BRIDGING THE DIGITAL DIVIDE THROUGH SOCIAL INCLUSION: A CROSS- COUNTRY ANALYSIS STUDY OF PAKISTAN, INDIA AND BANGLADESH

Myra Imran Rafiq *

Lahore School of Economics, Lahore, Pakistan

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ABSTRACT

In the 21st century, where digitalization is at its peak, the problem is that digital exclusion persists, which hinders the notion of attaining equal opportunities for people; in this sense, inclusion in the digital realm is connected to the state of social inclusion. Social inclusion is the amalgamation of several concepts, and perceiving it from the lens of the digital divide is one of those many factors. The paper endeavours to explore a quantitative relationship by studying three countries: Pakistan, India, and Bangladesh, and understanding the state of digital and social inclusion in them by undertaking an Ordinary Least Squares Regression (OLS) analysis, which will be adjusted via country, and Years Fixed Effects. Data from the World Bank Database was extracted to link the digital divide and social inclusion, which are intertwined to draw the relationship that people with either social or economic vulnerabilities are likely to be digitally excluded rather than prioritized. The study found that Pakistan needs to catch up in social progress and digital inclusivity in South Asia when compared to India and Bangladesh, which have fared better and have, over the years, been able to improve their digital and social inclusion rates. The paper also recommends improving economic and social dimensions to promote development and lessen the digital divide.

INTRODUCTION

In today's context, the term "digital divide" describes a wedge created between those who can benefit from new technological advancements and those who cannot, which translates to those individuals who have internet and a computer with them, in contrast to those who do not (Aydin, 2021). Although multiple definitions can be attributed to this phrase, the most commonly accepted one, which will also be utilized in this research paper, the one mentioned above, is better suited to the context of this paper. "Social inclusion" is another terminology that will be made a crucial subject of discussion throughout this paper, and according to the (United Nations Development Programme, 2020), it is described as a process through which efforts are made to create equal chances so that everyone, regardless of their background, can realize their full potential in life. Many researchers believe that social inclusion and digital inclusion are entwined (Sanders & Scanton, 2021) and believe that the digital divide exacerbates social inclusion levels. The digital divide is bound to increase when certain socially disadvantaged groups are segregated from society based on their per capita income levels, religion, race, age, and educational background (Van Deursen et al., 2021). Within the context of this research paper, to quantify the digital divide, internet penetration rate (as a % of the population) will be used, which, as defined by ITU (2010), is the percentage of a certain country's or region's total internet population. Anybody who is now able to use the internet is considered an Internet user, according to the Internet World Statistics (IWS): if (a) The person must be able to connect to the Internet, and (b) the person must possess the fundamental understanding needed to use web

technologies. In order to draw a comparative analysis, the graph below showcases the internet penetration rate in 3 major countries: Pakistan, India, and Bangladesh. The data has been derived from the World Bank's database for 12 years (2010-2021). Due to data unavailability, it wasn't easy to extract the figures from 2022 and 2023.

Figure 1 illustrates that while all three countries started from approximately a similar level in 2010, over the years, the country which was able to advance the most was India, with a standing internet penetration rate of 47% in 2021, followed by Bangladesh that stood at a rate of 31.5% in the same year. Pakistan's figure was 27.5%, which could be improved. Worldometer (2022) reported that as of 2023, Pakistan's population stands at 232 million; when both these figures are juxtaposed, it becomes certain that Pakistan does need to take additional measures to improve its internet accessibility, as it has not even crossed a penetration rate of 50% as of yet in any of these years. One notable aspect has been a positive upward trend during 2019 and onwards, which was the year of the pandemic. This does provide some consolation that the state of infrastructure and internet facilities can be improved in the long run.

Digital inclusion is gradually being linked with living standards, well-being, and social development of a population – instead of merely resorting to identify Gross Domestic Product (GDP) figures or per capita incomes, social development has now assumed a rather broader approach by encompassing other socioeconomic factors (Lybeck et al., 2023). Ragnedda et al. (2022) opined that digital inclusion has multilayered aspects to it and simultaneously

possesses a positive relationship with social exclusion levels; people with limited access will be overshadowed and outpaced by those who already possess the high-income level or upper-middle class label advantage in society.
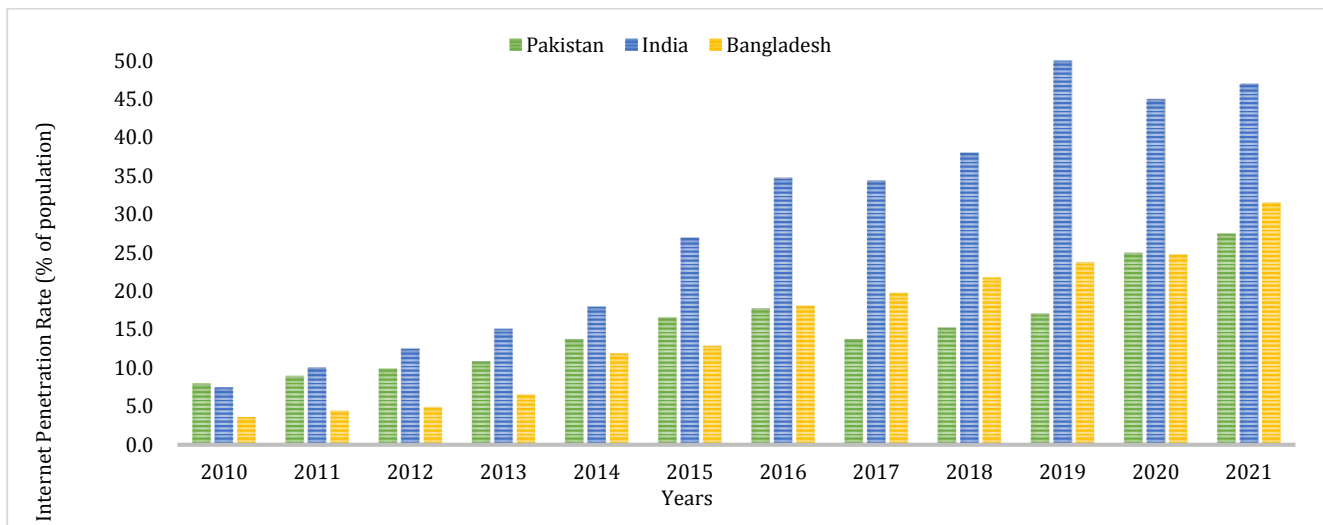

Figure 1. Internet Penetration Rate Countrywide (% of Population); Source: World Bank (2023); Note: The author inserted the data retrieved into Microsoft Excel to make the graph.

The idea of 'e-citizenship', defined as any individual who can exercise their rights in the cyber world, is also emerging as a newfound concept. This theory advocates for all members of society to have access to modern Information and Communications Technology (ICT) equipment, gain Information Technology (IT) literacy, and use cyberspace channels to communicate with their friends, families, and businesses. E-citizenship is one of the reasons why in many countries, both East and West of the globe, the focus is on enabling citizens to use technology and applications and ultimately altering the way people organize and communicate before (Jæger, 2021) so as progress in their respective careers and their lives in general. As social development becomes a holistic concept, amalgamating facets such as digitalization, and social inclusion within it, it becomes obvious that in the long run, if the digital divide isn't tackled, it could lead to critical threats for the people. One such sector is the employment sector – with ICT's making the production process smoother and improving productivity, enterprises are now opting to install more capital-intensive equipment, which could reduce, or in some cases even eliminate, the need for labour altogether. An intrinsic opportunity cost is associated with not investing enough in internet penetration and ICT infrastructure, which will showcase itself in the long run in the guise of unemployment, lower productivity levels, and a backward economy.

Many scholars believe that the improvement in internet penetration itself cannot be seen as an outlet that achieves the target of social inclusion altogether until those who are the most vulnerable in society are made part of the process (Pérez-Escolar & Canet, 2022). This means that even if more technological infrastructure, such as speedy internet access or fibre cables, is installed, there is no guarantee that social development can occur once and if individual users are empowered by ICT-related knowledge. However, this can become a possibility with the help of the government – if it can increase its expenditure, and enhance the technological skills of those in rural areas, as well as those people, who are segregated based on their religion, race, and income levels, then the situation can improve.

In countries such as Pakistan, India, and Bangladesh, many underlying issues may restrict individuals from accessing the internet, even if there is an increase in internet penetration (Shair et al., 2022). Some people can't afford digital devices, whereas others may lack the education to use them, which is why the government here needs to take a step forward and ensure that every household has at least one digital device to curb the digital divide to some extent. The government should join hands with relevant stakeholders to perpetuate the notion of digitalization forward and equip the youth with digital skills, which can aid them, and the country in the long run.

Research Questions and Objectives
Innumerable research papers and policy analysis that has been conducted identified specific groups of people who are at a disadvantage and unable to reap any benefits from growing digitalization as a result of low incomes, low literacy levels, isolation, and lack of connectivity in rural areas, along with many parts of urban areas too (Morss and Murray, 2001).

In light of those mentioned above, the primary question is; Can social inclusion bridge the digital divide?

The data published by the World Bank for 2021 showed that a staggering 63% of Pakistan's population is concentrated in rural areas, whereas in India, the rate is 64.61%, and in Bangladesh, it is 61.05% – as per extant literature and existing research, such areas are given minimal financial assistance. They have chances of limited ICT-related information, restricted access to ICT training programs, and the ability to run capital equipment, making it a challenge for them to reap the benefits of digitalization.

Based on those mentioned earlier, the following relationship is hypothesized.

H_0: There is no significant relationship between digital divide and social inclusion levels
H_1: There is a significant relationship between digital divide and social inclusion levels

The multiplier effect of a pervasive digital divide will exhibit itself in the form of more dependent households as a result of unemployment, low incomes, a redundant skillset, exhaustion of the government budget when and if unemployment benefits are

provided, and ultimately a backward economy, that has failed to advance overtime in the realm of peaking digitalization.

METHODOLOGY

This paper makes use of the World Bank indicators' data that have been provided on their website to ensure that a credible source of information has been chosen. The paper focuses on Pakistan, India, and Bangladesh, as they have high inequality rates in some areas, and even in a province as developed as Punjab, there are only some cities within it, such as Lahore or Multan, that the government pays more attention to than the others.

The irony is that even in Lahore and Multan, the level of rural-urban divide, divergence in the socioeconomic status, GDP per capita, and education levels vary, which restricts digital inclusion to a great extent. To quantify the impact of the digital divide, which is measured through the internet penetration rate (% of the population), the independent variables, as shown in Figure 2, have all been taken on a national rather than a district, local, or regional level.
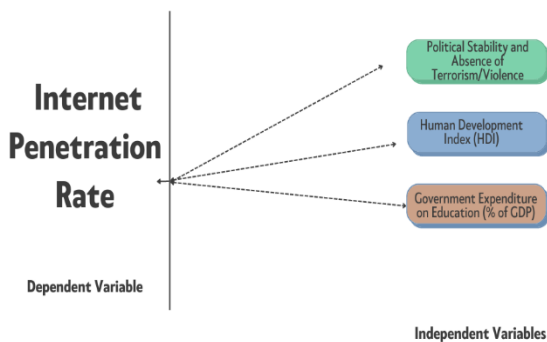

Figure 2. Key Variables that have been employed in the research; Source: World Bank and UNDP (United Nations Development Programme) Database; Note: The model is based on the author's selected variables in order to run a regression on them and was made manually.

The terminologies of the above-mentioned variables are as follows:

1. Political Stability and the Absence of Terrorism/Violence: This institutional metric demonstrates a nation's political and governmental stability and includes acts of terrorism/violence (Kraay et al., 2010). It ranges from -2.5 to +2.5, with -2.5 representing a country possessing a volatile political climate, whereas, on the other hand, +2.5 showcases a calm, harmonic political environment.
2. Human Development Index (HDI): HDI comprises three essential aspects of human development: life expectancy, focus on education, and a good level or standard of living (United Nations Development Programme, 2022).
3. Government Expenditure on Education (as a % of GDP): The total general government spending on education (current, capital, and transfers) is shown as a share of the gross domestic product (GDP). Included are expenses paid for by transfers to the government from external funding sources. The terms local, regional, and central governments are commonly used interchangeably (The World Bank, 2019).

Empirical Estimation

During the process of the research conducted, there were papers that did make use of the independent variables which the paper at hand discusses. When it comes to the variable political stability and absence of terrorism/violence, there were papers such as those of Ahmed (2007) and Vassilakopoulou and Hustad (2021) that did highlight it plays a significant, if not a crucial, role in determining the depth of digital divide in a country.

Similarly, with regards to the HDI, a similar conclusion was reached by Pérez-Castro et al. (2021), who postulated that elements such as education, health, and improved living standards are foundations in curtailing the digital divide in a nation, and are therefore to be taken seriously.

Liu (2021) conducted a research regarding the government spending on education opted for the stance that, especially in light of the recent pandemic, it has become vital that all income groups and segments of the population have access to firstly the internet, secondly, internet infrastructure, and thirdly quality education so as to use the two to their advantage in this growing age of digitalization.

Having mentioned the above, in order to test the correlation between the digital divide and social inclusion levels, the following equation has been constructed.

$$internet penetration rate_{it} = \beta_o + \beta_1 political stability and absence of terrorism/violence_{it} + \beta_2 human development index_{it} + \beta_3 \; government expenditure on education \; (as a \% of GDP)_{it} + \varepsilon_{it} \quad (1)$$

In equation (1), the digital divide ($internet penetration rate_{it}$) in country i and time t is a function of social inclusion, which is reflected by the political stability and absence of terrorism/violence in country i and time t ($political stability and absence of terrorism/violence_{it}$), the human development index in country i and time t ($human development index_i$), and government expenditure on education (as a % of GDP) in country i and time t $government expenditure on education(as a \% of \; GDP)_{it}$ and an error term (ε_{it}). In the above-stated model, the coefficients to be estimated are $\beta_o, \beta_1, \beta_2, \beta_3,$ and ε_{it} is the error term.

The dependent variable, internet penetration rate has been used as a crucial determinant to support the paper's thesis statement that social inclusion and digital inclusion are intermixed. This variable measures the percentage of Pakistan's, India's, and Bangladesh's total population that possesses ready internet access. It is expected that even if there is internet penetration, the living standard of the people is not improved; unless there is spending on education, the HDI gets worse every year, and the ongoing political unrest dissuades investors from investing, then the digital divide will only further widen, as income disparities, illiteracy levels, and poverty rise.

On the other hand, the first independent variable, in this case, is political stability and the absence of terrorism/violence. This was chosen because the global economy is undergoing structural change – digitalization is rampant and requires significant capital investment. Suppose a country isn't able to achieve a politically stable status. In that case, the likelihood is that investors might be reluctant to make an investment in profitable ventures like Amazon and be open to the idea of setting up IT hubs.

The second independent variable is the Human Development index, which measures health, education, and standard of living. The HDI is a meaningful indicator and one which reflects social development. Its range falls between 0 – 1%, and the closer it is to

1%, the higher its social development. If social development is improved, then so will social inclusion; the better the living standards of the people, the more the investment in internet facilities and related infrastructure. Additionally, the healthier the people, and the more educated they are, the greater the chances of human capital also increasing as people learn new skills, ideas, techniques, and ways of doing work, thus raising their productivity thresholds.

The third independent variable is government spending on education (as a % of GDP). This is because social inclusion involves gaining equal access to educational opportunities regardless of an individual's background. The general perception is that government schools need to be revamped, their course structures need to be updated, and the staff needs to be of better quality. In this instance, the school enrollment rates at the primary, secondary, and tertiary levels are also adversely affected.

With more pupils choosing to sit at home instead of attending school, and even if they do, they don't directly benefit, as they aren't being taught in a conducive environment, the chances of learning are therefore low, and so are awareness levels when it comes to advancing in the digital field. In such a situation, to uplift the state of social inclusion, the government needs to step in and provide funding for schools and focus on enhancing their quality too.

RESULTS AND DISCUSSION

In this section, the paper describe and discuss a few key findings to substantiate its claims further. The three countries under consideration are Pakistan, India, and Bangladesh, and they have been made a part of this discussion so as to shed light on the fact that social inclusion can make a difference when it comes to attaining a digital skillset. For reliable results, the data is from the World Bank and the United Nations Development Programme's (UNDP) websites.

Table 1 shows that there are a total of 22 observations for each variable that are analyzed for Pakistan, as seen above, and all of them have a positive mean figure, except for political stability and absence of terrorism/violence, as the values incorporated were a negative figure which represents an unstable political climate. The standard deviations for all the variables are less than 1, which means they are close to the mean and indicate that these variables are relevant in bridging the digital divide in Pakistan. Additionally, the table at hand for India shows 22 observations for each variable, and apart from the mean for the political stability and absence of terrorism/violence variable, which is negative due to the negative range provided, all of the rest are positive. The standard deviations are closer to the mean for all the variables except the internet penetration rate, which signals dispersion, and more variation in its dataset, as the values are not clustered around the mean.

Moving forward, the observations taken for Bangladesh are 22. The mean trend is similar for the variable political stability and absence of terrorism/violence as it has a negative mean due to the range being negative. The standard deviation has less variation for all the variables other than the internet penetration rate, which was also observed in India's case. This similar trend signals dispersion as observed and more variation in this variable's dataset, as the values are not clustered around the mean.

Table 1. summary statistics of the variables analyzed for Pakistan, India, and Bangladesh.

Variable	Pakistan	India	Bangladesh
Human Development Index (HDI)			
Observations	22	22	22
Mean	.424	.58	.564
Standard Deviation	.204	0.054	.056
Minimum Value	.004	491	.485
Maximum Value	.546	.645	.661
Government Expenditure on Education			
Observations	22	22	22
Mean	2.412	3.857	2.065
Standard Deviation	.329	.478	.102
Minimum Value	1.768	3.143	1,872
Maximum Value	3.003	4.474	2.221
Internet Penetration Rate (% of Population)			
Observations	22	22	22
Mean	.107	16.574	8.805
Standard Deviation	.071	17.201	9.986
Minimum Value	0.007	.5	.1
Maximum Value	.275	0.50	31.5
Political Stability and Absence of Terrorism/Violence			
Observations	22	22	22
Mean	-2.201	-1.08	-1.273
Standard Deviation	.478	0.228	.291
Minimum Value	-2.81	-1.51	-1.86
Maximum Value	-1.1	-.62	-.73

Source: Author's calculations based on World Bank (2023), and UNDP Datasets.

Table 2. Internet penetration rate's relation with all three independent variables for the countries: Pakistan, India, and Bangladesh.

Independent Variables	(1)	(2)	(3)	(4)
Government expenditure on education as (% of GDP)	1.967**	1.177	1.579**	1.283**
	(0.795)	(0.748)	(0.729)	(0.488)
Human Development Index (HDI)		5.035***	5.316***	-1.942
		(1.373)	(1.310)	(1.274)
Political Stability and Absence of Terrorism/Violence			-0.812**	-0.154
			(0.317)	(0.248)
Years Fixed Effect	No	No	No	Yes
				(0.844)
Constant	-0.340	-2.180**	-3.990***	-3.474***
	(0.790)	(0.871)	(1.089)	(0.883)
Observations	56	56	56	56
R-squared	0.102	0.284	0.364	0.835

Dependent variable: Internet penetration rate (% of Population); Source: Author's calculations based on World Bank, and UNDP data; Note: *** Indicates a 1% significance level, ** indicates a 5% significance level, and * indicates a 10% significance level.

In the case of drawing a linkage between the internet penetration rate and the government expenditure on education (as a % of GDP), Table 2 illustrates that there is a 5% significance level and showcases that an improvement in the education expenditure by the government will simultaneously lead to an enhancement in the internet penetration rate of all three countries. The coefficient value for the government expenditure on education is 1.967, which means that a 1% improvement in this variable would lead to an improvement in the internet penetration rate by 1.967. When the variable HDI is added along with government expenditure on education in column (2), then this shows a coefficient value of 1.177, which means that a 1% improvement in government expenditure on education would lead to a betterment in the internet penetration rate by 1.177. The same is the case when political stability and absence of terrorism/violence are added in column (3), and it shows that then, the coefficient value will be 1.579 when regressed against the internet penetration rate with the two existing variables which illustrates that a 1% improvement in government expenditure on education would lead to an improvement in the internet penetration rate by 1.579. Column (4) is related to the Years' Fixed Effects, and it shows a coefficient value of 1.283, which is less when compared to columns (1), (2), and (3).

Similarly, when it comes to the HDI, the p-value is < 0.01, which means that there is a 99% possibility that the null hypothesis, in this case, will be rejected. The results above show that with an increasing rate of HDI, there will be more internet penetration, too, so the result is highly statistically significant. Moving forward, in column (2), when HDI is regressed along with the government expenditure on education, then the coefficient value is 5.035, which means that an increase in HDI leads to a 5.035% improvement in internet penetration. Similarly, when the variable Political Stability and Absence of Terrorism/Violence is added in column (3), then the coefficient value is 5.316, which means that an increase in HDI leads to a 5.035% improvement in internet penetration by 5.316. Column (4) is related to the Years' Fixed Effects, and it shows a coefficient value of -1.942.

Lastly, the relationship between political stability and the absence of terrorism/violence is negative with the internet penetration rate but is statistically significant, up to 5%, or p-value < 0.05. This relationship may be depicting that there might be an endogeneity present which explains that if political stability and the absence of terrorism/violence possess a negative relationship with the internet penetration rate, then the same might be the case in a vice-versa situation where an increase in internet penetration rate might be impacting the political stability and absence of terrorism/violence rate. In column (3), when political stability and absence of terrorism/violence, HDI, and government expenditure on education are added, the coefficient value is -0.812, which may be due to political stability being an endogenous variable, which not only impacts the internet penetration rate, but is also influenced by it to some extent. Column (4) is related to the Years' Fixed Effects, and it shows a coefficient value of -0.154.

Findings and Analysis
In terms of the analysis, when it comes to the internet penetration rate and the HDI, as expected, there exists a strong, positive correlation. The HDI gives a holistic measure of social development and inclusion, which is why it has been used, and the fact that their relationship is highly correlated shows that this Index does influence internet penetration in a country. Therefore, there needs to be a focus on social factors so as to raise awareness, encourage inclusivity, and motivate the youth to join the digital inclusion journey. The essence of this is that in column (1) when there is only HDI's measurement against the internet penetration rate, then there is no coefficient recorded, but when government expenditure on education is added, then the coefficient value becomes 5.035 in column (2), and in column (3), with the inclusion of Political Stability and Absence of Terrorism/Violence, the coefficient value increases to 5.316, which means that after adding all these variables, and then regressing for the effect of government expenditure on education, there will be an improvement in the internet penetration rate by 5.316, without incorporating for Years' Fixed Effects, as has been seen in column (4), where the coefficient is now -1.942, and has decreased.

Similarly, for the internet penetration rate and government expenditure on education for all three countries too exhibits a statistically significant, positive relationship, as was anticipated by the author. This is illustrated by the fact that in column (1), only regressing for the internet penetration rate, and government expenditure on education, the coefficient is high, at a value of 1.967, which means that an increase in government expenditure on education would lead to an improvement in the internet penetration rate by 1.967. However, when HDI, and political stability and the absence of terrorism/violence are added, the coefficient declines to 1.579 in column (3), which means that these variables are important, but perhaps may not have such a significant role as government expenditure on education would,

as the internet penetration rate in this case will only improve by 1.579, prior to the results of 1.967 in column (1). Hence, in this case, it can be said that the model employed in this paper may not be completely perfect, as some limitations may exist, and those have been catered to in the limitations section of the paper.

Lastly, when it comes to the relationship between the internet penetration rate and political stability and the absence of terrorism/violence, it can be said that the results are slightly different from the author's expectations. The negative relationship attained in this regard insinuates the idea that perhaps the political stability rate is an endogenous factor, which not only impacts the internet penetration rate and may also be affected by it. Roughly by accounting for the year fixed effect, the sign could also be negative, but it might also be owing to other unexplained variables that have not been included in this paper. It is difficult to identify what is impacting the negative sign, but nonetheless, the paper has tried to form its interpretation regarding what the causative factor could be. It is particularly noteworthy that when all three variables, political stability and absence of terrorism/violence, HDI, and government expenditure on education, are taken in column (3), only then does there exist a coefficient value, which is -0.812, due to the explanation mentioned above. However, in column (4), when the data is accounted for Years' Fixed Effects, then the coefficient does improve and is -0.154.

Overall, with regards to the variable political stability and absence of terrorism/violence, there is an inverse relationship between this and the internet penetration rate, even when other variables are added, which may then also hint at an element of bias, as there was a high correlation between this variable and government education. Previous findings have corroborated the results that this paper was trying to illustrate: Ragnedda et al. (2022) used the multivariate analysis approach and then a cluster analysis by collecting a sample of UK citizens to establish a linkage between digital inclusion levels and socio-economic vulnerabilities. The conclusion derived was that there is a correlation between social and digital exclusion levels, and ultimately, the disadvantaged groups of society, either economically or socially, are primarily impacted as a result of the digital divide. On the other hand, the research conducted by Mubarak et al. (2020) that opted for a multivariate regression approach concluded a vividly strong relationship between incomes and education. The wider the gap between these two variables, the greater the digital divide, which is the deduction that this paper has also reached. The variables in this paper are somewhat different from those taken by Mubarak et al. (2020). However, overall, the unanimous conclusion is that socio-economic factors determine the brevity of the digital divide and its prevalence.

Limitations of the Study

In order to ensure that the study is credible, it is necessary that a few limitations of this paper also be mentioned. While efforts were made to warrant that the research was conducted as efficiently as possible, there may still were a few shortcomings. The independent variables were handpicked – there could have been other variables too, and in accordance with the paper's context, the most prominent ones have been made a part of this paper, as per the researcher's best judgment. The data obtained from the World Bank's database for government expenditure on education only applies to spending conducted by the Ministry of Education and excludes spending on educational activities by other ministries. The internet penetration rate does not classify how many urban and rural households have access to the internet and its infrastructural facilities. It is representative of the total population, and another hindrance is also that it only considers the number of households with access to the internet and telecommunication facilities rather than an individual's accessibility, which might not be the most suitable measure for understanding how many people are still digitally excluded. The HDI is a decent indicator in gauging social inclusion and development, but it is not broad enough to include other things, such as gender disparity and human security. Then again, these topics are another debate and did not fall under the scope of this topic, which is why they haven't been discussed.

CONCLUSION AND POTENTIAL RECOMMENDATIONS

The digital divide gap is not easy to bridge, considering that multiple factors play a role in determining it. Sectors such as education are allotted a minute portion of the budget. Though there is an investment in IT infrastructure to some extent, it is mostly only in the already developed cities such as Lahore, Delhi, or Dhaka, and that too in chosen localities. The dualism theory states that there are divergences between the rich and the poor people in an entire nation, and this is a stark reality in all three countries. Politicians are deeply embroiled in politically-motivated battles rather than catering to the economy. In such a situation, the paper has a few key recommendations to offer.

Firstly, there needs to be political stability in the country, and when that is done, the ideal way forward will be by providing provincial governments in the country with a set education budget, which is at least 5-8% of the country's GDP share. To ensure that there is no embezzlement or misappropriation of funds, an independent auditing committee can the transactions conducted by those provincial governments semi-annually to make sure that the funds are going in their intended places. These funds will improve educational quality by focusing more on digital education to equip the youth with valuable and transmittable skills. In addition, social media platforms also need to be monitored for hate speech so as not to incite detestation towards a political party, especially during the election season. This is important so that things can work out organically in a country and not be influenced by social media pressure.

Secondly, there needs to be more job creation; only increasing minimum wage rates is insufficient, as it reduces firms' labour demand and increases unemployment in the long run. The country needs industries and businesses set up where people can work and earn incomes for themselves. Once the necessities are met and their living standards rise, they can purchase IT infrastructure like smartphones, which they couldn't do before.

Thirdly, relying only on current infrastructure, cable, and fibre optic lines is not enough. Pakistan's, and Bangladesh's governments need to focus on improving the ICT landscape in all its provinces and areas. The development will be slightly time-consuming, but if it is successful, it will open up opportunities for investors to establish IT centres and hubs in the nation. PayPal and Amazon aren't available in Pakistan or Bangladesh right now, though they are in India due to the very redundant nature of the ICT landscape. But this can all change if the government and the State look forward to improving the economy and trying to bridge the digital divide to the best of their abilities.

The recommendations mentioned earlier are achievable, provided that countries like Pakistan can finally agree on a stable form of government, increase their industrial capacity, and convert from a consumption-led economy to an export-oriented one. Developing

ICT infrastructure will require time and patience. However, this effort will be invaluable in helping the country benefit from self-sustaining growth, innovation capabilities, and investment ventures in the long run.

REFERENCES

Ahmed, A., 2007. Open access towards bridging the digital divide–policies and strategies for developing countries. Inf. Technol. Dev. 13, 337–361.

Aydin, M., 2021. Does the digital divide matter? Factors and conditions that promote ICT literacy. Telemat. Informatics 58, 101536.

ITU, 2010. International telecommunication unions. Onlie Retrieved February 06, 2023, from website: https://unstats.un.org/unsd/accsub-public/docs/itu.pdf.

Jæger, B., 2021. Digital Citizenship–A review of the academic literature/Digital Citizenship: eine systematische Literaturanalyse. dms–der Mod. staat–Zeitschrift für Public Policy, R. und Manag. 14, 5–6.

Kraay, A., Kaufmann, D., & Mastruzzi, M. (2010). The worldwide governance indicators: methodology and analytical issues. In Policy Research Working Papers. World Bank. https://doi.org/10.1596/1813-9450-5430.

Liu, J., 2021. Bridging digital divide amidst educational change for socially inclusive learning during the COVID-19 pandemic. Sage Open 11, 21582440211060810. https://doi.org/10.1177/21582440211060810.

Lybeck, R., Koiranen, I., Koivula, A., 2023. From digital divide to digital capital: the role of education and digital skills in social media participation. Universal Access in the Information Society. https://doi.org/10.1007/s10209-022-00961-0.

Morss, K., Murray, R., 2001. Researching academic writing within a structured programme: Insights and outcomes. Stud. High. Educ. 26, 35–52.

Mubarak, F., Suomi, R., Kantola, S.-P., 2020. Confirming the links between socio-economic variables and digitalization worldwide: the unsettled debate on digital divide. J. Information, Commun. Ethics Soc. 18, 415–430.

Pérez-Castro, M.Á., Mohamed-Maslouhi, M., Montero-Alonso, M.Á., 2021. The digital divide and its impact on the development of Mediterranean countries. Technol. Soc. 64, 101452. https://doi.org/10.1016/j.techsoc.2020.101452.

Pérez-Escolar, M., Canet, F., 2022. Research on vulnerable people and digital inclusion: toward a consolidated taxonomical framework. Universal Access in the Information Society. https://doi.org/10.1007/s10209-022-00867-x.

Ragnedda, M., Ruiu, M.L., Addeo, F., 2022. The self-reinforcing effect of digital and social exclusion: The inequality loop. Telematics and Informatics, 72, 101852. https://doi.org/10.1016/j.tele.2022.101852.

Sanders, C.K., Scanlon, E., 2021. The digital divide is a human rights issue: Advancing social inclusion through social work advocacy. J. Hum. Rights Soc. Work 6, 130–143.

Shair, W., Waheed, A., Kamran, M.M., Kubra, N., 2022. Digital Divide in Pakistan: Barriers to ICT Usage among the Individuals of Pakistan. J. Econ. Impact 4, 196–204. https://doi.org/10.52223/jei4032206.

The World Bank, 2019. Government expenditure on education, Total (% of GDP) | Data. Retrieved from Worldbank.org website:
https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS

United Nations Development Programme, 2020. Social inclusion | Poverty eradication. Retrieved from Un.org website: https://www.un.org/development/desa/socialperspective ondevelopment/issues/social-integration.html.

Van Deursen, A.J.A.M., van der Zeeuw, A., de Boer, P., Jansen, G., van Rompay, T., 2021. Digital inequalities in the Internet of Things: differences in attitudes, material access, skills, and usage. Information, Commun. Soc. 24, 258–276. https://doi.org/10.1080/1369118x.2019.1646777.

Vassilakopoulou, P., Hustad, E., 2021. Bridging digital divides: a literature review and research agenda for information systems research. Inf. Syst. Front. 1–15. https://doi.org/10.1007/s10796-020-10096-3.

World Bank, 2023. Glossary | DataBank. Retrieved (February 06, 2023), from website:
https://databank.worldbank.org/metadataglossary/world -development-indicators/series/SE.SEC.ENRR

Worldometer, 2022. Worldometers - real time world statistics. Retrieved online from the Worldometers website: https://www.worldometers.info/.