

# Critical Reflections on the Deconvergence of Information and Communications Technology

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## Abstract

In recent years, information and communications technology (ICT) has gone through a process of convergence due to dynamic marketing and technological development. However, signs of deconvergence have emerged during this ongoing process of ICT convergence, which requires close attention and critical reflection by ICT practitioners and educators. This article seeks to identify and critique the seemingly paradoxical trend of market convergence/deconvergence, technological convergence/deconvergence, and audience convergence/deconvergence in ICT. To achieve this goal, a focus group discussion with eight selected participants was adopted as the research method for this study. The data were then analysed using qualitative thematic analysis. The themes revealed in the focus group discussion not only reflect the trends in ICT convergence but also, from various perspectives, highlight the increasingly obvious phenomena of deconvergence. The findings should inform industrial practitioners about the rapidly changing ICT landscape and shed light on future ICT policy and industry directions.

## Keywords

ICT, Deconvergence, Market Deconvergence, Technological Deconvergence, Audience Deconvergence

## 1. Introduction

Since the 1990s, growth in the information and communications technology (ICT) sector has exploded amid the view that it is an essential technology and one of the basic building blocks of modern society [1] [2]. Dynamic market and technology developments have caused convergence, a movement directed towards, or terminating in, the same point, a “coming together of things that were previously separate” [3]. ICT is now an umbrella term that includes any com-

munication device, encompassing radio, television, cell phones, computer and network hardware, satellite systems and so on, as well as the various services and appliances accompanying them, such as video conferencing and distance learning [4].

During the process of ICT convergence, some important phenomena and signs of deconvergence have also appeared, to which ICT practitioners and educators should pay close attention and reflect critically on. ICT convergence refers to the merging of different technologies and systems into a single unified system that provides multiple services and functions. For many years, this convergence has been a driving force behind the development of new technologies and services, as well as the creation of new industries and markets. However, in recent years, there have been signs of reverse convergence, or a trend towards fragmentation and specialization in ICT. One possible reason for this reverse convergence is that the original convergence was driven by a few dominant players, such as Google, Apple, and Amazon, who were able to create a unified ecosystem of products and services. However, as new players have entered the market, they have created their own ecosystems, which are not necessarily compatible with those of the dominant players. As a result, there is a proliferation of specialized technologies and systems, which are not interoperable with one another, leading to fragmentation in the ICT landscape.

The problem is that this seemingly paradoxical trend of convergence and deconvergence in the ICT industry is changing the landscape of the industry rapidly. This trend is not well understood, and its implications for industrial practitioners and policymakers are not clear. This research attempts to examine the trend of convergence and deconvergence in the ICT industry, with the aim of shedding light on the implications of this paradoxical trend for industrial practitioners and policymakers. By understanding the complex interactions between convergence and deconvergence in ICT, practitioners can develop effective strategies to navigate this dynamic technological landscape and maximize the benefits while minimizing their negative impacts. The findings of this research will provide valuable insights into the rapidly changing ICT landscape and inform future ICT policy and industry directions.

## 2. Literature Review

Convergence has become a buzzword [5] that can mean different things to different people, taking in corporate strategies (such as the merger between AOL and Times Warner), technological development (such as the integration of computers, television, and mobile devices), storytelling techniques (such as multimedia content on news websites), or even marketing efforts (such as partnerships between newspapers and TV stations to promote each other's work).

After reviewing the literature, we have divided the various types of ICT convergence into three broad categories: market convergence, technological convergence, and content convergence. Unfolding in parallel to these types of con-

vergence, deconvergence is an emerging trend that is a reaction to, and departs from, the convergence of ICT markets, technology, and users.

## 2.1. Market Convergence and Deconvergence

Market convergence is defined as “the blurring of boundaries between formerly distinct industries” [6], starting with telecommunications and information technology [7]. It was a favourable trend characterised by the promotion of privatisation, deregulation, liberalisation, and capital investment [8]. Mergers and acquisitions (M&A) activities were zealously sought to consolidate companies and assets to achieve rapid business growth via various types of financial transaction.

In M&A terms, a merger is the combination of two or more formerly independent business units into one organisation with a common ownership and management. Among the most famous examples are America Online (AOL)’s acquisition of Time Warner for \$182 billion in 2000, Facebook’s acquisition of WhatsApp for \$21.8B in 2014, and IBM’s acquisition of RedHat for \$34B in 2018.

However, despite being more than three decades into the neoliberal experiment, the various forces pushing back against global business convergence mean that the road to convergence is by no means a straightforward walk towards the expected destination. The process of convergence in business diversification is also controversial, as it often fails to produce either the promised synergies or the increased profits, revenue and share price.

Some important lessons can be learnt from M&A failures. AOL’s acquisition of Time Warner is considered one of the worst mergers of all time. Although the merger of these two giant businesses originally aspired to create a company that would lead a significant acceleration of growth in the entertainment and internet service sectors, it ended miserably and disintegrated in 2009 because the promised synergies never emerged. There were serious problems with execution as management rushed to get into new media without really understanding the dynamics of the new landscape. The lack of due diligence on company culture and the failure to predict the development of the market realistically meant the merged AOL-Time Warner paid a high price; a \$98.7 billion loss recorded after just one year of the merger in 2002 [9].

If companies acquire too many other companies in too many unrelated business areas, their strategies may become unmanageable and begin to unravel [10]. Deconvergence came into being in the form of corporate break-ups through partial sales to other companies or spin-offs [11], as exemplified by past cases such as Viacom-Columbia Broadcasting in 2006, AOL-Time Warner in 2009, and News Corporation’s split into its publishing and broadcasting arms in 2013.

## 2.2. Technological Convergence and Deconvergence

Media convergence can also be viewed from a technological perspective. It can

be viewed as a “convergence of modes”, a process of eroding the boundaries and increasing the connections between media [12]. Jenkins [13] described media convergence as the flow of content across multiple media platforms. Digitisation and communication technologies break down the walls between media and allow content to flow across them. Digitisation is a major factor driving content convergence. It allows common data representation, processing, storage, and transmission for various media or content types, and makes interoperability between different media possible. Facilitated by the availability of versatile all-in-one devices like the smartphone, media users play an active role in seeking information and generating content across different media.

A typical example of media technological convergence is the internet – a network of networks supporting the storage of different content in systems distributed around the globe. The World Wide Web, running on top of the internet, interlinks the contents scattered over the computers using hyperlinks that facilitate the retrieval of scattered information [14]. Browsers and search engines are the tools used to retrieve the desired content from this universal database.

Another popular example is multimedia presentations [15]. Thanks to digitisation, the presentation of content may be a combination of different media such as sound, image, text, animation, and videos. Users can even interact with the contents in an interactive multimedia communication environment.

However, the phenomenon of technological deconvergence has also been noted by ICT professionals and users [16] [17]. Numerous platforms whose design and functionality facilitate user generated content, such as Facebook, TikTok, Twitter, and YouTube, multiply content distribution channels and differentiate between content formats. Although ICT technologies allow the transfer of different media contents into all-purpose devices where text can be migrated between different media facilitating media convergence, multiple media technologies do exist and new media platforms do emerge, each with specific focuses and characteristics [13] [18]. In recent years, the number and diversity of technologies has significantly increased, alongside the process of technological convergence.

### **2.3. Audience Convergence and Deconvergence**

It is inappropriate (or impossible) to study convergence without studying what is happening with audiences. ICT convergence is creating a new user experience, which dictates “new terms of multimedia content consumerism, interaction and personalised use of the internet environment” [19]. These new experiences change the habits and patterns of audience behaviour. ICT convergence thus brings about the transformation of the audience.

The most prominent feature of audience transformation is that the user is transformed into a content producer and consumer because of the prevalent role of the internet and the development of interactive usability. The ascendancy of citizen journalists and bloggers has created an unprecedented opportunity for audience convergence. Even people who are not really producers are still taking

advantage of multiple media platforms to extend their mediated practices [20]. Convergence from the audience's perspective is expected "to allow user experiences to move fluidly through multiple content and devices" [21]. The ability to work with ICT is regarded as one of the key competencies necessary for success in both life and the labour market.

The practices and realities of audiences in convergent media environments have been investigated and studied by scholars such as Sergio Sparviero, Corinna Peil, and Gabriele Balbi [22]. They have deconstructed the taken-for-granted concept of media convergence from the perspective of the audience's media usage and raised the issue of audience deconvergence, a matter that has been overlooked and understudied. They have focused our attention on the fact that the convergence of ICT has been accompanied by the deconvergence of audiences in terms of their different needs and tastes and the diverse media content they consume and produce [13].

### 3. Research Method

This study utilized a focus group discussion as the primary research method to investigate the concept of ICT deconvergence. Qualitative in nature, focus group discussions involve a selected group of individuals participating in an interactive conversation focused on specific issues. "It involves a focus on specific issues, with a predetermined group of people, participating in an interactive discussion" ([23], p. 1). The research aimed to achieve two objectives: firstly, to identify a diverse range of perspectives on the paradoxical issue of ICT convergence/deconvergence; and secondly, to gain a comprehensive understanding of this issue from the participants' viewpoints.

#### 3.1. Participants

In mid-August 2022, eight participants were selected for an interactive discussion on ICT convergence/deconvergence via Zoom due to safety precautions related to Covid-19 exposure. The first author of the paper acted as the moderator, while two co-authors were present during the discussion to take notes.

To ensure a diverse and information-rich sample, the research team employed specific criteria when selecting potential participants. These criteria included professional experience, academic background, and publications related to ICT convergence and deconvergence. The team also considered additional factors such as gender, age, occupation, and educational background. Using a purposive method, the researchers recruited eight participants, most of whom were from a local private university, who possessed the specific characteristics and experiences that could provide valuable insights into the research issue at hand.

**Table 1** provides a clear snapshot of the participants' demographic information, outlining details such as gender, age, occupation, and educational background. This approach allowed for a transparent representation of the sample and provided context for the perspectives shared during the focus group discussion.

**Table 1.** List of participants.

Participant pseudonym	Occupation	Age range	Reasons for pre-selection
Tom	Professor	Late 50s	Rich expertise in international politics and economics
Sam	Assistant professor	Early 40s	Research interest in global marketing and communication
Pearl	PR practitioner	Mid 40s	Adept at multimedia production and mixed media campaigns
Ronald	Application research engineer	Late 30s	Knowledgeable in ICT engineering and software development
Ted	Assistant professor	Late 30s	Expertise in media law and ethics
Fred	Senior lecturer	Mid 50s	Opinion leader in Sino-US relations; instructor in online journalism and new media
Derek	MA student	Late 20s	A tech savvy student with wide experience in computer games
Mary	BA student	Early 20s	Majoring in convergent media and information technology

### 3.2. Procedures

Prior to conducting the focus group discussion, the research team held several meetings to develop a guide for questioning and to recruit participants with the appropriate expertise in ICT and its latest developments. The final eight, who had some knowledge of market convergence, techno-logical convergence, and audience convergence were selected and approached.

With the consent of all participants, the entire discussion was recorded for later data transcription and analysis. The focus group discussion lasted approximately two and a half hours, during which time the participants engaged in an in-depth conversation guided by the moderator's open-ended questions. The insights gained from this discussion were then transcribed and analyzed to identify key themes and patterns related to the issue of ICT convergence/deconvergence.

### 3.3. Focus Group Discussion Questions

Based on a review of the literature covering ICT convergence/deconvergence, the following research questions were designed to guide the focus group discussion. The guide was not a static research instrument but a preliminary one that offered the flexibility to ask follow-up and additional questions, if necessary. When the moderator raised a question for discussion, he explained the key terms

to ensure that all of the participants understood the definitions and scope of the concepts.

*Q1: The ICT market changes rapidly. What do you think about the phenomenon of market deconvergence in ICT?*

*Q2: There are more and more cases of M&A failures reported during the process of market convergence. What effects can such failures have?*

*Q3: It is hoped that ICT technological convergence will bring us all-purpose devices. Is there a single device that would allow you to access different media content? Please elaborate.*

*Q4: What are the effects of business protectionism on web technology evolution? What are the implications/impacts of US-China technology decoupling, especially in the field of ICT?*

*Q5: Some people claim that ICT convergence results in audience deconvergence. Do you agree? Give your reasons.*

### 3.4. Data Analysis

After transcribing the focus group discussion verbatim, the research team utilized thematic analysis (TA) to interpret and analyze the data. TA is a widely used approach for analyzing focus group data. To ensure a systematic coding process, the team developed detailed guidelines for thematic coding based on the six-phase approach to TA by Braun and Clarke [24], with modifications to suit the specific research objectives of this study.

## 4. Results and Findings

Research questions 1 and 2 aimed to address market deconvergence, while questions 3 and 4 focused on technological deconvergence, and question 5 explored audience deconvergence. The thematic analysis of the focus group discussion data revealed distinct themes within each of these categories, highlighting the unique complexities and nuances of each type of deconvergence.

### 4.1. Market Deconvergence

The participants in the focus group generally concurred with the assertion that market deconvergence is a prevalent phenomenon worldwide that is likely to persist in the foreseeable future. They identified the following factors contributing to this trend.

#### 4.1.1. De-Globalisation Because of the Pandemic and the US-China Trade War

The world economy is being pulled back from the global economic integration of recent years because of the COVID-19 pandemic and the US trade war with China. The pandemic has caused an unprecedented lockdown with the most stringent cross-border control measures, reinforcing concerns that global supply chains, including those in the ICT sector, are suffering profound disruptions. As

the world faces new challenges in overcoming the global economic slowdown, expectations are growing that more countries will close their doors to international business activities. The US trade war with China is an example of how the global economy is being reshaped by developed countries raising tariff barriers to imports. Tom gave his expert view on the recent escalation of the challenges in global politics and economics:

*“As we know, globalisation is the process of increasing interdependence and integration into the world community while the process of de-globalisation is the opposite. The US-China trade conflict and the Russia-Ukraine war is further hindering world market integration. US factories and companies in China have begun to return to their own countries or to other countries like Vietnam. In other words, there is an obvious trend of market deconvergence in the world today”.*

#### **4.1.2. Inability to Create the Desired Synergies**

Synergy is the combined effect of two or more companies interacting or working together to produce an ultimate effect. That is the driving force for market convergence in the form of M&A. However, there are more and more reported cases of M&A failure due to the inability of such transactions to produce the desired synergies. Another participant, Sam, highlighted the main causes and consequences of M&A failures:

*“It seems to me that among the various reasons for the failure of mergers and acquisitions, the inability to create synergies is one of the most critical factors. This is easy to understand: when a company acquires too many other companies in too many unrelated business areas, it is hard for it to manage the converged company profitably. In this circumstance, the company has to demerge by splitting up. Such corporate break-ups or spin-offs are examples of market deconvergence”.*

#### **4.1.3. Tighter Restrictions on Foreign Direct Investment**

A popular and convenient way for a conglomerate to expand globally is through foreign direct investment (FDI)—acquiring a large stake in a foreign company or buying it outright to expand into a new region. However, cross-border trade and investment have become more restricted, which might cause global market activities to diminish [16]. Sam shared his concern about the increasing uncertainties surrounding investment in global markets:

*“To my mind, the investment environment for business integration has suffered over the last decade or so as Western governments have adopted new and stricter FDI rules that cause greater legal uncertainties for parties carrying out transactions across borders. There are various factors contributing to the tightening of policy on investment from abroad, including growing concerns about high levels of inward investment from countries such as China into areas of strategic importance, which might pose a threat*



to national security”.

## 4.2. Technological Deconvergence

The majority of the participants in the focus group shared the view that the development of ICT technology is a key driver of convergence. They acknowledged that technology has the power to bring together previously isolated industries such as broadcasting, computing, and electronics, and to create all-purpose supermedia capable of carrying any media content. However, the participants also recognized that technological deconvergence is a clear trend, with various factors contributing to this phenomenon.

### 4.2.1. Emergence of New Platforms and Channels

The technology of digitisation allows multimedia content to be intermingled, sent, published, and stored on different types of devices. The functionalities and applications previously linked to standalone devices can now converge to a single media device [25]. A perfect example of such convergence is the smartphone, which combines the functionality of a telephone, a camera, a music player, and computer networks into a single device. However, this movement of media into all-purpose devices is far from replacing the numerous existing technologies and offering a single solution for the entirety of users’ mediated activities, as pointed out by Derek:

*“There is no single device in control of the flow of all media into daily life. In fact, the number and diversity of technologies has significantly increased in the last few years. Many people carry multiple devices—aptops, mobile phones, tablets, game stations—because different devices are designed to suit our needs when accessing content depending on our location and the type of content. Movies are more comfortably watched via smart TV in our living rooms, while short videos or news clips are conveniently consumed anytime, anywhere on our mobile phones. The emergence of more and more new ICT platforms and channels is one of the examples of technological deconvergence”.*

### 4.2.2. Protectionism by Device Manufacturers and Service Providers

Technological convergence prompts once isolated industries such as broadcasting, computing, and communications to enter alliances. Different forms of technology can cohabit in a single, all-purpose device, sharing resources and interacting. However, the device manufacturers and service providers may not always enable limitless interoperability and connection. Big ICT companies seek to protect their products and services—different operating systems such as macOS vs Windows, iOS vs Android, together with their associated ecosystems and services, introduce boundaries between devices from different companies. Examples were given by Ronald:

*“Deconvergence comes into play when big tech companies build their own*

*ecosystems to fence their clients inside. For example, with their built-in security, Apple's devices such as iPhone, iPad and iPod can only install and run the apps available in Apple's App Store. The back-end cloud-based connection through iCloud services and the entertainment content from Apple TV and the iTunes Store create a complete, closed ecosystem for Apple's devices. It is generally agreed that there are two major reasons for such technological deconvergence: one is the market's need to be profitable, the other is to maintain customer loyalty".*

#### **4.2.3. Technological Decoupling between the US and China**

Technological decoupling between the U.S. and China has caused serious concern. Although Chinese companies have already established a firm grip on internet services for consumers, much fundamental technological know-how remains under the control of US and Western companies. This concern is mentioned in the following quote from Ronald:

*"US-China technology decoupling has had a major effect on Chinese internet and technology companies, including big companies like Tencent and Alibaba. Take chips as an example. China cannot produce high-end chips yet. Chinese companies have been forced to develop their own chips and pursue homegrown alternatives to foreign technologies, like Huawei's Harmony mobile operating system, although this is a long-term investment and meaningful results may not be achievable, say, within five years. In every sense, technology decoupling means technological deconvergence".*

### **4.3. Audience Deconvergence**

The majority of participants in the focus group shared the perspective that ICT convergence can lead to audience deconvergence. Thematic analysis of the discussion data revealed several key themes related to this phenomenon.

#### **4.3.1. Cyber Retribalisation**

All of the participants agreed that netizens usually self-select into groups that share their own interests, attitudes, and beliefs. The internet allows people with similar interests to find and connect with each other. Cyber retribalisation is a term used to describe the formation of internet groups separated by users' online practices. The tribal nature of the internet speaks to a situation in which people break apart into small tribes rather than unite into a larger, interdependent global village. Fred elaborated on the effect on audiences of this paradoxical function of the internet:

*"I remember that there was a famous debate many years ago: does the internet bring people closer together or pull them apart? The first statement is audience convergence because the internet has the unique ability to connect any user with any other user. The second statement explains audience deconvergence because people are concerned that the internet connects more*

*people virtually but at the same time it makes people more isolated socially because the more time they spend online, the less time they spend interacting in real life”.*

#### **4.3.2. Audience Segmentation**

The wide spread of computing technology collapses the centralised power structure and hegemony of our society. More and more information channels are now available to audiences, which become segmented because each can look for media content that suits its interests and values as well as making it most comfortable. The segmentation of the audience is essentially the deconvergence of audiences, as illustrated by Mary:

*“Our teachers use a push vs. pull model of communication to distinguish between traditional and new media. Traditional media ‘push’ information to the intended recipients, whether the recipients like it or not. On the other hand, the audience in the new media era can ‘pull’ information anytime or anywhere, according to their own interests or needs. The internet and mobile devices have shifted control from the source to the receiver. The power to decide what is seen, read, or heard is increasingly in the hands of the audience. Such a phenomenon, to me, is an example of audience deconvergence”.*

#### **4.3.3. Information “Cocoon” Effect**

In the age of connected digital technologies, information overload is an over-exposure to, an abundance of, information and data that exceeds the audience’s processing capacity. Selective exposure to information is a way of dealing with information overload. It refers to the processes that allow an individual to select and focus on particular inputs for further processing while simultaneously suppressing irrelevant or distracting information. Fred explained the information cocoon effect of selective exposure:

*“I often ask my students: how many websites do you visit most often every day? Most of them answer around 10 websites. Selective exposure is a must for them to tackle the problem of information overload. At the same time, push algorithms have been widely adopted by internet service providers to analyse users’ preferences and send personalised information to each user. That is why we say that netizens are now living in their information cocoons. Such numerous cocoons are examples of audience deconvergence.”*

#### **4.3.4. Audience Inertia**

Audience inertia refers to the predisposition of users to follow certain practices irrespective of the availability of superior alternatives [26]. For example, iPhone users usually buy a new iPhone instead of another brand such as Huawei or Samsung when their old iPhone becomes obsolete because they have become used to the iPhone’s operational platform. According to Pearl, this audience in-

ertia is another kind of audience deconvergence:

*“I think that audience inertia is a big obstacle to the adoption of information and communication technologies. It is not easy to alter audience inertia after years of accepted practice. Audience inertia contributes to the deconvergence of audiences”.*

## 5. Conclusion and Discussion

ICT convergence has been a major trend in recent years, with breakthrough technologies such as digitalisation and the internet linking previously independent computing and information technologies, telecommunications networks, and media content. This convergence has brought about many benefits and opportunities for individuals, organizations, and societies [27] [28]. However, while the importance of ICT convergence has been fully realized and studied by scholars and industries alike, the phenomenon of deconvergence in ICT has received less attention. This study explores the concept of market deconvergence and its ties to external and internal factors that influence multinational corporations, as well as the different forms of deconvergence in ICT, including technological and audience deconvergence.

This study emphasizes the importance of studying deconvergence in ICT, as it provides critical insights into the drawbacks and challenges of ICT convergence. By understanding these negative effects, organizations can develop effective strategies to maximize the benefits of ICT convergence while mitigating its negative impacts. The study of ICT deconvergence yields important themes and insights that are essential for navigating the rapidly changing technological landscape.

Market deconvergence is tied to both external and internal factors that influence the business, management, and operations of multinational corporations. External factors, as exemplified by the COVID-19 outbreak and the stricter FDI restrictions resulting from the US-China trade war, have had significant effects on international markets, just as the world economy is facing great challenges. Associated with the failure of M&A to work as intended and expand the market, internal factors often force merged corporations to break-up or spin-off, as exemplified by the classic demerger of America Online and Time Warner.

Organisations considering cross-border business or investments should pay close attention to geopolitical conflicts. These tend to reverse the globalisation process by imposing government policies that help domestic industries by restricting international trade. At the business development and management level, organisations should realise that market convergence does not mean great economic gains, as M&A increasingly fails to produce the desired synergies. The process of market deconvergence can be seen as a response to and a balancing effect of the geopolitical and economic position by appropriately adjusting for local and global market developments in a way that allows organisations to func-

tion pragmatically.

Convergence has arisen through the evolution and popularisation of such breakthrough technologies as digitalisation and the internet. It links computing and other information technologies, telecommunications networks, and media content that originally operated largely independently. However, ICT convergence into all-purpose devices does not mean there is a single solution for users' mediated activities. Numerous new digital devices, platforms, and services have been created, meaning users are now able to select a specific ICT technology based on their individual interests and demands. The relocation of usage practices onto different devices and platforms illustrates the tendencies towards deconvergence [22].

Deconvergence also comes into play as a result of technological protectionism when device manufacturers and service providers use lock-in systems that force users to receive content, services, and applications from one brand only. Users have to pay higher costs and are inconvenienced if they want to transfer to another brand. The technological decoupling of the US and China makes the tendencies towards technological deconvergence ever more obvious. We have to bear in mind, when talking about technological convergence, that device manufacturers and service providers will not automatically aim for convergence for the benefit of their users. They will obstruct convergence to retain or boost profits, and at the same time cultivate their customers' loyalty.

Audience deconvergence occurs when transmedia content streams on different devices and platforms, leading to the fragmentation of the audience and the increased availability of options to select the content they like. However, due to humans' limited capacity to process information, audiences have to choose their favourite websites from which to consume information. In so doing they retreat into their own online "tribes", with each choosing to live in its own information cocoon. We should also be aware of audience inertia, meaning people prefer to stay with an incumbent technology even if there are better choices available. Exploration of the traits in audience deconvergence not only depicts the actual practice of audience ICT usage, but also reveals the reasons for such deconvergence. It is important for us to reflect critically on the phenomenon and work out ways for audiences to make the best of ICT convergence and break out of their information cocoons.

These three types of deconvergence are interrelated. For example, technological deconvergence can lead to audience deconvergence while technological and audience deconvergence can cause or speed up market deconvergence. The wave of deconvergence in ICT warrants our attention and reflection because it is gaining momentum, even as ICT convergence remains the major trend.

The focus group discussion method used in this research has some limitations. One is the limited generalizability that the focus group discussions may not be representative of the broader population because participants are usually selected purposively or through convenience sampling, which may not reflect

the diversity of the population being studied. Another one is the limited depth that although focus group discussions can generate a rich and nuanced understanding of a topic, the depth of discussion may be limited due to the time constraints of the method.

The majority of participants in our focus group were deliberately selected from the same university because of their expertise and knowledge related to ICT deconvergence, making them “information-rich” and ideal for the research topic. However, the limitation of this type of group composition is that many participants already knew each other, which may have limited their willingness to provide more detailed responses or challenge each other’s perspectives [29]. This familiarity could have created a potential bias in the discussion.

To mitigate this limitation, a group of participants who are strangers to each other might be more willing to contribute their inputs to the discussion because of the increased anonymity. Therefore, future research could consider recruiting participants from a wider range of backgrounds and institutions to ensure a more diverse and varied group composition, which could provide a more comprehensive understanding of the perspectives on ICT deconvergence.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

### References

- [1] Kim, E., Kim, J. and Koh, J. (2014) Convergence in Information and Communication Technology (ICT) Using Patent Analysis. *Journal of Information Systems and Technology Management*, **11**, 53-64.  
<https://doi.org/10.4301/S1807-17752014000100004>
- [2] Kumar, R. (2008) Convergence of ICT and Education. *World Academy of Science, Engineering and Technology*, **40**, 556-559.
- [3] Meikle, G. and Young, S. (2011) Media Convergence: Networked Digital Media in Everyday Life. Palgrave Macmillan, Basingstoke.
- [4] Kingsley, A. (2017) Information Communication Technology (Ict) in the Educational System of the Third World Countries as a Pivotal to Meet Global Best Practice in Teaching and Development. *American Journal of Computer Science Technology*, **5**, 1-5.
- [5] Gordon, R. (2003) The Meanings and Implications of Convergence. In: Kawamoto, K., Ed., *Digital Journalism: Emerging Media and the Changing Horizons of Journalism*, Rowman & Littlefield, Lanham, 57-73.
- [6] Hacklin, F. (2007) Management of Convergence in Innovation: Strategies and Capabilities for Value Creation beyond Blurring Industry Boundaries. Physica Verlag, Heidelberg.
- [7] Bröring, S., Cloutier, M. and Leker, J. (2006) The Front End of Innovation in an Era of Industry Convergence: Evidence from Nutraceuticals and Functional Foods. *Journal of R&D Management*, **36**, 487-498.  
<https://doi.org/10.1111/j.1467-9310.2006.00449.x>

- [8] Lindio-McGovern, L. (2007) Neo-Liberal Globalization in the Philippines: Its Impact on Filipino Women and Their Forms of Resistance. *Journal of Developing Societies*, **23**, 15-35. <https://doi.org/10.1177/0169796X0602300202>
- [9] Sanders, E. (2003) AOL Posts Record \$99-Billion Loss. Los Angeles Times. <https://www.latimes.com/archives/la-xpm-2003-jan-30-fi-aol30-story.html>
- [10] Jin, D.Y. (2013) De-Convergence of Global Media Industries. Routledge, New York. <https://doi.org/10.4324/9780203588031>
- [11] Gomes-Casseres, B. (2015) A Yahoo Break-up Could Be the Start of Lots of Splits. Harvard Business Review. <https://hbr.org/2015/12/a-yahoo-break-up-could-be-the-start-of-lots-of-splits>
- [12] Pool, I.S. (1984) Technologies of Freedom. Belknap Press, Cambridge. <https://doi.org/10.4159/9780674042216>
- [13] Jenkins, H. (2006) Convergence Culture: Where Old and New Media Collide. New York University Press, New York.
- [14] Max, R., Hannah, R. and Esteban, O.O. (2015) Internet. <https://ourworldindata.org/internet>
- [15] Pincus, H., Wojcieszak, M. and Boomgarden, H. (2017) Do Multimedia Matter? Cognitive and Affective Effects of Embedded Multimedia Journalism. *Journalism and Mass Communication Quarterly*, **94**, 747-771. <https://doi.org/10.1177/1077699016654679>
- [16] Witt, M. (2019) De-Globalization: Theories, Predictions, and Opportunities for International Business Research. *Journal of International Business Studies*, **50**, 1053-1077. <https://doi.org/10.1057/s41267-019-00219-7>
- [17] Jin, D.Y. (2012) The New Wave of De-Convergence: A New Business Model of the Communication Industry in the 21st Century. *Media, Culture & Society*, **34**, 761-772. <https://doi.org/10.1177/0163443712448952>
- [18] Peil, C. and Sparviero, S. (2017) Media Convergence Meets Deconvergence. In: Sparviero, S., Peil, C. and Balbi, G., Eds., *Media Convergence and Deconvergence. Global Transformations in Media and Communication Research—A Palgrave and IAMCR Series*, Palgrave Macmillan, Cham, 3-30.
- [19] Kalamar, D. (2016) Convergence of Media and Transformation of Audience. *InformaTol*, **49**, 190-202.
- [20] Bird, S.E. (2011) Are We All Producers Now? Convergence Culture and the Media Audience. *Cultural Studies*, **25**, 502-516. <https://doi.org/10.1080/09502386.2011.600532>
- [21] Tavares, T.A. and Schofield, D. (2016) Interaction Design for Convergence Medias and Devices: A Multisensory Challenge. In: Lugmayr, A. and Dal Zotto, C., Eds., *Media Convergence Handbook—Vol. 2: Firms and User Perspectives*, Springer, Berlin, 245-260. [https://doi.org/10.1007/978-3-642-54487-3\\_13](https://doi.org/10.1007/978-3-642-54487-3_13)
- [22] Sparviero, S., Peil, C. and Balbi, G. (2017) Media Convergence and Deconvergence (Global Transformations in Media and Communication Research—A Palgrave and IAMCR Series). Palgrave Macmillan, Cham. <https://doi.org/10.1007/978-3-319-51289-1>
- [23] Hennink, M.M. (2014) Focus Group Discussions: Understanding Qualitative Research. Oxford University Press, New York.
- [24] Braun, V. and Clarke, V. (2006) Using Thematic Analysis in Psychology. *Qualitative Research in Psychology*, **3**, 77-101. <https://doi.org/10.1191/1478088706qp063oa>

- [25] Allen, M. (2008) Web 2.0: An Argument against Convergence. *First Monday*, **13**. <https://doi.org/10.5210/fm.v13i3.2139>
- [26] Seth, H., Talwar, S., Bhatia, A., Saxena, A. and Dhir, A. (2020) Consumer Resistance and Inertia of Retail Investors: Development of the Resistance Adoption Inertia Continuance (RAIC) framework. *Journal of Retailing and Consumer Services*, **55**, Article ID: 102071. <https://doi.org/10.1016/j.jretconser.2020.102071>
- [27] Goold, M. and Campbell, A. (1998) Desperately Seeking Synergy. *Harvard Business Review*, **76**, 131-143.
- [28] Gitelman, L. (2006) *Always Already New: Media, History, and the Data of Culture*. The MIT Press, Cambridge. <https://doi.org/10.7551/mitpress/1208.001.0001>
- [29] Galanes, G. and Adams, K. (2013) *Effective Group Discussion: Theory and Practice*. 14th Edition, McGraw-Hill, New York, NY.