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Unequal access to digital resources understanding the role of technology in educational disparities in urban and rural China

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ABSTRACT

Introduction. Educational disparities among rural and urban areas have been a significant issue and require the emphasis of recent literature and policymakers. *This study aims* to address a critical gap in the literature by examining the role of digital inequality in perpetuating educational disparities between rural and urban areas in China. Specifically, it explores how the lack of digital adoptability and digital skills mediates this relationship, highlighting the urgent need for targeted interventions in educational institutions.

Study Participants and Methods. The study gathered data from the students of selected educational institutions using questionnaires. The researchers have sent 602 surveys in rural schools and 523 in urban schools but after one month only 357 (59.30%) valid responses were received from rural schools and 290 (55.45%) received from urban schools. The study also used Smart-PLS to examine the association between the understudy variables.

Results. The outcomes indicated that digital inequality has a positive association with a lack of digital adoptability ($\beta = 0.459$, $p<.00$) and a lack of digital skills ($\beta = 0.601$, $p<.00$), and both have a positive association with educational disparities ($\beta = 0.319$, $p<.00$) and ($\beta = 0.569$, $p<.00$) in rural areas but a negative association among variables in urban areas in China. The outcomes also exposed that the lack of digital adoptability and lack of digital skills positively mediates between digital inequality ($\beta = 0.146$, $p<.00$) and educational disparities ($\beta = 0.342$, $p<.00$) in rural areas but negatively mediates in urban areas in China.

Discussion. The study guides policymakers in establishing policies to reduce educational disparities in urban and rural areas by providing digital technology and skills in rural areas.

Conclusion. This study highlights the impact of digital inequality on educational disparities between rural and urban areas in China. It emphasizes the mediating role of digital adoptability and skills in this relationship. The findings offer insights for policymakers to bridge educational gaps by improving digital infrastructure and skill development in rural regions.

KEYWORDS

digital inequality, lack of digital adoptability, lack of digital skills, educational disparities, educational institutions

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INTRODUCTION

The urban rural digital inequality is a vivid example of how equitable access to technology remains distant today, which in turn deepened the divide in education. Aligned with UNESCO's Sustainable Development Goal 4 (SDG 4) on quality education, this study examines how unequal access to digital resources perpetuates educational disparities between urban and rural China. By addressing this critical issue, the research contributes to global efforts to promote equitable and inclusive education in the digital age. Given that technological infrastructure is well developed in urban areas and that the internet is widely available there, digital resources must also be easily found in these areas. On the other hand, challenges that prevail in rural areas include inadequate and expensive devices, unavailability of internet connection, and low levels of computer literacy. This digital inequality is profound and affects nearly all aspects of life but primarily education leading to learning disparities [1]. There is otherwise poor provision in rural areas, and even if students are connected, they often cannot afford to implement technology, a situation that their urban counterparts rarely contend with. This fundamental imbalance establishes the context for conceptualizing how home digital divides impact on education inequalities and the precise part played by digital adoption and literacy in mediating.

The paper introduces that the digital inequality in urban and rural China is associated with digital adoptability capacity. That is because residents of cities are more exposed to technology than people in rural areas and, therefore post higher chances of embracing technological devices in learning languages and other activities in their careers and day to day lives. In rural settings, though, the uptake of technology is limited and infrastructure support weak thus limiting their capacity to adopt technological solutions [2]. This lack of adoptability also extends beyond the inability to source materials but is a result of exclusion from existing advancements in IT solutions. According to Osipov, Lunqu, Dun, and Yuan [3], low access and resources in rural areas are still depriving people from optimizing the use of technology let alone making education facilitated by technology an everyday affair. Altogether, digital inequality impacts on the development of digital skills consequently.

The learning environment of urban students involves the use of technologies thus availing them a chance to learn and develop vital IT competencies. More school located in urban areas are more likely to adopt e-learning platform and virtual classroom and other tools with enhanced skill learning [4]. In contrast, Olanrewaju, et al., says that rural students do not have the opportunities to use such technologies at all because of shortage of resources, teachers' lack of preparedness, and weak technologies [5]. This leads to a digital skills gap that indeed worsens the position of rural learners even more. The general lack of essential digital skills hampers rural students from getting adequate academic performance through online based resources.

The correlation between digital adoptability and the differences in education prove how important technology is in today's society. Crittenden, Biel, and Lovely III [6] Points those students of urban areas, who have high digitization index, can use different electronic materials for example electronic books, online classes, and virtual tutorials to support their learning. On the other hand, rural students employ traditional more constrained ways of learning as characterized by a low ability to adapt to digital learning. This inability to utilize technology education plays a major role in arising gaps in the level of education between the urban and the rural students [7].

Lack of adoptability also slows innovation and creativity of teaching methods, making rural schools to lag far behind the urban schools. Likewise, the lack of digital skills affects educational issues directly in the similar manner that fundamental rights are violated. As Cairns, Ebinger, Stinson, Jordan, and University [8] says, technological literacy becomes such a critical component of nearly all types of interactions, whether it be in completing a course online or collaborating with people in interconnecting knowledge networks. Skilled early in this type of learning, urban students are likely to be productive in the integrated digital education systems. Rural students are frequently neglected because they rarely interact with others and do not know how to gain such abilities. Also, Behizadeh, Thomas, and Behm Cross [9] pointed out that this shortcoming of skills prevents rural students from performing as per the expectations of urban students and hence perpetuates the social justice loophole in learning outcomes.

Digital adoptability as a mediator of digital inequality and education inequality demonstrates the existence of an access barrier to educational disparities. Challenges faced by rural areas in access to devices and networks limit the facility by which digital tools for education may be embraced [7]. Such a restricted adoptability translates the existing disparities of the rural students in education and makes it very hard for them to compete with their urban counterparts. Researches like Manca and Delfino [10] state that if rural schools are unable to get the necessary funds to adopt technology, students are left stranded in an outdated schooling system, unable to close the technology gap with schools in the urban areas which have embarked on implementing the technology. In like manner, the mediating function that digital skills performed in the connection between digital disadvantage and academic gaps shows that disadvantage has ripple effects.

Rural students do not afford to use technologies hence they do not have a chance to master the skills which are core for achieving better scores in a system that relies on technology [11]. This amplified skill gap deepens the educational inequity between the urban and rural students because the urban students with adequate digital skills demonstrate enhanced ability to engage in online learning. The combination of digital inequality, adoptability, and required skills, the rural learners are then inconvenienced in many ways by issues revolving on the inequality in this digital age.

The research seeks to establish the effects of digital divide particularly its relation to educations inequity within urban and rural china. This paper explores how non adoption of digital technologies and lack of skills moderates this association, as well as important factors maintaining unequal access to education. In this work, the incontrovertible link between digital divide and educational divides and the issue of urban-rural divide in China is examined. It also includes the two mediating factors of digital adoptability and digital skills which, have not been explored fully by prior research studies. By focusing on these dynamics, the study fills a significant gap in the state of knowledge regarding how technological mediated inequalities deepen and impact education. Finally, it sketches a convincing socio-geographical digital access and proficiency disconnect, that can inform specific intervention strategies and policy frameworks.

LITERATURE REVIEW

Digital inequality helps explain the lack of digital adoptability especially in areas that technological equipment and infrastructure differ [12]. Previous works have shown that digital inequality means access to devices, connectivity, and digital skills hinders the use of those tools. For instance, Nascimento et al. [13] pointed out that the restricted digital opportunities for people lead to limited investigation and incorporation of novel technologies into the life cycle, thus dealing with reverse adoption. The rural dwellers are under undue pressure given that most of them have poor access to physical structures and are economically less well-off making it difficult for them to operate within the digital platform.

Additionally, research by Gamji, et al. [14] suggest that the digital inequality is not only in physical connectivity, but other divides pertain to, exposure to digital media, skill in technology and enthusiasm. All these features together determine people’s ability and desire to use digital technologies. Studies conducted on emerging markets show that little awareness of the tech and scarcity of content in the native language increases digital non-adoptability. Other crucial features of this connection are economic restraints. People in low-income homes and communities spend more on basic requirements, thus excluding them from [15]. That way people in digitally deprived context continue to be isolated from the evolving aspects of technology. These dynamics emphasize how digital inequality persists to influence the gaps to digital access and usage. Therefore, we propose that,

H1: Digital inequality has a relation with lack of digital adoptability

Digital inequality is crucial to the development of digital skills because inequality in information communication technology and other technologies reduces the possible ways of skill enhancement. Mirazchiyski and Černe [16] Pointed out that first order digital inequality hampers one’s abilities to gain universal necessary digital competencies. This is evident especially between people in rural or

low-income settings, where presence of technology in the learning process is a rarity resulting in unending skill gaps. Also, Soomro, Kale, Curtis, Akcaoglu, and Bernstein [17] importantly notes that while digital divide goes beyond access to technology and reaches quality of technology use and learning related resources.

In other words, people cannot acquire digital literacy if they do not practice working and navigating through digital environments. Additionally, there is no supportive ecosystem as seen in the availability of training programmes, digital literacy projects to bridge the skills gap for whatever reasons leaving the marginalized groups more exposed [18]. Other research works also show that schools in these disadvantaged areas lack adequate capital to incorporate acquisition of digital skills into their teaching-curriculum. As Joshi, Vinay, and Bhaskar [19] mentioned before, ineffective and inadequate training, alongside outdated equipment also limit the kinds of opportunities students have to get the most out of using technology in the classroom. Thus, the gap between digitally included and excluded communities widens, entrenching the gap between digitally haves and have nots, thus social inequalities. Therefore, we say that,

H2: Digital inequality has a relation with lack of digital skills

Lack of digital adoptability strongly plays a role in exacerbating educational inequities because it provides learners with unequal chances to use and profit from digital resources. Rizvi and Nabi [20] Found that those, who can hardly master new technologies, often experience a shortage of opportunities to get free online tutorials, innovative learning resources, and virtual classrooms. This is a more significant problem in the rural or developing regions that lack the necessary IT support of digital learning to reduce impartment of equitable education.

As Kalolo [21] discovered that digital adoption, capabilities of incorporating and making efficient use of technology in education is associated with the quality of educational opportunities, and their affinity and accessibility to everyone who might benefit from it. Students with disabilities who cannot manipulate digital devices or find it difficult to effective use of the learning innovations are locked out of the online resources and blended instructions, thus deepening the learning divide.

The problem is more acute where traditional pedagogy dominates and hinders access to digital literacy as a medium of instruction. Adoptability constrains by socio-economic and institutional factors put disadvantaged students behind [22]. These barriers cause the exclusion from vitally important educational resources, like individual learning processes, and virtual tools for cooperation. Therefore, there are continuity issues of educational disparities increases due to the digital non-adoptability primarily in the learning environment that lacks adequate technology and resources. Therefore, we make a hypothesis that,

H3: Lack of digital adoptability has a relation with educational disparities

Inadequate digital competence is one of the causes of inequality in education, especially for the current learning processes that involve technology solutions. Núñez-Canal, de Obesso, and Pérez-Rivero [23] Found that students with low levels of digital competencies experience challenges in gaining, comprehending and using digital education materials, thus, might experience difficulties in studying.

In environments where technology is blended in to the teaching and learning process, those who have no ability to use these technologies in their learning are disadvantaged by those who have such abilities. The Mehra, Sikes, and Singh [24] study also reveals that digital divide is further reflected in rural and low income areas since they avail lesser opportunities to digital training, facilities or gadgets. Self-employment modern peoples have little chance to gain these critical digital skills hence the educational achievement gap is widened.

In such environments, lack of digital competence hinders the student’s interactions with current approaches toward learning and, overall, affects the academic and career outcomes. Furthermore, Aldhafeeri and Alotaibi [25] research indicate that the digital skills gap stakeholders reduce students ‘engagement in cooperative and engaging learning. The more the digital tools are integrated into education, the more the students without these necessary skills to work with such tools are bound to

suffer from educational injustices thus resulting to futures negative ramifications as regards to their education and career. Therefore, we propose that,

H4: Lack of digital skills has a relation with educational disparities

Among the factors, digital adoptability, interacts with digital inequality to enhance educational inequalities. Digital inequality is defined as the difference in the basic availability of digital technologies and still poses a problem more prominently in the rural or economically less developed zones [26]. But even if web technologies become more easily accessible by learners and organizations, the organizational and infrastructural conditions that facilitate their appropriation can be a significant challenge.

Digital non-adopters are typically found unwilling or unable to adapt to different technologies and this may be due to highlights like lack of training, culture or infrastructure. Students from digitally disadvantaged regions have been evidenced to use technology for learning purposes less frequently than their counterparts even though they have access to the devices [5]. For this reason, such students cannot leverage technology to equalize education and significantly increase the gap between rural and urban schooling.

When students cannot use such tools properly, digital learning outcomes are reduced, which in turn detracts from the public's education experience [27]. It is for this reason that lack of digital adoptability is a key mediator that exacerbates the effects of digital divides on learners' performance. Therefore, we make a hypothesis that,

H5: Lack of digital adoptability mediates the relation of digital inequality and educational disparities

The lack of personal digital skills is central to mediating the relationship between the digital divide and educational achievement gaps. Digital inequality that is always the result of the inequality to digital resources becomes the hindrance for students in the region that is considered to be low-income [28]. However, all these are compounded by the absence of adequate digital skills. In other words, while students from the disadvantaged areas get an opportunity to acquire the digital devices, and necessary internet resources their lack of skills to utilize them impacts their performance. Ferri, Grifoni, and Guzzo [29] reveal that students with inadequate digital literacy face challenges when it comes to participating in digital platforms and searching for information, as well as when undertaking collaborative tasks online. These features are becoming more relevant now, especially when all educational processes seem to be involved in technology as a tool for instruction. When such resources cannot be used, learners from poor background suffer more in their academics perpetuating the vice of educational inequality [27]. Thus, the lack of digital competence bears the brunt of involution as a fundamental brake on educational mobility and a harbinger of deepening educational regionalization in favor of the cities. Therefore, we say that,

H6: Lack of digital skills mediates the relation of digital inequality and educational disparities

RESEARCH METHODS

The study examines the impact of digital inequality on lack of digital adoptability and lack of digital skills and their role of educational disparities and also investigates the mediating role of lack of digital adoptability and lack of digital skills among digital inequality and educational disparities in educational institutions in rural and urban areas in China. The study gathered the data from the students of the selected educational institutions using questionnaires.

The items were used to measure the constructs used in the study such as digital inequality is measure with four items taken from Dodel and Mesch [30], lack of digital adoptability is measured with five items taken from Lazar, Panisoara, and Panisoara (2020), lack of digital skills is measured with five items adopted from Van Laar, van Deursen, van Dijk, and De Haan [31] and educational disparities is measured with six items taken from Levinson, Barlin, Altman, and Satin [32].

In addition, the study has selected the students of high secondary schools in rural and urban areas as the respondents. These students were chosen using simple random sampling. The surveys were sent to the students by personal visits to their schools. The researchers have sent 602 surveys in rural schools and 523 in urban schools but after one month only 357 valid responses were received from rural schools and 290 received from urban schools. Hence, the study has 59.30 percent response rate from rural areas while 55.44 percent response rate from urban areas.

Moreover, the study also used smart-PLS to examine the association between understudy variables. This tool deals with the primary data and gives best outcomes using large data sets and complex frameworks [33]. The article used one predictor named digital inequality (DIN) while the study used two mediating variables named lack of digital adoptability (LDA) and lack of digital skills (LDS) and the study also used one predictive variable named educational disparities (ED). Table 1 shows these variables in framework.

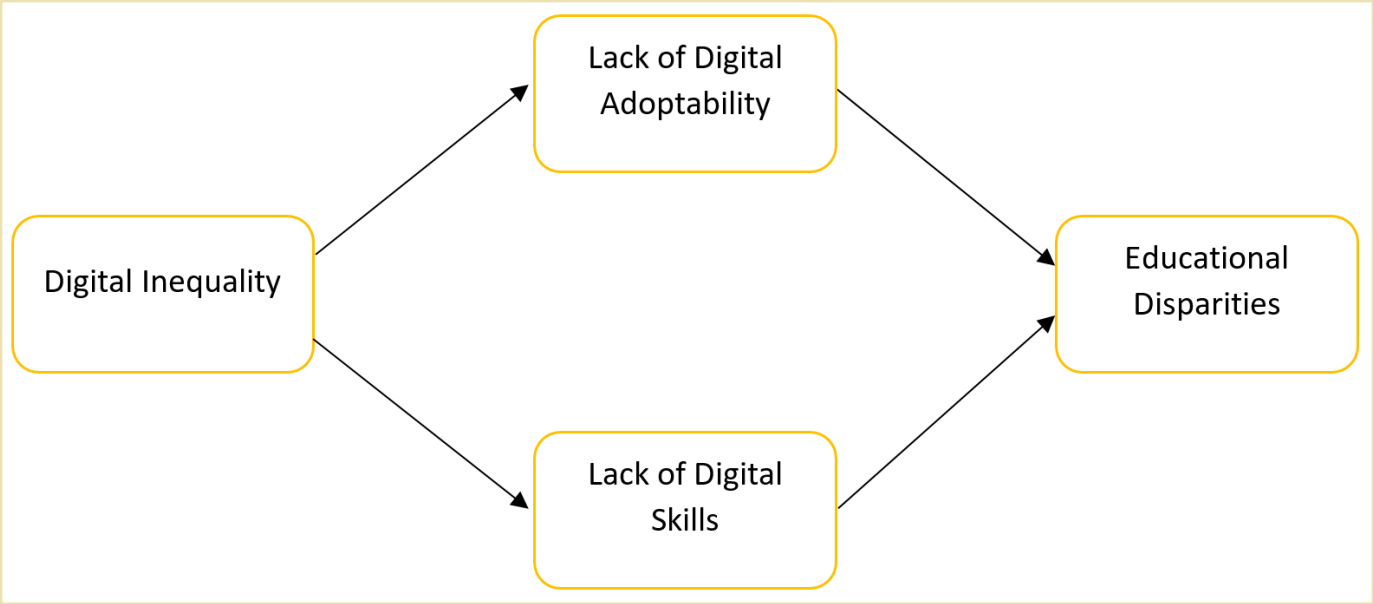

Figure 1 Research framework

RESEARCH FINDINGS

The study examines the convergent validity that exposed the items' correlation. Firstly, convergent validity is checked using urban data with help of factor loadings and average variance extracted (AVE) and both the tests exposed that the values are larger than 0.50. In addition, itis checked using Cronbach Alpha and also using composite reliability (CR) and both the tests exposed that the values are larger than 0.70. These values exposed a high correlation among items. Table 1 shows these outcomes.

Table 1

Convergent validity (Urban)

Constructs	Items	Loadings	Alpha	CR	AVE
Digital Inequality	DIN1	0.807	0.827	0.883	0.653
	DIN2	0.821			
	DIN3	0.866			
	DIN4	0.734			

Educational Disparities	ED1	0.855	0.891	0.917	0.650
	ED2	0.699			
	ED3	0.832			
	ED4	0.797			
	ED5	0.834			
	ED6	0.810			
Lack of Digital Adoptability	LDA1	0.878	0.968	0.975	0.888
	LDA2	0.976			
	LDA3	0.965			
	LDA4	0.974			
	LDA5	0.913			
Lack of Digital Skills	LDS1	0.864	0.921	0.941	0.760
	LDS2	0.864			
	LDS3	0.870			
	LDS4	0.888			
	LDS5	0.874			

Secondly, convergent validity is checked using rural data with help of factor loadings and average variance extracted (AVE) and both the tests exposed that the values are larger than 0.50. In addition, itis checked using Cronbach Alpha and also using composite reliability (CR) and both the tests exposed that the values are larger than 0.70. These values exposed a high correlation among items. Table 2 shows these outcomes.

Table 2

Convergent validity (Rural)

Constructs	Items	Loadings	Alpha	CR	AVE
Digital Inequality	DIN1	0.816	0.879	0.917	0.734
	DIN2	0.866			
	DIN3	0.903			
	DIN4	0.841			
Educational Disparities	ED1	0.709	0.845	0.886	0.565
	ED2	0.701			
	ED3	0.766			
	ED4	0.781			
	ED5	0.754			
	ED6	0.792			
Lack of Digital Adoptability	LDA1	0.876	0.857	0.898	0.641
	LDA2	0.810			
	LDA3	0.857			
	LDA4	0.798			
	LDA5	0.642			
Lack of Digital Skills	LDS1	0.848	0.849	0.892	0.624
	LDS2	0.824			
	LDS3	0.773			
	LDS4	0.715			
	LDS5	0.782			

The study also examines the discriminant validity that exposed the variables' correlation. Firstly, discriminant validity is checked using urban data with help of Heterotrait Monotrait (HTMT) ratio and test exposed that the values are not larger than 0.90. These values exposed a low correlation among variables. Table 3 shows these outcomes.

Table 3

Discriminant validity (Urban)

	DIN	ED	LDA	LDS
DIN				
ED	0.188			
LDA	0.152	0.454		
LDS	0.138	0.442	0.450	

Secondly, the discriminant validity is checked using rural data with help of Heterotrait Monotrait (HTMT) ratio and test exposed that the values are not larger than 0.90. These values exposed a low correlation among variables. Table 4 shows these outcomes.

Table 4

Discriminant validity (Rural)

	DIN	ED	LDA	LDS
DIN				
ED	0.780			
LDA	0.515	0.725		
LDS	0.685	0.863	0.620	

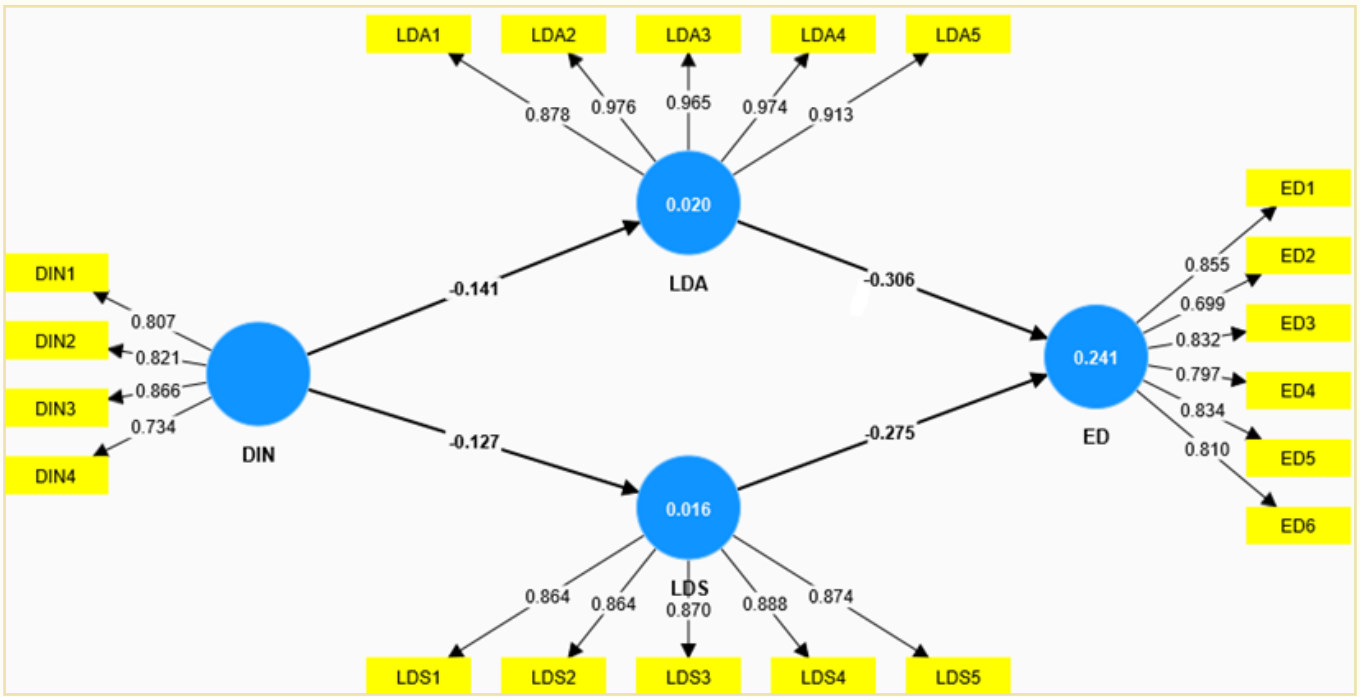

Figure 2 Measurement model assessment (Urban)

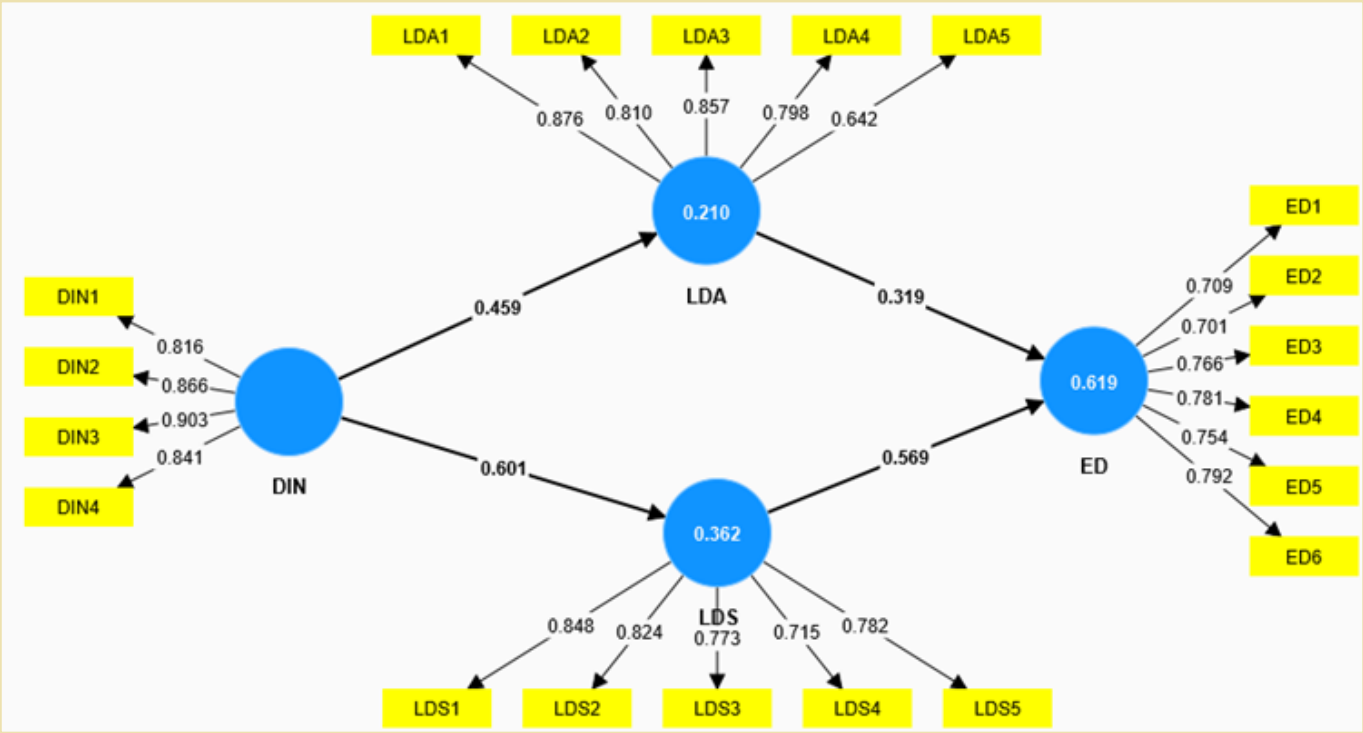

Figure 3 Measurement model assessment (Rural)

The outcomes of path analysis using urban data indicated that the digital inequality have negative association with lack of digital adoptability and lack of digital skills and accept H1 and H2. In addition, the results also exposed that the lack of digital adoptability and lack of digital skills have negative association with educational disparities in urban areas in China and accept H3 and H4. Finally, the outcomes also exposed that the lack of digital adoptability and lack of digital skills negatively mediates among digital inequality and educational disparities in urban areas in China and accept H5 and H6. Table 5 shows these associations.

Table 5

Path analysis (Urban)

Relationships	Beta	Standard deviation	T statistics	P values
DIN -> LDA	-0.141	0.058	2.456	0.014
DIN -> LDS	-0.127	0.064	1.980	0.048
LDA -> ED	-0.306	0.075	4.098	0.000
LDS -> ED	-0.275	0.061	4.544	0.000
DIN -> LDA -> ED	-0.043	0.020	2.130	0.034
DIN -> LDS -> ED	-0.035	0.021	1.685	0.093

The outcomes of path analysis using rural data indicated that the digital inequality have positive association with lack of digital adoptability and lack of digital skills and accept H1 and H2. In addition, the results also exposed that the lack of digital adoptability and lack of digital skills have positive association with educational disparities in rural areas in China and accept H3 and H4. Finally, the outcomes also exposed that the lack of digital adoptability and lack of digital skills positively mediates among digital inequality and educational disparities in rural areas in China and accept H5 and H6. Table 6 shows these associations.

Table 6

Path analysis (Rural)

Relationships	Beta	Standard deviation	T statistics	P values
DIN -> LDA	0.459	0.051	9.017	0.000
DIN -> LDS	0.601	0.040	15.098	0.000
LDA -> ED	0.319	0.055	5.752	0.000
LDS -> ED	0.569	0.053	10.791	0.000
DIN -> LDA -> ED	0.146	0.035	4.153	0.000
DIN -> LDS -> ED	0.342	0.045	7.672	0.000

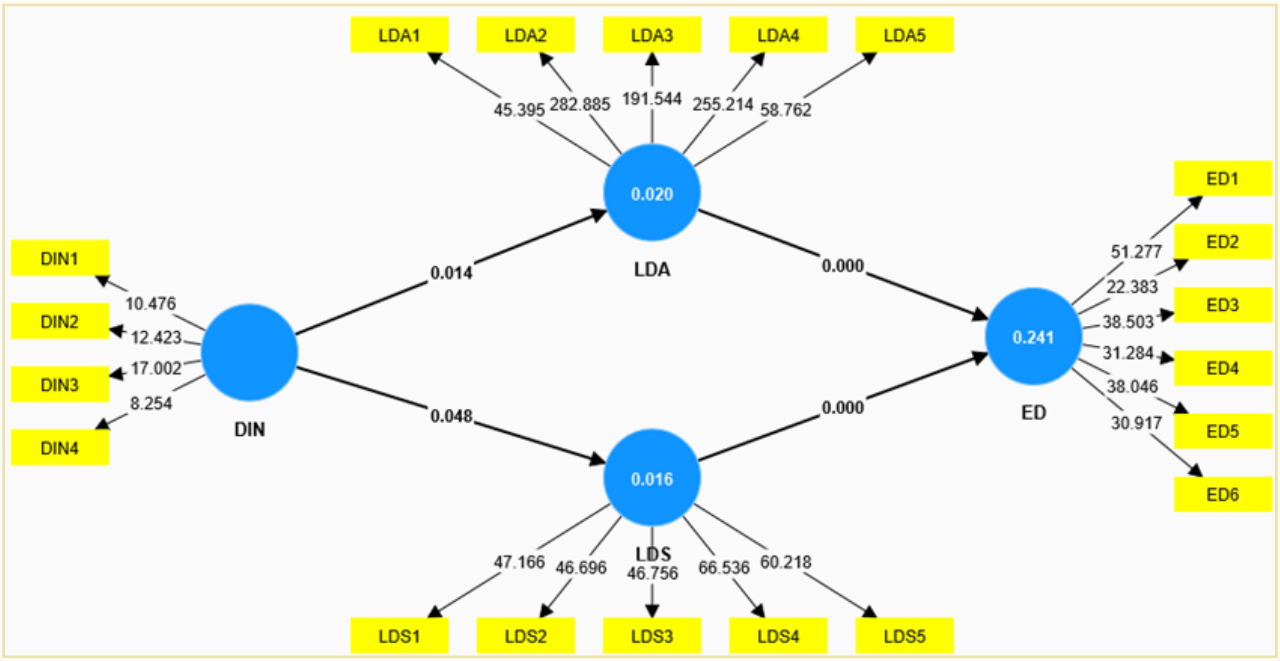

Figure 4 Structural model assessment (Urban)

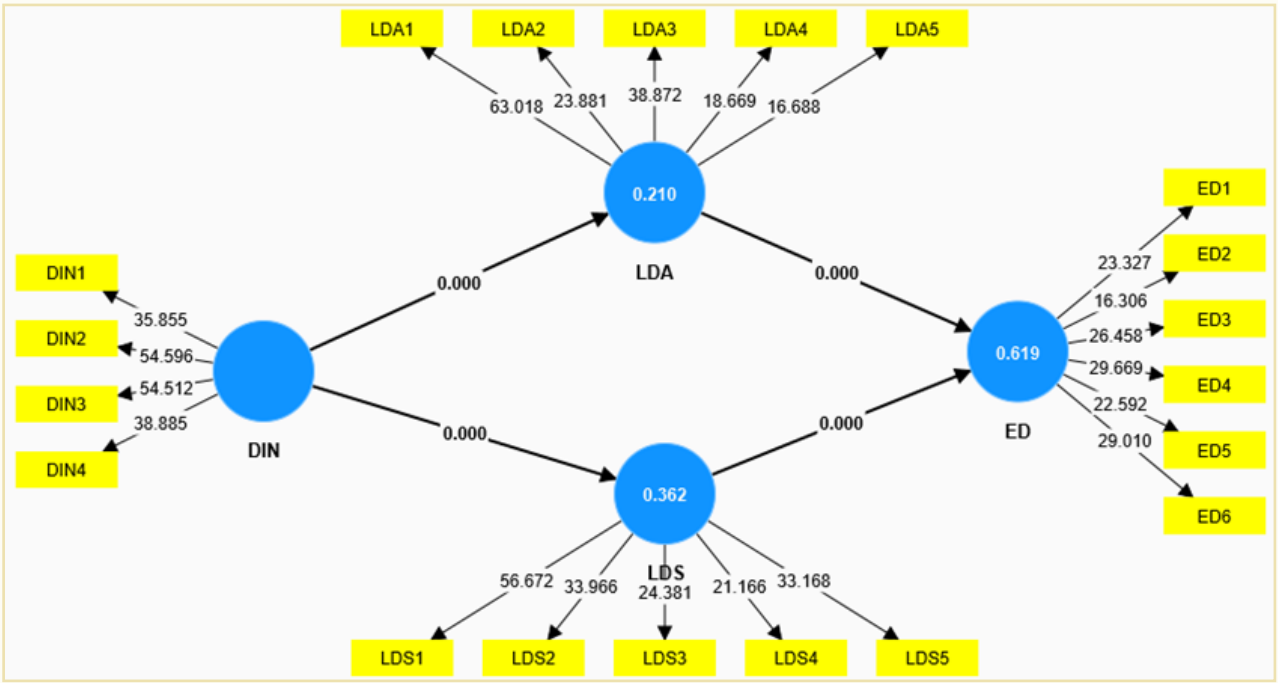

Figure 5 Structural model assessment (Rural)

DISCUSSIONS

Digital inequality touches on non-adoption of digital technologies with more meaning in the developing world due to mini or no access to technology and Internet. Earlier studies like Durand et al. [12] have pointed out that disparities in the access to digital resources can result in unequal potential to adopt digital technologies in urban and rural regions. This is because urban region is better endowed in terms of infrastructure, affordability and awareness than rural region hence, more likely to have higher level of digital adoptees.

On the other hand, they exposed procrastination common among the rural community resource such as erratic internet connection, high costs of technological devices, and low interaction with technology. For example, in HR sector, a study by Philip and Williams [26] pointed out that until there is availability of cheap and effective technological support, people and organizations in such remote areas cannot incorporate the available technologies into their school systems. This lack of digital adoptability strengthens the gap and hinders efforts towards adoption of technology in important sectors such as education.

Digital inequality also has a cause-and-effect relationship with the digital skills which in turn compounds the differences in utilization by the urban and rural inhabitants. Restricted access to technology reduces viable ways of using the technology to gain knowledge and skills critical for engaging the digital economy and learning environment. From Livingstone, Mascheroni, and Stoilova [34] it was established that exposure and usage are two key ways that define the acquisition of the digital skills which are relatively higher among the urban people due to enhanced access.

They are unable to develop these skills due to these constraints including lack of training programs and poor information communication technology support primarily experienced by rural communities [35]. As a result, people in such area cannot engage optimally in online learning or use other technologies in their academic advancement. This lack of skill aggravates educational inequity, as Tyagi, Vishwakarma, Rishi, and Rajiah [36] for this reason avow that skill gaps sustain systematic injustice in education.

Low digital adoptability negatively affects education inequality because learners with limited capacity are excluded from integrating technology into their learning. Here, educational institutions in rural areas do not have the infrastructure that is necessary for delivering students' access to online learning, teaching and learning resources, or educational software and virtual classrooms. When such tools cannot be acquired, students bear the brunt of using conventional formative and informative methods that may be ineffective in the current world.

As Holmes and Burgess [37] say, digital inequalities in education lead to this kind of students being structurally disadvantaged where they hail from is often resource poor. However, without adoptability, education stakeholders cannot introduce new teaching strategies that improve learning and perpetuate the already existent gap between the Urban and Rural sector in education.

Likewise, the study finds that scarce digital competencies are among the core reasons causing educational inequalities. Using media skills, and engagement with web tools, connection to e-resources and work in virtual environments are vital in contemporary learning. When students and teachers do not possess these skills, they are greatly hampered by them in using technologies to promote student achievement. The studies conducted by Tsai [38] highlighted that the shortcoming of the use of digital skills among learners and instructors prevent effective use of web-based resources impacting learning achievements.

Furthermore, lack of such skills perpetuates the system's inequalities since firms located in wealthy urban regions with access to improved training infrastructure will produce better performers as compared to fellow regional rivals from rural regions [39]. Lack of digital adaptability as a mediator of digital inequalities and educational inequalities explains why inequality of technologies affects successive phases in integrated societies. Digital inequality hinders use of the devices and communication infrastructure which in turn hinders adoptability and the ability to implement use of digital tools in teaching.

Literature like Menegaki [40] established that the lack of technology adoption in areas of poor people results in the delivery of substandard educations. For instance, schools lacking high-speed

internet connection or appropriate educational technology are unable to adopt use of technology in their schooling, a situation that puts learners from poor background at a disadvantageous position since they do not access technology enriched education as is the case with urban children.

In the same way, a lack of digital skills also mediates digital inequality in prescribing educational inequalities. According to Richardson and Bissell [41] inequality in using technology skills mean that many people get limited practice to develop the needed skills in how to go about engaging in digital processes. Hence, students and teachers in rural areas lack the capacity to unlock full potential of technology for learning.

This view is supported by research such as that of Tyagi et al. [36] as they showed how lack of skills brought about by inequalities in access reinforce a trend that reduces chances of education equality. These mediators stress the relation between accessibility, adoptions, and skills shaping educational outcomes revealing a complex role of the digital divide for educational equity.

STUDY IMPLICATIONS

The findings of this study are useful to policy makers and other stakeholders interested in understanding and eradicating inequalities in education in urban as well as rural areas of China. Recognizing innovative division as a constant that drives differences, it appeals for enhanced infrastructure in the rural setting specifically cheap technology gadgets and internet connectivity. This study emphasizes the need to enhance the digital adoption and skills aiming at rural learners need to improve in their training that need the teacher's intervention.

The authorities should also ensure the use of technology in the rural school operations to provide equal and quality education hence the use of technology in the rural curricula. It is therefore agreed that collaboration between the public and the private sectors is crucial for achieving sustainable solutions. These measures can address some of the institutionalized bias and make education more egalitarian in the end narrowing the gap in result differentiation between the urban and the rural realm.

LIMITATIONS

There are several limitations which can be identified in this study, so they should be considered. First, it concentrates on the samples of only urban and rural areas in China and as we know China's status and technological background is quite different from other regions or countries there might be difficulty in generalizing the results. Second, the study employs cross-sectional research and therefore cannot describe developing long-term impacts on digital inequality and differences in education. Third, self- administered measures of digital adoptability and skill may bias the results hence compromising the validity of the results. Moreover, cultural factors, policies of institutions, and differences in economic situations were not given enough attention to and can impact the observed relationships. For that, future research should address these gaps for a more general investigation.

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