utilize technology to improve their quality of life. They can access digital services, leverage artificial intelligence, and participate in positive transformation in various sectors of society.

Therefore, the role of Digital Skills Education and Training is crucial in achieving better digital literacy, exploiting the potential of a knowledge-based economy, and realizing the principles of Society 5.0. Investments in digital skills training enable individuals to compete in an increasingly digital labor market and support more significant economic growth and social progress. Digital skills training needs to be given the proper and long-term priority to create a more digitally competent, inclusive, and competitive society.

4.3. Socioeconomic Conditions.

Socioeconomic conditions are a critical factor in digital literacy. These factors include various aspects, such as income, access to education, and social inequality. The socioeconomic conditions of a person or group greatly influence their access to technology and the internet.

This inequality of access creates significant barriers to knowledge-based economic participation. Groups with limited access to digital technology need to catch up in terms of access to information, educational opportunities, and economic empowerment. In an economic environment increasingly dependent on technology, these inequalities have the potential to give rise to greater economic inequality.

Apart from that, inequality in access to technology also affects the realization of the principles of Society 5.0. In a society increasingly integrated with technology, this inequality of access can result in some groups not fully benefiting from technological advances. This technology can make it more difficult for people to actively participate in social reform in several spheres and widen social gaps.

Along with a deeper understanding of the impact of Socioeconomic Conditions on digital literacy, there is a strong demand to create strategies and policies to reduce this inequality of access. Addressing socioeconomic inequalities in digital

literacy is essential to achieving greater inclusion and progress in this digital era. In order to ensure that every individual and group has equal opportunities to develop digital skills and utilize technology, there needs to be more significant investment in improving access and provision of training. In this way, more equitable digital literacy can be the basis for creating a more inclusive and advanced society.

4.4. Demographic Characteristics

Demographic characteristics are one factor that is often overlooked in efforts to increase digital literacy. These factors include various aspects, including age, gender, ethnic background, and even geographic location. Individual demographic characteristics can influence how individuals perceive and adopt technology.

It is essential to recognize that varying demographic characteristics can lead to different levels of technology adoption. For example, older generations may face different barriers and anxieties in using technology than younger generations. Likewise, an individual's ethnic or cultural background may influence their preferences and needs regarding digital literacy. Therefore, it might not be practicable to approach digital literacy in a one-size-fits-all manner. Adapted digital literacy programs must be more provided, and successful digital literacy projects must consider various demographic factors. This demographic entails generating more pertinent training materials, taking individual concerns more seriously, and putting more of an emphasis on fostering an environment that is supportive of various groups.

Diversity in individual skills and perspectives can be essential to a knowledge-based economy. Diverse backgrounds and experiences can drive innovation, bring a broader understanding of problems, and spark productive collaboration. Therefore, diverse demographic characteristics can be valuable in a knowledge-based economy. Moreover, in the context of Society 5.0, inclusivity and equal participation are fundamental. A society increasingly integrated with technology must ensure no one is left behind. Creating digital literacy initiatives that are inclusive of all levels of society is essential to achieving these principles.

In order to achieve equitable digital literacy and support inclusivity in this digital era, it is essential to pay special attention to the demographic characteristics of individuals and groups. This demographic requires more significant efforts in developing diverse digital literacy programs that ensure everyone has an equal opportunity to develop their digital skills. This way, digital literacy can become a powerful tool for achieving more significant economic and social progress.

4.5. Digital infrastructure Continuity

Digital infrastructure may be the most critical factor in achieving this goal in Society 5.0, where technology is becoming increasingly important in addressing social and economic challenges. The foundation of this hypothesis is a more connected populace with more advanced technology. Infrastructural shortcomings prevent this vision from being realized, preventing many people or communities from being idle and not reaping the full benefits of technology.

Due to this, there has to be more emphasis placed on building infrastructure designed to support the development of digital literacy and understanding. This language encourages investments in faster, more robust internet connectivity and more generous access to the digital ecosystem.

4.6. Motivation and Attitudes Towards Technology

The drive and attitude of individuals toward technology might thwart their attempts to use it and learn new digital abilities. Successful digital literacy programs may promote the acceptance of technology and positive attitudes toward it, which is crucial in a knowledge-based economy.

They are understanding how variables like human motivation and attitudes affect technology adoption. Through in-depth study, we can see how people's views about technology can affect how likely they are to pick up new digital abilities. The degree to which people are driven to use technology influences how well digital literacy initiatives are received.

Therefore, in facing the challenges of digital literacy and community empowerment in the Society 5.0 era, it is essential to consider the central role of individual motivation and attitudes towards technology. We can develop more potent tactics to raise digital literacy and advance a knowledge-based economy if we have a deeper understanding of these issues.

V. CONCLUSION

In the Society 5.0 era, where digital technology is the central pillar in forming an inclusive and sustainable society, digital literacy and a knowledge-based economy have a central role. A strong understanding of digital literacy helps people overcome challenges in an increasingly complex digital era. With sufficient digital skills, individuals can access various digital services, participate in an increasingly connected world of work, and leverage technology to improve their quality of life.

Apart from that, a knowledge-based economy is a determining factor in realizing the vision of Society 5.0. The ability to create, adapt, and adopt digital technologies positively impacts economic growth, innovation, and social progress. Investment in education and digital skills training is critical to achieving better digital literacy, harnessing the potential of a knowledge-based economy, and supporting the principles of inclusion in Society 5.0.

However, challenges such as unequal access to technology and social disparities remain, hindering efforts to achieve equitable digital literacy. Therefore, a strong commitment is needed from the government, private sector, and society to overcome these obstacles and ensure that digital literacy becomes a right that all can access.

In this conclusion, we underline the importance of digital literacy and a knowledge-based economy in encouraging society to face the challenges and opportunities in the Society 5.0 era. Only with a strong understanding of digital technology and investment in digital skills can society bridge gaps, create inclusive societies, and participate in sustainable development. Digital literacy is the foundation of the transformation towards a better Society 5.0, where technology is used to improve human capabilities and achieve sustainable development goals.

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