

INFORMATION AND COMMUNICATION TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT: EFFECT OF NATIONAL CULTURE

Abstract

The globalisation of world markets and the ubiquitous nature of Information and Communication Technologies (ICT) make ICT an inevitable choice to address developmental issues. ICT are believed to be enablers of social and economic development, tending to foster inclusive digital economy by bridging the digital divide by International Telecommunication Union (ITU), United Nations (UN) and the World Bank. The ICT are accelerators, augmenters, and amplifiers of change. These technologies are also prominent among technologies as they leapfrog traditional growth trajectories and accelerate the development process of nations.

The Sustainable development is defined “as the development that meets the need of the present without comprising the ability of future generations to meet their own needs”. It encompasses the development of economy, society, and environment. For sustainable development to progress from vision to action, ICTs need to transit from digital to developmental revolution. The United Nations Sustainable Development Goals (UNSDG) comprises of 17 development goals targeted to be accomplished by 2030. This requires all countries to prioritise the achievement of sustainable development high on their development agenda. Most countries rely on the benefits of ICT to accelerate the attainment of sustainable development goals.

The World Bank statistics indicate that nearly 70% of ICT for development (ICT4D) projects are failures, more than one-third of ICT4D projects have severely failed, with half being partial failures and only a limited number of projects were successful. The primary reasons attributed to the failures are infrastructural challenges and social issues. The infrastructural challenges are materialistic and require financial aid for developing adequate infrastructure, while social issues are subjective and require attention for appropriate use of ICT towards development. For example, social classes, gender, religious attributes primarily associated with the cultural

dimensions that influence the use of ICT. This study focuses on social issues on the use of ICT for sustainable development. To the best of our knowledge, the academic literature has been scant on the influence of social structure such as cultural dimensions on the use of ICT for development. ICT has taken an absolute path in the diffusion process for development. Although the expectations of the ICT outcomes are highly over-rated, it has constantly underperformed, which is mostly due to the transformations in societal culture. Therefore, the following research questions are developed for this study:

- RQ1: Is the influence of ICT use for Economic Growth, Human Development and Environmental Performance similar across cultural dimensions?
- RQ2: Do cultural dimensions influence ICT use for Sustainable Development of nations?

The theoretical foundation for this study is based on the social construction of technology theory, which states that the continued use of ICT is highly dependent on various factors such as artefact of society. The study demonstrates the necessity of congruence between ICT use and national cultural values to attain desired developmental goals, considering the national cultural dimensions as a societal artefact. The thesis first explores the effect of ICT use and national cultural dimensions on the individual dimensions of sustainable development namely economic growth, human development and environmental performance. Subsequently, the effect of ICT use and national culture dimensions on all the three dimensions of sustainable development together is explored. An econometric analysis is carried out on the secondary data from renowned publicly available databases such as the World Bank, International Telecommunication Union, the United Nations and the Hofstede culture scores for 80 countries, for the period 2000-2016.

While exploring the RQ1, it is found that the ICT use and national culture dimensions have a significant positive influence on economic growth and human development but have a negative

influence on environmental performance, indicating that extensive use of ICT for economic growth and human development can result in an imbalance in the sustainable development through the use of ICT. The national cultural dimensions of *low power distance, collectivism, masculinity, weaker uncertainty avoidance, long term orientation, and indulgence* influence the relationship between ICT use and economic growth. *Low power distance, collectivism, femininity, short term orientation, and restraint* culture dimensions influence the relationship between ICT use and human development. Due to the counter-intuitive results of the main relationship, the cultural dimensions aiding environmental performance did not require an investigation.

While exploring the RQ2, it is found that the culture dimensions significantly influence the relationship between ICT use and sustainable development. Also, the study shows a significant mediation relationship between all the three dimensions of sustainable development. The results show that ICT use leads to sustainable development as ICT use influence economic growth and the spillover effects from economic growth to human development and environmental performance. The ICT use needs to be targeted exclusively to reduce its effect on the environment while addressing sustainable development. The influence of ICT use on sustainable development varies with geographic regions and level of economic development of countries. The ICT use on sustainable development is significantly influenced by all the culture dimensions, namely *low power distance, individualism, masculinity, strong uncertainty avoidance, long term orientation, and indulgence*. A counterintuitive finding the study offers is the negative relationship between ICT use on human development while considering sustainable development.

Further, to enhance the understanding of the relationship between ICT use and national culture dimensions on sustainable development and its dimensions. The study also focuses on investigating the relationship by categorising countries according to their level of economic

development, geographic regions and time period. Such categorisation supports prescriptive suggestions for addressing ICT for development accordingly. It also highlights the nuances of how the synergy of ICT use and culture dimensions lead to desired development.

This study makes several novel contributions such as (i) addressing the research gap on the influence of national culture dimensions on the relationship between ICT use and sustainable development when all three dimensions of sustainable development are considered individually and collectively (ii) application of social construction of technology theory in the ICT4D literature. This study brings out the social sensitivities while using ICT for sustainable development. The study has implications to policymakers at national and international levels for taking decisions on the use of ICT for sustainable development and balancing the development across the three dimensions of sustainable development. Further, causality and latent growth models can be explored with these models to understand the cause and effect relationship of ICT use on sustainable development.

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