FOSTERING NATIONAL RESILIENCE AND SUSTAINABILITY: A STUDY OF MANAGING DIGITAL AGILITY AND ICT ADOPTION AT THE COUNTRY LEVEL

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ABSTRACT

This in-depth study explores the intrinsic value of efficiently managing the use of information and communication technology (ICT) and promoting digital agility while keeping a country's overall perspective in mind. Modern societies are becoming increasingly dependent on digital technology, therefore a nation's potential to withstand shocks and maintain sustainable development critically depends on its ability to quickly adapt to changing conditions and adopt ICT solutions. This study's main goal is to identify the tactical pathways by which countries can use ICT adoption and digital agility to increase their overall resilience in the face of a wide range of issues. By attempting this, the research hopes to shed light on the methods by which nations might use their digital prowess to ensure their own rich and safe futures. Five key countries are examined in-depth in this investigation: The United States, China, Japan, Germany, and India. This examination aims to reveal the complex interactions between numerous ICT indicators, economic growth trajectories, and sustainability's multifaceted facets. The findings that follow highlight the necessity of adjusting solutions in response to unique influence patterns that appear as a result of these research. Given that different ICT variables have varying degrees of influence on growth trajectories across national boundaries, the complexity of these interactions becomes clear. Additionally, this study highlights the wide range of influences that ICT has on the various aspects of sustainability. This necessitates a thorough analysis of the benefits and downsides associated with the integration of ICT systems. The conclusion of these findings highlights the necessity for flexible policy frameworks capable of comprehensively assessing the possible benefits and drawbacks of ICT integration. It becomes more and more clear as the research reveals its insights that stakeholders and policymakers stand to gain a lot from this knowledge base. The knowledge gained here gives the tools needed to develop well-informed policies that take use of ICT's economic potential while also enhancing social justice and environmental well-being. This paper essentially promotes the synchronization of ICT growth with sustainability goals, contending that doing so will enable countries to skillfully navigate the rapidly changing global context. Countries can strengthen their ability to endure challenges and sustain growth that is mindful of larger ecological and social issues by finding a harmonic balance between digital competency and sustainability imperatives. Therefore, this

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study has practical implications for the creation of policies that might harness the transformative potential of digital technology for the all-around improvement of nations in addition to adding to the academic discourse on ICT and its implications. In conclusion, this research offers a thorough effort to clarify the fundamental relationships between the strategic management of ICT adoption, the development of digital agility, and the bolstering of a country's sustainability and resilience. The analysis's focus on important countries highlights the particular dynamics at work, calling for specialized strategies. This research urges the development of sophisticated policies that take use of the advantages of digital integration while minimizing its negative effects because it acknowledges the complex effects of ICT on growth and sustainability. The insights it provides have broad repercussions, leading decision-makers and stakeholders toward a future in which technological breakthroughs are wisely utilized to promote long-term prosperity, societal equality, and ecological well-being.

This study examines the value of managing ICT adoption and digital agility from a national viewpoint, concentrating on how these factors affect a nation's sustainability and resilience. The ability of a nation to quickly adjust to changes and adopt ICT solutions is crucial to its ability to resist upheavals and sustain sustainable progress as societies become more dependent on digital technology. The purpose of this study is to identify the means by which nations might strategically use ICT adoption and digital agility to increase their overall resilience in the face of diverse problems. The paper's ultimate goal is to advance knowledge of how countries may utilize digital capabilities to ensure a prosperous and secure future. In this study, five important countries—the United States, China, Japan, Germany, and India are examined to better understand the complex interaction between ICT indicators, economic growth, and sustainability parameters. The findings highlight the necessity for customized solutions by revealing distinctive influence patterns. The complexity of these linkages is illustrated by the fact that the influence of particular ICT variables on growth varies across nations. The study also emphasizes the various impacts of ICT on sustainability dimensions, identifying both advantages and disadvantages. These findings highlight the need for flexible policy frameworks that weigh the potential upsides and disadvantages of ICT. This report provides insights that policymakers and stakeholders may use to create plans that leverage ICT for economic growth while advancing social justice and environmental well-being. Nations can better manage the changing global scene by coordinating ICT growth with sustainability objectives.

Keywords: Digital Agility, ICT, Resilience and Sustainability.

INTRODUCTION

The resilience and sustainability of nations have turned into crucial aspects in determining their ability to prosper amidst difficult challenges in an era marked by unheard-of technological advancement, globalization, and interconnection. The significance of digital agility and the adoption of information and communication technology (ICT) in creating national resilience and sustainability has arisen as a topic of utmost importance as societies struggle with problems ranging from economic volatility to environmental deterioration. This study explores the complex interactions between digital agility, ICT adoption, and the more general goals of sustainability and resilience at the national level.

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Virtually all facets of human life have undergone radical change as a result of the quick development of digital technologies, which have transcended geographical boundaries and altered socio-economic paradigms. The globe has simultaneously seen a growing understanding of how vulnerable current systems are to natural disasters, economic shocks, and global pandemics. These factors have forced nations to look for novel solutions that would not only improve their ability to handle crises but also guarantee their long-term viability and prosperity.

Information and communication technology have emerged as a key enabler in constructing resilience and accomplishing sustainability goals. This technology includes a wide range of tools and systems, including internet infrastructure, data analytics, cloud computing, and mobile technologies. Digital agility has emerged as a crucial skill for both governments and society, defined as the capacity to quickly adapt and use the potential of digital technologies in response to changing conditions. A country's ability to successfully integrate and use ICT to support its resilience plans has a direct impact on its ability to reduce risks, maintain key services, and promote sustainable development.

There is still a big knowledge gap on how national-level plans for ICT adoption and digital agility are developed, carried out, and optimized, even while existing literature recognizes the significance of digital technologies in improving resilience and sustainability at various levels. By examining the complex dynamics of overseeing ICT uptake and encouraging digital agility within the context of more general national resilience and sustainability goals, our research seeks to close this gap.

This study aims to identify best practices, obstacles, and potential hazards related to the alignment of digital strategies with overarching national goals by looking at case studies from various nations and regions. It also strives to shed light on the elements, such as legislative frameworks, technology infrastructure, regulatory environments, and public-private partnerships that contribute to effective digital transformation inside nations.

REVIEW OF LITERATURE

The relationship between information and communication technologies (ICT) and a nation's capacity to develop resilience and sustainability has grown increasingly important in the quickly changing environment of the twenty-first century. Opportunities and obstacles presented by the digital age can substantially alter a nation's direction. In order to build national resilience, sustainability, and effective management of digital agility and ICT adoption at the country level, this literature review intends to give an informative analysis of the body of research in that area.

Obrenovic, et al. (2020) studied a novel viewpoint on managing the COVID-19 pandemic within companies is presented through a complete framework that is the result of the combination of theoretical underpinnings and empirical observations. According to the research, organizations with decentralized leadership, adaptable workforces, and adaptive organizational cultures are more resilient in maintaining business operations during pandemics. Additionally, highly resilient businesses support decentralized decision-making, enabling better-informed responses to changing conditions.

Internet and communication technology (ICT) integration is now recognized as a critical business strategy. Through and after the crisis, the use of intranet, social

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media, and online communication platforms in regular corporate operations promotes the growth of trust among employees, stakeholders, and clients. The study also emphasizes the fine line that businesses must walk when balancing resource stockpiling and resilience planning. AlHinai, (2020) stated international organizations and national disaster management (NDM) authorities have been compelled to prioritize improving their disaster mitigation, preparation, response, and recovery activities due to the growing social and economic devastation caused by global disasters. Utilizing technical development and the advent of the Fourth Industrial Revolution has been increasingly important in this endeavor. However, these developments also put existing NDM systems under pressure, changing the way they function, are organized, and interact with one another. Lacking a thorough investigation of the effects of digital transformation on the whole life cycle of national disaster management, existing research mostly concentrates on the technological aspects. This research combines multidisciplinary principles from business management, information systems, and disaster management to fill this gap. Gouda, & Tiwari, (2022) analyzed the results highlight how knowledge management, an atmosphere that fosters innovation, adaptability in learning, and efficient internal corporate communication all have a beneficial impact on innovation adoption. Along with its effect on sustainable business performance, innovation's perception also has a big impact on how widely it is used. The adoption of innovation and a company's long-term success are also positively correlated. It's crucial to remember that ambidextrous leadership does not significantly correlate with the adoption of innovations.

RESEARCH METHODOLOGY

The research methodology employed in this study is designed to investigate the objectives pertaining to the impact of ICT indicators on growth and sustainability parameters. The study employs multilevel multiple regression models with a maximum likelihood estimation approach to analyze the relationships.

Model 1: Impact of ICT Indicators on Growth

For the first objective, a multilevel multiple regression model is employed to examine the influence of ICT indicators on economic growth. The study focuses on the five top countries globally: The United States of America, China, Japan, Germany, and India. This model evaluates the contribution of ICT indicators to economic growth in each of these nations. ICT indicators selected are impacted by their importance in economic growth and technology.

Model 2: Impact of ICT Indicators on Sustainability Parameters

The second model examines how ICT indicators affect sustainability metrics. Equal opportunity, civil society, governance, and the environment are among the sustainability factors being considered. For determining a country's overall sustainability, each of these factors is crucial. In order to determine possible contributions of ICT to sustainability, the model investigates the relationship between ICT indicators and each sustainability metric.

Model 3: Multivariate Regression of ICT Indicators on Growth

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This model uses a multivariate regression analysis with economic growth as the independent variable and a set of ICT indicators as the dependent variable. This analysis is part of the study's effort to identify the precise ICT metrics that have the biggest bearing on economic development in the chosen nations. The findings of this analysis provide insight into how various ICT indicators contribute differently to economic growth in various nations.

Model 4: Identifying Key ICT Indicators for Growth in Different Countries

The essential ICT metrics that have the biggest influence on economic growth in each of the five chosen nations are identified by this model. According to the study, the following ICT indicators have the greatest impact on growth in each nation: SIC for overall growth, IUI for the United States, FBU for China, MCS for Japan, FBU for Germany, and FBU for India.

The research methodology makes use of multilevel multiple regression techniques to shed light on the intricate connections between sustainability, economic growth, and ICT indicators.

The study attempts to improve our comprehension of the complex effects of ICT on numerous facets of development and sustainability by analyzing data from the top five countries.

DATA ANALYSIS AND INTERPRETATION

Multilevel modeling is particularly useful when standard linear regression assumptions are violated due to the presence of correlated data points or when interest lies in understanding how group-level factors influence individual-level outcomes. Multi-level of analysis allows for the consideration of a variable's effects. In addition to the more conventionally employed individual-level variables, they offer the chance to evaluate the effects of macro-level variables (Pettigrew, 2006). The ICT indicators that are fixed broadband users, individual internet users, mobile cellular users and Secured internet connections, are considered to be the indicators of Information and Communication Technology Tables 1-9.

Table 1
VARIABLES

Gross Domestic Product	GDP
Fixed Broadband Users	FBU
Individual Internet Users	IUI
Mobile Cellular Subscription	MCS
Secured Internet Connections	SIC
Equality	EQ
Civil Society	CS
Governance	GO
Environment	EN
Sustainable Economic Development Assessment	SEDA

Objective 1: Impact of ICT indicators on Growth. Impact of ICT indicators on sustainability parameters.

Objective 2: Impact of ICT on growth.

Model 1:

$$\text{Growth} = \beta_0 + \beta_1 \text{ICT}_{\text{indicators}} + \mu$$

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Model 2:
Sustainability = $\beta_0 + \beta_1 ICT_{indicators} + \mu$

Multilevel multiple regression models with maximum likelihood are taken. In the first model we have seen the impact of ICT indicators on growth, and this model applies for all five top countries in the world, United States of America, China, Japan, Germany and India. In the second model the sustainability parameters are equality, civil society, governance and environment. We have

$$LnGDPPPP = \beta_0 + \beta_1 LnFBU + \beta_2 LnIUI + \beta_3 LnMCS + \beta_4 LnSIC + \mu$$

Table 2
COUNTRY WISE MODEL OUTPUT

USA: Model 1				China: Model 1			
Dep LnGDP	Coeff	Robust Std Er	P	Dep GDP	Coeff	Robust Std Er	P
LnFBU	-0.096	0.097	0.32	LnFBU	-0.022	0.018	0.23
LnIUI	-0.061	0.048	0.21	LnIUI	0.48	0.02	0
LnMCS	1.29	0.099	0	LnMCS	0.27	0.03	0
LnSIC	0.035	0.003	0	LnSIC	0.018	0.003	0
Cons	5.23	0.34	0	Cons	6.32	0.101	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.00003	0.00001	41.08	var (residual)	0.00002	0	43.068
Japan: Model 1				Germany: Model 1			
Dep LnGDP	Coeff	Robust Std Er	P	Dep LnGDP	Coeff	Robust Std Er	P
LnFBU	-0.69	0.49	0.16	LnFBU	1.21	0.3	0
LnIUI	-0.31	0.1	0.002	LnIUI	-0.17	0.27	0.53
LnMCS	0.59	0.27	0.027	LnMCS	0.28	0.13	0.036
LnSIC	0.007	0.01	0.45	LnSIC	-0.005	0.01	0.73
Cons	8.6	0.68	0	Cons	5.8	0.93	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.0001	0.00003	34.47	var (residual)	0.0001	0.00005	31.69
India							
Dep LnGDP	Coeff	Robust Std Er	P				
LnFBU	0.27	0.15	0.075				
LnIUI	-0.11	0.08	0.15				
LnMCS	0.06	0.16	0.68				
LnSIC	0.08	0.01	0				
Cons	8.32	0.73	0				
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood				
var (residual)	0.0006	0.0001	24.51				

In USA growth impactful variables are MCS and SIC. In China they are all four variables of ICT, but FBU has a negative impact. Moreover, in Japan IUI and MCS are impactful and in Germany FBU and MCS are impactful. In India, FBU and SIC are impacting variables in case of growth.

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Model 2: Parameters of sustainability (Equality, Civil Society, Governance and Environment)

Equality = $\beta_0 + \beta_1 FBU + \beta_2 IUI + \beta_3 MCS + \beta_4 SIC + \mu$
Civil Society = $\beta_0 + \beta_1 FBU + \beta_2 IUI + \beta_3 MCS + \beta_4 SIC + \mu$
Governance = $\beta_0 + \beta_1 FBU + \beta_2 IUI + \beta_3 MCS + \beta_4 SIC + \mu$
Environment = $\beta_0 + \beta_1 FBU + \beta_2 IUI + \beta_3 MCS + \beta_4 SIC + \mu$

Table 3
USA: MODEL 2

Dep Equality	Coeff	Robust Std Er	P	Dep Civil society	Coeff	Robust Std Er	P
FBU	0.27	0.092	0.003	FBU	2.4	0.92	0.007
IUI	-0.19	0.03	0	IUI	-0.31	0.15	0.046
MCS	0.19	0.05	0	MCS	-0.06	0.38	0.84
SIC	0	0	0	SIC	0	0	0
Cons	98.25	2.44	0	Cons	34.88	16	0.029
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.07	0.027	-1.53	var (residual)	3.16	0.878	-21.94
Dep Governance	Coeff	Robust Std Er	P	Dep Environment	Coeff	Robust Std Er	P
FBU	-0.65	0.24	0.006	FBU	-0.19	0.36	0.5
IUI	-0.03	0.03	0.39	IUI	0.03	0.06	0.5
MCS	0.11	0.09	0.23	MCS	0.307	0.14	0.036
SIC	0	0	0.58	SIC	0	0	0.73
Cons	96.88	4.7	0	Cons	26.8	5.71	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.22	0.097	-7.37	var (residual)	0.42	0.095	-10.84

In the US, impact of ICT parameters on equality is significant and mostly positive, whereas impact of IUI on civil society is negative. Impact of MCS on governance is positive and that of FBU, IUI and MCS on environment is positive.

Table 4
CHINA: MODEL 2

Dep Equality	Coeff	Robust Std Er	P	Dep Civil society	Coeff	Robust Std Er	P
FBU	0.78	0.19	0	FBU	-0.23	0.06	0
IUI	0.27	0.27	0.31	IUI	0.1	0.08	0.18
MCS	-0.38	0.12	0.002	MCS	0.0003	0.03	0.99
SIC	0.005	0.003	0.15	SIC	0.004	0.001	0
Cons	63.99	6.4	0	Cons	53.57	2.9	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	2.28	0.66	-20.16	var (residual)	0.29	0.098	-8.82

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Dep Governance	Coeff	Robust Std Er	P	Dep Environment	Coeff	Robust Std Er	P
FBU	-0.19	0.14	0.18	FBU	0.1	0.06	0.11
IUI	0.71	0.16	0	IUI	-0.54	0.11	0
MCS	-0.32	0.06	0	MCS	0.2	0.04	0
SIC	0.007	0.002	0	SIC	0.005	0.001	0.004
Cons	10.12	2.52	0	Cons	17.97	5.3	0.001
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.22	0.72	-13.86	var (residual)	0.93	0.56	-15.23

In China, Impact of FBU on Equality is large and positive, but that of MCS is negative. Impact of FBU on civil society is negative and that of IUI is positive on governance. MCS is negative on governance and IUI on environment.

Table 5
JAPAN: MODEL 2

Dep Equality	Coeff	Robust Std Er	P	Dep Civil society	Coeff	Robust Std Er	P
FBU	-6.8	2.9	0.022	FBU	0.2	0.7	0.76
IUI	0.29	0.26	0.26	IUI	0.3	0.18	0.1
MCS	0.67	0.39	0.08	MCS	-0.24	0.15	0.1
SIC	0.0001	0.003	0.59	SIC	0.0002	0.0001	0.018
Cons	179.44	52.55	0.001	Cons	73.09	13.14	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	5.65	2.15	-25.13	var (residual)	0.79	0.46	-14.33
Dep Governance	Coeff	Robust Std Er	P	Dep Environment	Coeff	Robust Std Er	P
FBU	-1.2	1.13	0.28	FBU	-4.9	1.45	0.001
IUI	-0.14	0.2	0.5	IUI	0.1	0.26	0.688
MCS	0.24	0.11	0.03	MCS	0.44	0.15	0.004
SIC	0	0	0.84	SIC	0	0	0.22
Cons	78.82	12.37	0	Cons	148.27	20.42	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	1.47	0.68	-17.75	var (residual)	2.64	0.816	-20.96

In Japan FBU has a negative impact on Equality. IUI has a positive and MCS has a negative impact on civil society. MCS has a positive impact on governance and environment. FBU has a negative impact on environment.

Table 6
GERMANY: MODEL 2

Dep Equality	Coeff	Robust Std Er	P	Dep Civil society	Coeff	Robust Std Er	P
FBU	-0.26	0.1	0.016	FBU	-0.402	0.45	0.37

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IUI	0.19	0.057	0.001	IUI	0.28	0.33	0.405
MCS	0.08	0.02	0.001	MCS	0.21	0.15	0.147
SIC	0	0	0	SIC	0	0	0.004
Cons	75.15	4.7	0	Cons	47.63	22.05	0.031
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.16	0.05	-5.6	var (residual)	5.15	2.46	-24.62
Dep Governance	Coeff	Robust Std Er	P	Dep Environment	Coeff	Robust Std Er	P
FBU	-0.082	0.36	0.82	FBU	-0.44	0.23	0.05
IUI	-0.54	0.16	0.001	IUI	0.21	0.11	0.05
MCS	0.1	0.08	0.207	MCS	0.207	0.06	0.001
SIC	0	0	0.662	SIC	0.0001	0	0.072
Cons	128.98	10.22	0	Cons	37.33	7.6	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.604	0.132	-12.83	var (residual)	0.28	0.122	-8.62

In Germany the FBU has a negative impact on equality, but IUI and MCS has a positive impact on Equality. IUI has a negative impact on governance and has a positive impact on environment. FBU has a negative impact on environment and MCS has a positive impact on environment.

Table 7
INDIA: MODEL 2

Dep Equality	Coeff	Robust Std Er	P	Dep Civil society	Coeff	Robust Std Er	P
FBU	-14.11	4.88	0.004	FBU	-13.8	20.94	0.51
IUI	0.4	0.14	0.005	IUI	1.14	0.67	0.091
MCS	0.05	0.05	0.32	MCS	0.008	0.32	0.98
SIC	-0.015	0.006	0.018	SIC	-0.07	0.03	0.01
Cons	52.33	1.79	0	Cons	37.68	9.2	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.318	0.11	-9.31	var (residual)	8.65	4.32	-27.47
Dep Governance	Coeff	Robust Std Er	P	Dep Environment	Coeff	Robust Std Er	P
FBU	-11.54	3.08	0	FBU	-0.64	9.3	0.94
IUI	0.093	0.12	0.44	IUI	-0.02	0.28	0.91
MCS	0.1	0.03	0.003	MCS	-0.06	0.1	0.53
SIC	0.02	0.006	0.001	SIC	-0.002	0.01	0.84
Cons	50.54	1.32	0	Cons	19.18	1.9	0
RE parameters	Estimate	Robust Std Er	Log pseudolokelihood	RE parameters	Estimate	Robust Std Er	Log pseudolokelihood
var (residual)	0.32	0.105	-9.3	var (residual)	0.86	0.28	-14.84

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In India, FBU has a huge negative impact on equality, but IUI has a positive impact. IUI has a positive impact on civil society. FBU has a negative impact on governance, MCS and SIC has a positive impact too.

Multivariate regression model is used to assess the second objective. Impact of growth on ICT indicators.

Model 3:

$LnFBU,LnIUI,LnMCS,LnSIC = \beta_0 + \beta_1 LnGDP + \mu$

Table 8
MULTIVARIATE MODEL

Multivariate (Indp LnGDP) : USA				Multivariate (Indp LnGDP) : China			
Dependent	Coeff	Robust Std Er	P	Dependent	Coeff	Robust Std Er	P
LnFBU	0.84	0.06	0	LnFBU	2.24	0.17	0
LnIUI	0.97	0.14	0	LnIUI	1.09	0.03	0
LnMCS	0.47	0.03	0.003	LnMCS	1.05	0.04	0.003
LnSIC	14.66	1.53	0.006	LnSIC	12.21	0.9	0
R sq	0.9			R sq	0.9		
Multivariate (Indp LnGDP) : Japan				Multivariate (Indp LnGDP) : Germany			
Dependent	Coeff	Robust Std Er	P	Dependent	Coeff	Robust Std Er	P
LnFBU	1.29	0.18	0	LnFBU	0.78	0.03	0
LnIUI	0.99	0.13	0	LnIUI	0.2	0.04	0
LnMCS	2.34	0.24	0	LnMCS	0.49	0.06	0.003
LnSIC	18.45	3.97	0	LnSIC	12.88	0.99	0
R sq	0.9			R sq	0.9		
Multivariate (Indp LnGDP) : India							
Dependent	Coeff	Robust Std Er	P				
LnFBU	0.86	0.15	0				
LnIUI	2.7	0.4	0				
LnMCS	0.65	0.09	0				
LnSIC	12.31	0.86	0				
R sq	0.9						

As we conduct multivariate regression with dependent variable as all the ICT indicators and independent variable as growth, we get results as discussed below. Growth in all countries has the greatest impact in SIC. In USA, its IUI, in China its FBU, in Japan it is MCS, in Germany it is FBU and in India it is FBU Figure 1.

Table 9
COUNTRY WISE DIGITAL ADOPTION INDEX

		2014	2016
USA	Digital Adoption Index	0.719952	0.747118
	DAI Business Sub-index	0.759848	0.781266
	DAI People Sub-index	0.664677	0.730538
	DAI Government Sub-index	0.73533	0.72955
China	Digital Adoption Index	0.50101	0.58625
	DAI Business Sub-index	0.471047	0.548277

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	DAI People Sub-index	0.400256	0.524802
	DAI Government Sub-index	0.631726	0.68567
Japan	Digital Adoption Index	0.816455	0.834881
	DAI Business Sub-index	0.731021	0.7607
	DAI People Sub-index	0.786716	0.835007
	DAI Government Sub-index	0.931627	0.908937
Germany	Digital Adoption Index	0.802186	0.839698
	DAI Business Sub-index	0.85191	0.868452
	DAI People Sub-index	0.740811	0.779709
	DAI Government Sub-index	0.813837	0.870934
India	Digital Adoption Index	0.442272	0.510772
	DAI Business Sub-index	0.430099	0.500528
	DAI People Sub-index	0.160062	0.227438
	DAI Government Sub-index	0.736656	0.804349

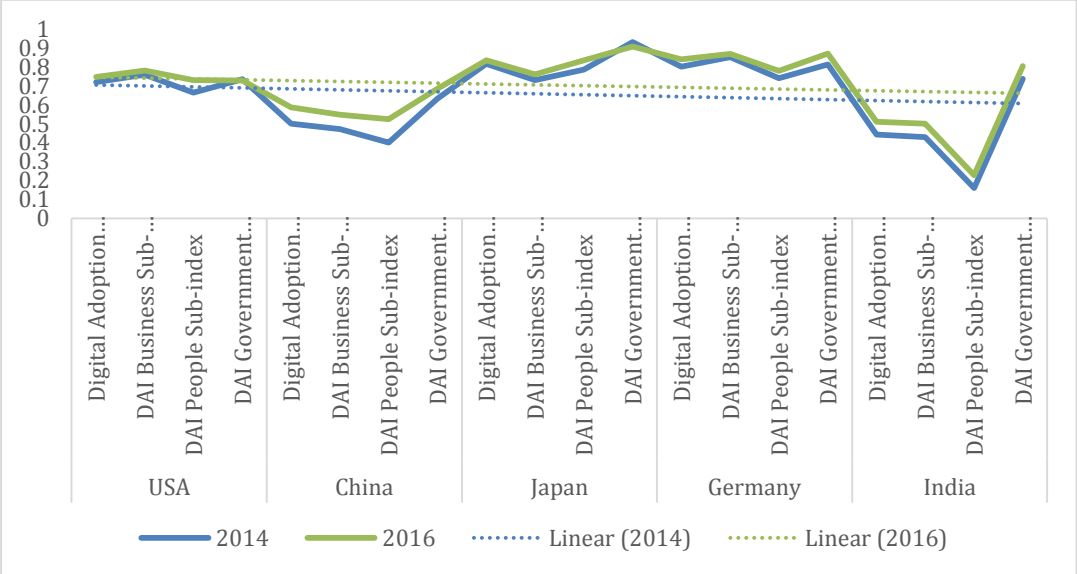

FIGURE 1
COUNTRY WISE DIGITAL ADOPTION INDEX

Findings

The study's findings highlight the diverse impacts of ICT indicators on growth and sustainability parameters across the selected countries: The United States of America (USA), China, Japan, Germany, and India.

United States (USA)

- In the USA, the variables "MCS" (specifically Media and Content Services) and "SIC" (Services Infrastructure and Connectivity) exhibit significant positive impacts on economic growth.

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- Impact of ICT indicators on equality is generally positive, suggesting that these indicators contribute positively to addressing inequality.
- However, "IUI" (Internet Use Intensity) has a negative impact on civil society, indicating a potential challenge in its influence on societal interactions.
- The "MCS" variable positively affects governance, while all three variables - "FBU" (Fixed Broadband Use), "IUI," and "MCS" - have positive impacts on the environment.

China

- In China, all four ICT variables have an impact on economic growth, but "FBU" shows a negative impact.
- However, "MCS" negatively influences equality and civil society, showing possible concerns associated to media and content services in these dimensions.
- "FBU" considerably and positively impacts equality and the civil society dimensions, underlining its potential significance in societal inclusion.
- While "IUI" and "MCS" have bad effects on the environment, "IUI" has favorable effects on governance.

Japan

- "IUI" and "MCS" have a noticeable favorable impact on economic growth in Japan.
- "FBU" has a detrimental effect on civic society and equality.
- "IUI" has a good impact on civil society, whereas "MCS" has a negative one.
- "MCS" has a favorable effect on governance and the environment, indicating that it has the potential to enhance these features.
- It's interesting to note that "FBU" harms the ecology in Japan.

Germany

- "FBU" has a negative influence on equality, whereas "IUI" and "MCS" have good effects; in Germany, "FBU" and "MCS" have large beneficial effects on economic growth.
- "IUI" negatively impacts governance but positively influences the environment.
- "FBU" negatively impacts the environment, while "MCS" positively affects it.

India

- In India, "FBU" and "SIC" exhibit significant positive impacts on economic growth.
- "FBU" has a notably negative impact on equality, while "IUI" positively impacts it.
- "IUI" positively affects civil society.
- "FBU" negatively influences governance, but "MCS" and "SIC" positively impact it.
- "FBU" and "MCS" positively affect the environment.

CONCLUSION

The results of the study show the various influences of ICT indicators on growth and sustainability measures across the selected nations. The findings highlight how crucial some ICT indicators are for affecting economic growth and a number of sustainability elements. The study's conclusions can aid stakeholders and policymakers in better understanding the complex relationships between ICT development, growth, and sustainability, enabling them to create tailored policies to capitalize on ICT's potential advantages for societal improvement. In this long study, we looked at the intricate interactions between ICT indicators, economic growth, and sustainability standards across five preeminent countries: The United States of America, China, Japan, Germany, and India. Our analysis turned up a number of

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effect patterns that provide light on the benefits and potential downsides of ICT in these nations.

The findings illustrate ICT's extensive impact on economic growth. Each country has a unique collection of ICT characteristics that have a significant impact on growth, making it imperative to adapt methodologies to local circumstances. The effects of "MCS" and "SIC" and other ICT factors on growth in the United States, "FBU" and other ICT variables in China, "IUI" and "MCS" in Japan, "FBU" and "MCS" in Germany, and "FBU" and "SIC" in India demonstrate the need for cautious tactics when using ICT's potential for economic growth.

Our study also highlights the nuanced relationship between sustainability metrics and ICT metrics. Some ICT-related elements have positive consequences on politics, civil society, equality, and the environment, while others exhibit unexpected trends. Examples of the complexity in action include the different effects of "IUI" and "MCS" on various areas, as well as the consequences of "FBU" on civil society, equality, and the environment.

Collectively, these findings highlight the necessity for flexible policy frameworks that consider the unique traits of each country. Finding a careful balance between utilizing ICT's advantages and mitigating its possible drawbacks is essential for achieving sustainable progress. These insights can serve as a source of inspiration for stakeholders, industry leaders, and policymakers as they create policies that harness the transformative potential of ICT while preserving social justice and environmental wellbeing.

Our analysis offers a road map for well-informed decision-making as the global environment keeps changing. Nations may set sail for a future that enjoys the benefits of technology innovation while respecting the values of inclusion and environmental stewardship by coordinating ICT development with growth imperatives and sustainability goals. In the end, achieving a seamless integration of ICT into society calls for continual cooperation and adaptable solutions that guarantee a better, more sustainable future for everybody.

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