The Role of ICT in Urban Development and Its Impact on

Mental Health: Thailand Context

Supavadee Nontakao

Sripatum University International College

E-mail: supavadee.no@spu.ac.th

Vasavat Sutinyamanee

Sripatum University International College

E-mail: vasavat.su@spu.ac.th

ABSTRACT

The objectives of this article are to present the role of ICT in urban development, its impact on working life and way of life of urban dwellers, to explain the relationships between urbanization and economic growth, and to explore the impact of heavy use of ICT in urban area on the mental health. The urbanization trend has been accelerated since the 20th century. Urbanization in Thailand has proceeded after World War II with a relatively modest annual growth rate of 2.0%. ICT potentially plays an important part in achieving sustainable urban development. Governments of many countries including Thailand are taking the lead in developing the next generation of cities: smart cities driven by technological solutions. Urbanization and economic growth are very much related to each other. It brings new opportunities and challenges for sustainable development. However, urbanization has given rise to major health issues. Physically and mentally, the urbanites are becoming the sufferers due to various environmental degradation, pollution, fast-living culture, etc. Unemployment and economic conditions can lead to an increase in mental disorder. The technology access variable had a positive effect on mental disorder. In Thailand, the growing addiction to social media has left many users stressed and less patient. Youngsters are also addicted to internet games. Youngsters who spend a lot of time on the internet tend to perform poorly at school. Video game addiction is a mental health disorder.

KEYWORDS: urbanization, ICT, economic growth, urbanites, mental disorder

1. Introduction

By 2030, according to the projections of the United Nations (UN), each of the major regions of the developing world will hold more urban than rural dwellers; by 2050 fully two-thirds of their inhabitants are likely to live in urban areas. Thailand has shifted from 36 percent urban to almost 50 percent urban, which means that half of the population now lives in cities and urban areas. In 2020, 51.8% of Thailand's population lives in urban centers, while 48.2% lives in rural areas. With the Bangkok urban area accounting for nearly 80% of the total urban area in Thailand, urbanization is dominated by Bangkok (Statista Research Department, 2022).

Significant investments are required to meet urbanization demands. Global spending on urban development and building infrastructure is expected to grow. The role of Information Communication Technologies (ICTs) is recognized by businesses and government in meeting the goals of urban infrastructure provisioning. In previous centuries, urban development was evident in industrial infrastructure such as railways, roads, and telephone lines, preparing the way for new cities and new connections. This century's urbanization is based on the integrated management of the economic, social, and infrastructure aspects of urbanization via the use of networked information. Governments of many countries are developing the future cities driven by technological solutions.

However, there is still controversy in the literature about the exact association between health and information and communication technology (ICT), with some evidence suggesting links between ICT usage and health problems (Berg-Beckhoff et al., 2017). Symptoms of mental overload among ICT users has been reported (Bondanini et al., 2020), for example. Fatigue has been linked the condition involving a strong and persistent form of mental and/or physical tiredness, pain, weakness, exhaustion, and inability to concentrate (Sumanth, 2021).

2. Objectives

The objectives of this article are

1. To present the role of ICT in urban development, its impact on working life and way of life of urban dwellers.
2. To explain the relationships between urbanization and economic growth.
3. To explore the impact of heavy use of ICT in urban area on the mental health

3. Urban Societies in Transition

Most countries have tendency to develop the city as the center of government and business, rather than developing rural areas. As a result, the urban areas are equipped with infrastructure, public facilities and offer more job opportunities compared to the rural areas. This situation has attracted more people from rural areas to migrate and live in the city to get a job to improve their lives and eventually leads to many urbanization issues.

Significant social changes are also taking place in the urban areas. Urban societies are becoming more diverse and complex, with greater regional connectivity set to accelerate this process. Those cities able to harness social transformation, in creating open, tolerant, and inclusive societies, are more likely to benefit and progress. Despite the many and varied reasons for rapid urban growth, all growing cities face similar challenges of having to quickly adjust and develop solutions to rising housing, transportation, and basic services demand (United Nations, 2015). Their role in economic development has driven and benefitted from integration, large-scale investment, and employment generation. This has lifted millions of people out of poverty, forged growing middle classes and transformed the urban physical landscape. Estimates of the contribution of cities to the GDP demonstrate their economic importance, as well as the relatively high productivity of urban populations. For example, in South-East Asia, cities contribute 48 percent of national GDP, while representing only 21 percent of

the population. The dominant and growing importance of cities to economic performance is evident across the Asia and Pacific region. (United Nations, 2015).

4. Urban Development in Thailand

Urban growth in Thailand is dominated by the Bangkok urban area, which was the fifth largest in East Asia in terms of area and the ninth largest in terms of its population. Urbanization in Thailand, as in many other developing countries, has proceeded rapidly after World War II, but growth has been highly uneven with a relatively modest annual growth rate of 2.0% (World Bank, 2015).

The Bangkok Metropolitan Area and its vicinity, Samut Prakan and Nonthaburi, remains the dominant and only major urban center in the country. Like most large urban areas in the region, Bangkok is administratively fragmented, with more than 60% of the urban area located outside the boundaries of the Bangkok Metropolitan Administration. Demographic expansion and economic development in Thailand are concentrated in and around the capital Bangkok. The Bangkok Metropolitan Region (BMR) is host to almost half of the urban population. When the Eastern Seaboard, the area adjoining the metropolitan region, is included, the combined area would account for nearly 80 per cent of the country's urban population (World Bank, 2015).

At present, BMR is facing with the issues and problems concerning environment, social, transportation, economy, and many others. These issues which frequently occurred in developing countries are mainly caused by the discrepancy of development in cities and villages. This imbalanced development between the urban and rural areas is believed to cause some economic and social problems.

5. Information Communications Technology (ICT) and Urban Development

The process of urbanization and the rapid application of information and communications technology are interrelated. Society depends more and more on ICT for many of its activities. There is a need to make ICT infrastructure an essential component of city development. The cities of the future will require information management, knowledge workers, and telecommunications infrastructure. Multiple service providers for data and telecommunications are important. ICT is not a remedy for all the problems that the country faces, but ICT can certainly act as a catalyst in the social and economic development process (Harter et al., 2010).

ICT has been affecting cities and the spatial arrangements of activities within cities. City boundaries are no longer physical; rather communications technology defines the extent of a city. It is the conventional telephone networks, cable networks, mobile telephone, Internet, satellite communication systems and data and video networks that are creating extensible information highways. Newer ways of working and changes in nature of jobs to information intensive services and knowledge economies demand investment in ICT infrastructure and the 24×7 availability of connectivity. Mobile technologies and the easy availability of mobile devices imply that the potential to do business, interact and learn is no longer to be limited to a place and a time. The immediate need for cities in developing countries is to provide adequate urban infrastructure to meet the increasing pace of urbanization. One of the key value propositions of ICT in a smart city is the ability to capture and share information in a timely manner. If the information is provided in real time and is accurate, sustainable urban development could be achieved.

ICT was supposed to free people from the constraints of place. With everyone wired digitally, we could work from anywhere. However, this did not happen. What is found today is that creative, highly educated, and skilled workers are moving to the cities. People are choosing cities that suit their lifestyles. The standard of living has been better in urban than rural areas. With high levels of infrastructure coupled with better access to information networks, living in the cities has improved the lives of the people (Mansi, 2013).

During the 2019 ASEAN Summit, Thailand introduced the Eastern Economic Corridor (EEC) initiative to transform Thai provinces into smart cities with the aim to create a center for trade, investment, regional transportation, and a strategic gateway to Asia. The focus on smart cities is a core pillar of the government's Thailand 4.0 initiative which aims to transform the kingdom into a high-income nation with vastly improved quality of life in urban centers. Seven provinces have been committed to pursuing smart city development. They include those in Phuket, Chiang Mai, Khon Kaen, Chon Buri, Rayong, Bangkok, and Chachoengsao. Recently, the Thai government decided to participate in the Smart Green ASEAN Cities project jointly coordinated by the European Union (EU) and ASEAN. The project's framework aims to support sustainable urbanization in the region, reduce the environmental footprint of urban areas and improve the quality of life of residents (Iamtrakul & Klaylee, 2019).

6. Urbanization and Economic Growth

The benefits from the growth of big cities are already well known, greater employment opportunities, higher wages and salaries, a lower cost of living owing to scale economies, higher productive capacities owing to spatial agglomeration, more and better social services, more varied cultural and spiritual opportunities, and so on. Economic growth and urbanization are closely related to each other. Mansi (2013) suggested that economic growth and urbanization have an element of dual causality, that is urbanization can cause economic development, and yet, without economic progress there may not be urbanization. Urbanized areas have become the hub of socioeconomic activities.

It is well known that urbanization provides several advantages to the economics of scale and division of labor, boosting productivity and competition. It helps in accessing the labor force and input materials to the production process, decreasing the geographical distance between firms, reducing transaction costs, and fostering competition. These urbanization advantages, investment in infrastructures and market structure, are intangible attributes and capabilities that a country needs to drive economic growth and innovation (The ASEAN Post Team, 2021). It could be concluded that urbanization leads to productivity gains, which are enabled by new technologies, the globalization of information and technology and to the liberalization of world trade and capital markets. Nguyen & Nguyen (2018) found that urbanization positively impacts economic growth. However, the relationship between urbanization and economic growth is non-linear. The urbanization reaches a threshold after which it may impede the economic growth.

Thailand with a GDP of 16.316 trillion baht (US$505 billion) in 2018, the 8th largest economy of Asia, according to World Bank. National income statistics from the NESDB have shown that Bangkok and its vicinity has GDP per capita of 435,356 baht, the highest in the country, was about 5 times that of the northeast region

86,233 baht. National income statistics from the NESDB have shown that, with only 24.4 percent of total population in 2020, Bangkok and its vicinity generated 47.5 per cent of the gross domestic product. Its GDP per capita was about 5.6 times that of the northeast region. In addition, the GDP per capital in the BMR was 1.97 times higher than the national average of 228,398 baht (Statista Research Department, 2022).

Thailand is planning to build a $37 billion smart city in an industrial hub near Bangkok that's already drawn billions of dollars of investment pledge; it is set to draw investments of about 2.2 trillion baht over the next 5 years. The project will comprise five business centers for companies to rent as commercial areas including a hub to house regional headquarters of firms, a financial center, and areas for precision medicine, international research and development, and future industries such as clean energy and 5G technology (Statista Research Department, 2022).

7. Urbanized Daily Life and Work Life

Extensive use of ICT and digital transformation result in significant changes in urbanites' daily life and in workplace. With the rapid development of mobile technology and smart devices, internet, social media, and instant messaging have penetrated people's daily life. These tools can be used for socializing, entertainment, self-promotion, communication, and information seeking by almost anyone, anywhere, at any time. Attracted by their prevalence and convenience, ICTs are now becoming an indispensable part of urban life. The growth of technology has affected urbanites' work and influenced the way they communicate and interact. Work is no longer bound to a certain time or place, and this is expected to have negative consequences on workers' mental health: stress, anxiety, depression.

ICT influences urban dwellers psychologically and/or socially. ICT-related factors help describe individuals in relation to their social environment and how these affect physical and mental health. Although ICT improves productivity and communication possibilities, it creates adaptation demands on the person and the tasks performed. Intensive use of ICT requires more work time and work speed, enhances multi-tasking, and causes disturbances to working routines and over exposure to information, which cause anxiety and frustration that potentially leads to burnout over time.

Psychosocial consequences emerging from the use of ICT are often described as technostress, defined as one's discomposure, fear, tenseness, and anxiety when learning and using computer technology directly or indirectly, ultimately resulting in psychological and emotional problems (Ushu & Wang, 2011). Technostress is commonly described in association with an individual's role in the workplace and the tasks the individual is assigned to perform with technology as part of that role (Bondanini et al., 2020). Technostress occurs when an individual has a negative evaluation of their experience when carrying out tasks using technology at work. Technostress may be described as ineffective coping with technology that results in distress. Use of ICT, such as cell phones, voice mail, e-mail, and instant messaging, can challenge employees by creating a range of stressors, including overload, role ambiguity, and job insecurity.

8. The Impact on Mental Health

The outcomes of urbanization have been a complex mix. Urban areas are centers for economic growth, businesses, and employment opportunities; standards of living are increasing. However, aspects of the physical and social environment are degrading, water availability and quality, air and water pollution, slum housing, traffic congestion, for instance. Nevertheless, this paper focuses the impact of urbanization and ICT on the psychological aspects. Cities are pools of inequality, injustice, crime, violence, poverty, and social disintegration. The movement of people to urban area needs more facilities to be made available and infrastructure to grow. Lack of adequate infrastructure increases the risk of poverty and exposure to environmental adversities. As the number of nuclear families increases, the social support decreases. Poor people experience environmental and psychological adversity that increases their vulnerability to mental disorders. Social problems, such as stress, grief and loss, and other adverse situations resulting in a lack of confidence, are also causes of depression. Moreover, income inequality was also found to be associated with other mental problems, such as thoughts of and attempts at suicide.

The explosion of Internet, emails, e-marketing introduce new phenomenon such as receiving too much information. In this regard, information becomes ineffective, resulting in difficulties to process the message and confusion in the mind of the recipient. This results in psychological stress. Cyberbullying can be done via email, web pages, and by mobile phone, and includes misuse of picture taking. Cyberbullying victims were reported of mental diseases: stress, depression, anxiety, for instance. Mental diseases and mental instability are a typical urban phenomenon as instability and insecurity of life.

When considering mental health of urbanized work life, ICT forces users to work faster and longer. Employees potentially can be reached anytime, thus enhancing the feeling for employees to be constantly connected. The employees feel threatened about possible job loss as a result of a new ICT or better ICT trained staff replacing them. the complexity associated with ICT makes employees feel inadequate in relation to their skills and forces them to spend time and effort to learn various aspects of ICT. Continuous changes and upgrades in ICT unsettle users and creates uncertainty, which results in their having to constantly educate themselves. Sumanth & Hiremath (2021) mentioned that the psychosocial consequences may result in anxiety disorders, frustration, job dissatisfaction, and low job performance, and may develop into burnout and mental health problems.

Video games are the most popular form of media entertainment. They have been the subject of frequent controversy and censorship, due to the depiction of graphic violence, sexual themes, consumption of illegal drugs or alcohol in some games. Video games have been accused of causing addiction and even violent behavior. The excessive use of video games makes it more damaging effects on a young mind. Some video game players have disturbed their studies and health by playing the video games for many hours. Human psychology has relation with video games and becoming an addictive person is one such behavior of human mind. Getting the inner desires of doing violent things, which is not possible in real life is also part of such addiction (Ahmed, & Ullah, 2013). The Radio and Media Association for Children and Youth (RMACY) studied 3,056 Thais aged between 15 and 18 and found that during weekends and holidays, 32.6 percent of respondents spent three to five hours a

day playing online games. Adolescents in Bangkok played the longest – more than eight hours a day on weekends (Khidhir, 2020).

Citing statistics on Thai people's use of the internet, Dr. Kiatiphum Wongrajit, Director-General of the Department of Mental Health said 82% of the population or 57 million Thais have daily access to the internet. Of them, 51 million regularly engage with social media. Daily usage of the internet per person often exceeds nine hours, he said. Dr Kiatiphum said growing addiction to social media has left many users stressed and less patient. Youngsters are also addicted to internet games. Youngsters who spend a lot of time on the internet tend to perform poorly at school, resulting in them being reprimanded by their parents, which builds stress (The ASEAN Post Team, 2021).

Lerskullawat & Puttitanun (2020) used secondary data of mental disorder cases in all 77 provinces in Thailand during the period 2015 to 2017, which were collected from the Department of Mental Health, Thailand. They found that the technology access had a significantly positive effect on mental disorder rates. This is possibly due to the fact that when people spend too much time on the internet, use it excessively for work, or become addicted to social networks, in the process receiving wrong information, or being bullied on social media, they can suffer negative impacts. This can therefore increase their stress levels, leading to higher mental disorder rates.

9. Conclusion

As countries become more reliant on manufacturing and services and less on agriculture, urban areas are more to become important hub for innovation and trading. In addition, urban areas are human capital accumulation. Governments of many countries including Thailand are developing the next generation of cities, smart cities, driven by ICT solutions. ICT influences every area of our lives; technology has opened links for individuals to readily access information, help and support. However, there are significant risks associated with its increased usage. We have also seen several negative effects of technology on mental health. Internet addiction, particularly among teenagers, is becoming a widespread issue. It has been linked to depression, low self-esteem, and loneliness – symptoms that often lead to diagnosable mental illnesses. The passive use of social media sites, such as Instagram, Twitter, and Facebook, is specifically linked to being a risk factor for increased levels of depression. Additionally, in working age population ICT use forces employees to accomplish more tasks in less time, results in the elimination of manual jobs, and affects relationships with colleagues, leading to stress. Hence, there is a need to spread awareness about the mental illnesses across the society.

10. Suggestions

Urbanization and economic growth have had a strong correlation. However, the mere presence of so many people in a concentrated area could not result in economic growth and increased quality of life. The city administrators and policy makers should improve infrastructure, employment, and professional cooperation. Investment in infrastructure could help create economic opportunities for urban development and make urbanization and economic growth synonymous. Urban investments in infrastructure including ICT can enable the designing of smarter cities that offer a better quality of life for urbanites while being more sustainable and cost efficient.

However, the other side of the coin that administrators should be aware of mental disorders could also be caused by the economic and social factors associated with living in urban areas. <u>Economic and social conditions together with living standards in urban areas are possible factors which result in mental disorders</u>. <u>Income inequality</u> normally found in urban areas was a factor leading to depression. Social problems, such as unequal opportunity, social inequality, and ICT related social problems: privacy, cyberbully and fraud are also causes of depression.

11. References

Ahmed, U. & Ullah, I. (2013). Video Games Addiction: Positive and Negative Effects of Playing Video Games on Youth and Children. Retrieved from https://www.diva-portal.org/smash/get/diva2:1309141/FULLTEXT01.pdf.

Berg-Beckhoff, G., Nielsen, G. & Larsen, E. (2017). Use of information communication technology and stress, burnout, and mental health in older, middle-aged, and younger workers – results from a systematic review. International Journal of Occupational and Environmental Health. 23(2), 160-171. https://doi.org/10.1080/10773525.2018.1436015.

Bondanini, Giorgia et al. (2020). Technostress Dark Side of Technology in the Workplace: A Scientometric Analysis. International Journal of Environonmental Research and Public Health. 17(8013), 2-23. doi:10.3390/ijerph17218013.

Harter, G., Sinha, J., Sharma, A. & Dave, S. (2010). Sustainable Urbanization: The Role of ICT in City Development. Booz & Company. www.booz.com.

Iamtrakul, P. & Klaylee, J. (2019). Lesson Learns of Success factors from 10 Smart Cities Development: Thailand Context. IEEE Xplore. Conference: 2019 First International Conference on Smart Technology & Urban Development (STUD). DOI:10.1109/STUD49732.2019.9018765.

Khidhir, S. (2020). Gaming: The latest Thai addiction. Retrieved from https://theaseanpost.com/article/gaming-latest-thai-addiction.

Lerskullawat, A. & Puttitanun, T. (2020). Economic Conditions and Mental Health in Thailand. Research Square. https://orcid.org/0000-0003-1301-0892

Mansi Bosamia. (2013). Positive and Negative Impacts of Information and Communication Technology in our Everyday Life. International Conference On "Disciplinary and Interdisciplinary Approaches to Knowledge Creation in Higher Education: CANADA & INDIA (GENESIS 2013)", At: Swami Sahajanand Group of Colleges, Bhavnagar. https://www.researchgate.net/publication/325570282_Positive_and_Negative_Impacts_of_Information_and_Communication_Technology_in_our_Everyday_Life.

Nguyen, H.M. and Nguyen, L.D. (2018), "The relationship between urbanization and economic growth: An empirical study on ASEAN countries", International Journal of Social Economics, 45(2), pp. 316-339. https://doi.org/10.1108/IJSE-12-2016-0358)

Shu Q, Tu Q, Wang K. (2011). The impact of computer self-efficacy and technology dependence on computer-related technostress: a social cognitive theory perspective. International Journal Human-Computer Interact. 27(10), p.923–939.

Statista Research Department. (2022). Share of the urban population in Thailand from 2010 to 2021. Retrieved on Jan 13, 2022. https://www.statista.com/statistics/761131/share-of-urban-population-thailand/

Sumanth S. Hiremath. (2021). Impact of Urbanisation on Mental Health: A Critical Appraisal. Journal of Alzheimer's Parkinsonism & Dementia. 5(1), 1-4.

The ASEAN Post Team. (2021). Retrieved on 24 January 2021 https://theaseanpost.com/article/developing-thailands-smart-cities

The World Bank. (2015). Urbanization in Thailand is dominated by the Bangkok urban area. https://www.worldbank.org/en/news/feature/2015/01/26/urbanization-in-thailand-is-dominated-by-the-bangkok-urban-area.

United Nations. (2015). The Millennium Development Goals Report 2015. United Nations, New York.