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Print Media Portraying Pak-China Education Collaboration Through Soft Power lens

Nadia Rehman, Ji Liu and Wenlan Zhang
Shaanxi Normal University, Xi'an, China

The study examines the connection between Pakistan and China in education through an evaluation of print media. The purpose is to discover how Pakistani media portray the relationship between Pakistan and China from a soft-power perspective. The Down, News and Educationists, three press outlets, have been followed (2010-2019). The data was divided into four streams. Pakistani students moving to China to study in China are included. The second wave studied publications citing Chinese schooling news in Pakistan. In the third flow, the researcher examined articles on the movement of Pakistani education into China. In the fourth flow, the researcher looked at articles on how China improves its education system, policies, and what Pakistan may learn. China and Pakistan have partnered in research and technology, according to the article. The Chinese Government supports Chinese education through several bursaries and bourses and the introduction of numerous technology-based programs for Pakistani students. This study evaluated how China used Soft power to promote Pakistan-China relations and how the print media depicted it.

*Keywords***:** soft power, media, The Dawn, The News, The Educationist, Pak-China education collaboration,

China has deepened its economic connections with Pakistan through conversations over the routes and projects of the China-Pakistan Economic Corridor that were focused on the elite (CPEC) (Ahmed, Hanif, & He, 2021). China has cultivated ties with Pakistani players in the energy, media, and education sectors beyond the country's political leaders. Attractive incentives in both the Chinese and Pakistani markets are encouraging the growth of mutually beneficial relationships between the two countries' performing arts communities. Due to China's status as a rising global power and the promise of future economic gains, a growing number of Pakistanis are deciding to learn Mandarin and study abroad in China. The push pressures offered by Chinese government efforts are encouraging Chinese actors to strengthen their links with many sectors of Pakistani culture (Afzaal, Hu, Ilia's Chishti, & Khan, 2019). In Pakistan, for instance, China supports and funds Confucius Institutes and classrooms all around the country, and offers scholarships to Pakistani students who wish to study in China. Chinese companies have expanded their operations in Pakistan and are working with local educational institutions to learn about and respect the country's unique culture, customs, and religious

Correspondence concerning this article should be addressed to Ms. Nadia Rehman, Ph.D. Scholar, School of Education,
Shaanxi Normal University, Xi'an, China, Email: nadiarehman05@outlook.com

beliefs. Chinese media outlets like Xinhua News Agency have partnered with their provincial Pakistani counterparts to hone in on the country's audience and shape public opinion on pressing international issues in line with Beijing's priorities. Chinese investment in Pakistan's electrical sector is also in line with the BRI's Go Global policy for Chinese SOEs, which encourages the growth and internationalization of Chinese businesses. Additionally, Beijing's authorities have employed more traditional forms of soft power, like as the promotion of popular culture, educational exchanges, media expansion, and the Chinese language (Hussain, Mehmood, & Saeed, 2017)..

The educational sector can now benefit from China and Pakistan's growing economic ties. China's key contributions to education in Pakistan and other developing nations are scholarships, vocational training, and Chinese language instruction. There is a growing need among young, middle-class Pakistanis to study Mandarin Chinese, and Confucius Institutes and classrooms are facilitating this goal by spreading the language and culture of China around the world. Increasingly, more people are considering studying in China since they believe it is one of the best places to do so. China's enhanced support has led to a dramatic rise in the number of scholarships offered to Pakistani students. There are a number of variables contributing to this increase in enrollment among Pakistani students, including a greater familiarity with Chinese higher education, cheaper Chinese universities, and a greater belief in the value of Chinese degree programs (Ahmed, 2019).The bulk of China's educational aid to Pakistan and other developing nations go toward university scholarships, vocational training programs, and Chinese language classes.

It is the Chinese governments push factors and the pull factors of local circumstances in Pakistan that have led to these alliances. The belief that China would continue to push itself as a major world power and the expectation that closer connections with China will lead to future political and economic gains account for these pull factors on Pakistan's side. Many Pakistanis think that going to school in China or learning Mandarin will be better for their careers than going to school in the West. Due to all this number of urban Pakistanis studying Mandarin has increased dramatically across all educational levels, from middle schools and high schools to colleges and universities (Ahmed, Hanif, & He, 2021).

The Chinese scientific publication looks to have increased markedly as a major potential and signal for synergy in regional higher education. China now ranks second in worldwide science production indexes after the US (Adams, King, & Ma, 2009; UNESCO, 2010; Yang & Welch, 2011). China is also considered worldwide as an attractive partner because of its high-ranking colleges and increasing scientific research. China tends to boost its strategic soft power objectives by extensively investing in human resources and developing research-intensive schools (Yang, 2012). China is a fascinating place for international students to graduate from the USA and other industrialized countries. China has been an interesting place for overseas students to seek higher education after the U.S. and other wealthy countries. China gives international students favorable conditions such as scholarships for learning Mandarin and participating in other education initiatives (Yang, 2012).

During a state conference on foreign education held in Beijing in December 2014, China's current President Xi Jinping and Minister Li Keqiang, signed a memorandum of recruiting international students as a national strategy to strengthen soft power, and global competitiveness was emphasized. Today, 500,000 students are recruited in the "Study in China," making China the largest host country in Asia (Wen et al., 2018). Six thousand and fifty-six Pakistani students are now enrolled in Ph.D., Master, and Bachelor programs in China (The Express Tribune, April 14, 2019). According to a study conducted by Latief and Lefen (2018), the CSC scholarship program has a major impact on Pakistani students' economic, cultural, and social position and is happier than other international students.

Pakistani media have traditionally shown the relations between Pakistan and China in a favorable light, praising China for everything it has done for Pakistan. The deep bond between Pakistan and China has long been touted in Pakistani media (Rakisits, 2012). The media may impact public opinion and help implement national and international programs. The image of a state can be raised or damaged rapidly by the media. The function of the media is so vital that it can be the devil or the angel (Anshan, 2016). The media are vital in keeping people informed about global events. People in areas where people lack first-hand knowledge or information attract media messaging, but that does not mean that the media is telling us what to think. In addition, the media has a covert purpose in picking public attention to capture specific events for the viewers. As a result, less critique and public discussion limit the spectrum of public arguments on a particular subject (Happer & Philo, 2013).

Literature Review
History of China – Pakistan diplomatic relationships
The acquaintances between Pakistan and China began in 1950 and increased in the late fifties and sixties (Zeb, 2014). The Bandung Conference in 1955 was the first attempt (Dobell, 1964). Pakistan has gone through a terrible phase, yet both countries have remained mutually supportive and maintained their bilateral relations. Pakistan helps break the isolation of China by bridging the gap between China and other Muslim nations. With time, both countries have been partners in many areas, including trade, defense, and energy, and have been a good example of friendship (Zeb, 2014). By giving technical support to enhance the country's infrastructure and upgrade existing facilities, China assisted the economic development of Pakistan. Recently, several energy-related projects in Pakistan have been inked. Countries also have joint military exercises and partners in the nuclear energy business (Paul, 2011).

Economic trade is one of the greatest markers and treasured by other countries of their friendship. Pak-China has entered into a free trade agreement aimed at boosting Chinese investment in Pakistan. China has invested in many development projects, including nuclear power plants, road building, copper mining, gold, and power generation. According to a World Economist poll, the Chinese Government invested between $4 billion and $15 billion, a considerable amount of money between 2007 and 2010 (The Economist, May 12, 2011). In this diplomatic engagement, Pakistan also provided several incentives to China. China has gained commercial access to Pakistani ports, market access, and cheap raw materials (Malik, 2017). Over the next two decades, Pakistan's

assistance to China will generate $60 billion in transit fees. In addition to business, the emphasis on human relationships was placed on both countries. Pak-China recently launched programs and opportunities for researchers to work together to improve the quality of education. Through fellowships and internships, scholars and students were able to learn from each other. The Confucius Institute also strives to provide a venue where people can interact (Zeb, 2014).

Role of Education in Pak-China Relationship

The Pak-China education relationship was initiated by the Confucius Institute in 2005 with the backing of China and the Confucius Institute headquarters (CII) to allow Pakistani students to study Chinese firsthand. In 2007, Islamabad NUML University created the first Confucius Institute (China, Org, Cn, 2007). This site seeks to promote Chinese as a language. According to a survey, the platform helped 4,000 students learn Chinese, and an online distance learning program was also launched. It is a characteristic of the Chinese soft power that a resolution to declare Chinese as an official language was offered in the Senate of Pakistan. Still, it was adopted later by the Senate Chairman that Chinese language training is needed for those involved in the CPEC project to bridge communications gaps and difficulties (Hussain & Mehmood, 2018).More students enroll in language programs and other graduate programs in China. A recent survey shows that 19000 Pakistani students are enrolled in different programs in China, and the number increases every year (Hassan, 2017).

Because of its lack of money and professional labs, Pakistan cannot provide high technology laboratories and research environments in education. High-end research is lacking in universities with fewer resources to access state-of-the-art technical facilities; but, when students are given a chance to study abroad, they thrive in research and development. This difference is bridged via the education corridor China-Pakistan. The Higher Education Commission of Pakistan (HEC) and the Chinese Scholarship Council (CSC) inked a MoU. From 2005 to 2009, the Chinese government reportedly funded 1000 teachers and scientists for Ph.D. and other training programs in China (HEC). Education collaboration between Pakistan and China is seen as a strategy to expand educational exchanges. President Xi Jinping signed an MOU with HEC at the National University of Modern Languages to discuss student and faculty exchanges. China has also established Confucius institutes in Pakistan's major cities. The NUML International Education Center (NICE) was also set up at the University of Xinjiang Normal, Urumqi. With this relationship, Pak-chin students will communicate their knowledge and culture in a welcoming worldwide environment (Hussain & Mehmood, 2018).

With the support of the Chinese Language & Culture University in Beijing and the Confucius Institute Headquarters, the Confucius Institute in Pakistan was created in 2005. The first coniferous institute was founded in 2007 at NUML University Islamabad (China.Org. Cn, 2007). The platform is aimed at promoting Chinese as a national language. According to a poll, 4000 students learned Chinese on their platform and an online distance learning course. Chinese as an official language in Pakistan's Upper House is emblematic of China's soft power. However, the Senate President later stressed the significance of language training for people working in CPEC projects to bridge communication gaps and obstacles (Hussain & Mehmood, 2018).

Theorizing the Role of Education Exchange through the lens of Soft Power

In 1990, Joseph Nye developed the phrase "soft power" to characterize the ability of a country to persuade others to achieve its objectives. According to Nye (2004), education and culture are the most efficient soft power to convince the host country to shape its foreign policy and values. He defines soft power as follows in his book "Soft Power":

"Soft power is the ability of the cultural recognition and guides others to follow and this power stems from the attractiveness of the culture and sense of the value of a nation" (Nye, 2004.p.14).

Soft power convinces other countries to alter their advantages and preferences according to this notion to accomplish the desired goals of this country. Soft power contrasts with hard power based on persuasion and not force, while hard power is based on military and economic strength. Soft power derives its attraction from the principles, culture, and foreign policies of a country. In current circumstances, political multi-polarization and economic globalization are the patterns of development around the world. The doctrine of soft power has a tremendous impact on political education and foreign policy in a country (Hongtao & Lin, 2017). Soft power in higher education is based on other countries' values, policies, and culture and the worldwide educational system's framework, which comprises socially appropriate regulations, institutions, and standards. Higher education is an important source of information and a cornerstone of society's integrity. Universities and colleges try to promote knowledge as a powerful speech (Amirbek &Ydyrys, 2014).

Countries are vying fiercely to adopt higher education innovations to fulfill the expectations of the high-tech sector. Colleges and institutes have attracted foreign talent as a result of the competition. "Global mind competition" is a hard fight. Following Europe, countries like Singapore, Malaysia, Indonesia, and other Eastern Asian countries have embraced higher education as a soft power instrument to drive their economies (Nye, 2005, p. 12). Soft power was drawn to countries of major economies like the United States, Germany, China, Russia, Russia, Turkey, and some other developed European countries, and a host of educational initiatives have been launched to attract young people from all over the world that is competent, innovative and talented. Soft power is a paradigm that shifts the world's perceptions, particularly those of other countries by great powers. These countries have given a premium to education for the first time in history and devoted special attention to it (Nye, 2004). Higher education is a key soft power instrument for attracting talent worldwide, such as overseas students, technical experts, intellectuals, and researchers. The consequence is that the soft power of each nation is exactly proportionate to the number of international students. Therefore more international students imply more promotion of soft power in the host country (Li, 2018). Higher education as a soft power instrument to shape national policies, values and culture is a global hot topic. The word was initially called "educational attractiveness and competitiveness" but is now gaining recognition in the global field of education due to its effectiveness and novelty. Finally, the objective of conceptualizing higher education soft power is to explore the reasons for the globalization of the internationalization of higher education. It is a two-way road; both host and host countries can profit from Soft Power in the long term through international higher education (Li, 2018). Scientific and academic exchanges play a key role in the theory of soft power. The U.S. is the world's

best example of motivating elite political countries and winning allies with student exchanges (Nye 2004). Soft power education provides host country long-term benefits; it is always praised, and students who have experienced the cultural value of the host country always push policy in a manner that never harms the host country Soft-power education (Amirbek & Ydyrys, 2014). Research findings on education as a tool for soft power suggest that quality of studies, social engagement with overseas students, and host country views toward immigration are major success factors. For example, there has been much scientific debate on China's soft power strategy that involves educational exports from China, mostly Confucius Institutes (Paradise, 2009 and Yang, 2010). The propagation of the Confucius Institute shows Chinese soft power achievements, yet these institutions have been severely influenced by national players' political and ideological concerns (He & Wilkins, 2019).

The Important Role of Media in Shaping Public Perception

The media is heavily influenced by public opinion and societal viewpoints, a topic long debated and researched. People's perception of the outside world is influenced by the media's or newspapers' reporting on global events (Happer & Philo, 2013). Media has a meditative function to distribute news about politics and politics to reinforce messages to attract audiences and shape their conduct, particularly in connection with other kinds of institutional support (Van, 2014). The media acts as a vehicle for shaping public opinion in particular social groups and the public. Despite this, the media have been a crucial player in molding public opinion in North Africa and the Middle East for the past 150 years and have produced a terrific piece on hot topical topics. At the time, the media concentrated on popular opinion, whereas scholarly activities in the region received less attention (Deguilhem, & Claudot, 2012).

Media broadcasting offers unidirectional public information, i.e., it affects their audience but takes little (if any) input from them. Consequently, the broadcast media in a closed society focus more or less on popular opinions and attitudes. Science and technology have progressed rapidly and have created new platforms for spreading knowledge, such as computers, tablets, smartphones, and other convenient devices. These new technologies are used to distribute social media or the "we media" to the public opinion, which is influenced more or less by broadcast media, especially in secret societies. Through Twitter, Facebook, WeChat, and Microblog services, there are one-to-one and numerous communication developments. Everyone may express their ideas and publish information, which represents an important change in how information and opinions are distributed in the media (Fan & Pedrycz, 2017).

Method

The researcher has examined three outlets from the past ten years, from 2010 to October 2019, including two daily publications (Dawn and the Express Tribune) and one weekly newspaper (The Educationist). Dawn is the first and most frequently read English newspaper. The country has had a journal record since independence and before independence. During the American Revolution, the break became a symbol of solidarity and faithfulness. Young people and students spoke in support of Pakistan's demand (Roger & long, 2009). Dawn has offices in different provinces of Pakistan, including

Sindh (Karachi), Punjab (Lahore), and Islamabad (the federal capital). According to a source, it circulates 109,000 on weekdays. It is a renowned international journal read by the most educated and privileged elite in the country, representing 11 percent (Shah, 2010). The News Tribune is the most popular newspaper, the only newspaper in the world to cooperate with the International New York Times. The main headquarters in Punjab (Lahore), PKK (Peshawar), and Islamabad, the capital, are in Sindh (Karachi) (Hayat & Wahab, 2014). The Educator is an educational newspaper that publishes news or issues relating to education worldwide, primarily in Pakistan and Asia, with the help of the Higher Education Commission (HEC) Pakistan. It is available in print in all five Pakistani provinces as well as in English and Urdu online.

Print media, in particular the English press, which is considered the most reliable compared to social media in Pakistan, plays an important function in influencing public opinion. Politicians and Pakistan's most qualified people read English newspapers and rely on them for a detailed understanding of various issues. We found all articles in the three media covering education in the area of Pak-China. We used search criteria to find results on the coverage of the Pak-China Education Collaboration. The current study includes all publications, including education, China, Pakistan, schools, teachers, universities, scholarships, etc. We used the data mining application to collect and export the results to Excel for all the necessary items from search engines. To eliminate duplicate search results, data were purged. Search phrases not relevant to the study included, for example, CPEC (China-Pakistan Economic Corridor), as some news about education was combined with CPEC. We have chosen articles for quality analysis from three news outlets: Dawn, The News Tribune, and Educationist. Compared to the 'Educationist,' in the last decade from 2010 to 2019, Dawn and the News Tribune have published numerous articles. A total of 139 papers were found, with 70 published by Dawn, 60 by The News, and 9 by Educationist. Table 1 shows the increases in published articles found by the search over the last 10 years from 2010 to 2019 for the terms Pak-china Education collaboration in three outlets.

Table 1
Number of Articles, by outlet and year

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Dawn	0	3	3	4	4	7	11	14	12	12	70
The News Tribune	2	7	2	4	1	6	6	12	11	9	60
Educationist	0	0	0	0	0	0	1	2	4	2	9
Total	2	10	5	8	5	13	18	28	27	23	139

Media content analysis

The study begins by presenting three different outlets' discussions individually. Then, in the final section, we aggregated the findings of the Pak-China educational collaboration via the prism of soft power. The greatest technique to investigate the dynamics of education reform and the relevance of insight is to use media content analysis. According to Green-Saraisky (2015), the media uses content framing and speaker representation to mediate public opinion. Mass media not only distributes

information but also helps create what constitutes our common social reality and pertinent hopes and future expectations. The mass media uses an information presentation technique that promotes causal interpretation patterns among the audience. Analyzing the underlying interpretation patterns in a population through media discussion is thus a successful strategy (Waldow, Takayama, & Sung, 2014). The employment of mass media as a soft power in education might help study the contextual and chronological elements of the discourse, behavior, policy, and partnership of two countries. Many comparison studies have utilized a content media analysis (Liu 2018). This study aimed at examining the contents of 139 publications. Two-level coding was established based on frame and voice ideas for an in-depth examination. These two analysis methods helped us understand how Pak-Chinese educational collaboration is presented in the media and shared with the public, and who was granted legitimacy and power to speak about Pak-Chinese learning collaboration and its relevance (Green-Saraisky, 2015).

Article-level analysis

After a thorough review of all articles on three sites, the keywords and speaker representations that approximate the content size have been extracted. Different contents frames were coded after the media item had been examined. To illustrate the Pak-China educational relationship, I examined the different types of structure that the three channels use. Articles that follow the 'study abroad in China' structure usually provide an overview of education in China-wide and accessible. This category includes all media content related to cooperative research initiatives, fellowship programs, and Chinese degree programs. Content under Pakistan's 'Chinese education' category encompasses all Chinese programs in Pakistan, including Confucius programs, Chinese education, and universities. Media content frames collaborative programs between China and Pakistan, such as cultural exchange programs, bursaries, and research initiatives, equally beneficial to both countries. The 'Pak-China Education Partnership' is characterized as being half done in Pakistan and half in China. Media content that emphasizes challenges students encounter due to Chinese education or critical feedback on education quality deficiencies is classified as "Chinese education quality." Pakistani education articles in China are classified as 'Pak-education in China.' This contains all Pakistani language, literature, and study programs in China. Finally, opinions and ideas on reforms in education are categorized under the title 'Education policy reform' for schools, teachers, higher education, or policies.

Speaker-level content analysis

To study how governmental bodies or policymakers use the media to promote educational partnerships between Pakistan and China. I examined which government bodies have their voice on the importance of Pak-China education collaboration in the debate. We coded every speaker's speech in each piece. Only remarks were included, which are directly quoted in articles and include citations or speeches paraphrased by reporters. The speeches were divided into 8 groups based on their position and role, and then the speeches of each speaker were coded. Speaker references were used to identify the legitimacy and authority of participants as well as imitation of media conventions, such as newspaper priorities and pragmatism (Green-Saraisky, 2015). We split the discourse into eight groups and directly and periphrastically categorized their quotations to understand the concept fully. The 'federal government' category includes all government bodies falling under this minister of education. The word "provincial

government" refers to government bodies, such as the minister of Sindh, hired by the provincial government. Professors, university vice-chancellors, deans, and leaders are the words "university professor." University administration, "Chinese Ambassador," the Rector of the University, incubates all Chinese government players who repent unexpectedly like the Chinese Ambassador. The teacher category includes all teachers or language teachers. The student category is self-explanatory. "Other" includes all actors not in the above categories, such as business people, private consultants, guests, etc. Dawn, News Tribune, and Educationists were chosen for their popularity, publicity, and discourse as three national media channels assessed in this study. These periodicals have an important influence on the elite, the general, and the educated public. Dawn, The News Tribune, and educational material are taken from their respective archives on the Internet. 70 articles published in Dawn, 60 pieces in The News Tribune, and nine in Educationist searching for the necessary articles from targeted data using the keywords 'study abroad in China' and other keyword variations. Articles published after October 26, 2019, get removed. In September 2011, Dawn published the first pieces, and in December 2010, The News Tribune.

Results

Figure 1 shows the growth trends of education partnerships between Pak and China over the previous ten years, which show an enormous increase in media reports. The total number of articles in three media outlets has constantly increased. There was a considerable increase in the number of papers published between 2015 and 2019. This has been made feasible by the projects inked between China and Pakistan. Political events have a major impact on media coverage. Increasing political coordination between the two countries takes place every year, with more media coverage. Dawn published more stories compared to The News and Educator.

Figure 1. Growth of Media Coverage of Chinese Education Collaborations in Pakistan, 2010–19.
Sources: *Dawn, The News Tribune and Educationist*, Authors Compilation.

Table 2 shows how content framing has altered over time between 2010 and 2019. Initially, less than half (33.8%) of the news items have a strong and clear message on Chinese studies, while 25.8% highlighted Chinese education in Pakistan. In 24.4% of the articles, Pak-China educational collaboration was highlighted. 3.5% of articles criticize the quality of Chinese education. Only 6.4 percent of the content referred Pak-education in China. 5.7 percent of papers discussed the current situation of China's educational system, including how China reforms education, increases university ranks, and the country's education budget.

Table 2

Content framing of Pak-china education collaboration, by time framing

	2010-2013 F/percentage	2014-2016 F/percentage	2017-2019 F/percentage	Total F/percentage
Study abroad in china	10 40%	8 23.5%	29 36.25%	47 33.8%
Chinese education in Pak	10 40%	8 23.5%	18 22.5%	36 25.8%
Pak-China Edu	4 16%	13 38.2%	17 21.25%	34 24.4%
collaboration	0 0%	3 8.8%	02 2.5%	5 3.5%
Quality of Chinese medical Edu				
Pak-Edu in china	1 4%	1 2.9%	7 8.75 %	9 6.4%

Compare the differences between the framework content between the three media outlets in Table 3 to determine audience-specific framing tendencies. The Dawn Outlet published 30% of its pieces on the status of students in China overseas, the News Tribune 40%, and the Educationist 22. 2%. Dawn publishes 30% of items connected to education, The News Tribune publishes 25%, and Educationist does not publish them. Dawn publishes 17.14 percent of Pakistan-China collaboration stories, 28.3 percent in the News Tribune, and 55.5 percent in Education. Only 7.15% of the content about quality of Chinese medical education articles was published in Dawn, neither in The News Tribune nor in Education. Dawn published 8.57% of Pakistani education articles in China, while The News Tribune published only 3.3%, and Educator published no articles. 7.14% of stories in Dawn outlet, 3.3% in the News Tribune, and 22.2% in Educationists discuss how China is strengthening its education system and what Pakistan can gain from China.

Table 3

Content framing of Pak-china education collaboration, by Media Outlet

	Dawn Frequency/%	The Express Tribune Frequency/%	The Educationist Frequency/%
Study abroad in china	21 30%	24 40%	2 22.2%
Chinese education in Pak	21 30%	15 25%	0 0%
Pak-China Edu collaboration	12 17.14%	17 28.3%	5 55.5%
Quality of Chinese medical Edu	5 7.15%	0 0%	0 0%
Pak-Edu in china	6 8.57%	2 3.3 %	0 0%
Learn from china	5 7.14%	2 3.3%	2 22.2
Total	70 100%	60 100%	9 100%

Table 4 shows how media speakers in Pakistan and China talk over time regarding education. The article-level statistics are obtained from Dawn, the News Tribune, and the online archive archives of the educator, respectively. Search points include education in China, education partnership between Pakistan and China, and variations in these terms. Speakers have a voice of authority and authenticity, according to Green-Saraisky (2015), and the public listens to what they have to say. To document the use of education by Pakistani print media to communicate soft power to the general population. Initially, the speakers who talked about education partnerships between China

and Pakistan have become more and more diverse over time. For example, over the years 2010-2013, the representation of speakers was not uniformly split; students received 21.4 percent of all quotations, 18 percent from the provincial and university professors, and 18 percent from China's ambassador, administration, and teachers (11 percent). Between 2010 and 2013, less than 4% of all citations were received by the federal government and others. In the second term, 2014-2016, university professors received the largest number (29%), followed by students (21%), the provincial and administrative received 16%. During this timeframe, the Federal Government and others received the least quotations while teachers received none. During the period 2017-2019, the highest percentage of university professors (28%) were given citations compared to the rest of the speakers (17%), the Chinese ambassador (17%), federal government, and government (12.9%), while professors and others received the lowest percentage (5%) of the citations. Between 2010 and 2019, it was demonstrated that professors at universities obtained 46% of all quotes, the largest number among all speakers. The academics have received a minimum of eight citations in the last ten years. In the past 10 years, the quantity of quotations has consistently climbed for all speakers.

Table 4
Speaker representation about education in Pak-China in media outlets by the time

	2010-2013 Frequency/%	2014-2016 Frequency/%	2017-2019 Frequency/%	Total Frequency/%
Federal government	1 4%	2 5.2%	14 12.9 %	17
Provincial government	5 18%	6 16%	9 8.3 %	20
Chinese ambassadors	3 11%	4 10.5%	18 17%	25
Universities VC/prof	5 18%	11 29%	30 28%	46
Administration	3 11%	6 16%	14 13%	23
Students	6 21.4%	8 21%	12 11%	26
Teachers	3 11%	0 0%	05 5%	8
*Other	2 7.14%	1 2.6%	6 6%	9
Total	28 100%	38 100%	108 100%	174

Table 5 illustrates the presentation of the speaker split down by the media outlet. First, the Express Tribune more frequently quotes federal and provincial governments than Dawn and the Educationist. The News Tribune is a well-known publication for a wider readership of educators who see government officials as a dependable source of credibility. Furthermore, the speech representations of Dawn and The New Tribune varied little; both channels covered similar themes, but Dawn and Educationist diverge significantly from the News Tribune and the Educator. The educator emphasized more administration news than Dawn and The News Tribune, which is 38%. Dawn and The News have also been shown to pay more attention to lectures by university professors with 31% and 21% respectively.

Table 5
*Speaker representation of Pak-China education in media outlets*

	Dawn Frequency/%	The Express Tribune Frequency/%	The Educationist Frequency/%
Federal government	4 4.5%	10 13.6%	3 23%

Provincial government	11	12.5%	9	12.3%	0	0%
Chinese ambassadors	13	14.7%	10	3.6%	2	15.3%
Universities VC/prof	28	31.8%	16	21.9%	2	15.3%
Administration	9	10.2%	9	12.3%	5	38.4%
Students	14	15.9%	12	16.4%	0	0%
Teachers	3	3.4%	5	6.8%	0	0%
*Other	6	6.8%	2	2.7%	1	7.6%
Total	88	100%	73	100%	13	100%

Discussion

In this study, we examined all the data from a soft power perspective. According to Nye, education is the most effective soft power strategy to influence foreign policy (Nye, 2004). There was little research to understand the Pak-China Education Partnership in the context of soft power. The media are a mediating power that is a prism for the relationship between Pakistan and China. The media form and reflect public views. By examining the media talk of three Pakistani outlets, the study helps fill a hole in Pakistani literature. This study's major goal is to examine how the media mediated Pak-China education through soft power and how both nations participated.

As a consequence, the researcher split the data into four flows. In the first flux, we concentrated all the articles about studying abroad in China, leading Pakistani students to China for higher education. In the second flow, news reports about Chinese education in Pakistan, especially the Chinese education movement in Pakistan, were examined. We have analyzed the expansion of Pakistani literature to China in the third flow. In the fourth flux, articles discussing the quality of Chinese education were reviewed, how China improved its education system, what policies it adopted, and what Pakistan could learn from China in this area.
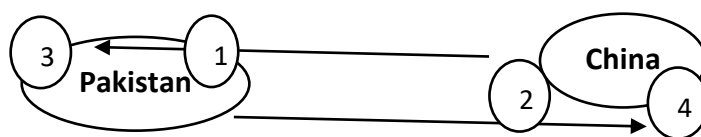
Dawn coverage

In 2010-2019, Dawn authored 70 articles. Dawn has more articles in Pakistan on Chinese schooling. China is Pakistan's good buddy. China has invested heavily in the various domains of health and business education. Pakistani students earned generous Chinese bursaries due to the Silk Road. In addition, China has a lot of investment in education. The Confucius Institute is the best example. China also invests in technological education

An agreement had been signed with the PML-N Punjab Government that the company would invest two percent of its net profit on development projects. The Corporate Social Responsibility Agreement and Technical Training Agreement was signed between Huaneng Shandong Ruyi (HSR) and the Punjab government in June 2017.
(01.7. DawnAug, 9)

> *"The role of CCLS is to promote exchanges with Wuhan University to teach Chinese law courses, conduct training seminars, and attend conferences and symposia on the Chinese legal system. By building academic capacity to study and teach courses in Chinese law through CCLS, both countries stand to gain as our ties are strengthened through CPEC and the Belt and Road Initiative."*

(01.12. DawnOct, 26)

This partnership between the two universities will benefit students and scholars and both countries and their joint endeavors. Pakistan and China reaffirmed their resolve to cooperate in the education sector to strengthen their bilateral strategic cooperation. China is dedicated to helping Pakistan strengthen its education system through funding and grants. Both Parties stated that Pakistan was supported to strengthen the industry, education, and socio-economic sectors of the second phase of the China-Pakistan Economic Corridor (CPEC). The Confucius Institute continues to attract an increasing number of students in Pakistan.

> *"Pakistani students are very sharp and learn Mandarin in a short amount of time. Mandarin is not difficult for those who want to learn it,"*
> *(01.28. DawnMay16)*

Dawn has published a total of 20 papers on Chinese studies. It was noted that Dawn outlet deals more fully with the movement of students from Pakistan to China. Dawn released various works on the knowledge of students' advantages of studying abroad in China. In China, the number of Pakistani students is expanding steadily. They are doing well in the realm of research. Dawn published the following article, for example:

> *"A series of preferential policies drafted by the Chinese government for students from these countries have contributed to the remarkable rise in their numbers, including offering 10,000 places each year for students from countries along the Belt and Road Initiative to study in China under the support of the Chinese Government Scholarship".*

(01.25. DawnMarch2)

> *"Studying in China seems to be one of the better things to do for those seeking foreign education. There are many takers in Corporate Pakistan today for those having exposure to a distinct language and culture".*   *(01.1.*
> *Dawn Feb, 8)*

The Chinese Government encourages Chinese students to attend Chinese institutions with several awards. It appears that studying in China has been the 'cool' thing lately, according to one report. Shanghai, Beijing, and Hong Kong are the most popular study destinations outside of the country. And all of them have one thing in common Mandarin, Chinese.

Dawn published 11 articles about the Pakistan-China partnership in the realm of education. This flow covers all quotes on Chinese education in Pakistan and Pakistani education in China. For example, exchange or training programs that benefit both countries. The cooperation between Sindh and Chinese universities is one example.

"The governor praised Dr. Mohammad Ali Shaikh, vice-chancellor of the Sindh Madressatul Islam University (SMIU), for engaging Chinese universities and establishing the students` exchange program that he said was the first such link in the history of Pakistan. `It is good to know that Sindh has taken lead in establishing contacts with the universities in Hainan province of China, ` he said".
(01.39. Dawn. April, 5th)

A unique academic partnership between Sindh and Hainan was established through the Sindh-Hainan Universities Forum (S.H.) The province government and universities of Hainan also granted scholarships to Pakistani students.

"NUML had found that the people of Baluchistan were quite eager to learn the Chinese language so that they could land jobs and other opportunities."

(01.41. Dawn.August, 8)

In collaboration with Xinxiang University, the NUML International Center for Education built the China-Pakistan Joint Cotton Bio-Tech Laboratory. The China Culture Center was also formed in Pakistan. Dawn featured two articles on Pakistani schooling in China. The NUML and Xingjian Standard University have inked an agreement to set new standards in higher education. Both universities have planned to create NICE (NUML International Center for Education) in China.

"Rector NUML retired Maj-Gen Masood Hasan emphasized the need for such agreements that can bring a considerable change in the education sector. He also praised the institutions on both sides. The spokesman said that agreements will offer a base for the people of Pakistan as well as the people of China to cooperate in the field of education".

(01.51. Dawn. April 23, 2015)

The Chinese and Pakistani Science and Technology Ministries constructed the Chinese-Pakistan Joint Cotton Biotech Laboratory. At the same time, NUML and Xinjiang University worked together to set up the NUML International Education Centre. The China Culture Center in Pakistan was also founded.
Dawn published two articles in China about Pakistani schooling. The NUML and Xingjian Normal University have forged an agreement to work together to develop new high school standards. Both universities will establish NICE (NUML International Center for Education) in China.

"Urdu may be a bit more challenging than other languages, but a growing number of Chinese students are choosing to learn the vernacular anticipating opportunities to be offered by Chinese companies carrying out development projects in Pakistan under the China-Pakistan Economic Corridor (CPEC)".
(01.31. Dawn. June, 11.2017)

"The Beijing Foreign Studies University (BFSU) has been teaching Urdu since 2007 and till now two batches of its students have

completed their degrees in the discipline, Head of Urdu Department at the School of Asian and African Studies Zhou Yuan said in an interview".

(01.31. DawnJune, 11.2017)
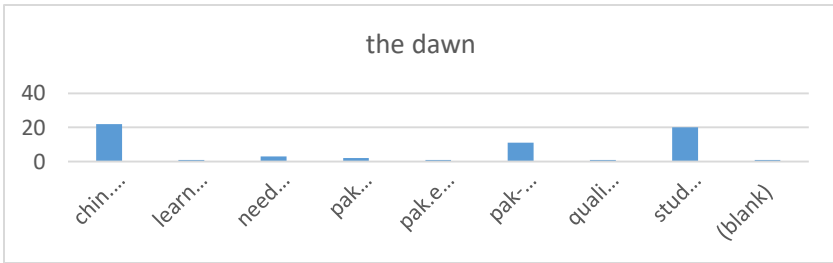
The Express Tribune

The express tribune produced 60 articles over the ten years from 2010 to 2019. More tales have been published about studying in China. It described Pakistani students' educational migration to China. Twenty-five works on the topic in China have been published in the Express. Compared to the other two outlets, more articles have been published. For instance,

Pakistan ranks third in the number of international students currently studying in China with 28,023 students, according to a statement issued by China's Ministry of Education. (01.8. Dawn August 30, 2019)

Pakistanis are China's third-largest overseas student community. Official data show that China has been Pakistani students' highest educational destination, with approximately 7,034 studying bursaries in Chinese universities. Following the opening of China Pakistan Economic Corridor (CCEC), a Belt and Road Initiative pilot project, Pakistani students in China grew due to the Chinese government's several good measures. 6,156 Pakistani students have completed Ph.D. programs in China, 3,600 have completed Master programs, 11,100 have received Bachelor and 3,000 have completed Short Term Exchange Programs. Pakistani students also study Chinese, engineering, medical, I.T., and several other fields of study.

16 works on Pak-China educational collaboration were published in the express tribune and 15 articles on Chinese education in Pakistan. Several instances are provided here: cooperation and 15 articles on Chinese education in Pakistan. Examples include:

"UN-Chinese Language Day," Yao Jing said the promotion of the Chinese language in Pakistan is a new stage of cooperation between the two countries since language is the most important means for communication, cooperation, and connectivity. "In China, eight universities are working to promote the Urdu language and 12 Pakistan-study centers working to promote the mutual understanding between the two countries". (01.36. Dawn September 5, 2018)

The Pakistan-China Institute, a local think tank, worked in the Pakistan Institute of Parliamentary Services (PIPS) in Islamabad to foster bilateral relations between Pakistan and China. There are 12 study centers in Pakistan in China.

*A group of seven Chinese students will soon leave for Islamabad to participate in a six-month-long training program to further improve their Urdu language skills. (*02.89. The Exp. August *27, 2018)*

The ministry of overseas Pakistanis and human resource development has decided to teach the Chinese language at the schools run by the Overseas Pakistanis Foundation (OPF) while it mulls over the formation of the youth council, comprising children of the Pakistani citizens living abroad. (02.71. The Exp. April 2, 2019).

People of Pakistan are eagerly learning the Chinese language because of the China-Pakistan Economic Corridor projects. "The OPF asked to make the Chinese language mandatory at all its schools. Students are also interested to learn the language from the beginning.
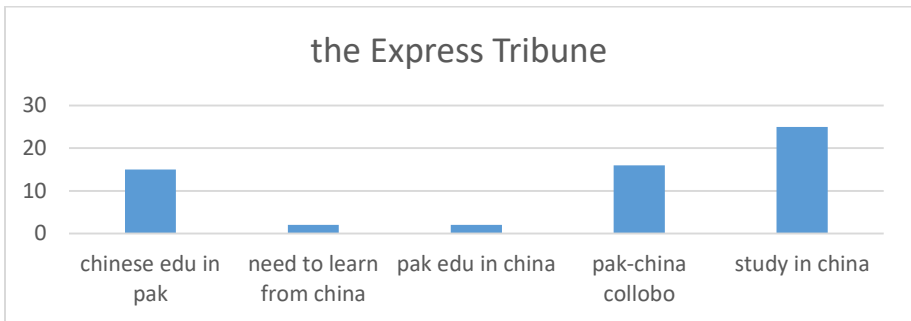
The Educationist
The Educationist is an educational publication that provides topics important to the educational area. Nine papers were published between 2016 and 2010. It has published five pieces on education partnerships between Pakistan and China, five papers on China study, and just two articles on Chinese educational policies, which Pakistan should learn to develop its education system. There are a few instances below.

"Higher Education Commission and Huawei for successfully conducting this ICT competition for students. Roadshow and workshops were held in 53 universities and academic institutions across Pakistan. More than 5000 students attended the examination conducted on Huawei's learning platform. Top 300 students were invited to attend the second round, of which 171 students passed HCNA Certification".

(02.131. The Edu. April 5, 2019)

China has gained a reputation as a global leader in the technology field and producing a bulk of research every year. China and Pakistan have engaged in the field of

research and technology. China has established several technology-enabling programs to empower Pakistani students.

> *A delegation from various technological companies of China called on Punjab University Vice-Chancellor. The delegation visited the Institute of Chemical Engineering & Technology where Prof Dr. Taqi Zahid Butt briefed them.*
> (02. 131. The Edu. April 5, 2018)

> *Islamabad: (September 6, 2018): The China Road & Bridge Corporation (CRBC) scholarships for Pakistani students under Inherit of Pak-China Friendship, Hundred Talent Study Financing Program will help strengthen China-Pakistan relations.*
> (02. 132. The Edu. June 2, 2019)

Most of the students from Pakistan came to China to study Masters in Transport Engineering, Structural Engineering, Geo-technology, Railways, Bridges, and Tunnel, among other topics. Students who were chosen based on merit through a fair selection process attended the ceremony. CPEC is a major push for engineers and I.T. experts, and UET is various Chinese colleges.

In recent years, engineers have played a crucial role in CPEC, and this gap has been created and filled in conjunction with Chinese organizations. Several Pakistani institutions within the CPEC are associated with several Chinese colleges.
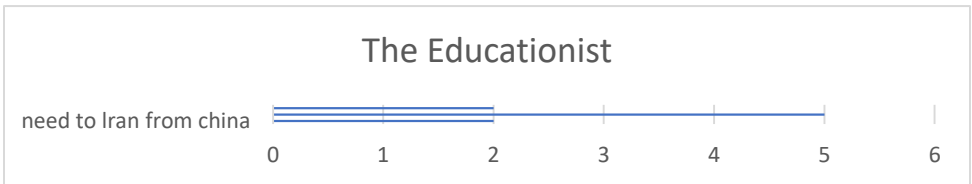
Conclusion

The media shows a lot about building and spreading public conversation and awareness (Liu, 2019). The Pak-China educational partnership's timing, intensity, and tone on three independent print media outlets in Pakistan are remarkable. Dawn newspaper usually offers a partnership of high intensity with a broad range of materials that are more exposed than others. The alliance was also enthusiastically supported by the two other channels. In Pakistan, critics have uncovered three sources of information on medical education. Most students who obtain their MBBS in China must take a certification examination in Pakistan (PMDC). However, concerns and reform arguments are more widespread when it comes to difficulties for students. This research showed that media reporting in hierarchical experiments could play an important role in preparing local policy studies for horizontal transmission. Public discussion and mood can be influenced by retention (or release), problems (or simplification) of media in numerous social domains, and diverse demographic groupings. The results demonstrate that Dawn is an important way of legitimizing and disseminating information from Pakistan's

collaboration on education to the broader population in Pakistan. When two countries discuss their political connections, research reveals that government officials' views are more often referred to as sources of legitimacy for professionals in education, which can support the state's core role in setting essential policies. Green-Saraisky (2015) provides a background for these findings by showing the considerable and genuine sources of a comparable reporting pattern by government officials in the United States. A deeper study of the relationship between media reporting and reform agendas is needed.

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**Cross-country diffusion of the ISO Energy Management Standard:
How important is the neighbourhood effect?**

Amjad Masood
Bahria University Islamabad, Pakistan

Sami Ullah, Umar Ijaz Ahmed and Muhammad Arqam Iqbal
MNS University of Agriculture Multan Pakistan

This study examines the uneven spread of ISO-50001 standards at the country level with sample size of ninety-six (96) countries from 2011-2019. For the empirical estimation, we applied probit regression to analyse the reach of the certification across countries, and the negative binomial regression to analyse the intensity of diffusion. The findings show that infrastructural and institutional quality facilitate the ISO standard's diffusion. Countries with more developed energy sectors are more than expected to have a greater level of energy management certification. Furthermore, the diffusion of the certification is strongly affected by the geographic location of a country. The number of ISO-50001 certificates in a country is linked to the intensity of the certification in the neighbouring countries. We also found the neighbourhood effect measured in terms of distance-weighted corticates in other countries as a strong predictor of the diffusion process .

Keywords: Energy management; ISO-50001; Certification; Diffusion;
JEL Code: P18, P28. Q43, Q47, Q48

The diffusion of global standards on energy management techniques has increased substantially across the globe in the last two decades (Heras-Saizarbitoria & Boiral, 2013; Marimon et al., 2011). The geography of a country can also affects the diffusion of organizational innovation such as ISO certification. The ISO-50001, an energy management system in centred on the Continual improvement model that can use for other well-recognized standards i.e., ISO-9001 or ISO-14001 as well. It becomes easy for the organizations to incorporate energy management into their overall attempts to enhance quality and eco-friendly management (ISO, 2018). In 2015, all United Nations member counties adopted the 2030 agenda for Sustainable Development, which gives a collective plan for peace, harmony and affluence for the people and the planet. This plan draws 17 Sustainable Development Goals (SDGs) which are an imperative call for action by all developing and developed countries (UNDP, 2022). This standard contributes to the following Sustainable Development Goals: affordable and clean energy (SDG 7), sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12), and climate action (SDG 13) (ISO, 2018). Given the importance of energy management, 71 percent of municipalities in the European Union have obtained ISO 50001 certification (Kaselofsky et al., 2021). Similarly, ISO-50001

certification has been proliferating in China as it has accrued more than half of the ISO 50001 certificates in Asia by 2018 (Jin et al., 2021).

The ISO-50001 certification was initiated in 2011. In the first year, there were 459 certificates in a total of 31 countries. Over the past years, the certification spread rapidly to 99 countries with a total of 18,209 certificates of the standard worldwide in 2019 - see Figure 1. With the modifications done by a few of the contributors of data about the number of sites, certificates and sectors, the aggregate number of legitimate certificates was lower than in 2017 (ISO, 2019). The ISO describes this in their 2018 Survey Report as "The overall total number of valid certificates was lower than in 2017 […]. Some large certification bodies reported in past surveys the number of certificates that included the number of sites. In this survey, they have split the number of certificates and the number of sites which led to important reduction in the number of certificates reported."

Source: Authors' graphic based on ISO Survey data (2019).
Note: Number of countries given on the secondary axis.
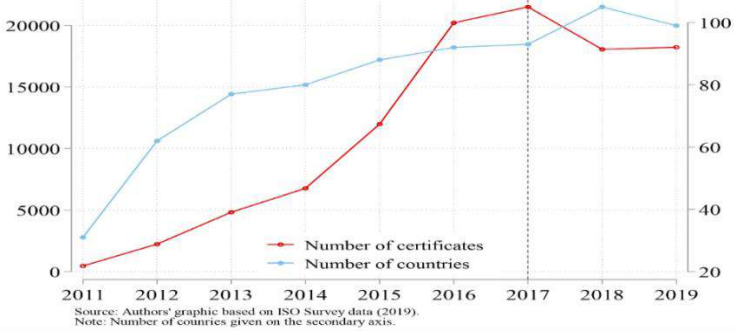
Figure 1- ISO-50001 diffusion over time

However, the spread of ISO-50001 certification across the world is rather uneven. In some countries, the incidence of certification is high. The top countries with a high incidence of the certification include Germany (5,786), China (2,934), the United Kingdom (1,184), Italy (1,150), and France (812). Alternatively, in some countries, the number of ISO-50001 certificates is as low as only 1 certificate in each Guatemala, Kenya, Lebanon, Monaco, Senegal, and Zimbabwe, as of 2019. Figure 2 shows the uneven spread of ISO-50001 certification across the world.

Source: Authors' graphic based on ISO Survey data (2019).
Note: The circle radius is proportional to the certification intensity

Figure 2- Uneven spread of ISO-50001 certification across the world[1]

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[1] The location of each circle is based on the latitude and longitude values whereas the circle radius is proportionate to the number of ISO-50001 certificates in the country in 2019.

The current study aims to examine the uneven spread of the Energy Management Standard certification across countries. As the ISO-500001standard is launched recently, the existing literature on the standard is rather scant. To the best of our understanding, there is only one research by Sousa Lira et al., (2019) that looked into cross-country diffusion of the energy management certification. However, the study covers a sample of 12 countries over the period 2011-2016. We analyzed the number of ISO-50001 certificates in 96 countries over the period 2011-2019. We particularly focused on the neighbourhood effect. The outcomes of the present study show that the incidence of the certification in neighbouring countries is a strong predictor of the diffusion. While the diffusion process depends upon the characteristics of the energy sector, better institutional quality and strength of available infrastructure.

The remainder of the article is designed as; Section 2 describes literature review on the diffusion process. The theoretical framework, estimation approach, and data are discussed in Section 3. Next, Section 4 offers the results of the t-test, probit regression, and the negative binomial regression. Finally, the study concludes in Section 5.

Diffusion of organizational innovation

A big set of literature is available on the diffusion of standards. Certification schemes like ISO certification is considered as organizational innovations (Ryan & Gross, 1943). Standards improve competency (Bansal & Bogner, 2002) and help in improving operational performance and greater customer satisfaction. Several studies analyse the global diffusion of ISO standards (Albuquerque et al., 2007; Nishitani, 2010) which find that diffusion of certification is deterministic to various country-level factors including bilateral trade, cultura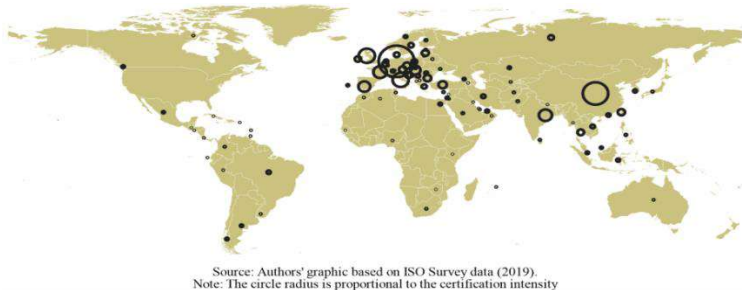l and historical relationships such as colonial ties, economic and governance level of a country. The contagion effect of the past adoption of certification in a country is measured through certified firms existing in the country. Similarly, the gross domestic product of a country reflects the potential for the magnitude of certification (Albuquerque et al., 2007). In the following, first we review some important studies pertaining to the diffusion of ISO-9000 and ISO-14000 standards. Later, we discuss the literature particularly associated to the diffusion of ISO-50001 certification.

Several studies investigate the diffusion of ISO-9000 and ISO-14000 certifications. For instance, Albuquerque et al., (2007) compared the diffusion of ISO-9000 and ISO-14000 certifications. The study discovers the diffusion of ISO 9000 is mainly determined by geography and joint trade relationships, but ISO 14000 is mainly determined by the geography and cultural similarities. Likewise, the diffusion rate of ISO standards is greater for later — implementing nations and the later ISO 14000 standard. One of the acknowledged objectives in the wake of the creation of the International Organization for Standardization was to build standards to accelerate global businesses in goods and services. Franceschini et al., (2010) used the single linkage clustering algorithm to examine the diffusion of ISO certificates in Europe. European nations were found to differ in forms of ISO-9000 certification diffusion in terms of saturation, growth, rate of decline in the certification. In this regard, a recent study by Hikichi et al., (2017) examines the development of ISO 14001 in the American nations and as well as its economic zones. The study revealed that the number of ISO 14001 certifications has steadily expanded on the continent, but unequally amongst its countries. The number of ISO 9001 certifications stays greater than the ISO 14001, but the difference among them is declining at the country level.

While earlier researchers briefly described the diffusion procedure of these standards among sectors of activity, some studies investigate the process of diffusion at the sectoral level. For example, Corbett, (2008) find the impact ISO 9000 on diffusion and find that exporting firms may concurrently be importing the management practices of importing countries. Llach et al., (2011) examine the development of the global diffusion of ISO 9000 standard specific to activities of industrial sectors. Based on the ISO survey data from 1998 to 2008, they analysed diffusion in relations of specific manufacturing sectors to measure the discrepancy of diffusion among different sectors of activity. Their results shows that the diffusion of ISO 9001 exhibit a logistic curve in all sectors, though the existing phase of diffusion (in terms of the preliminary, growth, and saturation phases respectively) varies among distinct areas of action. These sectors have been categorized into three units based on their potential future progress. Similarly, Marimon et al., (2011) examine that there are models of diffusion of the ISO-14001 standard that are unusual in particular areas of economic activity. The study was conducted by employing a logistic curve that comprehensively clarify the nature of this development, and uncertainty and concentration indices were computed to evaluate the development of the positions of the sectors joining the number of certifications ISO 14001. It accomplishes that the diffusion between areas is consistent: all areas have undergone related behaviour.

Among recent studies on the subject, Castka & Corbett, (2016) postulate that social and environmental standards could be more broadly implemented if they are well administered, less strict, and more positively cover up in the media. The writers gather data on 41 eco-labels from various data resources. The study finds that the better-governed brands are broadly accepted, however, strict labels within the sample have less wide acceptability. More promising media exposure is not linked with broader adoption. Although the diffusion of ISO certification had been studied extensively, a more recent work by Rodriguez-Arnaldo and Martínez-Lorente, (2021) looks into the matter in a newer way. This study analysed the impact of six factors on ISO-9001 execution: exporting to Europe, economic growth, innovation, repute, business sophistication and competitiveness. Based on the data for the period 2009-2018, their findings reveal a robust positive association for the nation's economic growth only when nations with lower incomes are judged. In case of developed countries, a negative but significant relationship is realized for reputation, competitiveness, business sophistication and innovation, while the results are reversed when considering the less developed countries.

There are comparatively fewer studies on the diffusion of the ISO-50001, the energy management standard of the ISO. The primary reason is that the standard commenced in 2011, which is much more recent as compared to ISO-9000, ISO-14000, and several other standards. Non-renewable energies are the planet's primary resource of energy. Nevertheless, the decline in supply, enhanced demand, greater merchandise manufacturing expenditures, and harmful impacts on the ecosystem headed to the necessity to develop the ISO 50001 standard to employ the energy management system for enhancing energy productivity and decrease the greenhouse gases emission. As an early study, Rodriguez et al., (2015) aims at examining the early implementation of the ISO 50001 standard. The results enable the classification of ISO 50001 accredited companies and expect the advantages of the implementation of the standard. The conclusions established on the study have showed the benefits and motivations of the initial acceptance of ISO 50001. The three extremely important reasons to accept ISO 50001 were the internal factors for instance "increasing energy efficiency", "developing energy awareness between employees" and "leader's initiative". It was determined that internal factors rather than external factors stimulate the application of ISO 50001.

Pertaining to ISO-50001 adoption at the company level, Fuchs et al., (2020) explored several motivations for the adoption of the energy management standard. According to this study, environmental sustainability, government incentives or rules and prevailing principles and objectives are the most repeatedly identified determinants. Though, the improvement in productivity, cost reduction, and operating developments are the leading advantages; the primary obstacle is lacking a culture of energy management. Similarly, Marimon & Casadesús (2017) examined the adoption of ISO-50001 certification at the firm level. They studied 87 Spanish firms to investigate the relations between the corporate motivations that lead organizations to develop the ISO 50001 certification. For the analysis, they applied exploratory factor analyses and structural equation modelling. The study shows that social obligations describe operational obstacles, which in turn impact operating advantages. Ecological factors are directly linked to ecological advantages. Organizational obstacles have a negative association with ecological and operational benefits. Operational complexities are associated to ecological and operational benefits.

Looking into the diffusion process at the cross-country level, Sousa et al. (2019) examine the diffusion of ISO-50001 certification covering 12 countries over the period 2011-2015. The study aims to explain the diffusion process against various country-level factors such as the existing level of ISO certification as well as characteristics of the energy sector e.g., energy creation from gas, coal, and oil resources; share of renewable energy production; and per capita energy use, among others. The study characterizes the diffusion procedure of the ISO 50001 standard across the globe and explored that what are the key aspects that define the adoption of energy management in the various regions of the world. Multiple regression model was employed for the certification numbers and environmental, societal, and economic parameters, energy mining and climate change. Thus, it was noted that Europe has the maximum number of ISO-50001 certifications and Asia is the quickest-developing region. Amongst the countries, the United Kingdom and Germany are those with the highest diffusion of ISO-50001, but China has been enhancing its diffusion with each year.

While there are benefits associated with the certification, compliance with ISO certification, nevertheless, requires additional cost which may act as a hindrance in the adoption process, particularly in the case of smaller firms. Incentive programs by governments can play a vital role in this regard. Reis et al., (2020) investigate the diffusion of the ISO-500001 standard by employing the system dynamics modelling method. It suggests an expansion of the diffusion model associated to market participant pressure, built on institutional theory. The findings demonstrated that monetary and economic incentives offered the most substantial influence on the overall number of certified industries. Large companies are the most pertinent sector for certification without supplementary policies, while smaller ones benefit substantially from incentive programs. This study reiterates the significance that participants have in fostering environmentally friendly standards and programs and extends valuable learnings on the procedures of embracing energy management systems.

Method
Conceptual framework
The cross-country diffusion of ISO-50001 certification can be demonstrated theoretically as any other organizational innovation, in such a way that the stated incidence of certification signifies the accumulated behaviour of logically acting manufacturers in the country. Let's assume a representative manufacturer, who intends at certification if discounted benefits exceed discounted costs of conformity. The cost associated with the adoption of a

standard includes various factors such as the creation of grading and cleanliness facilities or training of personnel, along with the modifications in the production procedure, e.g., documentation and water testing, and the cost of auditing, etc.

The adoption of a certification scheme can be studied at the firm level. In this regard, firm size, location, industrial sector, and several other factors can affect the adoption. However, there are country-level factors that are beyond the reach of individual managers. The current study investigates various country-level factors which affect the global spread of the ISO-50001 certificates. Accumulating all the manufacturers in single country and assessing acceptance among countries, produces between-country difference in factors outside the reach of individual companies. We identify five categories of prospective factors affecting the number of released certificates per country, as shown in Figure 3.

Literature shows that the overall inclination of certification affects the diffusion of new standards. The intensity of diffusion is related to the economic scale. That is, larger economies have a greater number of firms which is linked to the higher number of certificates in the country (Herzfeld et al., 2011; Rodriguez-Arnaldo & Martínez-Lorente, 2021). The diffusion process is also affected by a sectoral-specific condition (Llach et al., 2011). There is a body of literature related to the role of infrastructural and institutional quality and their role in the diffusion of diffusion (Berliner & Prakash, 2013; Orcos et al., 2018) Based on the literature, we develop a conceptual framework to explain the diffusion of ISO-50001 certification at the country level.

General tendency of certification
- ISO-9001 certification

Total economic mass of a country
- Gross domestic product

Characteristics of energy sector
- Energy depletion
- Time required to get electricity connection

General macroeconomic conditions
- Time required to start a new business
- Mobile phone and internet subscriptions
- Control of corruption

Intensity of certification in neighbourhood
- ISO-50001 certificates in neighbourhood

ISO-50001 Certification
- Incidence of ISO=50001 certification (0/1)
- Number of ISO-50001 certificates

Figure 3- Conceptual framework for the country level diffusion process

The global spread of the ISO-50001 can be analysed in two forms. First, taking the incidence of certification in a country as a binary variable takes a value equal to 1 in case there is at least one producer with the ISO-50001 certification. In other words, the standard has diffused to that country. Second, taking the number of certified firms in that country measures the intensity of the diffusion process. In case the outcome takes the form of a binary variable, i.e., take value 1 when there is at least one certificate of ISO50001 and 0 otherwise, the probit model takes the form given in Equation (1).

$$\Pr(Y = 1|X) = \Phi(\beta_0 + \beta_1 X) \tag{1}$$

In the equation, a vector of regressors X affects the probability of outcome Y, whereas Φ denotes the cumulative distribution function of the standard normal distribution. In this

way, we can estimate the impact of country-level variables on the probability of the incidence of ISO-50001 certification in a country.

Next, we analyse the impact of country-level factors on the intensity of certification in a country. Instead of the binary variable, the dependent variable, in this case, is the number of ISO-50001 certificates in a country. As the dependent variables are count data, and non-negative integers, hence we opt for a count data estimator. In the case of count data, Poisson and negative binomial estimators are generally superior to OLS estimators (Winkelmann, 2008). Poisson distribution assumes that mean and variance are equal. However, the variance surpasses the mean in case of over dispersion, while in comparison with the Poisson model, a negative binomial model is more suitable. Moreover, the negative binomial estimator is capable of dealing with undetected heterogeneity in the deviation of the determined variable. The number of certificates can be explained by following negative binomial model.

$$\Pr(Y_i = y_i | x, \alpha) = \frac{\Gamma(y_i + \alpha)}{\Gamma(\alpha)y_i!} \frac{\exp(y_i x_i' \beta)\alpha^\alpha}{(\exp(x_i'\beta) + \alpha)^{y_i + \alpha}} \quad , y_i = 1, 2, 3, \dots \tag{2}$$

Where y_i is the number of ISO-50001 certificates in country i, while x is a vector of predictors including a constant. β is a vector of parameters to be estimated. The observations are assumed to be independently distributed across countries.

All variables included in the analysis are tabulated along with their description and data sources in Table 1 below.

Table 1
Variable description and data sources

Variable	Description	Source
ISO-50001	Number of ISO-50001 certificates in a country	ISO Survey
ISO50Contiguity	As explained below	Constructed
ISO50Proximity	As explained below	Constructed
ISO-9001	Number of ISO-9001 certificates in a country	ISO Survey
GDP	Annual gross domestic product in US$	WDI
EDepletion	Adjusted savings: energy depletion (% of GNI)	WDI
EDays	Time required to get electricity (days)	WDI
BDays	Time required to start a business (days)	WDI
Mobile	Mobile cellular subscription per 100 people	WDI
Internet	Fixed broadband subscriptions per 100 people	WDI
CCRank	Control of corruption rank (1=lowest to 10=highest)	WGI
D1819	Takes value 1 for years 2018 and 2019, zero otherwise	Constructed

To estimate the impact of the geographic neighbourhood, we formulated two variables as given below.

$$\text{ISO50Contiguity}_{it} = \sum_j \text{ISO50}_j \text{ where } j \text{ shares border with } i \tag{3}$$

$$\text{ISO50Proximity}_{it} = \sum_j \frac{\text{ISO50}_{jt}}{\text{Distance}_{ij}} \text{ where } j \neq i \tag{4}$$

We formulate the variable *ISO50Contiguity* to capture the neighbourhood effect in terms of the number of certificates in the neighbouring countries, whereas *ISO50Proximity* is

the distance weighted certificates in all other countries. The information on countries with shared borders and bilateral distance between them is taken from the French Institute Centre d'Etudes Prospectives et d'Informations (CEPII). Note that we estimated the equation for the full sample over the period 2011-2019 (96 countries $\times$ 9 years = 864 observations). To capture any effect specific to the procedural change in the ISO survey from 2018 onwards, we have included the dummy variable *D1819*. Nevertheless, we additionally estimate the specified models for the period 2011-2017 as a robustness check.

For the empirical estimation, we specify our probit model as follows.

$$
\begin{aligned}
\text{dISO50001}_{it} = \ &\beta_0 + \beta_1 \ln(\text{ISO50Contiguity})_{it-1} + \beta_2 \ln(\text{ISO9001})_{it-1} \\
&+ \beta_3 \ln(\text{GDP})_{it-1} + \beta_4 \ln(\text{EDepletion})_{it-1} \\
&+ \beta_5 \ln(\text{EDays})_{it-1} + \beta_6 \ln(\text{BDays})_{it-1} + \beta_7 \ln(\text{Mobile})_{it-1} \\
&+ \beta_8 \ln(\text{Internet})_{it-1} + \beta_9 \text{CCRank}_{it-1} + \beta_{10} \text{D1819}_t + \varepsilon_{ijt}
\end{aligned} \quad (5)
$$

$$
\begin{aligned}
\text{dISO50001}_{it} = \ &\beta_0 + \beta_1 \ln(\text{ISO50Proximity})_{it-1} + \beta_2 \ln(\text{ISO9001})_{it-1} \\
&+ \beta_3 \ln(\text{GDP})_{it-1} + \beta_4 \ln(\text{EDepletion})_{it-1} \\
&+ \beta_5 \ln(\text{EDays})_{it-1} + \beta_6 \ln(\text{BDays})_{it-1} + \beta_7 \ln(\text{Mobile})_{it-1} \\
&+ \beta_8 \ln(\text{Internet})_{it-1} + \beta_9 \text{CCRank}_{it-1} + \beta_{10} \text{D1819}_t + \varepsilon_{ijt}
\end{aligned} \quad (6)
$$

Note that the dependant variable *dISO50001* is a binary variable taking a value equal to 1 in case of at least one certified firm exists in a country, and 0 otherwise. In equation (5), we measure the neighbourhood effect through the variable $ISO50Contiguity$, which is the intensity of certification in the neighboring countries. Alternatively, the effect is measured as the distance-weighted certification in other countries, the variable $ISO50Proximity$.

For the negative binomial estimation, the specified region model is given in equations (7) and (8) below. In these models, the dependent variable ISO50001 is the count of certificates per country. In other words, it is a continuous variable consisting of non-negative integers.

$$
\begin{aligned}
\text{ISO50001}_{it} = \ &\beta_0 + \beta_1 \ln(\text{ISO50Contiguity})_{it-1} + \beta_2 \ln(\text{ISO9001})_{it-1} \\
&+ \beta_3 \ln(\text{GDP})_{it-1} + \beta_4 \ln(\text{EDepletion})_{it-1} \\
&+ \beta_5 \ln(\text{EDays})_{it-1} + \beta_6 \ln(\text{BDays})_{it-1} + \beta_7 \ln(\text{Mobile})_{it-1} \\
&+ \beta_8 \ln(\text{Internet})_{it-1} + \beta_9 \text{CCRank}_{it-1} + \beta_{10} \text{D1819}_t + \varepsilon_{ijt}
\end{aligned} \quad (7)
$$

$$
\begin{aligned}
\text{ISO50001}_{it} = \ &\beta_0 + \beta_1 \ln(\text{ISO50Proximity})_{it-1} + \beta_2 \ln(\text{ISO9001})_{it-1} \\
&+ \beta_3 \ln(\text{GDP})_{it-1} + \beta_4 \ln(\text{EDepletion})_{it-1} \\
&+ \beta_5 \ln(\text{EDays})_{it-1} + \beta_6 \ln(\text{BDays})_{it-1} + \beta_7 \ln(\text{Mobile})_{it-1} \\
&+ \beta_8 \ln(\text{Internet})_{it-1} + \beta_9 \text{CCRank}_{it-1} + \beta_{10} \text{D1819}_t + \varepsilon_{ijt}
\end{aligned} \quad (8)
$$

Table 2 shows the summary statistics of the variables involved in the analysis. It shows that the ISO-50001 certification ranges from 0 to 9024 certificates across countries with average of 113 certificates.

Table 2
Summary statistics

	(2)	(3)	(4)	(5)
Variables	**Mean**	**SD**	**Min**	**Max**
ISO-50001	113.1	611.5	0	9,024
ISO50Contiguity	3.805	6.266	0	66.26
ISO50Proximity	462.0	1,463	0	11,525
ISO-9001	9,420	33,771	0	393,008

GDP	6.866e+11	2.154e+12	1.377e+09	2.061e+13
EDepletion	3.803	7.025	2.77e-05	54.37
EDays	99.71	56.70	10	411.6
BDays	28.23	46.77	1.500	690
Mobile	1.074e+06	346,964	11,739	2.126e+06
Internet	119,168	124,591	21.58	437,705
CCRank	5.532	2.789	1	10

Results

Comparison of group means

To begin with, we present the comparison of mean values for the explanatory variables across the two groups using a t-test – see Table 3. The estimates show that the countries with ISO-50001 certification have a higher incidence of the certification in their neighbourhood. Similarly, the higher certification of quality standards (ISO-9001) is associated with a higher incidence of the energy management standard. Furthermore, the non-certified group of countries performs worse, on average, in terms of energy depletion conditions. In the noncertified countries, it takes roughly 15 days more to get the electricity connection compared to the mean number of days for the same task in the countries with certification. Similarly, in the countries with certification, it takes around 21 days, on average, to start a business. The time for the same take is around 38 days in the non-certified group. Looking at the variables related to the quality of infrastructure and institutions, it is clear that the countries with better infrastructure and intuitional quality have the incidence of ISO-50001 certification.

Table 3

Comparison of group means using t-test

	(1)	(2)	(3)
Variables	**Certified**	**Non-certified**	**Differences**
ISO50Contiguity	725.1	100.7	624.4[***]
ISO50Proximity	5.5	1.5	4.0[***]
ISO-9001	14932.2	1849.3	13082.9[***]
GDP	1.1e+12	1.5e+11	9.2e+11[***]
EDepletion	2.1	6.1	–4.0[***]
EDays	93.4	108.4	–15.1[***]
BDays	20.5	38.8	–18.3[***]
Mobile	1201777.7	899651.5	302126.2[***]
Internet	178496.9	37671.2	140825.7[***]
CCRank	6.7	3.9	2.9[***]

Diffusion probability analysis

Table 4 presents the estimates of Probit regression where the certification is treated as a binary variable. That is, the variable *dISO50001* takes a value of 1 when the certification exits in a country, and 0 otherwise. Estimations for the period 2011 to 2019 are reported under Colum (1) and (2) whereas Columns (3) and (4) present estimates of the sub-sample for the first eight years 2011-2017. Note that the dependant variables are taken in lags. That means the country level conditions are assumed to affect the diffusion in the next time interval.

Table 4
Diffusion of ISO50001 certification: Diffusion probability

VARIABLES	Dependent variable: ISO-50001 certification (0/1)			
	Period: 2011-2019		Time Period: 2011-2017	
	(1)	(2)	(3)	(4)
ln(ISO50Contiguity)$_{it-1}$	0.480***		0.494***	
	(0.108)		(0.111)	
ln(ISO50Proximity)$_{it-1}$		1.391***		1.338***
		(0.230)		(0.204)
ln(ISO-9001)$_{it-1}$	0.316**	0.307**	0.221	0.242**
	(0.158)	(0.136)	(0.158)	(0.112)
ln(GDP)$_{it-1}$	0.502**	0.470***	0.549**	0.482***
	(0.195)	(0.161)	(0.226)	(0.157)
ln(EDepletion)$_{it-1}$	-0.175**	-0.114**	-0.165**	-0.105*
	(0.071)	(0.055)	(0.080)	(0.054)
ln(EDays)$_{it-1}$	-0.353	-0.261	-0.421	-0.291
	(0.340)	(0.278)	(0.369)	(0.247)
ln(BDays)$_{it-1}$	0.257	0.206	0.258	0.210
	(0.269)	(0.202)	(0.238)	(0.151)
ln(Mobile)$_{it-1}$	0.479	0.205	0.648	0.196
	(0.631)	(0.412)	(0.758)	(0.337)
ln(Internet)$_{it-1}$	-0.138	-0.071	-0.047	-0.002
	(0.106)	(0.085)	(0.111)	(0.089)
CCRank$_{it-1}$	0.294***	0.234***	0.263***	0.221***
	(0.102)	(0.084)	(0.094)	(0.067)
D1819$_t$	0.454**	-0.097		
	(0.231)	(0.200)		
Constant	-21.761*	-17.615**	-25.144*	-17.867***
	(11.224)	(8.363)	(14.115)	(6.737)
N	864	864	672	672
Countries	96	96	96	96

Note: Robust standard errors presented in parentheses. ***, **, shows Statistical significance at p<0.01, p<0.05 and p<0.1 respectively.

Diffusion intensity analysis

Next, we analyse the intensity of the certification of energy management standards at the country level using the negative binomial regression. The results are displayed in Table 5. The first two columns report the estimates of the full sample where we have estimated the impact of contiguity and proximity parameters. However, the last time two columns report the estimations of the subsample for the period 2011-2017. The dependent variable is the number of ISO-50001 certificates in a country. These estimates corroborate with the earlier estimation using the probit model.

Table 5

Diffusion of ISO50001 certification: Diffusion intensity

| Variables | Dependent variable: ISO50001 Certification (Counts) | | | |
| | Time period: 2011-2019 | | Time period: 2011-2017 | |
	(1)	(2)	(3)	(4)
ln(ISO50Contiguity)$_{it-1}$	0.319***		0.335***	
	(0.019)		(0.021)	
ln(ISO50Proximity)$_{it-1}$		0.901***		0.910***
		(0.044)		(0.046)
ln(ISO-9001)$_{it-1}$	-0.037	-0.021	-0.050	0.036
	(0.066)	(0.069)	(0.083)	(0.085)
ln(GDP)$_{it-1}$	0.273***	0.334***	0.320***	0.337***
	(0.069)	(0.071)	(0.085)	(0.084)
ln(EDepletion)$_{it-1}$	-0.127***	-0.029	-0.138***	-0.041
	(0.026)	(0.027)	(0.032)	(0.032)
ln(EDays)$_{it-1}$	-0.424***	-0.239**	-0.607***	-0.300**
	(0.093)	(0.095)	(0.129)	(0.129)
ln(BDays)$_{it-1}$	-0.082	0.023	-0.237**	0.048
	(0.077)	(0.078)	(0.100)	(0.098)
ln(Mobile)$_{it-1}$	0.879***	1.002***	1.584***	1.308***
	(0.237)	(0.239)	(0.287)	(0.287)
ln(Internet)$_{it-1}$	0.125*	0.194***	0.060	0.173**
	(0.071)	(0.074)	(0.086)	(0.082)
CCRank$_{it-1}$	0.016	0.008	0.000	0.048
	(0.036)	(0.035)	(0.044)	(0.039)
D1819$_t$	0.067	-0.185***		
	(0.061)	(0.061)		
Constant	-19.580***	-24.566***	-28.456***	-29.265***
	(3.924)	(3.972)	(4.838)	(4.819)
N	864	864	672	672
Countries	96	96	96	96

Note: Robust standard errors presented in parentheses. ***, **, shows Statistical significance at p<0.01, p<0.05 and p<0.1 respectively.

Discussion

Our study explores the neighbourhood effect on diffusion of ISO 50001 — energy management standards across 96 countries of the world. It explores that Contiguity — neighbourhood effect in terms of the number of certificates in the neighbouring countries and Proximity — distance weighted certificates in all other countries have positive and statistically significant effect on the adoption and intensity of certification of ISO 50001 in the neighbouring countries.

It is noticeable that the ISO-9001 certification does not have any impact on the intensity of the ISO-50001 certification. In connection to the probit regression, the ISO-9001 certification only affects the probability of ISO-50001 certification, not the intensity of the latter. Looking at the other variables, the coefficient for the variable GDP shows a higher incidence of certification in larger economies – the scale effect (Castka & Corbett, 2016; Herzfeld et al., 2011; Rodriguez-Arnaldo & Martínez-Lorente, 2021).

The diffusion process is also evident to be affected by the characteristics of the energy sector. energy depletion conditions prevailing in a country are negatively related. Sousa Lira et al., (2019) found a similar negative effect for this variable. Countries with a more developed energy sector (as captured by the number of days required to get electricity) are more like to have intensive diffusion of the ISO-50001 certification. Similarly, the longer time needed to begin a business is negatively related to the diffusion process. Pertaining to infrastructure, we see that development in terms of communication facilitates the diffusion process. Similarly, intuitional quality is evident to foster the diffusion of ISO-50001 certification. The dummy for the years 2018 and 2019, *D1819,* has a negative coefficient in the negative binomial regression which implies the intensity of certification decreased in the years 2018 and 2019. The coefficient for the same variable is negative in the case of probit regression above showing the diffusion of ISO-50001 standard to newer countries. Collectively, this means the number of certificates decreased (due to the procedural change in the ISO survey) while the diffusion to more countries continued. These findings corroborate with the ISO-50001 certification visualized in Figure 1.

Conclusions

Governments and firms pursue to develop technologies for energy management as the energy sources around the world are becoming scarcer with increasing prices. Therefore, optimization of electricity use and improvement in energy efficiency has become crucial for firms. Given this, organizations be likely to implement ISO 50001 in all operational and organizational form. ISO 50001 aids small and large organizations to get the maximum efficiency of the energy generated and enhance the permanence of organizations in public or private sectors. However, the incidence of ISO-50001 certification is rather uneven across the globe. This study examines the uneven spread of ISO-50001 standards at the country level with sample size of ninety-six (96) countries from 2011-2019. For the empirical estimation, we applied probit regression to analyse the reach of the certification across countries, and the negative binomial regression to analyse the intensity of diffusion.

The cross-country level spread can be explained by two types of factors. The first group includes factors that a country cannot change. For instance, a country cannot change its history and geography. We find that the diffusion of the certification is strongly affected by the geographic location of a country. The number of ISO-50001 certificates in a country is connected to the intensity of the certification in the neighbouring countries. We also found the neighbourhood effect measured in terms of distance-weighted corticates in other countries as a strong predictor of the diffusion process. Furthermore, the contagion effect of the past adoption of certification is an important factor. Similarly, the gross domestic product of a country reflects the potential for the magnitude of certification – the scale effect.

Apart from these factors, the diffusion process is affected by the macroeconomic situations prevalent in the country. The findings show that infrastructural and institutional quality facilitate the diffusion of the ISO standard. Control of corruption help to preserve the incentive for certification. Mobile and internet communication facilitate the diffusion of knowledge and thus foster the diffusion process. Countries with a more developed energy sector are more likely to have a higher level of energy management certification. Therefore, governments should improve the sectoral condition as well as develop infrastructure to encourage the diffusion of ISO-50001 certification. Consequently, this would contribute to improvement in energy management across the globe.

Appendix A

List of countries included in the analysis:

Afghanistan	Czech Republic	Kuwait	
	Russian Federation		
Albania	Denmark	Kyrgyzstan	Saudi Arabia
Algeria	Ecuador	Libya	
	Senegal		
Angola	Egypt	Lithuania	
	Slovakia		
Argentina	Equatorial Guinea	Malawi	
	Slovenia		
Austria	Estonia	Malaysia	South Africa
Azerbaijan	France	Mexico	South Korea
Bangladesh	Gabon	Moldova	Spain
Belarus	Georgia	Mongolia	Sudan
Belize	Germany	Morocco	
	Suriname		
Bolivia	Ghana	Mozambique	
	Swaziland		
Bosnia and Herzegovina	Greece	Myanmar	
	Tajikistan		
Botswana	Guatemala	Nepal	
	Tanzania		
Brazil	Hungary	Netherlands	
	Thailand		
Brunei Darussalam	India	Niger	
	Tunisia		
Bulgaria	Indonesia	Nigeria	
	Turkey		
Cameroon	Iran	Norway	
	Ukraine		
Canada	Iraq	Oman	
	United Arab Emirates		
Chad	Ireland	Pakistan	
	United Kingdom		
Chile	Israel	Papua New Guinea	
	United States of America		
China	Italy	Peru	
	Uzbekistan		
Colombia	Ivory Coast	Poland	Viet Nam
Congo	Jordan	Qatar	
	Zambia		
Croatia	Kazakhstan	Romania	
	Zimbabwe		

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Educational Trajectories of University Students in Russia: Analysis before The COVID-19 Pandemic and Development Trends

Veronica M. Grebennikova
Kuban State University, Russia
A.S. Griboyedov Moscow University, Russia

Oleg V. Grebennikov and Oksana A. Us
Kuban State University, Russia

Alla V. Molchanova
Moscow Psychologic-Social University, Russia

The COVID-19 outbreak has significantly affected the education system. Both the labor market and the education market have undergone dramatic changes during the pandemic. A rather serious discrepancy between the structure of labor demand and the structure of graduates underlies the relevance of the present study. The paper aims to analyze the relevant fields of higher education, as well as to identify key trends in 2013–2020 admission campaigns to assess development prospects. In the course of the study, we put forward several hypotheses that were tested using the case study of Russian undergraduates with state-funded tuition. Structural and dynamic analysis of the 2013–2020 period indicated the growing demand from students for education in all fields except Social sciences. A comparison of the indicator of structural shifts between 2019 and 2020 shows a fundamental change in the demand for fields of educational training for Healthcare and medical sciences, the growth rate was 2.5 times. Considerable changes in the structure of supply were observed in social sciences (a drop in the percentage of enrolled students), engineering, technology and technical sciences (a rise in the percentage of enrolled students). However, with increased demand for engineering-technical programs in 2020, there was no similar increase in supply. Our hypothesis about a decline in demand and supply for the humanities was not confirmed. At the same time, we proved the hypothesis about an increase in applicants' demand for medical specialties by 9.4% in 2013–2020 and by 22.6% in the 2020 crisis year. The COVID-19 pandemic has revealed the problem of the healthcare staffing shortage and the need to increase the number of students enrolled in medical education programs. The COVID-19 outbreak has had a profound impact on changes in learner profiles. The identified trends are pushing for a rethinking of the higher education system and the labor market in search for an optimal balance in educating staff.

Keywords: structure of education, COVID-19 pandemic, labor market, Higher education.
JEL: I21, I23

Correspondence concerning this article should be addressed to Dr. Veronica M. Grebennikova, Professor of the Kuban State University, and A.S. Griboyedov Moscow University. Email: vmgrebenikova@mail.ru

The COVID-19 pandemic has significantly affected the education system, which was among the first ones to face global changes and the need to develop distance learning technologies. The span of 2020–2021 became a landmark period, which gave grounds for the analysis of the past decade and the forecast of promising trends in future development.

The global market for education services has experienced dramatic disturbances (Wangenge-Ouma & Kupe, 2022; Tilak & Kumar, 2022; Liu & Gao, 2022; Purcell & Lumbreras, 2021). Underestimating the potential threat of COVID-19 and its scale, ignoring the experience of other countries in combating the pandemic led to serious consequences (Bruin et al., 2020). Since universities are structurally involved in global processes (Marginson, 2017), their sustainability was subjected to a serious test. The coronavirus breakdown halted educational migration. According to the OECD (2020), in the pre-pandemic period the number of foreign students enrolled in higher education programs accounted for 5.6 million people; however, in 2020, there was a significant decline in their numbers. It is also estimated that the crisis-related decline in the number of resident students will be varying between 15% and 25% (Dennis, 2020). This caused an increase in demand for higher education within the country and changed the structure of education profiles in universities. Special attention is paid to the impact of the COVID-19 pandemic on these processes.

On the other hand, keeping borders conditionally open during the pandemic had a positive effect on enrollment rates. In the Netherlands, the enrollment of international students in 2020 decreased by no more than 4% (Nuffic, 2021), while in France the drop was 25%. Due to the liberalization of the procedure, Russia managed to maintain the enrollment level of foreign students and even increased their total number in 2020 by 6% compared to 2019 (RF Ministry of Education, 2022). Australia's strict border crossing requirements fueled a 63% drop in international student enrollment (Campus France, 2021). Brazil and a number of other developing countries have not been able to fully and effectively switch to distance learning (Marinoni & van't Land, 2020).

The perception and assessment of the pandemic-caused changes in the education system vary from positive to strictly negative. Some researchers argue that there is a threat of the distance learning process being formalized, since the teacher-student personal and emotional contact is believed to be crucial and, therefore, it should be maintained (Levinsen, 2007; Siritongthaworn et al., 2006). Studies highlight some adverse effects, such as longer class periods, higher workload, etc. (Klyagin, 2020; Pililyan, 2020; Tomczyk & Walker, 2021; Shtykhno, Konstantinova, & Gagiev, 2020). To maintain the quality of distance learning, appropriate response at various levels of management is important (Okulich-Kazarin, Bokhonkova, & Ruda, 2022).

At the same time, the distance format allows one to quickly share educational materials with students; learners' schedule is more flexible; teachers have an opportunity to implement new forms of information presentation, knowledge control, and the development of skills for self-regulation of learning behavior, which positively affects academic performance (Grishin et al., 2020; Traxler, 2009; Maatuk et al., 2022; Kukulska-Hulme, 2010; Driver, 2012; Khan, Shah, & Sahibzada, 2020). Meanwhile, only from 5% to 10% of students enrolled in the fully-online education programs complete their studies successfully (Kolesnikova, 2019). Differentiation also manifests itself in groups of students with different levels of giftedness and locality (Yusof, Ismail, & Radzi, 2022). Thus, it is necessary to consider possible consequences for the educational process caused by the coronavirus crisis.

Exploring the factors influencing the forms of education is important from the perspective of the subsequent adaptation of the education system to similar crises and the development of the most effective technologies for the interaction of participants in the educational process that contribute to gaining high-quality university education. Transformation during the COVID-19 pandemic emphasizes the need for research aimed at analyzing the most relevant fields of higher education and identifying key trends in admission campaigns of previous years. In our study, the COVID-19 pandemic became the backdrop for analyzing changes in student educational trajectories. The impact of the pandemic is considered by us in the context of the proposed hypotheses. The study horizon of 2013-2020 imposes some limitations in terms of interpreting the strength and long-term impact of the pandemic. We focus on analyzing the dynamics and the structure of submitted applications and students enrolled in universities, and identifying the most popular education profiles and trends during the period of 2013–2020.

Literature Review

Higher education forms human resources and serves as a backbone element of the national economy. Among the central problems of modern education is a significant discrepancy between the structure of labor demand and the structure of supply (graduates). This discrepancy has long been existing and is observed in many countries (Eichhorst, Marx, & Rinne, 2020; Flisi & Santangelo, 2022). The problem is compounded by extremely quick global changes, since universities are unable to promptly respond to the fast-changing economic demands for graduates' competences.

Firsova (2020) analyzes the effectiveness of higher education and discusses current problems and imbalances in its development. The research findings show that students' preferences for educational programs are often not due to the structure of the economy, but to the demand of the population in the field of education, as well as inclinations and ideas of applicants. In Russia, there is a consistently high demand for management, law, education and pedagogy programs (Kovalenko, 2011). We assume that this trend is no longer supported. The demand for such specialists in the labor market is decreasing. This leads to imbalances and inefficiencies in public and private spending on higher education. The hypotheses of our study, based on a review of the literature, changes in the economy over the past few years, indicate that other training profiles occupy leading positions in the educational field.

In contrast to foresight forecasts, which allow outlining a list of professions that are expected to be in demand in the future (Talwar & Hancock, 2010; Frey, 2011; Armstrong, 2017; Slayter, 2019), there is an approach (Hines, 2019) stating that work will gradually lose its central role in the daily life of most people (the so-called "post-work future" (Houston Foresight Program, n.d.). Hines (2017) demonstrates that the goal of receiving higher education is changing: preparing for work life is no longer a key task for students; the boundary between different aspects of their activities is gradually blurring; it is becoming increasingly difficult to identify students' occupation. This integration of various aspects causes a decrease in labor productivity (Gavett, 2015), thereby creating a gap in the performance of exclusively labor tasks. The noted observations can be considered as new limitations of studies that are devoted to the analysis of students' educational trajectories. In this case, the change in learning trajectories should be studied in a comprehensive manner, because these changes now do not fully indicate a change in the structure of labor resources.

Changes in the requirements for staff competences are due not only to the fact that some specialties will lose their significance, but also to the extent to which the knowledge and skills acquired in the learning process are consistent with the format of the new economy. The

rise of digital technologies will cause the eventual dissolution of about 50% of professions in the near future, and 67% of today's schoolchildren will end up working in those professions that do not yet exist (Frey & Osborne, 2013). This is confirmed by the OECD (2019): 40% of jobs created between 2005 and 2016 were in digitally intensive sectors. At that, it is estimated that by 2030 between 400 million and 800 million individuals around the world could be displaced by automation and need to find new jobs (Manyika et al., 2017).

Experts emphasize that in the pandemic, the success of universities depends on how quickly they can integrate digital educational technologies into their system, provide a high level of distance learning and track the digital footprint of students (Gallagher & Palmer, 2020). This goal is dictated by the desire of universities to pick up the trends of the labor market and provide in-demand training for students.

Currently, one of the main trends in the field of education in Russia is the priority of information technology and engineering-technical training over other fields to intensify innovative development (Dashkovskaya, 2021). It is worth noting that for a long time in Russia there has been an imbalance between the labor and education markets. The negative consequence of this was graduates facing difficulties with finding their first employment in their specialty. We will try to show in the study the existing gap between different profiles of education.

Based on the sample observation of Kolosova, Rudakov and Roshchin (2020) study the problem of graduates employment according to the profile of education received at the university from the standpoint of determinants, such as salary and job satisfaction. They confirmed that the probability of finding a job in the degree field was higher for students in medical, computer (information technology) and legal sciences. This once again confirms the relevance of the research problem.

Lanchakov, Filin and Yakushev (2020) investigated the distribution of state-funded openings in Russian universities, analyzed the peculiarities of graduates employment since 2015, and discussed the possible trends in this field until 2025. The researchers conclude that the most effective solution is the targeted attraction of potential applicants, continued involvement in joint events, getting to know the university at an early stage, and orientation of future applicants towards choosing the most in-demand professions. As it turned out, school plays a significant role in choosing the educational trajectory. According to the survey conducted by the Higher School of Economics (Prakhov, Rozhkova, & Travkin, 2021), 66% of bachelor's degree students entered the university after secondary school; 28% of respondents applied to the university after graduating from lyceums, gymnasiums, schools with gymnasium classes or in-depth study of certain subjects. Only 6% of students obtained primary and secondary vocational education before entering the university. The results of our study and the findings of Lanchakov, Filin and Yakushev (2020), Prakhov, Rozhkova, and Travkin (2021) can be useful in developing targeted interventions to balance learning gaps and labor market demand.

Amid fierce competition, universities are pursuing active marketing policy to attract applicants that is aimed at building the image of the future profession with an emphasis on the quality of the education provided. Generally, applicants adopt a rational approach to choosing their future profession. First of all, they think over the opportunities that employment can provide them with, and look over their competencies that imply certain knowledge, skills and abilities to be acquired in the learning process.

Similar to deciding on an education profile, choosing an educational institution is a complex process influenced by numerous factors, including labor market demands that have changed during the pandemic (Anufrieva et al., 2021). Rapid changes stimulate applicants to reconsider their educational plans just as quickly.

Using admission campaigns of 2013–2020 as examples, we attempt to track the change in preferences of Russian applicants and identify education profiles they chose.

Methods

Purpose of the study

The study aims to analyze the changes in the structure of fields of education preferred by students when entering Russian universities. During the analysis of 2013–2020 admission campaigns, we will also highlight key trends in the sphere of higher education, which will allow us to assess the prospects for further development.

Study design

In the course of the study, a structural-dynamic analysis was used (Sivelkin & Kuznetsova, 2002). This method lies in calculating individual and summarizing indicators of structural changes, i.e. absolute and relative structural shifts with a constant and variable comparative base.

The structural indicator was calculated by formula (1):

$$d_i = \frac{x_i}{s} \times 100,$$

(1)

where d_i is the share of the *i*-th structural element, $i=N,1$; x_i is absolute value by the *i*-th element; s is the sum total of absolute values of structural elements. When calculating, data on the selected indicator is used as a structural element to analyze structural changes (e.g., number of submitted applications for bachelor's degree programs; number of students enrolled in bachelor's programs).

The individual indicator of absolute structural shifts with a variable comparative base is calculated by formula (2):

$$\Delta = d_j - d_{j-1},$$

(2)

where d_j is the proportion of the element in the *j*-th period; d_{j-1} is the proportion of the element in the period *j*–1.

The individual indicator of relative structural shifts with a variable comparative base is calculated by the ratio (3):

$$J_d = \frac{d_j}{d_{j-1}}.$$

(3)

The linear coefficient of absolute structural shifts with a variable comparative base (L^{Ab}_z) is calculated as a percentage (4):

$$L^{Ab}{}_z = \frac{\sum_{i=1}^{n} |d_j - d_{j-1}|}{n},$$

(4)

where d is the proportions of attributes; n is the number of gradations in the structures; j is the periods compared.

The indicators of structural shifts allow tracing the dynamics of demand for profiles (specialties). To identify a field of education, the All-Russian Classifier of Specialties in Education is used (Rosstandart, 2016) that covers: mathematics and natural sciences; engineering, technology and technical sciences; healthcare and medical sciences; agriculture and agricultural sciences; social sciences; education and pedagogical sciences; the humanities; art and culture.

Study Hypotheses

As part of the study, we put forward a number of hypotheses about changes expected to happen in the structure of higher education by professional educational programs caused by the reorientation of companies and households in the pre-pandemic period and after the COVID-19 outbreak. The central hypotheses are as follows.

H1: during the period under review, the Russian system of higher education witnessed an increase in supply and demand for engineering specialties. This should be due to trends in the technological development of the economy, demand from the labor market, and government contracts for state-financed education in this group of specialties. The pandemic exerted a positive impact on students' interest in engineering specialties in 2020. The imposed restrictions on individual mobility and social distancing altered the forms of employment and study. This necessitated developing additional means to ensure distance learning and led to the increased demand for specialists in this field.

H2: during 2013–2020, there was a decline in supply for the humanities programs resulting from a decreasing demand for such specialists in the labor market.

H3: in 2020, there was an increase in students' interest in medical specialties and the consequent rise in supply of such educational programs. The prolonged COVID-19 pandemic has caused a serious shortage of medical staff at all levels. Fixing the problem of the healthcare staffing shortage will take time; however, the growing interest of the state in expanding medical programs is obvious.

By using structural-dynamic analysis of demand and supply, we aim to test the above hypotheses and identify the development patterns of higher education in Russia.

Study limitations

It is noteworthy that the subject and object of research impose some restrictions. Firstly, the analysis of fields of education is carried out only for higher educational institutions, whereas secondary vocational education was not considered. Secondly, the research timeframe is limited by the available statistical data on applicants enrollment; this period covers the 2023–2020 admission campaigns. Thirdly, we analyzed changes in the structure of state-funded education programs (government contract), while the commercial (paid) forms of training were not taken into account.

Data

The information base of the research includes data from Rosstat (Russian Federal State Statistics Service) and the Ministry of Science and Higher Education of the Russian Federation. The horizon of the study is the period of 2013-2020.

Results and Discussion

Higher education in Russia is undergoing constant reforms, which is accompanied by the regulation of supply and demand for educational services. The state is an active market player that provides tuition-free openings on a competitive basis for certain education profiles. The transformation of higher education during the COVID-19 pandemic was unprecedented and affected more than 4 million students and 235 thousand teachers in Russia (Shtykhno, Konstantinova, & Gagiev, 2020). The accumulated experience in the implementation of distance technologies has allowed the system of higher education to quickly switch to the format of mass remote learning (Djeki et al., 2022). However, the primary deterrent of the last few years is the declining number of applicants, which forces universities to employ a more flexible approach to accepting students. Let us more closely look at these shifts from the position of the changing structure of students' preferences.

Having analyzed 2013–2020 admission campaigns, we identified aggregated groups of education fields and determined the actual number of educational programs (specialties) corresponding to them.

In 2020, there were 181 bachelor's degree programs (specialties) offered by Russian higher educational institutions. The engineering, technology and technical sciences education field was the one providing the largest number of educational programs (74 out of 181) with the limited number of state-financed positions (Table 1). The next fields with the largest number of specialties were social sciences (27 programs), art and culture (26 programs), and mathematics and natural sciences (21 programs). It is worth noting that the number of applications for all these educational programs exceeds the number of state-funded openings.

Table 1

Fields of education and higher educational programs in Russia

Field of education (education profile)	Number of educational programs/specialties in 2020
Mathematics and Natural Sciences	21
Engineering, Technology and Technical Sciences	74
Healthcare and Medical Sciences	1
Agriculture and Agricultural Sciences	13
Social Sciences	27
Education and Pedagogical Sciences	5
Humanities	14
Art and Culture	26
Total	181

Source: (Minobrnauki, n.d.).

During 2013–2020, there was a steady growth in the number of applications submitted to such fields as mathematics and natural sciences, medical sciences, agricultural sciences, pedagogical sciences, the humanities, and art and culture. Table 2 shows the dynamics of applications to Russian universities between 2013 and 2020. The overall decrease in the number of applications was recorded only for engineering (decrease by 1.83%, or 22,542 units) and social sciences (decrease by 61.39%, or 1,193,066 units).

In 2020 compared to 2019, there was a significant increase in the number of applications submitted for programs in the field of mathematics and natural sciences (+7.85%), engineering (+10.67%), medical sciences (+22.62%), agricultural sciences (+4.26%), social sciences (+15.84%), pedagogical sciences (+6.91%), the humanities (+34.73%), and arts and culture (+30.35%).

It is quite difficult to compare the total number of applications submitted by applicants on a yearly basis, since demographic processes have a significant impact here: currently, the situation in higher education in Russia is gradually improving and moving away from the demographic bottom line reached in 2017 (Yudina, Mkrtchan, & Boyko, 2021).

According to experts, a constant demand for higher education in a difficult year of 2020 was due to favorable demographic factors and "cleansing of the higher education system, when there was a serious reduction in both the branch network and head universities, and an increase in the number of the target audience against this background" (Dashkovskaya, 2021).

In 2013–2020, the most popular fields of education among bachelor's degree students were engineering, technology and technical sciences, social sciences, education and pedagogical sciences. The share of applications in other fields did not exceed 10%. During the period under consideration, the share of applications for programs in engineering, technology and technical sciences grew from 30.3% to 41.0%. At the same time, the share of social sciences decreased from 47.7% to 25.4%.

In 2020, despite the COVID-19 caused economic crisis, the number of applicants for educational programs in medical sciences, the humanities, art and culture, engineering and social sciences increased compared to 2019. Hence, we can conclude that hypotheses *H1* and *H2* are partially confirmed.
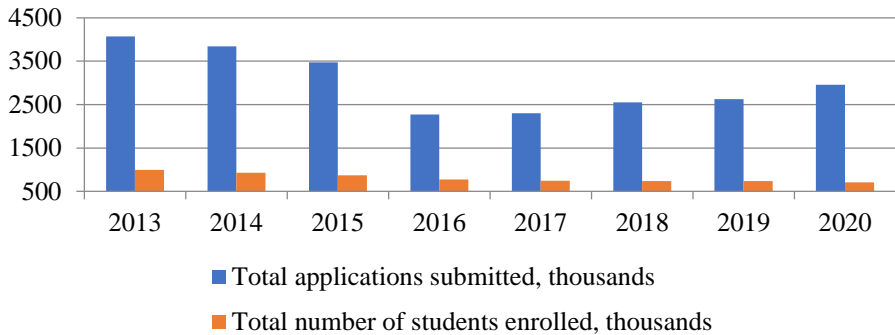
Table 2
Dynamics of applications submitted to Russian universities between 2013 and 2020

Field of education	2013	2014	2015	2016	2017	2018	2019	2020
Mathematics and natural sciences	217,576	207,665	186,208	171,835	181,235	213,692	229,195	247,181
Engineering, technology and technical sciences	1,233,527	1,121,051	1,097,472	941,126	956,256	1,052,900	1,094,180	1,210,985
Healthcare and medical sciences	2,210	2,592	2,477	1,158	1,651	1,954	1,971	2,417
Agriculture and agricultural sciences	98,011	106,516	99,362	87,477	86,675	102,337	103,643	108,057
Social sciences	1,943,561	1,783,407	1,477,133	608,481	605,602	660,081	647,885	750,495
Education and pedagogical sciences	374,902	436,840	410,243	319,453	322,745	360,809	375,674	401,637
Humanities	144,211	117,278	130,436	89,499	96,325	104,615	113,606	153,060
Art and culture	58,975	62,683	70,824	50,871	52,690	57,591	61,874	80,651
Total	4,072,973	3,838,032	3,474,155	2,269,900	2,303,179	2,553,979	2,628,028	2,954,483

Source: (Minobrnauki, n.d.).

As for supply dynamics, despite the ideas of "excessive availability", the number of state-funded positions has been steadily falling over the past 8 years (Fig. 1).

Figure 1: *Dynamics of applications submitted and students enrolled for bachelor's programs in Russian universities between 2013 and 2020*

■ Total applications submitted, thousands

■ Total number of students enrolled, thousands

Source: (Minobrnauki, n.d.).

In 2013–2016, there was a marked decrease in the number of applicants to higher educational institutions; however, the growth recovery was recorded between 2016 and 2020. Despite the coronavirus pandemic, the number of applications increased by 12.4% in 2020, compared to 2019.

Dynamics of the number of students enrolled in Russian universities between 2013 and 2020 mostly corresponds to the dynamics of applications submitted: the increment was observed in mathematics and natural sciences (+1.5%), medical sciences (+12.3%), the humanities (+26.3%), and art and culture (+13.1%). A decline in the number of enrolled students during this period was in engineering sciences (–13.6%), agricultural sciences (–36.9%), social sciences (–47.5%), and pedagogical sciences (–10.5%).

The largest share of enrolled students in 2020 was in the fields of social sciences (36.8%), engineering, technology and technical sciences (32.3%), and education and pedagogical sciences (12.4%). The share of students enrolled in other fields of education did not exceed 10%.

A noticeable increase in the number of enrolled students (increase in supply) was observed in medical specialties (by 2.41 times) in 2020, compared to 2019. In the humanities and art and culture, student enrollment was similar to the level of the previous year. In other specialties, the admission of students to tuition-free openings was reduced, which was partially attributed to the overall reduction in the number of educational institutions (Orlova, 2019).

Thus, the third hypothesis (*H3*) about the growing supply of medical specialties was confirmed. However, the first hypothesis (*H1*) is partially rejected: while in 2020 there was an increasing demand for engineering specialties, no similar growth in supply was recorded.

We have calculated the ratio of submitted applications (demand) and the number of enrolled students (supply) for certain fields of education (Table 3). This indicator shows the competition per one state-funded place.

Table 3

Ratio of submitted applications and the number of students enrolled in Russian universities in 2013–2020

Field of education	2013	2014	2015	2016	2017	2018	2019	2020
Mathematics and natural sciences	6.25	6.08	5.65	5.14	5.40	6.06	6.22	7.00
Engineering, technology and technical sciences	4.67	4.50	4.46	4.02	4.17	4.47	4.61	5.30
Healthcare and medical sciences	1.59	1.89	1.99	1.05	1.45	1.45	3.06	1.55
Agriculture and agricultural sciences	1.95	2.94	2.90	2.67	2.77	3.10	3.15	3.41
Social sciences	3.92	3.91	3.66	1.86	1.99	2.32	2.37	2.89
Education and pedagogical sciences	3.84	4.38	4.43	3.54	3.57	3.88	4.01	4.58
Humanities	4.40	3.36	3.69	2.49	2.66	2.70	2.78	3.70
Art and culture	3.16	3.14	3.45	2.55	2.78	2.89	3.15	3.82
Total	4.09	4.12	4.01	2.93	3.09	3.45	3.58	4.18

The general competition rate in 2013 was 4.09, whereas in 2020 it rose to 4.18, despite the COVID-19 pandemic and a steady decline in 2013–2019. From 2019 to 2020, the competition rate increased by almost 17%.

An analysis of the number of applications submitted to popular specialties in 2020 shows that the highest supply-demand ratio was found for mathematics and natural sciences – 7.0, followed by engineering, technology and technical sciences – 5.3. The lowest rate was observed in medical specialties with only three applicants applying for two state-funded openings.

Based on the data obtained, we determine the linear coefficient of absolute structural shifts in the distribution of submitted applications for bachelor's degree programs: $L_{2020/2019}=0.49$, $L_{2019/2018}=0.34$, $L_{2018/2017}=0.21$, $L_{2017/2016}=0.17$, $L_{2016/2015}=3.93$, $L_{2015/2014}=1.00$, $L_{2014/2013}=0.71$. The highest rate of structural shifts in specialties was found in the 2015/2016 period. In 2016–2019, subtle structural shifts were observed.

According to absolute chain and basic structural shifts in the distribution of submitted applications, the largest decline in the number of applicants in 2020 compared to 2013 was recorded for social sciences. At that, the largest increase in the share of submitted applications (by 10.7%) was observed in the field of engineering, technology and technical sciences. Thus, the hypothesis about the growing demand for engineering specialties and the falling demand for programs in the humanities is confirmed (partially *H1* and partially *H2*).

The analysis of the structural shifts' intensity by individual absolute measures is generally consistent with the assessment of relative indicators (Table 4).

Table 4

Individual absolute measures of structural shifts in the distribution of submitted applications for bachelor's degree programs in 2013–2020

Field of education	Basic						
	2014	2015	2016	2017	2018	2019	2020
Mathematics and natural sciences	1.01	1.00	1.42	1.47	1.57	1.63	1.57
Engineering, technology and technical sciences	0.96	1.04	1.37	1.37	1.36	1.37	1.35
Healthcare and medical sciences	1.24	1.31	0.94	1.32	1.41	1.38	1.51
Agriculture and agricultural sciences	1.15	1.19	1.60	1.56	1.67	1.64	1.52

Field of education	Basic						
	2014	2015	2016	2017	2018	2019	2020
Social sciences	0.97	0.89	0.56	0.55	0.54	0.52	0.53
Education and pedagogical sciences	1.24	1.28	1.53	1.52	1.53	1.55	1.48
Humanities	0.86	1.06	1.11	1.18	1.16	1.22	1.46
Art and culture	1.13	1.41	1.55	1.58	1.56	1.63	1.89

Source: (Minobrnauki, n.d.).

The largest increase in the share of applications submitted in 2020 compared to 2013 was observed in the fields of art and culture (1.89 times), mathematics and natural sciences (1.57 times), healthcare and medical sciences (1.51 times), education and pedagogical sciences (1.48 times), the humanities (1.46 times), engineering, technology and technical sciences (1.35 times). A decrease in the share of submitted applications by 47% was recorded in the field of social sciences.

The growth in demand for a number of fields of education in Russia can be explained in part by government policy. Over the past decades, state authorities and local governments have paid special attention to the development of culture (Kurina & Kurulenko, 2020). The competitiveness of graduates of universities of culture and arts is high and is determined, among other things, by a sufficiently stable and constantly increasing professional need of cultural and art institutions for highly qualified personnel (Gemranova, 2018). Similar trends can be traced in other fields of education. Since the indicators of structural change are calculated for the base data for 2013, we can observe the effect of a low base.

Thus, the assumption about a decline in applicants' interest in the humanities programs has been rejected, despite the falling demand for such specialists in the labor market (partly *H2*). The third hypothesis (*H3*) about the increasing popularity of medical specialties among university applicants has been confirmed. In 2013–2020, there was a significant rise in popularity of mathematics, engineering, medical, agricultural, and pedagogical sciences, as well as culture and the humanities, while the demand for social sciences was slowing down.

Similarly, we determine the linear coefficient of absolute structural shifts in the distribution of students enrolled in bachelor's degree programs: $L_{2020/2019}=0.19$, $L_{2019/2018}=0.33$, $L_{2018/2017}=0.61$, $L_{2017/2016}=0.37$, $L_{2016/2015}=1.10$, $L_{2015/2014}=0.60$, $L_{2014/2013}=0.49$. The highest rate of structural shifts in the specialties of enrolled students was found in the 2015/2016 period. In 2016–2019, subtle structural shifts in student enrollment were observed.

The analysis of structural shifts in the specialties of enrolled students demonstrates that the most significant changes were observed in the fields of engineering, technology and technical sciences, social sciences, education and pedagogical sciences, and the humanities. The slightest structural shifts were noted in healthcare and medical sciences, agriculture and agricultural sciences. Significant changes in the distribution of the specialties of enrolled students in these fields occurred between 2018 and 2020.

Table 5

Individual relative measures of structural shifts in the distribution of students enrolled in bachelor's programs in 2013–2020

Field of education	Basic						
	2014	2015	2016	2017	2018	2019	2020
Mathematics and natural sciences	1.05	1.09	1.24	1.29	1.36	1.43	1.43
Engineering, technology and technical sciences	1.01	1.07	1.14	1.16	1.20	1.22	1.22
Healthcare and medical sciences	1.06	1.03	1.02	1.10	1.30	0.63	1.58
Agriculture and agricultural sciences	0.77	0.78	0.84	0.83	0.88	0.89	0.89

Field of education	Basic						
	2014	2015	2016	2017	2018	2019	2020
Social sciences	0.98	0.94	0.85	0.82	0.77	0.75	0.74
Education and pedagogical sciences	1.09	1.09	1.19	1.24	1.28	1.30	1.26
Humanities	1.14	1.24	1.41	1.48	1.59	1.69	1.78
Art and culture	1.14	1.26	1.38	1.36	1.44	1.42	1.59

Source: (Minobrnauki, n.d.)

The largest increase in the share of enrolled applicants in 2020 compared to 2013 was observed in the fields of the humanities (1.78 times), art and culture (1.59 times), healthcare and medical sciences (1.58 times), mathematics and natural sciences (1.43 times), education and pedagogical sciences (1.26 times), engineering, technology and technical sciences (1.22 times). A decrease in the share of enrolled applicants was recorded in agriculture and agricultural sciences (by 11%) and social sciences (by 26%).

A comparison of the indicator of structural shifts between 2019 and 2020 shows a fundamental change in the demand for fields of educational training. For Healthcare and medical sciences, the growth rate was 2.5 times. All other fields of education did not show such bright dynamics: no changes in Mathematics and natural sciences, Engineering, technology and technical sciences, Agriculture and agricultural sciences; slight decline in Social sciences, Education and pedagogical sciences; relatively small increase in Humanities, Art and culture.

Thus, the growing supply of medical specialties in 2020 indicates that the hypothesis *H3* is confirmed. The COVID-19 pandemic has revealed the problem of the healthcare staffing shortage and the need to increase the number of students enrolled in medical education programs. The assumption that the supply of engineering and technical professionals was growing while the supply of specialists in the humanities was decreasing has not been confirmed (partly *H2*). Despite the structural imbalance in the labor market, the state maintains the supply of specialists in the humanities by providing state-funded positions.

Conclusion
The conducted research has change happened in the Russian market for higher education: the increasing demand for medical specialties. An increase in the popularity of applicants for a bachelor's degree was noted in the absolute number of applications in engineering, technology and technical sciences, social sciences, education and pedagogical sciences; the lowest demand was recorded for such fields as healthcare and medical sciences, art and culture, and the humanities.

In 2013–2020, there was a surging demand for education profiles in the fields of art and culture, mathematics and natural sciences, healthcare and medical sciences. What can be explained on the one hand by the effect of a low base, on the other hand, by the ongoing state policy. Our hypothesis about the falling demand from applicants for the humanities was not confirmed. At the same time, we have proved the hypothesis about an increase in demand from applicants for medical specialties during the period of 2013–2020 (by 9.37%) and in the pandemic year 2020 (by 22.63%).

In general, the structure of supply of specialists corresponds to the structure of demand. The most substantial changes in 2013–2020 were observed in the education profiles of engineering, technology and technical sciences, social sciences, education and pedagogical sciences, and the humanities. We have found no evidence to support the assumption about the rising supply of specialists in engineering-technical specialties and a simultaneous decline in

the supply of those in the humanities. We have confirmed the hypothesis about an increase in the supply of medical specialties in 2020. The COVID-19 pandemic has detected the problem of the healthcare staffing shortage and the need to attract more students to medical education programs.

Contrary to some experts arguing that there is no need for mass higher education, the supply of specialists with a university degree keeps growing. With some structural imbalance in the labor market, the state maintains the supply of specialists in the humanities by providing state-funded openings. This is due to the priorities of Russia's educational policy that, among other things, takes into account applicants' interest in gaining pedagogical education. At the same time, it is engineering-technical specialties that are leading in terms of both the absolute number and the specific growth rate of tuition-free places.

It is worth noting that the transformation of higher education was initiated much earlier under the influence of global risks, but it was the COVID-19 pandemic that became a trigger for reconsidering the system of socio-economic institutions, in particular universities and the labor market in search for an optimal balance in educating future professionals. Here, as a prospect for further research, it is expedient to conduct a detailed analysis of individual sectors of the economy in order to clarify the existing staffing gap between supply and demand.

Acknowledgements

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Investigating the relationship between moral and ethical: Does extrinsic and intrinsic religiosity improve people's mental health?

Haslinda Baji Anriani
Universitas Tadulako, Palu, Sulawesi Tengah, Indonesia

Harmita Sari
National Dong Hwa University, ROC Taiwan
Universitas Muhammadiyah Palopo, Sulawesi Selatan, Indonesia

Junaidi Junaidi
Universitas Muhammadiyah Palopo, , Sulawesi Selatan, Indonesia

Hamka Hamka
Universitas Muhammadiyah Kalimantan Timur, Samarinda, Indonesia

This study examines how religion affects people's ethics and morals in both extrinsic and intrinsic dimension. In order to validate how religion and mental health are related, it also considers people's ethics and morals as mediator variables. *Structural Equation Modeling (SEM) was used to validate* the research hypotheses after recruiting 570 participants. The result of this study showed that religiosity play important role on peoples' ethics and morals, which subsequently influences their mental health. Additionally, people's ethics and morals, as mediator play a beneficial effect in bridging the relationship between religion and mental health. It gives practitioners and scholars a chance to observe how religion and mental health interact with one another. Society and regulators also need to enhance communication and interaction. as well as educating people on the importance of ethics and moral principles from the social and religious fields. The recent study also contributes to literature in social and behavioral contexts towards religion, ethics, and the sociology .

Keywords: religiosity, peoples' ethics, moral and mental health
Paper type: Research Paper

The COVID-19 pandemic has had an impact on people's social and economic lives around the world. The unprecedented disaster is very disturbing to the community, especially for people's ethics and mental health (Faize & Husain, 2021). People begin to experience anxiety and stress due to a lack of activities at home, such as direct communication and interaction with their friends and families. They spent a lot of time at home, studying, communicating, and avoiding direct interaction as COVID-19 boosted positive cases. Fear of the COVID-19 pandemic has caused 40% of the global population to suffer mental illness and psychological disorder (Aqeel el al., 2021; Faize & Husain, 2021; Kaligis, Indraswari & Ismail, 2021; Kalkin, Arum & Erdurmazli, 2021; WHO, 2022), as well as in Indonesian people

 Correspondence concerning this article should be addressed to Haslinda Baji Anriani, Department of Social and Politics, Universitas Tadulako, Palu, Sulawesi Tengah, Indonesia. Email: Haslinda.anriani032@gmail.com

experienced anxiety (75.2%), suicidal ideation (68%), depression (67.3%) and stress (23.9%). It demonstrates that people had a high level of worry and anxiety during the COVID-19 pandemic. It also has a direct correlation to their ethics and mental health as well as their communication and interaction patterns. These problems, if not treated immediately, can continue to become more serious disorders for people (Aqeel et al. 2021; Chaudhary, 2020; Farrel & Mahon, 2021; Okun & Arun, 2020). In some countries such as Indonesia, religiosity plays an important role in shaping people's behaviors, including the habit of worshiping and social interaction. Furthermore, religion and people's psychology well-being play a significant role in providing support for individual and group during the COVID-19 pandemic (Afridi & Rahim, 2020; Junaidi, 2022).

Religion has an essential role in enhancing the quality of human life. Some scholars have paid attention to investigate the correlation between religiosity and people's ethics, morals, and mental health by different indicators (Cook, 2020; Kavonius & Ubani 2020; Lapcharoen, 2021; Patterson & Foster, 2021; Peng et al., 2020; Sen & Tho, 2020). There are two types of religious orientation: extrinsic and intrinsic (Allport & Ross, 1967). Extrinsic religiosity is people's motivations as individuals or in groups, whereas intrinsic religiosity refers to a personal view of life. Some empirical studies conclude that religiosity strongly correlates with ethics, morals, and mental health (Erken, Francis & McKenna, 2020; Roth, 2017; Thomson et al., 2021). In particular, the communication and interaction patterns among people, including empathy, respect, and obedience, makes people vulnerable to moral trauma and adverse health outcomes. Hence, there is an urgent need for study in many areas of the social and economic impact of the COVID-19 pandemic (Aqeel et al., 2021; Faize & Husain, 2020; Yousaf, Amin & Sami, 2022). However, there has been no research to validate the COVID-19's impact on the social field. Furthermore, the weakness of prior studies is more focused on the qualitative approach, experiment, and Western context, and they avoid applying the concept of religiosity comprehensively to solve people's mental disorders from a developing country perspective.

This study aims to uncover this this gap by evaluating the role of people's religiosity as well as the effect of people's ethics and morality, which also serve as mediator between people's level of religiosity and mental health. Furthermore, (Mukhtar & Naz, 2021; Lapcharoen, 2021; Nie & Price, 2021; Phillips, Connelly & Burgess, 2021; Reece et al., 2021) suggested future studies need to be investigated based on the Eastern and social fields. Consequently, the most recent study offers response to the following research questions:
RQ1. Does the level of religiosity play important role in people's psychological well-being (e.g., ethics and morals)?
RQ2. Does people's ethics and moral values have a positive role in mediating the relationship between religiosity and mental health?

Some theoretical and practical contributions are made by this work. First, this study examines how, in sociological field based on social identity theory (SIT), religion, ethics, moral and mental health. Second, prior studies have neglected to investigate the role of people's ethics and morals in social contexts (Chen & Chan, 2020; Nazeer & Furuoka, 2017; Soto et al., 2018).

Literature Review
Social identity theory
Social identity refers to the psychological part of personal and communal life. It has two main elements, namely personal, which correlates to a sense of personal and social identity, which has a relationship to a community sense of belonging (Tajfel, 1981). All the dimensions have a strong correlation to religion. Furthermore, those dimensions play an important role in

people's communication and interaction intentions. Social identity also possibly influences people's attitudes. In the field of religion, it influences personal mental health (Williams-Gualandi, 2020). People also establish utilitarian attitudes and communication toward ethics, morals, and mental health at the cognitive level. People have positive minds and views toward developing respect and obeying others, which represents the mental health level. People also possibly had a positive attitude toward habits based on religious concepts, which result in psychological well-being at the affective level. It is possible to make people's attitudes, ethics, morals, and mental health better than before. The social identity theory (SIT) is essential for explaining how people's psychological well-being and their level of religiosity related to one another. few studies, meanwhile, have looked into how religion influence people's ethics, morals, and mental health (Cook, 2020; Junaidi et al., 2022; Philips, Connelly & Burgess, 2021).

Religiosity

Religiosity refers to personal belief in linking love for God and human being (Erken, Francis & McKenna, 2020). Including attending religious activities, a good Samaritan, care of the frequent prayer as religious compliance, educated others, and enlightened a good habit. Those are extrinsic and intrinsic religiosity dimensions. It has an essential role in affecting communication and interaction patterns among people regarding a specific religious field (Stewart et al., 2019), individual ethics, moral and mental health (Phillips, Connelly & Burgess, 2021; Sen & Tho, 2020). Religion also provides a rule for the the routine activities among Indonesian people (Junaidi, 2021; Junaidi, Wicaksono & Hamka, 2022; Usman, Riaz & Ishtiaq, 2021). It has spiritual valuable due to the degradation of ethics and moral in some regions. Hence, this condition possibly influences peoples' mental health. It avoids them interacting with their peers, and the low-level empathy.

Ethics

Ethics is human nature or habits shown in everyday life, which comprises two important elements: good and bad, such as norms, morals, and positive thinking. It depends on the religion and interaction pattern of a group of people. Humans may be able to live more securely and calmly thanks to good habits, and vice versa. It has many of the same moral values as the Eastern and Western culture, including liberty, justice, integrity, and compassion for the weak (Soto et al., 2018). Communication and interaction also possibly develop the people's ethics, which the community can accept. Previous studies concluded that religion plays an important role in resolving ethical issuess, such as Chen and Chan (2019) and Stewart, Lawrence and Burg (2019).

Moral

Communication and interaction patterns have a crucial role in building a person's morals and character. The moral condition is the mental condition of people that keeps them brave, enthusiastic, and ethical. For instance, security, comfort, and friendship. Morality has two essential dimensions: moral identity, which is retained as a personal moral character based on experience; and moral inclusion, which refers to psychological processes of social justice in the community. The government must provide a genuine moral education because it can help people develop a positive character. In Indonesia, social activities and religion are unified in the community system.

Prior studies offered the concept that religion has a close relationship with morals. As an example, moral education in American public schools needs a curriculum to help people understand the different cultures, languages, and religions. Hence, they have a sense of

belonging and mutual respect (Erken, Francis & McKenna, 2020); similarly, in England, religion positively affects peoples' psychological well-being (e.g., empathy, sympathy, and love to others). In contrarily, Italia has a different pattern where moral religion does not strong correlation with peoples' mental character (Passini, 2016). However, preliminary researches more focus on Western context. Hence the study in various cultural, religion, and regions is needed to obtain comprehensively result.

Mental Health

Mental health is a condition when a person's mind is calm and/or feels restless. Someone who is mentally healthy can face life's challenges, establish strong relationship with others. On the other hand, people with impaired mental health find it difficult to control their emotions, eventually leading to bad behavior. People who have mental disorders can damage their interactions with others and their mental health. The social system must strengthen religious education in society. Some empirical studies conducted on religion can help overcome depression, lower stress levels, and anxiety. Praying a lot, as taught in religion, can change mental health quality (Cook, 2020; Nazeer & Furuoka, 2017).

Community interaction and religion are solutions to solve mental illness among people through combine community and religion activities as one of the unities. Including social interactions or communication. Regular prayer has a beneficial effect on enhancing people's mental health (Afridi & Rahim, 2020; Cook, 2020). Specially, how to use the appropriate language when discussing a topic with friends and parents. Besides, the other problems are social and environment (e.g., social system and religious habit).

Figure 1
Proposed research model
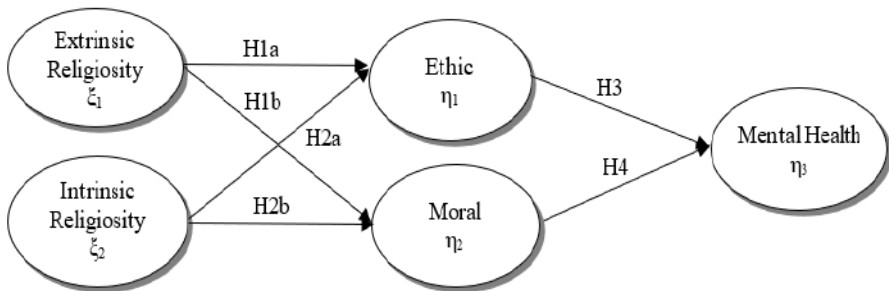
Hypotheses
The relationship between extrinsic religiosity and peoples' ethics/moral.

Some scholars apply categorical scales to validate the morale of people according to their religious beliefs (Cook, 2020). Religious adherence has a strong correlation to personal adherence, while morality is a high sense of caring for fellow human beings, positive thinking, and participating in religious activities. This perspective is essential to the influence of religion on people's ethics and morals. Extrinsic religiosity, which offers direction to always apply morals in the social communication and interaction process based on religious ideas, is the foundation of instrumental and practical interests in individual and community-oriented religion. Extrinsic religiosity is related to a high concern for people's needs and desires, worshiping in religious activities that increase faith, moral and mental health. Peoples' awareness to increase positive behavior is influenced by their level of religiosity and effectively reduces bad behavior such as disrespect for fellow human beings. Prior studies concluded that extrinsic religiosity

significantly affects peoples' morals (Soleiman & Lovat, 2019) and peoples' ethics (Erken, Francis & McKenna, 2020; Phillips, Connelly & Burgess, 2021). Hence, the research hypothesis:

H1. Extrinsic religiosity play important role to (a) peoples' ethics and (b) peoples' morals.

Religiosity affects various aspects of people's psychological well-being (e.g., empathy, respect, and mental health). It has a strong correlation to personal cognitive and behavioral traits, which also influences their ethics (Erken, Francis & McKenna, 2020), and also has become an educational goal for peaceful communication and interaction among people. The intrinsic field leads to people being more friendly based on religious objectives (i.e., respect for others). People who have strong beliefs will apply positive ethics, make religion a guide in life, and become the basis for reducing bad ethics, increasing sympathy and respect for fellow human beings. People need to practice the tenets of religion in their lives, which they get from reading the scriptures and discussing with others. Those are the dimension of intrinsic religiosity. As well as the people's morals (Krettenauer, 2020; Passini, 2016; Nie & Price, 2020), the authors concluded religion, ethics, and morals have a strong correlation with each other and are indispensable. Previous studies concluded that intrinsic religiosity had influenced people's ethics (Erken, Francis & McKenna, 2020; Roth, 2017; Stewart, Lawrence & Burg, 2019). Hence, the research hypothesis:

H2. People's (a) ethics and (b) morality are significantly and favorably influenced by intrinsic religiosity.

The relationship between peoples' ethics and mental health.

People's ethics have an essential role in determining the conditions of social communication and interaction. People who practice ethics in accordance with religious teachings will experience better mental health (Chen & Chan, 2020; Erken, Francis & McKenna, 2020). If a person's mental health is in good shape, they will be highly motivated to study and solve difficulties effectively. In reality, during COVID-19, several individuals saw a worsening in their mental health, including a lack of compassion for others, restricted freedom of speech, and a diminished sense of security in some nations. When exploring the connection between people's mental health and ethics and morality, this study takes into account the mediating role of those factors. Previous research found that religion improves people's ethics, which in turn enhances people's mental health (Cook, 2020; Essler & Paulus, 2021). Hence, the research hypothesis:

H3. Peoples' ethics has a positive effect on mental health.

Morality is an essential aspect in measuring people's mental health. It may guide and develop a more dynamic individual (Cook, 2020; Farrel & Mahon, 2021). Positive thinking and routinely participating in activities at the mosque can include morals that can have a positive effect on people's mental health. Furthermore, morals that do not follow religious guidelines will experience a moral decline. Thus, religion must be used as the basis and strategy in fostering people's morals to overcome the mental health decline during COVID-19. Moreover, the mediating role of people's morals is significant in examining the relationship between religion, morals, and peoples' mental health. This increases the quality of studies conducted in measuring peoples' mental health. Furthermore, a preliminary study reported that peoples' moral plays an essential role in overcoming mental health (Glazzard, Rose & Ogilvie, 2021;

Hall et al., 2021; McEwen, Alisic & Jobson, 2020; Williamson, Stevelink & Greenberg, 2018). Hence, the research hypothesis:

H4. Peoples' mental health is significantly and favorably influenced by peoples' mental health.

Method
Sample and data collection
From June 20 to August 10, 2021, an online survey was performed using Google Forms. The sample was drawn from a convenience sample of 570 Indonesians who experienced anxiety, despair, and stress as a result of the COVID-19 pandemic. However, 518 samples were legitimate, representing a completion rate of 90.88%.

Table 1

Respondent demographics

Demographic Items	Frequency	Percentage (%
Gender		
Male	204	39.4
Female	314	60.6
Age		
Under 20 years old	350	67.6
21~25 years old	122	91.1
26~30 years old	46	8.9
Time period of using social media		
Below 4 years	242	46.7
4~7 years	148	75.3
7~10 years	54	85.7
Over 10 years	74	14.3

Measures
For all items, this study used a seven-point Likert scale anchored between 1 and 7 ("strongly disagree" and "strongly agree"). Extrinsic religiosity emphasizes individuals's morals, such as a strong sense of empathy and concern for friends, family, coworkers, and other people. Extrinsic religious individuals, for example, engage in social activities to lessen the burden on those who are struggling. Improved communication is the key factor influencing the relationship between people's ethical religiosity, which was adapted from intrinsic religiosity, which is the frequency of people's involvement in mosques Junaidi (2021) and Junaidi et al., (2022). All items used in the study of peoples' ethics, morals, and mental health were adapted from Cohen and Cornwell (1989); Przybylski et al., (2013).

Results

The pilot study and descriptive statistic

It can be seen in table 2, the mean value and standard deviations above .5. It implies average, the peoples' religiosity, ethics, moral, and mental health have a strong correlation (Hair Jr et al., 2019).

Table 2
Correlation matrix for all instruments

Constructs	Mean	SD	ER	IR	ET	MR	MH
ER	6.30	1.18	**0.906**				
IR	6.48	0.77	0.544**	**0.827**			
ET	5.43	1.44	0.364**	0.319**	**0.905**		
MR	5.40	1.56	0.384**	0.307**	0.458**	**0.908**	
MH	5.85	1.03	0.485**	0.359**	0.493**	0.451**	**0.794**

Measurement result

Software AMOS 22 and SPSS 22 were used to validate the research hypotheses and using structural equation modeling (SEM) approach. Byrne (2016) and Hair Jr et al., (2019) both mention a two-stage methodology, which is also used in this work. First, the confirmatory factor analysis (CFA) method is utilized to assess the reliability and validity of the measuring approach. All of the CFA findings for the items showed a satisfactory fit (see table 3).

Table 3
Measurement results

Constructs and Measurement items	Squared multiple correlation (SMC)	Composite reliability (CR)	Average of variance extracted (AVE)	Cronbach's α
Extrinsic Religiosity		0,958	0.822	0.955
ER1: I enjoy reading the religion literature	0.861			
ER2: I believe it is crucial for me to have some quiet time for reflection and prayer.	0.974			
ER3: I occasionally have a powerful sense of	0.945			
ER4: On this belief, my entire life is built.	0.962			
ER5: It's crucial for me to engage in some quiet religious reflection and meditation.	0.775			
Intrinsic Religiosity		0.916	0.685	0.909
IR1: I visit the mosque because it gives me the chance to socialize, learn, and build relationships.	0.818			
IR2: My major goals in praying are relief and	0.856			
IR3: Religion provides solace through difficult	0.828			
IR4: Peace and joy are the goals of prayer.	0.876			
IR5: I attend religious events because it's fun to run across friends	0.755			
Ethic		0.931	0.819	0.929
PE1: I think it is okay to use another person's goods if the people agree	0.866			

PE2: I think it is okay to work together with other people	0.805		
PE3: I think it is okay to help other ~~people~~	0.772		
Moral		0.959	0.825	0.960
PM1: Having admirable qualities would make me feel good about myself.	0.893		
PM2: I would be ashamed if I had unethical ~~...~~	0.866		
PM3: I often buy products that are in line with my characteristics.	0.945		
PM4: I often use products and services to identify my characteristics.	0.953		
PM5: These are things that my reading of particular books and publications reveals about	0.880		
Mental Health		0.895	0.631	0.893
MH1: I worry that others have more enjoyable experiences than I do.	0.742		
MH2: When I don't know what my pals are doing, I become concerned.	0.823		
MH3: When I learn that my pals are having fun without me, I become concerned.	0.840		
MH4: It's critical for me to comprehend the work of my buddies.	0.841		
MH5: On sometimes, I question whether I spend too much time keeping up with events.	0.717		

Fit statistics (N = 518)

χ^2/df = 3.871, Goodness-of-Fit Index (GFI) = 0.864, Nonnormed fit index (NFI) = 0.924, Comparative Fit Index (CFI) = 0.942, Incremental fit index (IFI) = 0.942, and Root Mean Square Error of Approximation (RMSEA) = 0.075

Structural model

Extrinsic religiosity and people's ethics and morality have a positive and substantial link, as summarized in table 4 (0.246; p <0.001, 0.303; p <0.001), supporting hypotheses 1a and 1b. It suggests that people's religious practices, such as regular prayer and social engagement, have a positive impact on their attitudes. The same is true for H2a and H2b, indicating a favorable correlation between intrinsic religiosity and people's ethics and morality (0.203; p <0.001; 0.169; p < 0.005). Additionally, people's morals and ethics have a good impact on their mental health (0.387; p <0.001, 0.365; p <0.001), supporting H3 and H4 (see figure 2).
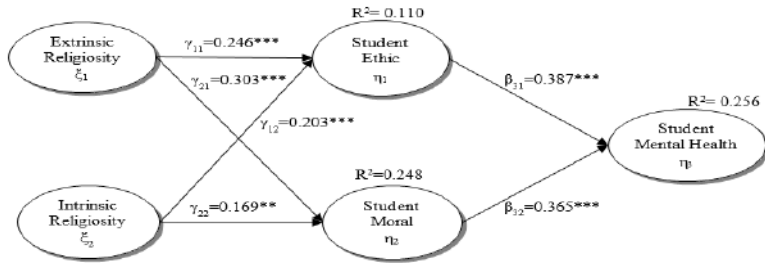
Figure 2
Structural model results

Table 4
Proposed model results

Hypotheses	Symbol	Path			Coefficients	Test results
H1a	γ_{11}	Extrinsic Religiosity	→	Ethic	0.246***	Supported
H1b	γ_{21}	Extrinsic Religiosity	→	Moral	0.303***	Supported
H2a	γ_{12}	Intrinsic Religiosity	→	Ethic	0.203***	Supported
H2b	γ_{22}	Intrinsic Religiosity	→	Moral	0.169**	Supported
H3a	β_{31}	Ethic	→	Mental Health	0.387***	Supported
H4a	β_{32}	Moral	→	Mental Health	0.365***	Supported

Note: Significant at *: $p < 0.05$, ***: $p < 0.01$, ***: $p < 0.001$

The degree of religiousness of a person has a significant impact on how well their social life, particularly their mental health, is preserved. People's daily activities such as social communication and interaction must be complemented by religious law and it is important to respect each other as much as possible for their mental health (Aqeel et al., 2021; Basit, Maroof & Mian, 2021; Junaidi, Wicaksono & Hamka, 2022; Stewart, Lawrence & Burg, 2019). This study uncovers the specific factors that determine people's ethical and moral quality. This is important and relevant in the social context. People's intrinsic religiosity has an essential role in ethics, which indicated that people's religion literation, frequent praying, and sense of belonging to God mostly influenced their daily lives. It implies that reading literature about their beliefs and religion, allocating specific time to pray, and sensing Allah's (God's) presence influences human attitude and behavior, including respect and obedience to others, as well as becomes fundamental to developing teamwork. Moreover, people's religion also plays an important role in people's morality through their awareness that religion law provides the best guide to their daily activities. Therefore, these results are in accordance with preliminary studies conducted by Cook (2020), Erken, Francis and McKenna (2020), Junaidi (2021), and Kavonius and Ubani (2020), which state that the frequency of religious activities (e.g., social activities: handling funds for disaster victims, participating in studies to increase religious knowledge) can have a positive effect on people's morals.

This study also supports Junaidi, Wicaksono and Hamka (2022), Kaligis, Indraswari and Ismail (2021), and Stewart, Lawrence and Burg (2019). The authors concluded that extrinsic religiosity dimension has positive and significant effect on people's ethics. It means that the frequent attendance of religious activities in mosques, the main objective of following religious law is to get relief and protection, and the people's belief that religion provides the best solution in their lives has a positive effect on enhancing their ethics. Furthermore, people also believe that participating in religious activities can possibly increase their peace of mind and

happiness. During the COVID-19 pandemic, the variables explaining extrinsic and intrinsic religiosity had a greater effect on people's morals than ethics. Furthermore, people's ethics and moral complete mental health for the years covered. It indicates that people's mental health in this context is determined by their frequency of religious activities, including sex, age, and education. This was particularly true among people during the COVID-19 pandemic with social and psychological problems. Moreover, the propensity of mental illness cases was mostly among people with low levels of religiosity.

Recent studies have shown that mental health has been a global problem since the colonial era and religious activities have a significant impact on people's mental health. Palk et al., (2020). Furthermore, enlightening people by including people's ethics and morals also has an essential role in mediating the relationship between religion and mental health. According to the current study, people's ethics and morals play a critical role in mediating both direct and indirect links between religiosity and mental health. Therefore, morality and ethics play a crucial role in bridging religious activities and preventing mental disease. This result confirmed prior studies by Aqeel et al., (2021), Essler and Paulus (2021), and Faize and Husain (2021), who revealed that people's ethics and morals have a strong correlation to mental health. In addition, religion, ethics, and moral and mental health are indispensable in social life (Junaidi. 2022; Krettenauer. 2020; McEwen, Alisic & Jobson, 2020; Palk et al., 2020).

Mediation effect

Table 5 shows all mediation effects are significant (i.e., partial mediators) (Hayes, 2018). It also shown that people's religiosity level through religious has a direct effect on people's mental health. The importance of ethics and morals as a bridge between mental health and religion demonstrates that a person will be happy in life and continue to cultivate positive relationships with other people. In other words, people with high levels of religion will develop good ethics and morals, making them amenable to getting along with and helping other people. Religion may also have an impact on how people view the solutions to life's issues.

Table 5
Mediation effects

IV	M	DV	IV->DV (c)	IV->M (a)	IV+M->DV		Bootstrapping 95% CI	
					IV (c')	M(b)	Percentile method	Bias-corrected
ER	ET	MH	0.310***	0.446***	0.427***	0.261***	[0.020, 0.075]	[0.022, 0.076]
Standard Error			0.033	0.050	0.033	0.027		
ER	MR	MH	0.321***	0.509***	0.427***	0.207***	[0.019, 0.068]	[0.020, 0.070]
Standard Error			0.034	0.053	0.033	0.026		
IR	ET	MH	0.303***	0.602***	0.486***	0.302***	[0.029, 0.079]	[0.031, 0.115]
Standard Error			0.053	0.079	0.056	0.028		
IR	MR	MH	0.329***	0.627***	0.486***	0.250***	[0.024, 0.072]	[0.028, 0.100]
Standard Error			0.054	0.086	0.056	0.027		

Note: ER: Extrinsic religiosity, IR: Intrinsic religiosity, ET: Ethic, MR: Moral, MH: People Mental Health
Significant at *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$

Discussion

Key findings

This study uncovers the specific factors that determine people's ethical and moral quality. This is important and relevant in the social context. People's extrinsic and intrinsic religiosity have a positive effect on their ethics and morals. Therefore, these results are in accordance with preliminary studies conducted by Cook (2020) and Erken et al., (2020), which state that the frequency of religious activities (e.g., social activities: handling funds for disaster victims, participating in studies to increase religious knowledge) can have a positive effect on people's ethics and morals. Recent studies have shown that mental health has been a global problem since the colonial era (Palk et al., 2020). In addition, the religious curriculum is applied in education and in the home environment, considering the COVID-19 pandemic, where the majority of people work from home. Likewise, enlightening people by including religious compliance tends to improve their ethics and morals. Furthermore, knowledge was developed from the discussion of the attitudes of people.

The role of ethics and morals as a mediator between religion and mental health shows that someone will be happier in life and will continue to build good relationships with fellow human beings. In other words, individuals with high levels of religion will develop moral principles that make them approachable and willing to assist others. Religion may also influence people's views on how to solve life's problems. These results imply that persons acting morally and ethically are congruent with higher levels of religion. In particular, a person's religious identification affects how they connect with their friends, and this strategy has a favourable effect on their mental health. The society environment that has religion and ethics rules to ensure that people can understand and have knowledge about it. On the other hand, people must apply ethics and morals that are in accordance with religious teachings. Similarly, someone with less awareness tends to quickly disconnect from their fellow human beings. This decision tends to cause serious problems to their mental health. Valuable social interaction is expected to strengthen religious activities in social communication and interaction. This is very important to solve social problems, one of which is the mental health of people. In addition, comprehensive methods and easy-to-understand mechanisms are important factors for improving mental health. People are not under pressure but are easy to get along with and can be accepted by society.

Conclusion

This study shows that religion dimensions, namely extrinsic and intrinsic, play an important role in guiding people's daily activities. It means that religion is not only a ritual but also provides social value. Hence, religious people can enhance the quality of society, including respect for and obedience to others. These activities have a positive impact on mental health, just as religion affects people's ethics and morals. Another important factor in bridging the chasm between religion and the mind is the level of a person's ethics and morality. This forms the basis for people's religious empathy as well as the relevance of their religious practices, knowledge, and experiences. The findings of this study assist sociologists to analyze specific situations, such as people's ethics that are in line with religious principles (e.g., respecting and obeying others). Enlightenment also enables people to live better lives (e.g., helping each other and building polite communication). Not only social principles, but also religious ones, must be presented.

Theoretical implications

The new study adds to the body of knowledge. First, it offers more accurate perspectives on how religion affects mental health, as mediated through people's ethics and morals. The results demonstrate a significant relationship between people's religiousness, ethics,

and morals. It improves mental health and relationships with friends and family. Second, it is demonstrated that morality and ethics act as a bridge between religion and mental health. The importance of mediator variables has greatly improved people's mental health compared to the past. This is the primary distinction between religious acts and the experiences that individuals have. Finally, this study supports the research hypothesis that predicts variables (such as mental health and religiosity) that influence people's empathy depending on their religion.

Managerial implications

According to the results of this study, governments and medical professionals should take an active role in talks about improving social life quality, religion, ethics, morals, and mental health. In the context of sociology, the results of this study allow the analysis of some instances such as people's ethics that are in line with religious guidelines (e.g., respect and obeying others). It is also enlightenment that allows people to live better (e.g., helping each other and building polite communication). It is not only necessary to provide religious values but also social values.

These findings have some practical implications. Such as religion and sociology, thus developing people's ethics and morals. The government must be applying the social system based on the religiosity principle. Religion has an important role in improving the mental health of people. It is closely related to people's psychological health. The importance of ethics and morality as a mediator between religion and mental health shows that someone will be happier in life and will continue to create excellent relationships with fellow human beings. The high level of people's religiosity will form positive ethics and morals, making them easy to get along with and help fellow human beings. Religion may also influence people's views on how to solve life's problems. These findings suggest that religion principles provide guidelines with ethics and morals that people follow. In particular, people's interactions with their friends are influenced by their religious identity and mental health. Therefore, the curriculum that has been made needs to be adjusted to religious guidelines, then practiced in everyday life. The school environment that has implemented the curriculum must ensure that people can understand and have knowledge about it. On the other hand, people must slowly apply ethics and morals that are in accordance with religious teachings. Similarly, someone with less awareness tends to quickly disconnect from their fellow human beings. This decision tends to cause serious problems for their mental health.

Religion and social are expected to play an important role in religious teachings in social communication and interaction. Including interaction in community is to maintain people's activities that must follow religious teachings. This is very important to solve social problems, one of which is the mental health of people. In addition, comprehensive methods and easy-to-understand mechanisms are important factors for improving mental health. People are not under pressure but are easy to get along with and can be accepted by society.

Limitations and future research directions

First, this study used social and theological context to determine people's mental health during the COVID-19 pandemic. To reach a more accurate conclusion, future studies must take into account various religions in all the regions. Second, it solely employs ethics and morals as mediators. Future studies should include mediators who represent other religious perspectives and issues. Additionally, it is important to make sure that people are aware of this link since it contributes to the development of religiously based ethics and values, which in turn helps individuals feel at ease, self-assured, and in better mental health.

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Effectiveness of Digital Technology Tools in Teaching Pronunciation to Saudi EFL Learners

**Saleem Mohd Nasim, Farooq AlTameemy, and
Jamal Mohammad Ahmad Ali**
Prince Sattam bin Abdulaziz University, Saudi Arabia

Razia Sultana
Qassim University, Saudi Arabia

The use of digital technology has become ubiquitous in every walsk of our lives. It has had a significant impact not only on social and technological aspects but also on educational areas, including (English) language teaching. Digital tools, the gift of new technologies, have proved to be an essential component of English Language Teaching (ELT). This study focused on finding out the efficacy of teaching pronunciation via digital tools (CDs, digital books, projectors, smart boards, and synchronous and asynchronous online materials) as opposed to traditional methods (printed materials, drilling, and imitating the teacher) to Saudi male EFL undergraduates. To investigate the differences, a quasi-experimental, pretest-posttest design (between-subjects) was used. The experimental and control groups (n = 25 in each group) were tested before and after the treatment on similar intra-sentential pronunciation activities at segmental (minimal pairs, word recognition, and consonant and vowel identification) and suprasegmental (stress patterns) levels. The results revealed that the participants in the experimental group learned pronunciation significantly better than the participants in the control group. This means that if students are exposed to digital technology tools, they will learn pronunciation better in comparison to the conventional method of teaching. The study is significant for both teachers and learners as it may help them make use of digital technology tools to improve students' pronunciation as well as their speaking skills .

Keywords: CALL; digital tools; pronunciation; EFL teaching and learning; segments and suprasegments, Saudi learners

The role of correct speech production is critical to understanding a language. Its basic utterances, from sounds to words, must be spoken appropriately and intelligibly. The ability to produce and perceive the important sounds of a language to achieve meanings in linguistic contexts is called pronunciation (Seidlhofer, 2011, p.56). In addition to having a good command of grammar and a sizable amount of vocabulary, intelligible pronunciation is a prerequisite for a clear understanding between the interlocutors. Poursalehi et al. (2014) assert that correct pronunciation ensures effective communication. Poor or bad pronunciation, on the contrary, can cause "pragmatic misunderstandings" (Pennington & Zegrac, 1998, as cited in Pennington, 1999). Morley (1998) also adduces that if learners lack proficiency in pronunciation skills, they may lose their confidence, which may influence them negatively while gauging their abilities and

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Correspondene concerning this article should be addressed to Dr. Saleem Mohd Nasim, Assistant Professor, English Language Unit, the Preparatory Year Deanship, Prince Sattam bin Abdulaziz University, AlKharj, Saudi Arabia, Email: s.nasim@psau.edu.sa, saleemmohdnasim@gmail.com

credibility. Fraser (2000) goes a step further. He declares that with bad pronunciation, learners may end up restricting themselves to socio-academic advancement and having limited work opportunities in the future.Therefore, to be able to communicate clearly and fluently, the enormous importance of pronunciation has now been widely accepted.

Although accurate pronunciation is a sine qua non for proper understanding of spoken discourse, it has been treated as the "Cinderella" of foreign language teaching (Seidlhofer, 2011, p.56). Most of the time, other components are greatly emphasized while pronunciation is hardly touched upon in the classroom. It is neglected (Derwing, 2010) and not given proper attention, whereas other sub-skills, i.e., grammar and vocabulary, are considered to a great extent. Consequently, the learners come up with faulty pronunciation and it becomes fossilized in the long run if not treated properly. This is also true for Saudi EFL students. Apart from that, lack of face-to-face contact with authentic pronunciation, spending more time with their mother tongue, the absence of some phonological-cum-phonetic features in their mother tongue, such as /p/, /t/, /v/, /d/, /t/, /tʃ/, lack of teaching resources, and traditional ways of teaching also contribute to the inadequate acquisition of intelligible pronunciation.

To address the perennial problem of pronunciation, digital technology offers many novel opportunities for EFL/ESL learners in a personalized and effective way (Blake, 2013; Liakin et al., 2015), which are lacking in traditional language classrooms. It shows an improvement over traditional methods and demonstrates the role that digital technology can play in teaching pronunciation. Digital instructional tools include a wide variety of digital technology consisting of video clips (online or recorded on DVDs), audio-video podcasts, video-conferencing tools, internet resources, and pronunciation software, to name a few. The learners can receive audio feedback on their utterances and performance after comparing them with simulated native speakers. They can see their lips' positions and manoeuvres in the oral cavity (manner and place of articulation) when they produce different sounds and compare their pitch contours with those of the native speakers or test their phoneme discrimination skills by playing a computerized version of software such as *Kaplan*. These modern technologies create a game-like atmosphere for pronunciation practices that do not exist in traditional classroom settings. Therefore, the purpose of this study is to examine the effectiveness of using digital tools for pronunciation teaching as opposed to traditional methods to Saudi male EFL undergraduates in suprasegmental (patterns of stress) and segmental (vowel and consonant sounds, sentence completion, minimal pairs, and word recognition) pronunciation activities.

Objectives of the Study
The study aims at:
1. Finding out the efficacy of digital tools in teaching pronunciation to Saudi EFL learners
2. Comparing the effectiveness of digital tools and traditional ways of teaching pronunciation in the case of Saudi EFL learners

Significance of the Study
Digital technology is now used in almost every aspect of our lives. It has had a tremendous influence not only on technological and social issues but also on educational fields such as (English) language instruction. The gift of new technology, i.e., digital tools, has proven to be a crucial component of English Language Teaching (ELT). The idea of incorporating digital tools into language classes as a way to improve learners' phonetic and phonological skills considerably has been advocated by Pennington (1999) and Celce-Murcia et al. (2011). Learners can use these tools for a variety of purposes without reluctance or exhaustion. Digital technology tools can be applied in the classroom to arouse students' interests, interaction, and motivation.

They can use pronunciation software to explore and take advantage of an infinite number of possibilities with mechanical, immediate, and personalized feedback in lifelike environments (Warschauer & Healey, 1998). What Levis (2007, p. 184) puts forward in the context of computers can be applied to digital technology tools that they can offer individualized instruction, regular practice via focused repetition exercises and listening discrimination, and automated visual assistance that shows learners how closely their pronunciation resembles model pronunciation. As a result, their performance will be enhanced and this will be reflected in their learning outcomes because those who are taught by using digital tools have better grades than those who are taught by instructors in conventional classrooms.

Theoretical Framework and Literature Review

The last part of the twentieth century proved highly valuable for changes in instructional technology. Technological advances, along with multimedia, the internet, and the World Wide Web, have paved the way for developing novel language learning and teaching techniques. The process of learning has become a web of interconnected platforms, which includes not only teachers, students, and books but also modern technological tools such as computer-assisted language learning (CALL), which has become well established in L2 settings for enhancing pronunciation with digital technologies. The American Council on the Teaching of Foreign Languages (ACTFL) also noted that language learning and teaching have benefited from the use of modern technology (ACTFL, 2013). It is becoming increasingly uncommon to find a language class that does not make use of some sort of technology, which can vary from audio-visual and animation effects in language teaching classrooms to software programmes, databases, and web pages that a user may access. Other multimedia resources, such as laptops, tablets, iPods, and cell phones, have been transformed into a type of portable classroom and have made language learning easier than ever. Texting, calling, and emailing have turned into techniques students can put to use to improve their language skills and sub-skills. The majority of English lessons are taught nowadays using internet-connected interactive whiteboards (IWBs) with visualizers, scanners, and other digital accessories (Moss et al., 2007). Hockly (2011) also emphasizes the integration of the latest technology into teaching and learning. According to Zaman et al. (2021), computer-aided instruction (CAI) boosts students' learning capacity and understanding, hence it should be used in academic contexts. Larsari (2011) similarly asserts that students' linguistic and pragmatic competencies will be improved if EFL instruction is supported by Computer-Mediated Communication (CMC).

English language instructors have always focused on enhancing the language skills of their learners and have experimented with a variety of teaching methods, improvising and even improving on previous techniques. When it comes to pronunciation teaching or learning, there is "a lack of serious research" (Gilakjani & Ahmad, 2011). Hashemian and Heidari Soureshjani (2013) pointed out that the ability to speak English entails several skills, for example, grammar, vocabulary, and pragmatics, but pronunciation is the most important of all of them. Therefore, investigating the pronunciation and the relative effectiveness of different methods and materials with different types of learners is of critical importance (Macdonald et al., 1994; Munro & Derwing, 1995). In this regard, computer-aided pronunciation (CAP) in conjunction with CAI offers an opportunity for improving learners' pronunciation as well as phonetic and phonological competence (Pennington, 1999). A step in this direction was taken by some scholars recently. A few attempts are summarized below.

Al-Qudah (2012) used computer-assisted programmes to examine 149 (76 female and 73 male) students' proficiency in English pronunciation in the second semester of their third year at Al Zaytoonah University, Jordan. The participants were categorized into the control group and

the experimental group. To teach English pronunciation, printed materials were used for the participants in the control group, whereas the experimental group was given training through a computer-assisted program. A descriptive analysis was conducted for the pre-test and post-test of the participants' English pronunciation. Statistical techniques such as analysis of variance (ANOVA) were utilized to compare the control and experimental groups along with their male-female divide. The post-test results revealed significant variations in favour of the experimental group, but the gender-wise performance of students remained statistically non-significant.

Ong'onda and Muindi (2016) investigated whether the introduction of CALL software would affect learners' pronunciation while studying English phonetics at Mount Kenya University. The research design was quasi-experimental, with two groups, i.e., the experimental and the control group. There were 40 students in each group. The experimental group was exposed to computerized pronunciation instruction, but the control group was traditionally trained in pronunciation. The findings suggested that exposure to Computer Assisted Pronunciation Training (CAPT) had a positive effect on EFL students. It was also recommended that if CAPT programmes were added to pronunciation training, they could help learn the target language.

Liu and Hung (2016) employed My English Tutor (MyET), a CAPT software, to improve the pronunciation of fifty-one Taiwanese vocational institutes. They aimed at the sentence level structure, including target phrases with segmental and suprasegmental characteristics, at the beginning of every session. The participants worked on the software individually and rehearsed the sentences given in the task. For the exam, they completed three activities: (1) listening to a sentence and repeating it; (2) reading aloud a sentence without listening to a model of a speaker from an English-speaking country; and (3) listening to and repeating questions and responding to them. After giving the instruction, participants were given a questionnaire and a computerized speaking test to answer. The findings of the repeated measures analysis of variance suggested that the quality of the participants' pronunciation improved significantly.

Another study on improving EFL students' pronunciation skills through Web-based/CALL instruction was conducted on 85 Iranian students by Rahnavard and Heidar in 2017. The researchers used the Oxford Placement Test to validate their participants' levels of proficiency. They were randomly distributed into two groups consisting of 30 participants in each, i.e., 30 in the control group and 30 in the experimental group. Participants in both of these groups were given a pre-test of pronunciation, and then the control group was trained through traditional methods, whereas the experimental group was given the treatment of CALL/Web-based instruction for 12 sessions. The data analysis indicated a statistically significant difference in performance between the two groups; namely, the experimental group displayed that web-based learning had positive effects on the participants' motivation to improve pronunciation. They recommended using web-based instruction for second language learners, instructors, and syllabus designers.

Syafitri et al. (2018) also focused on improving the pronunciation of beginner-level students in a public high school in Indonesia using the multimedia software PowToon. They had six meetings with their participants, employing quantitative as well as qualitative data collection techniques such as tests, observation, questionnaires, interviews, and diaries. The findings of this research showed that utilizing PowToon was effective in improving participants' pronunciation in a speaking class. It raised their levels of motivation, attention, and interest in learning. Hence,

it was suggested that for teaching speaking, instructors should make use of PowToon, particularly if they want to improve their learners' motivation and pronunciation.

In 2019, Khafajy investigated the impact of electronic language software on the English pronunciation skills of grade four students in a primary school. To achieve this goal, the researcher developed two instruments: one was a questionnaire to determine essential and suitable pronunciation abilities, and the other was a pre-test and post-test tool with a key to assess pupils' productive pronunciation abilities. This quasi-experimental study had 60 male and female grade-four primary stage participants divided into the control group and the experimental group. The control group was instructed using traditional methods, whereas the experimental group was trained using electronic language software. The findings of the study showed that utilizing the electronic language software to enhance English pronunciation abilities in grade four primary stage pupils had a good effect. It was suggested to keep up with the trend of using CAPT applications in a blended learning environment to help elementary school pupils enhance their English pronunciation abilities.

Utilizing a technology-based English pronunciation app, Haryadi and Aprianoto (2020) measured the self-learning and participation of students at Mandalika University of Education (UNDIKMA), Indonesia. In a quasi-experimental study, forty-eight students aged 19–21 were divided into two groups (24 in each) and given pronunciation training using the app. Data collected through interviews and observation showed that learners' participation, i.e., engagement, attitude, and conduct, as well as self-learning, improved.

Bozorgian and Shamsi (2020) tested the efficacy of CAPT on five Iranian EFL students. They trained these students on suprasegmental aspects of English pronunciation using MyET for two months. The data collected through direct observation, interviews, and reflective notes of learners and researchers showed that the subjects improved their performance in the use of suprasegmental features. In addition to that, students were shown to have developed a positive attitude towards the tool and technique because they helped them become confident and autonomous in pronouncing English.

Sosas (2021) measured the effects of e-technology tools while teaching English speaking to university students aged 17–19 years in the Philippines. She divided 21 participants from junior, sophomore, and senior levels and had Focus Group Discussion (FGD) in language classes. The participants frequently used modern technology tools such as correspondence via email, interaction through social media, video conferencing, real-time and actual compering, and onstage speaking performances while they were involved in real professional and academic situations. The results showed that participants had positive learning outcomes in terms of speaking English.

Using digital technology tools in any form not only helps improve pronunciation but also language in general (Liu & Hung, 2016; Ong'onda & Muindi, 2016) and makes learners engaged, confident, motivated, and independent (Haryadi & Aprianoto, 2020; Syafitri, 2018). These researchers applied various forms of digital tools to improve their participants' pronunciation and concluded with positive results (at both levels of segmental as well as suprasegmental). In addition to that, Dekaney (2003), Hirata (2004), AbuSeileek (2007), and Neri et al. (2008) reported that learners who were taught with CAPT did better than those who were instructed with traditional teaching methods. However, only a few of them investigated the effects of using digital tools in the context of Saudi EFL learners and compared the differences between traditional and digital ones to improve pronunciation skills. Furthermore, Almaqrn and

Alshabeb (2017) noticed that in Saudi Arabia, neither instructors nor students put much emphasis on improving pronunciation skills. The researchers also observed that Saudi EFL students have difficulty listening to and pronouncing English correctly and face many problems. This circumstance hinders the development of their linguistic skills, too (Nasim et al., 2022). The goal of this study is to provide a solution that can facilitate the process of pronunciation learning. Plenty of data from several studies also demonstrates the significance of digital tools using the CALL approach to teach pronunciation. In addition to narrowing the research gap in pronunciation teaching and solving its learning problems, this study is a step towards contributing to the pedagogy of pronunciation integrated with multi-modal resources.

Research Questions

1. What is the effect of using digital tools to teach pronunciation on Saudi EFL learners' achievement?
2. Which is the more effective way of teaching pronunciation to Saudi EFL students: a digital-tool-embedded
   approach or a traditional method?

Hypotheses

1. Teaching pronunciation using digital tools improves Saudi EFL students' pronunciation.
2. There is a significant difference between the effects of using digital technology tools and traditional methods on teaching pronunciation.
   Ha: M1≠M2 and
   H0: M1=M2

Method

Research Design

This study is quantitative in nature, and its framework is a quasi-experimental, pretest-posttest (between-subjects) design. Two groups, control and experimental, were formed from the two already existing classes being taught by EFL instructors. The independent variable is the treatment of the CALL approach along with some digital technology tools (smart boards, projectors, digital books, CDs, and asynchronous and synchronous online materials) in the experimental group versus the absence of digital technology tools in the traditional teaching approach (teacher-imitation, drilling, and printed materials) in the control group. The dependent variable is the learning outcome of students on the pre-test and post-test.

Sample

The participants, selected through convenience sampling, were third-level Saudi male students at Al-Ghad International College for Applied Medical Sciences in Tabuk, Saudi Arabia. They were categorized into two groups: control and experimental. Each group was comprised of 25 students of mixed abilities in the English language. The age of these participants ranged from 17 to 21 years old. All of them were native speakers of the Arabic language. Before starting the study, a test of normality was performed on the sample's learning outcome. The Shapiro-Wilk value of the pre-test scores was 0.219 and of the post-test was 0.367, which indicates the normality of the data was more than 0.05 in each case.

Instrument

The pronunciation tests consisted of items and audio clips from the book that the participants were studying. The book, "*Ship or sheep?: An intermediate pronunciation course*", was written by Baker (2016) and published by Cambridge University Press. Both the pre-test and post-test were similar in design and had activities on sound discrimination, identifying sounds, listening for words, distinguishing minimal pairs, listening for sentences, and filling in the

blanks. These exercises were grouped into four categories: vowel sounds (VS), consonant sounds (CS), stress identification (SI), and sentence completion (SC). Each question carried 1 mark, and there were a total of 100 questions for 100 marks. The participants were given 45 minutes to complete each test before and after the treatment. The tests were validated (reviewed) in terms of their content and form by three EFL professionals. The reliability calculated for these tests was reported to be 0.79. These tests measured the students' pronunciation proficiency. The materials provided on computers were the same as the materials in the textbooks. It included smart boards, projectors, digital books, CDs, and asynchronous and synchronous online materials as digital tools, which covered the desired aspects of the study.

Procedure

The research was conducted over 15 weeks. It included a pre-test at the beginning of the study, a treatment session during the study, and a post-test after the treatment. The classes were held three times a week, and the duration of each class was 100 minutes. The academic objectives were the same for both groups, and the same homework was given to each group. In the 13th week, the post-test was administered. Students were given instructions on taking the tests. They were also asked to pronounce the phonemes, words, and sentences on the tests during the treatment session. The participants in the experimental group were also allowed to record their speech production. The instructors teaching those classes facilitated the experiment.

A pre-test at the beginning of the study was administered to both the control and experimental groups (n = 25 in each group) to check initial group achievement. They were assessed on identical intra-sentential pronouncing activities at the suprasegmental (patterns of stress) and segmental levels (vowel and consonant sounds, sentence completion, minimal pairs, and word recognition). During the treatment session, the experimental group was exposed to digital technology in its various forms (smart boards, projectors, digital books, CDs, and asynchronous and synchronous online materials). The computers had headsets for students to use in the language laboratory, and all devices were connected to the Internet. All subjects used digital tools under the guidance of their instructors. The instructors helped them to use all the devices effectively. On the other hand, the control group was restricted to learning the pronunciation of the English language through traditional methods (teacher-imitation, drilling, and printed materials). After the treatment, both the control and experimental groups (n = 25 in each group) were evaluated again on identical intra-sentential pronouncing activities at the suprasegmental (patterns of stress) and segmental levels (vowel and consonant sounds, sentence completion, minimal pairs, and word recognition).

Data Analysis

The present study adopted a pre-test and post-test design, a quasi-experimental research design to test the hypotheses posed in the study. To achieve the objectives of the research and test the hypotheses, the researchers used the Spearman-Brown equation to calculate the reliability coefficient, descriptive statistics, Pearson correlation coefficient, and t-tests. To process the data and obtain accurate results, SPSS version 25 was used.

Results

Participants' overall performance on the pronunciation pre-test

The mean scores and standard deviations of the control group and the experimental group on the pre-test of pronunciation can be seen in Table 1.

Table 1

The pre-test results of the pronunciation test for the control and experimental groups

				t-test			
	N	Mean	SD	t	df	Sig.(2-tailed)	Sig.(1-tailed)
Control Group Pre-test	25	69.44	13.55	.368	48	.715	.357
Experimental Group Pre-test	25	68.08	12.59				

The mean scores for using the traditional method for teaching pronunciation were (M = 69.44, SD = 13.55) in the control group, while they were (M = 68.08, SD = 12.59) in the experimental group. The table also displays the difference in mean scores of the two groups on the pre-test using the independent-samples t-test. At the 0.05 level, there was no statistically significant difference between the control and experimental groups at the start of the test and before any kind of treatment was given to the experimental group because the p-value was greater than 0.05 (p = 0.357, df = 48, p≥0.05). This means each group consisted of students with a similar level of competency in pronunciation activities. Figure 1 depicts a graphical comparison of the results of the students' performance on the pre-test between the control and experimental groups.

Figure 1

Pronunciation pre-test scores of the experimental and control groups
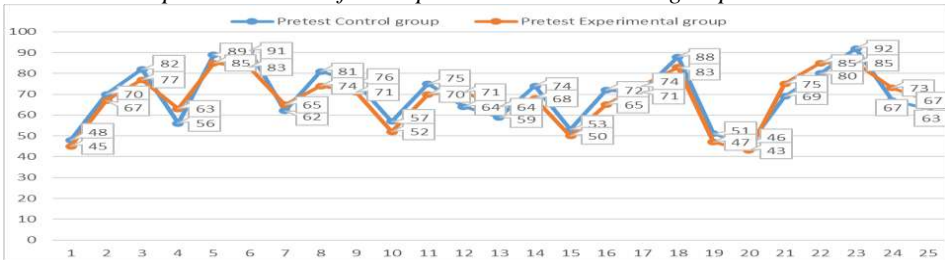
A comparison of the efficacy of teaching pronunciation via digital tools and traditional methods between the two groups

To answer the research questions that investigate the efficacy of teaching pronunciation via digital tools and compare the effectiveness of the two instructional methods used with the two groups, the mean scores of the participants in the experimental group and the group control on the post-test of pronunciation were analysed. The results are displayed in Table 2.

Table 2

The post-test results of the pronunciation test for the control and experimental groups

				t-test			
	N	Mean	SD	t	df	Sig.(2-tailed)	Sig.(1-tailed)
Control Group Post-test	25	65.88	15.07	-2.23	48	.030	.015
Experimental Group Post-test	25	75.08	14.04				

The mean score of the experimental group was (M = 75.08, SD = 14.04) whereas it was (M = 65.88, SD = 15.07) for the control group, as presented in Table 2. The independent samples t-test revealed a statistically significant difference in mean scores between the experimental and

control groups (p 0.015, df = 48, p≤0.05). Figure 2 graphically represents a comparison of the score results between these two groups on the post-test.

Figure 2
Pronunciation post-test scores of the experimental and control groups


Testing of hypotheses

To test the directional hypotheses 1 and 2, the significance level α=0.05 was determined. Table 1 and Table 2 report the results of the differences between the experimental and control groups on the pre-test and the post-test. The mean differences between the control and the experimental group on the pre-test were not statistically significant (p≥0.05, p =.357). On the other hand, the mean differences between the experimental and control groups on the post-test were statistically significant (p≤0.015). Therefore, Ha: M1≠M2 will be retained, and H0: M1=M2 will be rejected here.

Participants' performance on the segments and suprasegments on the post-test

For analysing the participants' performance on the pronunciation test in detail, the researchers categorized the tests into four parts: vowel sounds (VS), consonant sounds (CS), stress identification (SI), and sentence completion (SC). The post-test performance of participants on these segmental and suprasegmental units is shown in Figure 3.

Figure 3
Segmental and suprasegmental analysis of the experimental and control groups
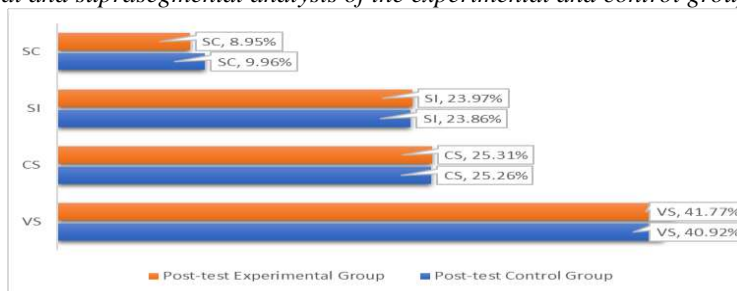
Discussion

The participants' performance in the control group was lower (40.92%) on discriminating vowel sounds, i.e., in minimal pairs and categorizing words under which they belong. Similar were the results for the control group in recognizing the consonant sounds (25.26%) and stress identification (23.86%). On the other hand, the experimental group showed improvements in all three of these categories when they were taught via digital tools. Their performance improved in identifying vowel sounds (41.77%), categorizing consonant sounds (25.31%), and marking stress patterns (23.97%). The participants, however, did not show any

improvement in the fourth category. They showed a drop in the performance of choosing a word for sentence completion from 9.96% to 8.95%.

Successful and effective communication depends on a speaker's ability to pronounce what they are saying in the proper way. Correct pronunciation includes intra-sentential pronunciation at segmental (minimal pairs, word recognition, and consonant and vowel identification) and suprasegmental (stress, intonation, and rhythm patterns) levels. Therefore, the best method of teaching them is always recommended. This study analysed the pronunciation activities of Saudi EFL students with and without digital tools to show the efficacy of the former.

The data on the pre-test revealed that learners in both groups, i.e., the experimental group and the control group, had a similar degree of pronunciation competence. However, the data from the post-test made it clear that the participants who were taught pronunciation via digital technology tools became significantly more competent than those who were taught via the traditional method of learning pronunciation, i.e., a case where their teachers taught them using teacher-imitation, drilling, and printed materials. In other words, after 13 weeks following the start of the study, teaching pronunciation using digital tools embedded in the CALL approach was more effective than the traditional way of teaching pronunciation to the EFL students at Al-Ghad College, Tabuk. Therefore, the researchers declare that the intervention of digital technology tools will improve the experimental group's pronunciation in the post-test.

The result of the directional hypotheses also proves the significant differences between the two ways of teaching. The acceptance of the alternative hypotheses and the rejection of the null hypothesis showed that using various forms of digital technology tools in a CALL embedded setting will bring out significant differences between those who did not use them.

The findings on segments (VS, CS, and SC) and suprasegments (stress patterns) also justify the inclusion of digital tools to effectively teach pronunciation. The phonological and phonetic contradictions in consonant and vowel sounds and stress patterns were better understood by the participants when they were taught and trained via digital tools, while the participants in the other group, who were taught using traditional methods, were not found to be as competent as their counterparts. Sentence-completion activities were found to have no improvement but were favourable towards traditional pronunciation teaching.

The outcome of this study matches that of previous studies. For example, in their investigations, AbuSeileek (2007) and Luo (2016) found that using digital tools such as CAPT helped learners better understand segmental and suprasegmental features, particularly stress patterns. Dekaney (2003) endorsed the use of teaching IPA using technology, and Neri et al. (2008) discovered the usefulness of CAPT in teaching isolated words. Mehrpour et al. (2016), Liu and Hung (2016), and Gilakjani and Rahimy (2019) strongly backed up the role of teaching pronunciation in general, as their studies revealed favourable results for digital tools.

This marginal increase in the performance of the participants who were exposed to the digital tools painted a positive picture of using digital technology tools with its latest tools to create a congenial atmosphere that facilitated learners to take part and interact with each other, leading to an improvement in their pronunciation. Clements and Sarama (2003) also support the idea of using appropriate technological resources because they are beneficial to learners, enhancing their linguistic knowledge. The findings are also in line with the assertions made by Pennington (1999) and Eskenazi (1999, p. 448) regarding CAP and CALL. Pennington (1999)

observed that CAP outperforms HAP (human-aided pronunciation instruction such as a human pronunciation coach or a phonetician). Eskenazi (1999, p. 448) identified five major features of successful learning present in the CALL program: (1) students listen to a lot of speech; (2) they speak more and more; (3) they get good feedback; (4) they are relaxed and comfortable without anxiety; and (5) they are assessed continuously. He also believes that the key characteristic of the CALL is to provide feedback via visual comparison of native models with the learners' speech. Therefore, in the light of these statements, it can be stated that using digital technology tools is of immense help in improving pronunciation.

From these findings, it can be inferred that the participants were more motivated and interested, and found the use of digital technology tools assisted their pronunciation learning. It is worth mentioning that they preferred the simulated voices of native speakers over their teachers, who presented them with printed materials, taught them how to pronounce words and sentences, and asked them to imitate. During the digital technology session, the teacher was a facilitator and a guide who instructed the participants on what, when, and how to use the learning process. As a result, pronunciation instruction became learner-centred rather than teacher-centred.

One reason for the positive outcome of using digital technology tools for pronunciation improvement could be the shifting perspective towards them. Learners are attracted to using it. They are called *digital natives,* and they want to replace traditional forms of learning with digital technology (Srivastava, 2020). Walker and White (2013) also assume that every youngster nowadays has a natural interest in digital technology and has a lot of knowledge about it. Using digital technology also helps in improving their grades (Srivastava, 2020), and this reason is enough to motivate them to use it and bring about more changes in their pronunciation. Furthermore, these tools are integrated in such a way that learners can control their process of pronunciation learning. They may have access to the material at any time, which promotes their autonomy.

Conclusion and Recommendations

The significance of digital technology and its application to teaching, particularly languages, has grown recently. Digital tools from computer devices to mobile phones facilitate the teaching of pronunciation as well as other language skills. It has a remarkable role to play in English language teaching and in setting a favourable stage for reform and exploring new teaching models in the new epoch. It has been proven that digital technology tools play a positive role in enhancing the activities and initiatives of students in learning and improving their pronunciation effectively.

This study primarily investigated the efficacy of digital technology tools in teaching pronunciation to Saudi EFL students at Al-Ghad College, Tabuk, Saudi Arabia. Secondly, it compared the differences between teaching pronunciation via digital technology tools and traditional methods. The results on the pre-test revealed no significant difference between both groups, i.e., the experimental and control groups, before the start of the treatment, but the results on the post-test revealed a significant difference, proving the efficacy of digital technology tools over traditional methods of teaching pronunciation. Therefore, the null hypothesis was rejected and the alternative hypothesis was retained, meaning that there was a significant difference between the participants' performances in the pronunciation activities as given in the tests. In other words, participants in the experimental group showed that digital technology tools assisted them in learning pronunciation more than the traditional method. These results underpin the findings of previous studies by Pennington (1999), Neri et al. (2008), and Celce-Murcia et al.

(2011), where learners become engaged, develop an interest, and are motivated to explore several possibilities in digital technology tools.

The study has pedagogical significance for students, teachers, and researchers, as well as curriculum planners. The teaching of pronunciation can be made engaging, enjoyable, and interesting using digital tools, and students may be able to acquire the language better. Once motivated, they will apply all their senses to learning pronunciation in different programmes, such as tongue twisters, sound animations, videos, and songs, along with authentic material. Students will develop autonomy as they may use these gadgets according to their pace and availability.

There are pedagogical benefits for teachers, as teaching will become learner-centred and learning-centred, as opposed to teacher-centred in traditional classrooms. They may also have an opportunity for self-development to become qualified and use this technology effectively. They will have more of a role as supervisors than as transmitters of information.

The planning of the syllabus is based on learners' needs, and new technology will be required by curriculum designers. It should be regarded as an essential part of the course content. Therefore, the teaching context should be developed and learning opportunities should be created for pronunciation teaching. Similarly, researchers should also conduct more research in different contexts connecting psychological constructs to technological tools.

Limitations

This study focused only on measuring the effectiveness of digital technology tools mentioned in the study. There are a number of other digital tools that may be integrated to test different effects on improving pronunciation. Also, the study involved students training, practising, and responding to the tests by choosing the correct sounds, stress, and words. It is recommended that future studies may test students' pronunciation by recording their responses. The sample of this study was limited to Saudi male EFL students only.

Acknowledgment

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Selfie Addiction and Narcissism as Correlates and Predictors of Psychological Well-being among Young Adults

Beenish Mubeen
University of Management and Technology, Lahore

Mujeeba Ashraf and Sidra Ikhlaq
University of the Punjab

This study examined the relationship between selfie addiction, narcissism and psychological well-being as well as the predictive role of narcissism and selfie addiction in young adults. Using correlational research design, a sample of 250 young adults with age range 19-35 (M = 23.51, SD = 3.63) was approached using non probability purposive sampling. Participants completed Selfie Addiction Scale (Aruguman, 2018), Narcissism Personality Inventory-16 (NPI-16; Ames, Rose & Anderson, 2006) and Ryff Psychological Well-Being Scale (Ryff, 1995). Selfie addiction had positive relationship with narcissism and negative relationship with one dimension "environmental mastery" of psychological well-being. Narcissism was found to be negatively related with psychological well-being. Regression analysis showed that narcissism was a significant negative predictor of psychological well-being. Furthermore, results of independent sample t-test revealed that scores on selfie addiction was higher in boys but narcissism and psychological well-being was high in girls. The findings of the current study may provide important information to young adults, parents, counselors and therapists regarding selfie addiction .

Keywords: selfie addiction, narcissism, psychological wellbeing

The desire of expressing oneself is a natural human need. Young people depend on their peer's ratings and assessments, which make them search for ways of showing themselves to the world. Nowadays young population is busy most of the time in clicking self-pictures and uploading them on social media, these self-pictures are known as selfies. Taking selfies is now become a norm. We can see people taking selfies everywhere, with smartphones in their hands, be even at home restaurants, in malls, or in public places. While some people use to take photos to keep a record of their memories, others want to take selfies all the time. This obsession with clicking selfies is a serious disorder which is called 'Selfitis' which is quite alarming. The rapid spread of a selfie affected adolescents' and youngster's minds and created a new form of addiction to the selfies. Constantly clicking selfies and uploading them on social networks is becoming a typical behavior and people are doing it more frequently. Excessive posting of selfies is associated with increase in narcissism. And being narcissistic would have an impact on psychological well-being of people (Lobo, 2016).

Selfies can be defined as self-representation or portraits which are taken from mobile phones in order to appreciate physical appearance of one's own self. We speak of selfie addiction when selfies are clicked excessively, on daily basis, with little struggle to stop clicking

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Correspondence concerning this article should be addressed to Ms. Beenish Mubeen, Lecturer, University of Management and Technology, Lahore, Email:beenish.mubeen@umt.edu.pk

them (Arumugam, 2018). The APA has defines it as: "obsession to click pictures of themselves and post them on the social media platforms to increase self-worth or self-esteem". In recent times, a new fashion of taking selfies has evolved. In September 2002, Steven Wrighter coined the term selfie (Alblooshi, 2015).

Worldwide, clicking selfies has become unavoidable part of our day to day lives. In Pakistan, introduction of smartphones contributes in improving the key techniques of people. Furthermore, a radical change has come in life style of people due to technological advancement in features of smartphones such as advanced camera, access to internet and touch screen. Individuals purchase smartphones according to their priorities. Due to technological advancement we do not have to get our photos in printed form; instead we can see our favorite photo whenever we want. Which in turn take your to world of fascination from memories that led us to crave for "Selfities (Arumugam, 2018).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5), published by American Psychiatric Association in 2013, it defines narcissism as "the self-admiration and appreciation that is characterized by tendencies toward fantasized talents, grandiose ideas, exhibitionism, and by interpersonal relations that are characterized by defensiveness in response to criticism; lack of empathy, feelings of entitlement, and exploitativeness." Selfies are the medium of promotion for people. Some scholars exclaimed that excessive selfie taking and posting behavior can result in harmful demeanors for example narcissism, egotism and rapaciousness (Sorokowski, et al., 2015).

As stated in DSM, narcissistic people are overwhelmed with brilliance, beauty, success, dreams, power and authority. Narcissists live in a relational phase with ostentatious behavior. They need appreciation and attention from other people. Narcissists have characteristic that they wanted to view positive and concrete traits in their personality such as having power and authority; and being beautiful and physically attractive (Mehdizadeh, 2010). Above described characteristics of narcissistic people illustrate the reason that why narcissist tend to take excessive amount of selfies. Primarily, narcissistic people are usually very concerned about how they look physically (Remiker & Baker, 2008). Narcissists love to wear beautiful clothes or emblaze their bodies in a provoking and eye-catching way. They want other to be attracted towards them and they imagine in their own minds that other people find them attractive. Due to these characteristics, they derive pleasure by taking a lot of selfies. By doing this they can control how they wanted they to look in pictures and how they want others to perceive them. Basically, selfies are blarneying photos that people use to impress others (Vazire, Naumann, Rentfrow, & Gosling, 2008).

Psychological well-being is an interpersonal and intrapersonal degrees of constructive agility including a person's affiliation with other people and point of views of oneself including personal growth and mastery (Ryff, 1995). Psychological well-being is also defined as a condition of psychological resilience in which an individual has the ability to utilize his sentimental and intellectual potentials; and optimal performance so that an individual can achieve daily goals of life (Asad et al., 20218).

Social rank theory and Social comparison theory illustrate that social environment plays a significant role in describing Social Networking Sites (SNS) behavior of young people. These theories suggest that young people who belong to certain peer group tend to click and upload selfies on social media accounts. Reason is that that there is high comparison and

competition in peer groups and every individual wants to look better than other individuals (Tandoc, Ferrucci, & Duffy 2015).

According to the narcissism dynamic self regulatory processing model, narcissistic people behave in a way by which they get positive remarks from others. Narcissistic people primarily use social media accounts because they wanted to maintain positive and magnificent sense of self (Morf, Torchetti & Schürch, 2011). Some writers and journalists argued that narcissistic people are so much indulged in clicking selfies that they forget their surroundings. That's why some writers referred it as selfish act. Some authors also suggested that selfie addiction leads to narcissism and it have negative affect on relationships with other people (Lee & Sung (2016).

Sociometer theory illustrates acceptance and rejection have an effect on psychological well-being of people including self-esteem. If someone gets like on his selfie so, it might be a sign of acceptance which leads to increasing psychological well-being and self-esteem of that person. Whereas if a person do not gets likes on his selfie then it might be a sign of rejection which negatively effects psychological well-being and self-esteem of that person (Leary & Baumeister, 2000).

 Charoensukmongkol (2016) conducted a study to examine 4 characteristics of a person that may describe reason of clicking selfies. These characteristics are: loneliness, narcissism, seeking behavior, attention- self-centered behavior. Findings from regression revealed that reason of taking selfies and all above described characteristics are positively related.

Longobardi et al., (2020) conducted a research to assess the social media usage on selfie obsession and psychological well-being. Results of study revealed that no gender difference exists in psychological well- being, selfie obsession and social media usage. Women are mostly utilizing their potential that also leads household wellbeing other than individual growth (Haram, Shams & Gohar, 2021). A negative relationship was found between psychological well-being and social media usage while a positive relationship was found with selfie obsession.

Coulthard and Ogden (2018) in their study examine the effect of uploading selfies and getting feedback on Instagram on wider dimensions of their psychological well-being of young adults. There were 3 conditions which proceed for seven days: no selfie-posting; posting selfies with feedback; posting selfies without feedback. Results revealed that intervention has no effect on mood or self-esteem. Greater appearance satisfaction was found in those who post no selfies as compared to those who post selfies (irrespective of feedback). While, greater face satisfaction was found those who post selfies and get feedback. Study concludes that the effect of selfies depends on which dependent variable is measured and when.

Rationale
Selfie is as much as an interesting phenomenon of self-portrait in this new technology period as a tool for building up the self-esteem and self-awareness. Selfies have modified communication in the social surrounding. It has changed communication and leisure time on social networking sites and consequently lessened the face-to-face communication. Instead of living in the present moment and enjoy, people are documenting it only to relive it on the media screen. The real moment was lived through the screen of smartphone in the first take and probably not even truly enjoyed or experienced. Taking selfies has become a norm. Selfies also have changed our perception about ourselves. The perfect representation that even obviously

false has become more important than communicating deeper quality and content. Further, characterized with the time where adults putting their efforts for freedom or competence and it directly associated with development of explicit and implicit self-esteem (Naeem, Tariq & Mubeen,2021).

There is one of the new goal of social excellence. The rapid spread of a selfie affected teenagers' and adolescents' minds and created a new form of addiction to the selfies. Constant taking selfies and uploading them on social networks is becoming a typical behavior and young people are doing it more frequently. Excessive posting of selfies is associated with increase in narcissism (Magner, 2018). And being narcissistic would have an impact on psychological well-being of people. Selfies has emerged few times back so limited researches are done on different age groups of people to know the effect of it on the personality of individuals and on psychological well-being. So, this study aims to investigate that how selfie clicking and posting is related to narcissism and psychological well-being in young adults.

Objectives

Following are the objectives of current study

- To analyze the association between selfie addiction, narcissism and psychological well-being in young adults.
- To find out selfie addiction and narcissism as predictors of psychological well-being in young adults.
- To explore gender differences in selfie addiction, narcissism and psychological well-being in young adults.

Hypotheses

Following are the hypotheses of current study

- There is likely to be a relationship between selfie addiction, narcissism, and psychological well-being in young adults.
- Selfie addiction and narcissism are likely to be the predictors of psychological well-being in young adults.
- There are likely to be gender differences in selfie addiction, narcissism, and psychological well-being in young adults.
-

Methods

Research Design

Correlational research design is used. The research investigates the relationship between selfie addiction, narcissism, and psychological well-being in young adults.

Sampling Strategy and Sample

Sample of 250 participants, using non-probability purposive sampling strategy, including both males and females (as per g power formula) aged 19 to 35 years, who have smart phones, social media accounts and are active users were taken from different institutes of Lahore, Pakistan.

Table 1

Demographic Characteristics of Participants of the Study (N=250)

Characteristics	M (SD)	f (%)
Age (years)	23.51(3.63)	
Gender		
Male		122(48.8)
Female		128(51.2)
Marital Status		
Married		48(19.2)
Unmarried		202(80.8)
Family System		
Nuclear		176(70.4)
Joint		74(29.6)
Socio-Economic Status		
Lower Class		2(0.8)
Middle Class		228(91.2)
Upper Class		20(8)
How often do you take selfies?		
Daily		123(49.2)
Weekly		70(28)
Occasionally		57(22.8)
Do you have social media account?		
Yes		250(100)
No		0(0)
How often do you share selfies on social media?		
Daily		
Weekly		103(41.2)
Occasionally		100(40)
		47(18.8)

Note. M=Mean; SD=Standard Deviation; f=frequency; %=percentage

Demographic Information Sheet

Demographics consist on information like initials of name, age, gender, education, marital status, socioeconomic status, number of selfies taken per day and number of selfies share on social media etc.

Selfie Addiction Scale. This questionnaire was devised and validated by Aruguman and Nagalingam in 2018. This is 10 items questionnaire, based on Likert Scale and the Scoring is given accordingly (Strongly Agree-5 to Strongly Disagree-1). The score varies from minimum range of 10 points to 50 points. Scores between 0-20 represents normal, 21-30 represents mildly addicted, 31-40 represents moderately addictive and 41 to 50 represents severely addicted people. The Cronbach's alpha of this scale was .75.

Narcissistic Personality Inventory-16 (NPI-16)

It is developed by Ames, Rose and Anderson in 2006. The NPI-16 is brief scale of subclinical narcissism with internal, discriminant, meaningful face, and predictive validity. It consists of sixteen pair of statements. For each pair participant have to select the one that best reflects his/her personality. The internal consistency of measure is verified and Alpha reliability of scale was .72.

Ryff Psychological Well-being Scale

Psychological well-being scale was developed by Ryff in 1995. This scale consists of 18 items. Each item rated on 7-point Likert scale ranging from 1 to 7 as strongly agree to strongly disagree. The PWB scale has 6 dimensions. Autonomy, environmental mastery, personal growth, positive relations with others, purpose in life and self-acceptance are the subscales of

this scale. To calculate scores of each subject, combine scores of all subscales. Higher scores indicate higher levels of psychological well-being. The reliability coefficient of every subscale and the whole scale was above .69.

Procedure
First, topic was selected and approved by the board of the studies. After approval of the topic, scales were selected and permission was taken from the authors. Tools were administered on research participants who fulfill the inclusion criteria and data was collected by researcher. Data was collected from different institutes of Lahore. Instructions were given to the participants and asked the participants to fill the questionnaires. All the ethical considerations were ensured. Informed consent was taken. They were given the right to withdraw from study at any time and were assured that their identity will be anonymous and responses to questionnaires would remain confidential.

Results
Data analysis initiated with the reliability analysis using Cronbach's alphas of all the scales. In the second step, Pearson Product Moment Correlation was used to assess the correlation between demographics and study variables. Hierarchical Regression Analysis was run to check the predicting role of selfie addiction and narcissism for psychological well-being in young adults. Mediation through Regression was used. At last Independent sample t-test was run to find out gender differences in study variables.

Reliability Analysis
Following are descriptive and reliability analyses for each assessment measure along with actual and potential ranges of the variables shown in Table 2.

Table 2
Descriptive Statistics and Reliabilities of Selfie Addiction, Narcissism and Psychological Well-Being.

Variables	K	M	SD	α	Potential	Actual
					Range	
Selfie Addiction	10	25.65	7.91	.89	10-50	10-45
Narcissism	16	9.35	4.31	.86	0-16	0-16
Psychological Well-Being				.83		
Autonomy	7	25.24	7.13	.73	7-42	7-39
Environmental Mastery	7	23.95	8.02	.69	7-42	7-54
Personal Growth	7	25.11	6.71	.69	7-42	7-39
Positive relations with others	7	26.84	6.83	.73	7-42	7-41
Purpose in Life	7	23.16	8.35	.70	7-42	7-52
Self-Acceptance	7	25.08	7.35	.76	7-42	7-38

Note. k=No. of Items; M=Mean; SD=Standard Deviation; α = Cronbach alpha value

The table 2 showed the means, standard deviations, number of items, reliabilities and action and potential ranges of assessment scales. The reliability analysis of each scales was carried out using Cronbach's Alpha. All scales showed high internal consistency range from .69 to .89.

Pearson product moment correlation analysis was carried out to assess the relationship between selfie addiction, narcissism and psychological well-being in young adults. Table 3 shows the result of this analysis.

Table 3

Correlation between Selfie Addiction, Narcissism and Psychological Wellbeing (N=250).
NOTE: p<.05=, p<.01=***

Variables	Selfie Addiction	Narcissism	Psychological Wellbeing	Autonomy	Environmental Mastery	Personal Growth	Positive Relations	Purpose in Life	Self-Acceptance
Selfie Addiction	--	.23**	-.10	-.79	-.16*	-.02	-.07	.04	-.06
Narcissism		--	-.16*	-.06	-.10	-.15**	-.15*	-.06	-.04
Psychological Wellbeing			--	.59**	.59**	.63**	.62**	.45**	.63**
Autonomy				--	.15*	.28**	.32**	.13*	.24**
Environmental Mastery					--	.29**	.25**	.06	.27**
Personal Growth						--	.35**	.08	.29**
Positive Relations							--	.06	.27**
Purpose in Life								--	.14"
Self-Acceptance									--

   Findings showed that selfie addiction is positively correlated with narcissism. It means that people who are more selfie addicted have more tendencies to be narcissist, egoistic and self-centered. Selfie addiction is negatively correlated with only one dimension of psychological well-being which is environmental mastery. It means that people who are selfie addicted are less likely to manage the responsibilities of daily life. Moreover, narcissism has negative relationship with psychological well-being particularly with personal growth and positive relations. It means that people who are narcissistic are less able to use their cognitive and emotional capabilities and they do not perform well in society. It also suggests that narcissistic people have difficulties in having warm and trusting relations. They are less concerned about other people. They lack empathy and affection.

   It was also hypothesized that selfie addiction and narcissism would be predictors of psychological well-being. To assess this hypothesis multiple hierarchical regression analysis was performed. Results are reported in table 4.

Table 4

Linear Regression Analysis predicting direct effect of Selfie Addiction and Narcissism on Psychological Well-Being in Young Adults (N=250)

Variables	Psychological Wellbeing		
	B	β	SE
Constant	3.13***		5.98
Selfie Addiction	-.22	-.07	.21
Narcissism	-.87*	-.15	.39
$F_{(2, 247)}$	3.83		
R^2	.03		

Note. *p<.05, **p<.01, ***p<.001, SE=Standardized Error, β= Standardized Coefficient

The results of Linear Regression analysis have indicated that the overall variance experienced by the model was accounted for 3% with F (2, 247) = 3.83, $p < .05$. The analysis showed that selfie addiction did not significantly predict value of psychological well-being (β = -.07, p>05). While narcissism negatively predict the value of psychological well-being (β = -.15, p< .05).

It was moreover hypothesized that there are likely to be gender differences in selfie addiction, narcissism and psychological well-being in young adults. Independent Sample t-test was run to assess the gender differences. Results are shown in Table 4.5.

Table 4.5
Independent Sample t-test Measuring Gender Difference in psychological well-being (N=250).

Variables	Male (N=122)	Female (N=128)	t (248)	p	Cohen's d
	M(SD)	M(SD)			
Selfie Addiction	28.39(7.11)	23.03(7.76)	5.69	.00	0.72
Narcissism	10.07(3.99)	8.66(4.49)	2.62	.01	0.33
Psychological Wellbeing	145.17(27.72)	153.43(23.27)	-2.56	.01	0.32
Autonomy	24.75(6.88)	26.73(7.36)	-1.09	.29	0.28
Environmental Mastery	22.86 (7.72)	25.00(8.18)	-2.12	.04	0.27
Personal Growth	24.59(7.27)	25.59(6.13)	-1.18	.24	0.15
Positive Relations	25.62(7.63)	28.02(5.76)	-2.81	.01	0.36
Purpose in Life	23.23(9.38)	23.09(7.28)	.13	.89	0.17
Self-Acceptance	24.12(7.96)	26.00(6.62)	-2.03	.04	0.26

Note=Mean, SD=standard deviation

To find out the gender differences on selfie addiction, narcissism and psychological well-being an Independent sample *t*-test was run. For selfie addiction narcissism and psychological well-being equal variances were assumed. Findings showed that there were significant gender differences between males and females on selfie addiction, narcissism, and psychological well-being and in three of its subscales including environmental mastery, positive relations and self-acceptance with small to medium effect size. Males showed more selfie addiction as compared to females. While females scored high on narcissism, environmental mastery, positive relations, self-acceptance and overall psychological well-being as compared to males. Talking about sub-scales of psychological well-being, no gender differences were found in autonomy, personal growth and purpose in life. While females scored higher on environmental mastery, positive relations, and self-acceptance than males.

Discussion

The present study aimed to explore the association between selfie addiction, narcissism and psychological well-being in young adult. The results revealed significant positive relationship between selfie addiction and narcissism and negative relationship between narcissism and psychological wellbeing dimensions. Previous studies like Joy & Venkatachalam (2019), found out that there are significant positive relationship between selfie addiction and narcissism. According to that research, significant relationship was found between narcissistic features and number of selfies clicked on per day, choose poses for taking selfies, and edit selfies before uploading and un-tag themselves from group selfies. Significant relationship was

found between narcissistic features and Posting of selfies on facebook (Sukhdeep, Maheshwari & Sharma, 2018).

Sharma, Ranjan and Kohli (2021), found that selfie addiction and psychological well-being are negatively correlated with each other. In demographics age also negatively linked with psychological wellbeing (Naseer, Mubeen & Farooq, 2021). The results of present research showed negative relation of selfie addiction with one dimension of psychological well-being which is environmental mastery which may be due to the cultural differences. As no correlation was found with other dimensions of psychological wellbeing.

Present research also revealed that narcissism has negative relationship with psychological well-being. Previous research like Wirtz and Rigotti, (2020), also found that narcissism is negatively and significantly correlated with psychological well-being. People who are narcissistic are less able to use their cognitive and emotional capabilities and they do not perform well in society. Narcissistic people have difficulties in making gratifying and trustworthy relations with others. Findings of correlation analysis were consistent with previous researches, so hypothesis was accepted.

Regression analysis showed that narcissism is significant negative predictor of psychological well-being. Many previous researches and articles suggested that there is a unique relationship between narcissism and less psychological well-being. Factors of low psychological well-being may include presence of negative emotions, life dissatisfaction, lack of social connectivity, incompetence to have feelings that connect a person with others, lack of appreciation to others and lack of sympathy (Bai et al., 2021; Lauzon, 2018; Stellar et al., 2017; Ryan, Bernstein & Brown, 2010)

Results of independent sample t-test revealed that there are significant gender differences in selfie addiction, narcissism and psychological well-being. Males scored higher on selfie addiction as compared to females. While females scored high on narcissism and psychological well-being as compared to males. Results of present study are in line with previous researches. Results from previous researches illustrate that there is no clear evidence regarding gender differences in selfie taking. Dhir and his colleagues in 2017 reported that females upload more selfies on their online accounts than males. But in contrast Guo and his colleagues in 2018 reported opposite results. Similarly, based on an article found on CNN, men are more likely to take more selfies at the age of 40 than women and vice versa for younger ages. According to researches women become more insecure at the age of 40, while men become more self-confident and want to reassure they are still young. That's why men take more selfies in later age (Wallace, 2014).

Further according to present study, females scored high on psychological well-being as compared to males. A study conducted by Matud, Curbelo & Fortes in 2019 goal to explore the coorelation between gender and psychological well-being in adult. Results revealed that males have higher self-acceptance and autonomy than females while females have higher personal growth and positive relations than males. In current study women also scored higher in environmental mastery, self-acceptance and positive relations than men. Therefore, results of present study are in accordance with previous researches.

Conclusion

The aim of the present study was to investigate the association between selfie addiction, narcissism and psychological well-being in young adults by using quantitative method to generalize the findings on a large population. The study confirms that selfie addiction has significant positive relationship with narcissism and selfie addiction has negative relationship with one dimension of psychological well-being which is environmental mastery. Narcissism has negative relationship with psychological well-being particularly with personal growth and positive relations with others. Narcissism was a significant predictor of psychological well-being. Significant gender differences of independent and dependent variables were also examined. Males scored higher on selfie addiction as compared to females while females scored higher on narcissism and psychological well-being than males.

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Impact of Servant Leadership on Employee Work Engagement: Mediating Role of Psychological Climate

Syeda Sana Zainab and Ungku Norulkamar Ungku Ahmad
Azman Hashim International Business School, Universiti Teknologi Malaysia

Muhammad Irfan Sheeraz
Higher Education Commission Pakistan

This study examined the influence of servant leadership (SL) on the faculty's work engagement. It also examined psychological climate (PC) as mediating variable in this relationship. Moreover, this study has considered social exchange theory (SET) as a base theory to explain the relationship between SL, PC, and work engagement. A quantitative research design was applied and data was collected using questionnaires from faculty members of Pakistani universities. A total of 276 datasets were analyzed through Structural Equation Modeling using SPSS version 27.0 and Smart-PLS 3. The findings of this study provide evidence that SL is the key leadership style for Pakistani universities. In addition, the PC significantly mediates the relationship between SL and faculty members' work engagement. In conclusion, the current study has extended the SET by incorporating PC as a mediator between the relationship of SL and the work engagement of faculty members in Pakistani universities. The findings are useful to the universities of Pakistan to consider the SL practices that are important in shaping the powerful motivational process of PC to enhance the level of work engagement among faculty members .

Keywords: Servant Leadership, Psychological Climate, Work Engagement, Social Exchange Theory, Education Sector.

A common definition of work engagement is being proactive in a task or purpose in the human-oriented and positive organizational behavior area that contributes to the improvement of workplace performance, focusing on that goal (Soares & Mosquera, 2019). Employee work engagement is an important topic and burning issue across the globe (Tsaur *et al*., 2019). A recent report on global workplace engagement stated that eighty-five percent of employees worldwide are not engaged in their jobs (Memon *et al*., 2020; Gallup, 2018), resulting in significant productivity costs (Ibrahim *et al*., 2019).

According to a survey, work engagement amongst employees working in different sectors of Pakistan has declined over time but its more in the education sector of Pakistan, and this has led to low productivity and growth (Sheikh *et al*., 2019). During the last decade, certain issues like corruption, mismanagement, and low budget badly influence the education sector and resulting in poor educational outcomes. Work engagement among faculty members of Pakistani universities has become one of the primary concerns for policymakers and academicians

Correspondence concerning this article should be addressed to Ms. Syeda Sana Zainab, Ph.D. Scholar at Azman Hashim International Business School, Universiti Teknologi Malaysia, Email: zainabsana12@gmail.com

(Sheikh e*t al*., 2019). Thus, the current study aims to investigate the critical issues of work engagement amongst faculty members specifically relating to PC and leadership style.

Leadership styles that positively influence their followers in higher educational settings and their probable effects on employees' attitudes and behaviors are key interests of researchers nowadays. Practitioners and academicians have emphasized the probable role of leadership styles that assist universities in achieving their objectives and encouraging work-related goals amongst faculty members (Jones & Harvey, 2017). Additionally, it is essential for making an improved comprehension of leadership behaviors (Inman, 2011), and to apply the most practiced leadership style in the universities to improve employee and organizational outcomes (Esen *et al*., 2020).

The literature revealed that various studies have been conducted in higher education settings to improve employee and organizational outcomes, such as faculty members' satisfaction with their job (Smerek & Peterson, 2007) staff commitment (Nazir & Islam, 2017), staff spirit (Rosser, 2004), faculty members turnover (Johnsrud *et al.*, 2000), and work engagement (Okun & Arun, 2020). Although studies on employee engagement, leadership styles, and their consequences have been conducted (Cole *et al*., 2012; Richter, 2018), leadership and faculty members' engagement are still under-researched and are relatively new topics to the education sector (Wilkins *et al.*, 2017; Zacher & Johnson, 2015).

Existing literature revealed that SL is most compatible with the values of the education sector as compared to other leadership styles (Wheeler, 2012). A recent systematic review on SL has identified potential research gaps in the existing literature. Thus, according to Eva *et al*. (2019), only five research studies were reported from Pakistan about SL style and more research is encouraged in the future. In addition, past research studies have identified mediating mechanisms between SL and work engagement. In past studies, mediators that were examined in the relationship between SL and work engagement are group trust climate, job resources, need satisfaction, psychological empowerment, and, organizational identification (Coetzer *et al.,* 2017; de Sousa & van Dierendonck 2014; van Dierendonck *et al*., 2014; Ling *et al*., 2017). However, more studies are needed to identify the mediating mechanism between the relationship between SL and work engagement (Aboramadan *et al*., 2020). Therefore, the present study has identified PC as a mediating mechanism between SL and work engagement. According to Aboramadan *et al*. (2020), future studies may consider PC as a mediating mechanism between SL and the work engagement relationship.

This inclusion of PC as a linking mechanism between SL and work engagement will extend previous research, which has mainly focused on person-job fit, intrinsic motivation and psychological ownership, group trust climate, leader-member exchange, need satisfaction, psychological empowerment, organizational identification, psychological capital, job resources, job crafting, job satisfaction, and public service motivation (de Sousa & van Dierendonck 2014; Kaur, 2018; Coetzer *et al.,* 2017; Aboramadan *et al.,* 2020; Ling *et al*., 2017; van Dierendonck *et al*., 2014; Yang *et al*., 2017; Bao *et al.,* 2018). PC is defined as a determination by the person of how much their work environment contributes to their sense of well-being (Carless, 2004). Different research studies have also considered PC as an important underlying mechanism at work that explains a wide range of attitudinal and behavioral outcomes (e.g. Ozyilmaz & Cicek, 2015; Saengon *et al.*, 2020; Savas & Toprak, 2014).

In conclusion, this study is trying to fill several research gaps. Firstly, it will look at leadership styles from the perspective of SL in the education sector of Pakistan as existing

literature revealed that studies conducted on SL in Pakistan are scarce (Eva *et al*., 2019). Therefore, more research is required in this area. Secondly, the present study proposes that SL may affect positively on work engagement of faculty members in the universities of Pakistan, as there is a dearth of study on work engagement and related factors in educational institutions (Wilkins *et al.*, 2018). Thirdly, the present study has introduced a mediating mechanism in the form of PC between SL and work engagement to investigate the direct and indirect relationships between SL and work engagement among faculty members of Pakistani universities (Aboramadan *et al*., 2020).

Hypotheses Development
Servant Leadership (SL) and Work Engagement

Work Engagement has received tremendous consideration in the last two decades (Aboramadan *et al.*, 2020; Bakker & Albrecht, 2018). According to Schaufeli *et al.* (2006), work engagement can be broken down into three categories: enthusiasm, commitment, and absorption. Work engagement refers to employees' perceptions of their jobs as encouraging and stimulating activities to which they dedicate their time, hard work, and energy that is vigor. The dedication dimension is defined as, these employees regard their job as a valuable endeavor, and the last dimension absorption is defined as when employees regard their job as demanding and exciting (Schaufeli *et al.,* 2006).

SL, on the other hand, is a significant approach (Greenleaf, 1970, 2002; Monfardini, 2009) a lifelong drive, and an administrative tool through which leaders' expression is extracted about their will to serve (Aboramadan *et al.*, 2020b). SL elucidates variance in consequent variables more as compared to the authentic, transformational, and ethical leadership styles (Banks *et al.*, 2018). SL is distinct as its focus is on aspirational and motivational characteristics that can find followers' requirements for psychological support as well as their belongings to help lessen their workplace challenges (Eva *et al.*, 2019). In universities, the engagement of faculty members is critical because the low engagement level of faculty members may result in several problems, that may include teaching quality and research.

Past literature, for example, Ling *et al*. (2017), De Clercq *et al*. (2014), Kaur (2018), Carter and Baghurst (2014), Coetzer *et al*. (2017), Aseanty *et al*. (2022), Zeeshan *et al*. (2021) has shown that SL is positively associated with work engagement. SL fuels the vigor amongst their subordinates (Schaufeli & Bakker, 2004) since SL identified the distinctive skills and expertise of their followers (Van Dierendonck, 2011). As a consequence, followers will experience positive feelings at work (Page & Wong, 2000) and this is the result of the extraordinary caring attitude of their servant leader. Through the effective use of communication, a positive work environment, and equipment with direction, servant leaders also assist followers in becoming more energized to reach their full work capacity (Van Dierendonck, 2011). SL is likely to have a beneficial effect on a wide range of personal, group, and organizational level outcomes (Yoshida *et al.*, 2014).

According to the SET, employers, as well as employees, would relish quality and trusting relationships till both parties adhere to the reciprocal arrangement (Cropanzano & Mitchell, 2005). Employees would behave or respond positively as a result of the employer's favourable arrangements (Saks, 2006). Employees will feel obligated and repay the company by showing high levels of work engagement when servant leaders establish a favourable work environment for them (Saks, 2006).

Hence, based on the SET (Blau, 1964) and existing literature, it is assumed that servant leaders' actions may be positively recognized by their faculty members (followers), and that faculty members (followers) will respond by enhancing their engagement in the workplace. As a result, it is assumed that:

H1. *SL is positively and significantly related to the work engagement of faculty members in the universities of Pakistan.*

Psychological climate (PC) as a mediator between servant leadership (SL) and work engagement

Existing literature has shown that leadership is an important antecedent of PC (e.g., Schneider *et al.*, 2005; Van Dierendonck, 2011; Ozyilmaz & Cicek, 2015; Walumbwa *et al.*, 2008). The current study also claims that SL is a significant and positive driver of PC as it forms reciprocal arrangements through SL practices that increase the interest of the faculty members (followers) (Blau, 1964). Past studies have shown associations between the SL and PC. For instance, Ozyilmaz & Cicek (2015) surveyed employees of for-profit organizations and found a strong positive association between SL and PC. Similarly, past studies have also shown a strong link between PC and work engagement. For example, Lee (2015) examined the relationship between the PC and work engagement and found that SL is an important determinant of work engagement. Similarly, Kataria *et al.* (2013) investigated the influence of PC on the work engagement of employees in an IT organization in India and found that PC is a strong driver of work engagement. This study asserts that the PC has a beneficial effect on work engagement. Therefore, PC turns into the mechanism for achieving employee work engagement. Therefore, this study proposes that the PC acts as a mediating mechanism between SL the work engagement. Accordingly, an employee engagement level is determined by the employee's PC with their social setting, which is shaped by the SL serving behaviours. Moreover, previous research supports that PC positively affects work engagement (e.g., Xanthopoulou *et al.*, 2008; Hakanen *et al.*, 2006; Lee, 2015; Saks, 2006).

PC refers to the emotional and observable elements of a worker's interactions with supervisors and colleagues. SL plays a dynamic role in establishing these climate perceptions of an employee. As per SET, "managerial practices that advance the collective interest of subordinates create joint obligations" (Blau, 1964: 207). Lewin *et al.* (1939) support this viewpoint by suggesting that employee work engagement is the outcome of diverse climates formed by various leadership styles.

This study supports the idea that workplace climate creates a social environment that affects employees' views in terms of their level of engagement at work. The PC that an individual experience from their social settings influences their work engagement (Lee, 2015), and PC about the employee needs provide servant leaders the possibility to deliver service by supporting their juniors in the shape of practical advice on a particular job or emotional support to employees who require personal healings (Liden *et al.*, 2014). Followers (employees) show serving behaviours as a consequence when they receive the advantages of their servant leader that assist them to become smarter, freer, healthier, and self-determined (Van Knippenberg *et al.*, 2004). It is believed that for subordinates if the experience of serving others is more psychologically fulfilling, and more employee benefits are received from the actions of a servant leader, the more the level of engagement of employees at their workplace. PC has also been proposed as a mediator in various relationships in recent empirical studies (e.g. Lee, 2015; Ozyilmaz & Cicek, 2015; Saengon *et al.*, 2020; Savas & Toprak, 2014). In line with the past research studies, we propose that SL shapes individual PC in a way that promotes positive

follower attitudes (i.e. work engagement), as implied by the social exchange theory reciprocity norm. As a result, we propose the hypothesis below:

H2: *PC mediates the relationship between SL and work engagement of faculty members in the universities of Pakistan.*

Research Model
This study suggests a framework for assessing the link between SL behaviours and faculty members' work engagement. Furthermore, the research suggests that PC acts as an important mediator between SL and work engagement relationship.
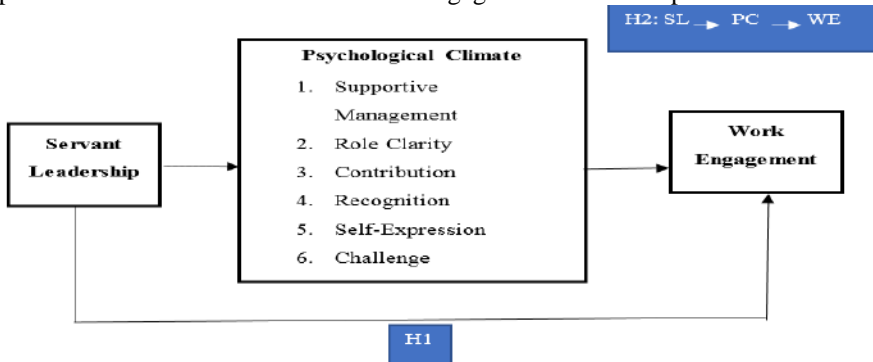
Figure 2.1.: Research Model

Method

The data was collected through a self-administered questionnaire from Pakistani universities using a quantitative research design. Referring to the Pakistan "HEC Universities Statistics, 2018" as the population of the current study, the data was gathered from faculty members at Pakistan's top ten universities. The response rate was 85 percent, thus being suitable for further analysis (Bell *et al.*, 2018). Data was analysed through Smart-PLS 3.

Measures
In the present study, all variables were evaluated using five-point Likert scales, ranging from 1-5. 1 represents strongly disagree whereas 5 represents strongly agree. For *SL*, a 7-item scale developed by Liden *et al.* (2015) was used. For *PC*, a 20-item scale that was developed by Brown & Leigh (1996) was used. For *Work Engagement*, a 9-item scale developed by Schaufeli *et al.* (2006) was used.

Results

Measurement Model
For the assessment of the measurement model, the acceptable value for factor loadings is equal to or greater than 0.60, and those values that lie below 0.60 were removed (Gefen & Straub, 2005). In this study, all factor loadings were found to be greater than 0.60 except for one item (SM2), which is 0.582. This item, however, was not removed because leaving it out has no discernible impact on the measurement model. This technique has been used in other studies that retained the factor loading values which are less than 0.6 but are above 0.50 (For. e.g. Lee, 2015). In the measurement model, the threshold for composite reliability is 0.70 (Ringle *et al.*,

2020), and the cut-off value for convergent validity (i.e. average variance extracted) is 0.50 (Ringle *et al.*, 2020). This study construct holds the threshold of composite reliability and convergent validity (Table 1).

Table 1

Factor loadings, alpha coefficient reliability, composite reliability, and average variance extracted

	Λ	Alpha	CR	AVE
Servant Leadership		0.944	0.954	0.747
SL1	0.881			
SL2	0.878			
SL3	0.885			
SL4	0.840			
SL5	0.864			
SL6	0.831			
SL7	0.871			
Supportive Management		0.737	0.816	0.534
SM1	0.625			
SM2	0.582			
SM3	0.796			
SM4	0.878			
Role Clarity		0.823	0.895	0.741
RC1	0.741			
RC2	0.921			
RC3	0.908			
Contribution		0.872	0.913	0.724
C1	0.849			
C2	0.897			
C3	0.886			
C4	0.766			
Recognition		0.890	0.932	0.820
R1	0.910			
R2	0.873			
R3	0.933			
Self-Expression		0.896	0.928	0.763
SE1	0.908			
SE2	0.907			
SE3	0.785			
SE4	0.888			
Challenge		0.755	0.889	0.800
Ch1	0.925			
Ch2	0.863			
Work Engagement		0.946	0.955	0.701
WE1	0.857			
WE2	0.844			
WE3	0.869			
WE4	0.857			
WE5	0.836			
WE6	0.786			
WE7	0.844			
WE8	0.888			
WE9	0.747			

The Heterotrait Monotrait Ratio (HTMT) technique is utilised to determine the discriminant validity (DV) of the constructs. The more conservative threshold for HTMT values is 0.85 or suggestively lower than 0.9, to support measures' DV (Hair *et al*., 2018). In this study, all HTMT is less than 0.90, therefore, DV is achieved (Table 2).

Table 2

Discriminant Validity using HTMT

	C	Ch	R	RC	SE	SL	SM	WE
C								
Ch	0.572							
R	0.736	0.820						
RC	0.851	0.692	0.804					
SE	0.643	0.845	0.890	0.699				
SL	0.850	0.638	0.787	0.836	0.623			
SM	0.443	0.506	0.659	0.737	0.618	0.552		
WE	0.895	0.635	0.753	0.752	0.588	0.836	0.406	

Structural model

The structural model explains the relationships that are established amongst the constructs of the proposed study. H1 assesses whether SL is positively and significantly linked to work engagement. The results exhibited that SL is positively and significantly linked to work engagement (β=0.486, t=5.864, p=0.000). The results are presented in Table 3.

Table 3

Structural Model Direct Effect

Hypothesis	Relationship	Coefficient (β)	t	p	Sig	Remark
H1	SL -> WE	0.486	5.864	0.000	***	Accepted

Note: ***p<0.01, ** p<0.05
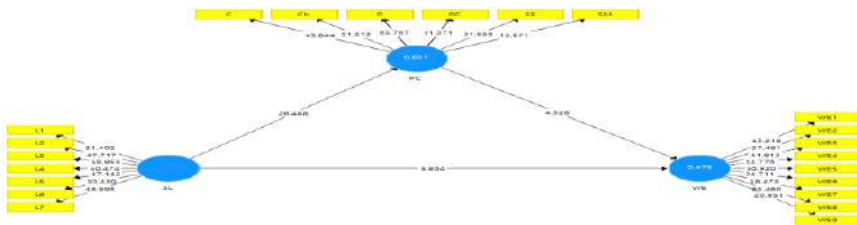
Figure 4.1: Structural Model

Mediation analysis

H2 assesses PC as mediating variable in the relationship between SL and work engagement. This study shows that by adding the mediator in the proposed model of SL and work engagement, the direct relationship was significant (β=0.486, t=5.864, P=0.000) (table 3) and the indirect relationship was also significant (β=0.306, t=4.740, p=0.000) (table 4.4). Hence, the results show partial mediation as the direct and indirect effects both show significant results. Therefore, H2 is supported as shown in Table 4.

Table 4.
Structural Model Indirect Effect

Hypothesis	Relationship	Coefficient (β)	t	p	Sig	Remark
H2	SL->PC->WE	0.306	4.740	0.000	***	Accepted

Note: ***p<0.01, ** p<0.05

Discussion

This study has investigated the direct link between SL and the faculty's work engagement. The study also investigated this relationship indirectly through the mediating mechanism of the faculty's PC. These relationships were studied in the universities of Pakistan as existing literature revealed that due to the lack of motivation of faculty members in Pakistani Universities, low productivity and growth have resulted in universities of Pakistan (Sheikh *et al*., 2019). Data was collected from faculty members to analyse the impact of their leader's behaviour on work-related attitudes. The results obtained through empirical analysis have shown that the findings of the study were aligned with the hypothesized relationships.

Direct Effect

The data analysis of this study has shown a positive and significant relationship between SL and faculty's work engagement (β=0.486, t=5.864, P=0.000). The findings indicate that SL creates an environment for employees to work with more dedication and motivation. This result is consistent with the previous literature that showed a positive link between leaders' behaviour and faculty's work engagement. According to Singh *et al*. (2020), SL has a positive significant impact on employee work engagement of hotel employees. According to Kaur (2018), when employees feel the positive attitude and behaviour of servant leaders, they are deeply encouraged towards exercising high levels of engagement and satisfaction in work. Thus, enriching the caring attitude amongst employees and improving the organizational environment by improving their satisfaction at the workplace differentiate servant leaders from other leadership styles. The findings of this study are supported by past literature.

Past Literature has also revealed that the effectiveness of the SL is related to the non-profitability structure of the organisation, as when a for-profit organisation is facing financial problems and needs to reduce spending to remain profitable, it is incredibly hard for a servant leader to maintain the competing interests of owners and employees (Schneider & George, 2011). By considering serving others first as an important element of SL (Greenleaf, 1977), the research study, Ozyilmaz and Cicek (2015) articulated that, SL is endorsed in a for-profit organisation by a servant leader demonstrating managerial skills and consistency in resolving various problems faced by the employees on daily basis, by meeting followers' workplace requirements and such that followers show job commitment in the organization, and by fostering an environment/climate where followers value teamwork and coordination when carrying out their duties. Recently, studies conducted on the employees working in the private sector universities in Western Jakarta and the banking sector of Pakistan, have found a positive impact of SL on employee work engagement (Aseanty *et al*., 2022; Zeeshan *et al*., 2021). Therefore, the effectiveness of SL in relation to employee attitudes and behaviours is applicable to all organizations irrespective of their organizational structure (for-profit or non-profit).

Mediating Effect

In addition, it was also found that the PC of employees at the workplace acts as a mediator between SL and faculty's work engagement (β=0.306, t=4.740, p=0.000). These results showed that SL in Pakistani universities indirectly influence the faculty's work engagement by affecting their PC. The results of this investigation are consistent with earlier research that has found that PC plays a significant mediating role. (e.g. Lee, 2015; Saengon *et al.*, 2020; Savas & Toprak, 2014; Ozyilmaz & Cicek, 2015). SL practices shape the PC of faculty members to enhance the level of work engagement among faculty members. Thus, PC is formed because of the perceived social settings, and due to the social environment provided, a social influence grows, and as a result work engagement is reflected in the employees' behaviour. According to the social exchange theory, employers and employees would relish a trusting relationships till both parties adhere to exchange rules (Cropanzano & Mitchell, 2005). The positive arrangements by the employer (servant leader) would result in positive behaviour or responses displayed by the employees (Saks, 2006). Servant leaders create a positive environment (psychological climate) for the employees to work in, and in return, employees will feel obliged and will repay the organization through high levels of work engagement (Saks, 2006). This study's findings are consistent with earlier studies. Based on the findings, it can be implied that to improve work engagement amongst faculty members, universities must consider the dynamic between servant leaders and the PC of their followers, which is formed by the serving behaviors of their leaders.

Implications

The findings of this study suggested several practical implications that can be made to the education sector as well as other service sectors which are suffering low levels of work engagement amongst their employees. First and foremost, this study has revealed the presence and function of SL in Pakistan's educational system, which has resulted in several positive outcomes. In practice, normally supervisors/managers evaluate the performance and work behaviours of their subordinates and not vice-versa. Therefore, to improve the working climate of the organization and to achieve organizational goals, universities can take anonymous feedback from the employees regarding their supervisors' behaviour, which may help identify servant leaders, so that significant improvements can be made to improve the organizational work environment (psychological climate) that may result in employee's work engagement. Hence through proper SL practices and the PC of the employees, a high level of work engagement can be achieved in the field of education as well as in other service industries.

In view of the information vacuum in the prior literature addressing the relationship between SL and work engagement, this study is one the empirical evidence of the occurrence of SL in the Pakistani educational sector and identified it as a crucial antecedent of faculty members' engagement. This study augments previous research by linking SL, PC, and work engagement, and it strengthens the literature supporting SL influences organizational performance. This study has tested an integrated model that connects SL and work engagement via mediating role of PC. By utilizing social exchange theory, this work has added to the corpus of knowledge already available. Blau (1964) shows that SL can significantly improve the PC which is important in increasing the likelihood of a work engagement. Thus, a positive PC environment that is formed by leadership practices helps explain the link between SL and work engagement.

Limitations and Recommendations

There are some limitations of the study which can be considered in future research studies. Firstly, it was cross-sectional, thus, future researchers can conduct a longitudinal study

to examine the influence of SL on their faculty members' engagement, so that relationship between the constructs of the study can be better understood. Secondly, this study was conducted on Pakistani university faculty members; while the findings may be different from the perspective of college faculty or faculty of other countries. Future research can be conducted on cross-country and cross-sector for more generalizability.

Thirdly, this research has considered both private and public sector universities, but the comparison between private sector universities and public sector universities was ignored. Future researchers can undertake a comparative study between public and private sector universities, to identify where SL and work engagement are more dominant. Furthermore, future researchers can consider equal participation of private and public sector universities which could not be made probable in this study due to time restrictions and resource constraints.

Lastly, the present research has taken into consideration only a few constructs that are influenced by SL. Future researchers may consider other constructs for example values play an important role in assisting a leader's behaviour (Arun & Gedik, 2020). Every organization's leaders need to be aware of the values that are upheld by their workforce. A leader needs to behave in such a way that is appropriate for the roles that their subordinates expect of them. Therefore, thorough research is needed to examine how perceived values may support leader conduct by examining employees' day-to-day actions. In order to be effective leaders, they must learn to act appropriately for the roles that their subordinates expect of them.

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Increasing Attention and Working Memory in Elementary Students Using Mindfulness Training Programs

Pattrawadee Makmee
Burapha University, Thailand

Short attention or attention deficit among children is now a problem for students. It affects many aspects of daily life, such as restlessness or lack of concentration, which affects the learning effectiveness in their studies. Mindfulness training, systematic training of the mind with a focus on attention and self-regulation, helps improve attention and has a negative relationship with stress. This research was to investigate the effects of mindfulness training in elementary students by comparing the mean scores of response accuracy and reaction time. The sample consisted of 60 elementary students, randomly assigned into groups, the first group being those trained with the audiovisual mindfulness program, and the second being the control group. The training program took place over four weeks, three days per week, and 30 minutes per day. The main finding of this research was that the mean response accuracy scores for attention and working memory after audiovisual mindfulness training, and without training revealed that scores of attention and working memory of the experimental group was higher than those of the control group. However, the response time for attention and working memory of the groups were not different.

***Keywords*:** attention, elementary students, mindfulness training programs, pretest and posttest control group design, working memory

Mindfulness training refers to a systematic training of the mind with the focus on attention and self-regulation (Tang et al., 2013). The purpose of mindfulness training is to train for self-awareness all the time while one is engaged in bodily activities as well as the awareness of one's thought. Mindfulness training can be classified into various patterns which differ in the way to control the mind or the posture taken during the training, mostly taking the form of training by repetitive action. Mindfulness training requires a target selection and attention to the target and the change of the target.

The selected target can be anything, for example, feeling of the physical body such as itchiness or pain, noise of the physical body or the environment, and things such as picture and flame. Mindfulness training yields better results when the training is serious, and continual for a long period of time (Siegel et al., 2009).

Neuroscience research on the benefits of mindfulness training revealed that mindfulness training was positively related to the activities of the left brain which controls the emotion (Davidson et al., 2003) and that it positively influenced adjustment to negative incidents and stresses (Aftanas & Golocheikine, 2002). In addition, mindfulness training helped develop

working memory efficiently (Bachmann et al., 2018) and helped improve attention (Black & Fernando, 2014).

Attention refers to the process which helps one choose and focus on the feeding of data especially for further processing while keeping out irrelevant data which could disrupt the mindfulness (Stevens & Bavelier, 2012); hence it helps the mind perceive only necessary data among a large pool of data. Without control of attention, the data may flow to unawareness. Hence, attention covers both awareness and unawareness (Rojanakosol, 2009). Attention is a complex structure which is related with the activities of working memory and high-level control to separate important items from a large quantity of sensory data (Luck & Gold, 2008). It has an important role of modulation of encoding to increase the efficiency of memory recovery (Chun & Turk-Browne, 2007), and attention and short-term memory closely react in modulation of coding (Fougnie, 2008) which influences the capacity of memory while working (Unsworth et al., 2014).

Working memory is essential to many complex cognitions such as problem solving, reading comprehension, attention control, and fluid intelligence (Sut et al., 2002). Working memory has many functions including temporary storage, processing of information and manipulation of information in activities of everyday life and continuously deals with information while the brain is working (Bayliss et al., 2005).

A study to increase attention by Integrative Body-Mind Training (IBMT) and music auditory was conducted and it was found that the experimental population could respond to questions more quickly and more correctly with less anxiety, depression and anger (Tang et al., 2007). Mindfulness practice of three hours per day over a period of 10 days among a group of people with the age ranging from 18-30 years old was studied. After the mindfulness practice, the group was given an attention network test on computers which revealed that the group with the practice performed better in accuracy and response time than the control group. This indicated that mindfulness practice increased attention (McLaren et al., 2010).

For the purpose of enhancing attention and working memory, a study of mindfulness training by visualization and auditory was conducted using a sample group of 50 people divided into two groups: 1) mindfulness training by observing different pictures including colorful pictures, mandala pictures and scenic pictures, and 2) mindfulness training by listening to auditory including the auditory of music, mandala, mantra, and the auditory of scenic nature. Results of the study revealed that mindfulness training by visualization or auditory helped increase the score from the measurement of attention and working memory (Campillo et al., 2018). In addition, Beattie et al., (2018) studied mindfulness practice to enhance the potential of working memory unit in children. Brain function in managing the work of the memory unit is very important for success in education, social relationship and attention.

From the systematic review of documents and researches, one can see that mindfulness practice gives positive influences on the development of attention, working memory, concentration practice and emotion control, all of which are useful for learning and everyday life living of teenagers. It is therefore considered important to study mindfulness practice for enhancing attention and working memory by using the methods of Campillo et al., (2018); Wannapoklang et al. (2019) which use audiovisual mindfulness program to enhance attention and working memory of elementary students.

Research objectives

1. To compare attention in elementary students before and after the mindfulness training program.
2. To compare working memory in elementary students before and after the mindfulness training program.
3. To compare attention and working memory in the students of the experimental group with mindfulness training and the control group.

Conceptual Framework

A mindfulness training program is the training program with the objective of enhancing attention and working memory of the trainees. The training program may employ different techniques to help achieve its objective. For the audiovisual mindfulness training program adopted in this study, functional activation is by the visual system with the sensory receptor being the retina, and by the auditory system with the sensory receptor being the cochlea. These systems send out neural signals to different areas of the brain. Hossain et al., (2018) discussed the function of the brain in relation to mindfulness training. It was discovered that mindfulness training in the form of repeated practice was related to the attention network. As the retina and the cochlea are stimulated by the image and sound signals, the signals will be sent to the visual cortex and the temporal cortex of the brain which will translate the stimulus signals to the prefrontal cortex and the parietal cortex.

The brain system of the attention network including the visual cortex, the temporal cortex, the prefrontal cortex, and the parietal cortex influences the cognitive processes such as attention and working memory. Attention can be measured by the Continuous Performance Test (CPT) in Psychology Experiment Building Language (PEBL) program (Mueller & Piper, 2014) via the computer screen. Attention test results include correct trials with the unit in points, and reaction time (RT) in milliseconds (ms) whereas the working memory is measured by the test called Dual N-back Task in PEBL program (Mueller & Piper, 2014) as well. Working memory test results are given as correct trials and reaction time as in the case of attention.

The author envisions the advantage of using the mindfulness training program in enhancing attention and working memory and is interested in conducting research to determine the effectiveness of the program with the conceptual framework as illustrated in Figure 1.

Figure 1
Conceptual framework
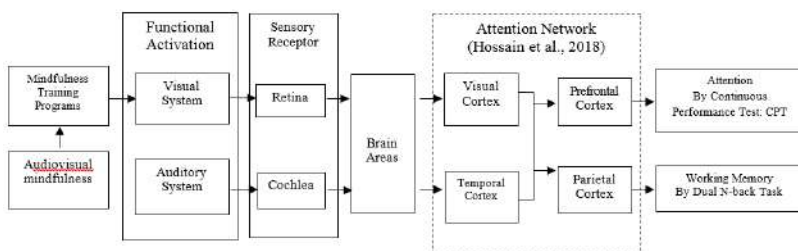
Method

Research Design
This research was a pretest and posttest control group design (Edmonds & Kennedy, 2017) with the experimental scheme as shown in Figure 2. Based on the study of Au et al., (2020), who examined meta-analytical techniques comparing the two control groups and discovered no appreciable performance difference between passive and active controls, this study used a passive control group rather than an active control group.

Figure 2

Pretest and posttest control group design

Group	Pretest	Treatment	Posttest
1	O_1	X_A	O_2
2	O_1	-	O_2

$\longrightarrow$ Time

Sample and Data Collection
The population of this research was elementary students in six classes (Grade one - six) of Wonnapasub School in Chonburi, Thailand, in Semester 1 of Academic Year 2021 with the total number of 112 students.

The sample group comprised the students of the population who volunteered to participate in the project. By examining personal data in the questionnaires, all members of the group had the qualifications as specified.

Determination of the sample size was based on the influence of the variables consistent with the population distribution. The computer program, G*power, was used to determine the sample size to be 45 students. In order that greater reliability and accuracy might be obtained, the sample size was chosen to be 30 students in a study group (Mcmillan & Schumacher, 2014). Being consistent with the experimental design, it was found that the sample size consisted of 60 students divided into two groups. The first experimental group consisting of 30 students practiced audiovisual mindfulness training, and the second control group of 30 students without mindfulness training. Simple random sampling was used in dividing the sample size into two groups using the criteria that follow.

Rights Protection of the Research Subjects
The researcher explained the objective, procedure, and method of this research to the participants in the sample groups before asking for their agreement to participate in the research. The participants were also informed that they could withdraw from participating at any stage of the research, and that all the information and data of the participants would be confidential, and only the summary and overall results might be disclosed for academic purpose. This research was conducted in accordance with the ethics of research in humans, and it was approved by the research ethics committee of Burapha University and given the research project code HU033/2564.

Research instruments
The instruments used in this research could be divided into four types including sample screening instrument, experimental instrument and data collection instruments as explained below.

Sample screening instruments
1. A questionnaire for personal information such as gender, health conditions, prevailing illness, normal hearing and normal vision.
2. A hearing test employed the method of finger rubbing one inch away from an ear on both ears. If the finger rubbing sound was heard, the hearing was normal. This research selected only those with good hearing in both ears to participate in the experiment.
3. Evaluation form for near vision using Jaeger Chart
4. Ishihara Color blindness screening form

Experimental instrument
The experimental instrument based on the mindfulness training program of Campillo et al., (2018) was developed for use in this study. The program design followed the principle of Kramer (2012) and Wannapoklang et al., (2019) which passed quality examination and approved by experts. The program which employed audiovisual techniques for mindfulness training took four weeks, three days per week, Monday, Wednesday and Friday, and 30 minutes per day. The mindfulness training group was instructed to focus their attention on specific images and sounds that corresponded to those images, including: 1) color images and sounds; 2) mandala images and mantras sounds; and 3) landscape images and sounds.

Data collection instruments
1 Continuous performance test (CPT) which was employed to measure attention via a computer screen (Mueller & Piper, 2014). Results of the test included correct trials with the unit in points and the reaction time (RT) in milliseconds (ms).
2 Dual N-back Task test on a computer screen, a instrument for measuring working memory developed by PEBL. Test results consisted of correct trials in points and reaction time in milliseconds.

Data Collection
Before the commencement of the experiment, the researcher sent out a letter to the principal of Wonnapasub School in Chonburi, Thailand to seek participation from the students in elementary classes of the school. The objective, procedure, method, and the potential impact of the research were explained to the principal. The students were asked to participate on a voluntary basis, and those who agreed to participate were required to sign consent forms before data collection. During the recruitment, there were 60 students completed the screening process to determine their eligibility for inclusion in the current study. Figure 3 depicts the entire recruitment process as well as the intervention phase. The students were divided into two groups, one was for audiovisual mindfulness training and the other without the training. Both groups were tested for attention by the Continuous Performance Test (CPT) and working memory by the Dual N-back Task Test in the PEBL Test (Mueller & Piper, 2014). After the tests, the data were collected and examined to check validity for further analysis.

Figure 3

Flow chart of participants throughout the study
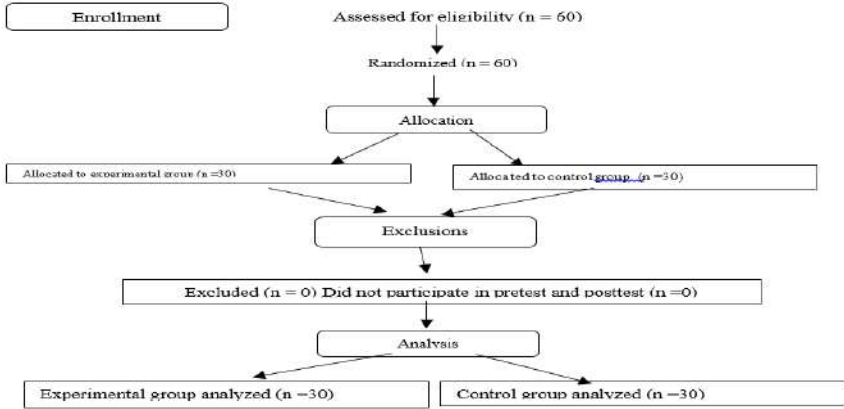
The experimental group intended for mindfulness training were trained by the audiovisual mindfulness training. The training program was delivered via Zoom.us, web-based software, which enables participants to see and communicate with the teacher and other group members via webcam. Classes were recorded so that individuals who missed a class could view it later. Participants in the program which lasted four weeks were instructed to practice on their own for 30 min three times a week via a secure online web-portal which provided either guided meditation recordings or writing prompts depending on group assignment. The portal recorded the amount of time students spent practicing. The practice frequency and duration were designed to meet requirements for a future workplace implementation of the program.

Before and after the experiment, the experimental group with the training and the control group were tested online for attention by CPT and for working memory by the Dual N-back Task Test. Data were collected and examined for validity for further analysis.

Analysis of Data

1. An analysis of general data by basic statistics in terms of frequency and percentage was made.

2. Comparison of attention and working memory scores of the group with mindfulness training before and after the mindfulness training was carried out by using dependent *t-test*.

3. Comparison of attention and working memory scores after the experimental period of the sample groups with and without mindfulness training was made by one-way ANOVA, in an effort to reduce risk of error during hypothesis testing (Gravetter et al, 2020).

Results

The results of mindfulness training to enhance elementary students' attention and working memory while studying are outlined below.

The elementary students' attention response accuracy of the experimental group after the training was significantly higher than before, but the average of pre-post reaction times was not different as shown in Table 1.

Table 1

Results for comparing students' accuracy scores, and reaction times of attention for elementary students before and after audiovisual mindfulness training

Attention	n	M	SD	df	t	p	Cohen's d
Accuracy score							
Before audiovisual mindfulness	30	320.82	27.72	29	-2.49*	.02	.40
After audiovisual mindfulness	30	331.00	22.14				
Reaction time							
Before audiovisual mindfulness	30	350.27	34.93	29	1.27	.22	.14
After audiovisual mindfulness	30	345.70	29.80				

      The elementary students after audiovisual mindfulness training were found to have higher accuracy scores of working memory with the statistical significance level of .01. It was also found that after audiovisual mindfulness training, the response time of working memory was less than before the training with the statistical significance level of .05 as shown in Table 2.

Table 2

Results for comparing students' accuracy scores, and reaction time of working memory of elementary students before and after audiovisual mindfulness training

Working memory	n	M	SD	df	t	p	Cohen's d
Accuracy score							
Before audiovisual mindfulness	30	2185.75	93.48	29	-13.73**	<.01	1.75
After audiovisual mindfulness	30						
Reaction time							
Before audiovisual mindfulness	30	2311.31	245.17	29	2.08*	< .05	.45
After audiovisual mindfulness	30	2223.19	127.14				

      The test of variance of attention and working memory between the experimented group and the control group by Levine's Test revealed that the variance of correct scores and the variance of attention response time yielded p > .01 which was statistically insignificant. Therefore, it could be concluded that attention and working memory of the two groups were not different and that the finding was consistent with assumption used in the analysis of variances. The result of ANOVA analysis of attention and working memory response accuracy revealed that scores of attentions and working memory of the groups were significantly different. However, the response time for attention and working memory of the groups was not different as illustrated in Table 3.

Table 3

Comparison of attention and working memory of elementary students after mindfulness training

		SS	df	MS	F	p
Attention	Accuracy score					
	Between	5134.31	1	5134.31	7.49*	< .05
	within	39754.86	58	685.43		
	total	44889.17	59			
	Reaction time					
	Between	1290.48	1	1290.48	0.72	.40
	within	103705.60	58	1788.03		
	total	104996.07	59			
Working memory	Accuracy score					
	Between	94571.75	1	94571.75	10.90*	< .05
	within	503385.31	58	8679.06		

total	597957.06	59			
Reaction time					
Between	9450.77	1	9450.77	0.24	.62
within	2244628.04	58	38700.48		
total	2254078.81	59			

Discussion

Comparison of the students' attention before and after audiovisual mindfulness training revealed a higher average score after the training than that before the training with the statistical significance level of .05, but the response time of the attention test before and after the training was not different. The finding is in agreement with the work of Morrison et al. (2014) who studied to reduce distraction among 58 university students. The students were divided into two groups, one with mindfulness training and the control. The experiment lasted seven hours over the period of seven weeks. Results of the experiment revealed that the group with mindfulness training scored better in the attention test than the control group, but the response time was not different. Furthermore, the correctness of the answers and the calculational accuracy of working memory were not different. It can therefore be concluded that mindfulness training enhanced attention.

Furthermore, it is congruent with Hossain et al., (2018), who demonstrate how trained visual and auditory mindfulness practices are related with the attention network. Sensory receptors, such as the retina in the visual system and the sensory receptor Cochlea in the hearing system, send nerve impulses to various brain locations during training. Furthermore, the findings of this study are compatible with those of Wannapoklang (2019), who found that, following mindfulness practice, 5th grade students' score of attention response accuracy increased significantly compared to prior training, but there was no difference in reaction time.

The brain function and well-being of students will be affected by their increased attention. Self-control has been demonstrated to promote school preparedness (Willis & Dinehart, 2014) and to aid in the development of concentration and self-awareness (Weare, 2013) and self-regulation (Khan et al., 2020), which leads to improved academic competence Duncan et al. (2007) discovered a link between self-control and academic achievement, and mindfulness activities were found to increase academic performance (Byrne, Bond, & London, 2013; Prasertcharoensuk et al., 2020; Makmee, 2021).

Comparison of working memory of the students before and after the audiovisual mindfulness training revealed that the average score of working memory was significantly higher than before the training and the average response time of working memory after the training was less than before the training which was in agreement with the theory of learning by multimedia of Mayer (2009) who stated that audiovisual multimedia resulted in more effective learning than a single medium, and enhanced working memory. The finding of our study was also consistent with the work of Mrazek et al., (2013) who studied mindfulness training for enhancing memory and efficiency in intelligence test by reducing inattention in a group of 48 undergraduate students. The results of their study discovered that mindfulness training, on the average, improved test score and accuracy in the intelligence test by 16%, indicating that mindfulness training for two weeks could increase the efficiency of working memory as well as the increase in reading efficiency while doing the intelligence test (GRE). This is in line with Wannapoklang (2019) findings, which showed that, after training, accuracy of working memory was substantially higher than before. However, the response time was the same. It also aligns with the findings of Greenberg et al., (2019), who investigated mindfulness training as a way to prevent

proactive disruptions in thinking memory. When compared to the control group, the mindfulness group had a considerably higher rate of disturbance errors.

Comparison of attention and working memory in the two groups, one with audiovisual mindfulness training, and without training, indicated that the accuracy scores of attention and working memory of the groups were significantly different. This is in agreement with the work of Campillo et al., (2018), who studied audiovisual mindfulness training for mood adjustment and improving attention and working memory. The results of this study revealed enhanced memory and attention after mindfulness training. This finding is in agreement with the work of Quach et al., (2016), who studied the influence of mindfulness training on working memory in teenagers. It was discovered that there was a significant difference of working memory scores before and after training in the group with mindfulness training while there was not a significant difference in the other groups. In the other tests of the study, none of the groups displayed significant difference.

The finding also agrees with the work of Levy et al., (2011), who conducted a preliminary study on the influence of mindfulness training on multitasking capacity as well as relaxation technique for stress and bodily fatigue. The sample groups were the company's employees and the training spanned over a period of eight weeks. The test involved an assignment of a range of tasks for the volunteers to perform before and after the training. The employees with mindfulness training were found to have less stress, improved memory, better attention to the task at hand, and less employment change. This finding is also in agreement with the work of Chambers et al., (2008), who investigated the capacity of intensive mindfulness on understanding and feeling of mentally retarded persons. There were 20 volunteers who received tests before and after the intensive mindfulness training for a period of 10 days. From the continuous evaluation of working memory and attention, it was found that the trainees had improved mindfulness, recovered from depression, had improved efficiency of the working memory unit, and improved attention continuously and significantly. This study indicated the future trend for the explanation of important processes useful for treatment by mindfulness training.

Based on a review of research on the use of mindfulness training and its effects by Jha et al., (2019), mindfulness meditation was proven to have a positive influence on working memory. Due to the memory system used while thinking, it is necessary to pay attention to details in order to properly insert information. It necessitates considerable attention in order to have a solid and accurate encryption of the data (Lewis-Peacock et al., 2018; Shipstead et al., 2016). The effect of strict mindfulness meditation on working memory was investigated by Baranski and Was (2018). Mindfulness training was proven to be ineffective at improving working memory after two weeks of practice. However, if the training is lengthy, it is likely to have an impact on working memory. This could explain why, after four weeks of training, this study found gains in working memory.

The result of this study is also consistent with research by Jha et al., (2017), who studied short-term mindfulness training using the training course called Mindfulness-based Mind Fitness Training (MMFT) with a total duration of 8 weeks. The subjects were divided into 3 groups: two experimental groups, namely M8T group and M8D group, and the control group. They found that mindfulness training prevented deterioration of cognitive memory. The results showed that the mindfulness groups had higher scores on the accuracy of working memory, but the reaction time was not different.

Conclusion
Although this research study showed that mindfulness training might enhance the research participants' attention and working memory, there are still some unanswered questions

regarding how the training actually improved their abilities. The meta-analysis study by Gobet and Sala (2022) discussed the unrealistic optimism of cognitive training and other artifacts that might have an impact on the study's findings, such as sample errors, use of a control group, or other artifacts. To ensure that sampling error was minimized, the sample in this study was split into two groups using a randomization procedure. Additionally, the subjects took a pre-test before training to ensure there were no individual differences. This research found that elementary students with audiovisual mindfulness training performed, in terms of attention and working memory, better than those without the training, with the accuracy scores of attentions and working memory of the groups being statistically significantly different.

The findings of this study are in line with the field of educational research which can be used to promote academic achievement. Students who regularly participate in mindfulness training programs will have greater attention and working memory. This is another option for improving attention and working memory to boost students' focus and effort, while school administrators use it as a guideline for formulating policy. In addition, to improve students' attention and working memory, teachers can blend mindfulness training programs with other subjects or instructional strategies.

Recommendations

Audiovisual mindfulness training enhances attention and working memory of the elementary students participating in the project. Based on the findings of the present study and those in the literature review, recommendations for improving attention and working memory are made as follows: 1) Students who continuously practice mindfulness can improve their attention and working memory. Mindfulness training is therefore an alternative technique for enhancing attention and working memory. 2) Schools can adopt the audiovisual mindfulness training program of this research to enhance attention and working memory of students. The training program can be integrated in various subjects or can be integrated with other teaching techniques to increase teaching and learning efficiency. 3) Administrators of educational institutions at various levels can use the results of this study in the formation of policy to enhance attention and working memory of students. 4) Various government and private agencies responsible for education and social affairs can use mindfulness training to enhance potential of teenagers.

Acknowledgments

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Internet Usage by Young Kids in India

Harikishni Nain
Bharati College, Delhi University, Delhi, India

Monica Chaudhary
S P Jain School of Global Management, Sydney, Australia

India is one of the countries with the highest number of kids under the age of 18 years. This paper adds value in understanding the usage in the current covid scenario. The research objectives for the current study are to examine how young kids in India use their time on internet for varied purposes, to study how young kids find the websites that are of interest to them and to examine how young kids obtain information about sensitive issues. A cross-sectional web survey was conducted to examine the various aspects of the use of the Internet and traditional media (television/radio/magazines/newspapers/billboards) among kids in India. Data was collected through a structured questionnaire. The sampling method used in the study was purposive sample (522 kids). Internet emerged as the first choice of media for kids for all the nine selected activities that include homework, shopping, restaurant/food-ordering, travel and tour, information search, health related information, weather forecast, entertainment, and news/current events. Girl respondents as compared to boys have consumed Internet at a higher rate for learning about the fashion (trends) and health related issues such as seeking preventative health care and specific information about medical issues .

Keywords: kids, communication, India, Internet, Media, Radio, TV

As of January 2021, there were 59.5 percent of the global population is active internet users. This also means that more than half of the global population is connected to the internet at any given point of time. Of this total, 92.6 percent (4.32 billion) accessed the internet via mobile devices (Statistica, 2021). There are studies that found that the use of internet globally would be fuelled by new updated information technologies trends like, blog writing, audio/video podcasts, Wi Fi connectivity and RSS feeds (Burns& Polman, 2006). It is a known fact now that communication technologies including the Internet have substantial impact on young children than all other technological innovations (Roberts & Foehr, 2004). A study of how the young kids use traditional and internet is important to understand and analyse as it enables advertisers and social marketers to develop effective and responsible marketing messages to these future consumers.

India is poised to be the youngest country in the world by 2022. As per the recent data, India in 2020 have over 560 million internet users. By 2023, there would be over 650 million internet users the country (Statista, 2020). There has been a consistent increase in internet

accessibility compared to 2015; the internet penetration rate was around 27 percent in 2015 and 50% in 2020. The introduction of the Indian government's Digital India initiative along with the increasing internet penetration resulted in the country's digital population amounting to approximately 688 million active users as of January 2020.

Kids' socialization agents are parent, friends, television, and internet (Chaudhary & Gupta, 2014; Ghouse et al., 2019). Mass media messages are considered as equally important socializing agents as parents and schools for young kids (Strasburger & Wilson, 2002; Chaudhary & Gupta, 2012). Media contents and media usage make strong influences on young kids' belief, attitudes, and behaviours (Roberts & Foehr, 2004). The amount of time spent by kids and teenagers on various media is correlated to the social and demographic variables (Roberts et al., 2003; Comstock & Scharrer, 1999). For example, young distribute spend more time on computers and video games (Gómez-Gonzalvo et al., 2020). Studies show that young kids increasingly watch television till they are 12 years of age, while they start listening to music at approximately 9 years of age and increased throughout adolescence (Psychosocial Paediatrics Committee, 2003). Mass media such as newspapers, radio, and television are deployed for the purpose of creating a more favourable climate for modern communication (Riaz & Pasha, 2012).

Studies found that young kids make active choices for the type and usage of media according to their personalities, socialization needs, and personal identification needs (Arnett, 1995). Katz and Blumler (1974) explains the same by their gratification theory. According to this theory, young kids will select and use the media to best fulfil their individual needs. With more internet availability and access in India, there is a need to update and validate the knowledge about internet usage on various media; and, how the Internet can be used to fulfil their varied communication needs. The current study is attempting to not just replicate the study by Chan and Fang (2007) but also extending this to present time of more internet access and Covid-19 environment in a developing country like India. The impact of the Covid-19 pandemic felt by the community is the inner turmoil of parents who initially chose to entrust their children's education to schools (Mahmudah et al., 2021).

The research objectives for the current study are the following:
1. To examine how young kids in India use traditional media and Internet.
2. To examine how kid's choice of the media choices varies by different activities.
3. To study how young kids search for online sites that interests them.
4. To examine how young kids acquire valuable information about health-related issues such as seeking preventative health care and specific information about medical issues.

Literature Review
Communication is elementary for any society. Communication tasks in a society is about knowledge sharing, socialization, entertainment and about gaining consensus through persuasion or control (Schramm, 1977). All communication needs a medium to connect. Mass media has been an active agent for socialization at all levels. Adults get information about society from mass media channels. Kids also get influenced by mass media and their consumer socialization.

As new forms of media emerge and the convergence of media technology, the pattern s of media usage is undergoing rapid changes. Substantial attention and apprehensions related to internet are lately focused on how the young consumers make use of the Internet as these young people are the 'digital generation,' at the vanguard of new skills and technologies, yet also vulnerable and at risk (Livingstone 2003). In a study of 12 European countries and Israel

involving survey of 11,368 young people in the age group of 6 to 16 years, it was found that there are four major media user styles that are labelled as low media users, traditional media user, specialists, and screen entertainment fans (Bovill & Livingstone, 2001).

Studies on internet are still less as compared to its wider reach and exponential growth (Kim & Weaver, 2002). The study of young people's Internet use is undeveloped, although key questions of academic and policy significance have focused on the dangers of such use (Livingstone, 2003). Technologically mediated communication is being incorporated into various aspects of our daily lives (Mann & Stewart, 2000; Whitty, 2004). The distinction between online and offline worlds is therefore becoming less relevant. While there exists a huge body of research on the Internet and computer-mediated communication, hardly there are any focussing on young kids.

The digital divide
Digital divide is casually defined as the gap between people who do and do not have access to forms of information and communication technology (Van Dijk, 2017). In a plainer language, digital divide is defined as the gap between people who have and do not have access to computers and the Internet. As accessibility to internet is growing at a faster rate, both parents and kids are spending more time on internet. Parents found it difficult to mediate the use of Internet. Parents can execute mediation and control confidently and smoothly on kids while they watch television; but quite challenging to supervise the Internet usage (Chan & Fang, 2007). Low income and no internet in the homes have led children towards significantly lower scores on all dimensions of digital literacy, academic performance, aspirations, perceived efficacy, self-esteem, family, and peer relationships (Wong et al., 2015).

Uses and gratifications theory (UAGT)
According to the UAGT proposed by Katz and Blumler (1974), the media users are goal oriented. These users play an active role in selecting and using the media that best fulfils their individual needs. This way, this theory shifts the focus of media communication from an effect viewpoint to an audience viewpoint. As per this theory, users select media to fulfil their specific needs which leads to ultimate gratification (Lin, 1999). UAGT has provided valuable insight for varied media including newspaper daily, radio (Albarran et al., 2007), television (Ruggiero, 2000), cable TV (Perse & Courtright, 1993), VCRs (Lin, 1993), MP3 players (Ferguson et al., 2007), internet (Ko et al., 2005), mobile phones (Mittal et al., 2017) and also social media (Whiting & Williams, 2013). Children select electronic games and other media contents in accord with the uses and gratifications they expect; this helps in their developmental tasks (Salisch, 2006)

Despite being popular, there is some criticism for UAGT; it is being said that it relies too heavily on self-declared reports (Katz, 1987). As a fallout, this theory is unsophisticated related to the social origin of individuals meet related to media. This theory was also criticised for the possible dysfunction of self and society. Despite these limitations majority of the scholars still believe that this theory provides considerable beast to understand the media choices and the purpose is behind it. UAGT deemed appropriate for the current study as well as the study is about the use of various media by kids.

Internet Usage
The Internet is a legitimate subject of mass communication and social science research. Newhagen and Rafaeli (1996) also attempted to theoretically position the same. Contemporary

researchers also trust upon considering Internet as a subject of research based on treating Internet as a bridge between mass communication and interpersonal communication (Ruggiero, 2000).

Researchers also show the kids use Internet for variety of off objectives; for example, watching videos, playing online games, searching for some information, socialising with friends and family and doing their homework (Holloway et al., 2013). There is another research that examines the relationship between Childs media usage and motivations; kids engage with media for six different motivations, for their learning, for passing time slash habit, companionship, to escape or to forget something, for arousal and for relaxation (Hargittai & Kim, 2010).

Male respondents used the Internet more frequently for games, music, shopping while girl respondents used the Internet more frequently for fashion and information about colleges/universities. Respondents found out websites by using search engines and asking friends. Respondents considered the Internet the most preferred sources of communication about sensitive issues when they need information fast (La Ferle et al., 2000).

The youth market
The global youth market is vital to international marketers and advertisers because of its size and its homogeneity (Chan & Fang, 2007). As of 2019, More than 25% of the world population is of kids that is under the age of 18 years (World bank, 2019), The global population aged 65+ surpassed the number of kids aged 0-4 in 2019, as birth rates declined, and lifespans rise (Euromonitor-International, 2020).

India is the country with the highest number of kids under the age of 18 years. Twenty-six percent of the India's population is of kids, so this study becomes pedal vital to understand how kids use traditional media and the internet. This will help the marketers and advertisers to make effective marketing strategies to cater to these kids responsibly (Chaudhary, 2018). India as a country it is transforming from a mere third world country do a remarkably high growth developing country. The continuous increase in the GDP and the per capita income has led to improvement in the education level. In this way India along with other Asian market is becoming like western countries in terms of personal inspirations and consumption patterns (Chan & Fang, 2007). As Indian market grew, multinationals need to gain a better understanding of this market before making any advertising strategy. Also, with the changing dynamics, kids have more and better access to Internet add mobile phones. Such a scenario will make targeting kids quite challenging by using only television as the major marketing medium. Therefore, there is a need for more research to better understand the media usage behaviour of young kids to establish a connexion with them. Information about how they get information about websites and sensitive issues is also needed for commercial and non-profit marketers to reach them in a cost-effective manner.

Method
Procedure
A cross-sectional web survey was executed to examine the media usage habits of kids in India across the Internet and traditional media (television/radio/magazines/newspapers/billboards). The sampling population was kids aged 13 to 20 years. Kids of this age group were selected for the study for four reasons: (i) during Covid-19, the online classes were made compulsory in India for kids of class VII (13 years and above) onwards; (ii) kids begin to imitate and project behaviour much similar to an adult (Piaget, 1970); (iii) can contingently make use of different media options as per the requirements (Roeddar-John, 1999); (iv) most active Internet users amongst kids belong

to this age group, e.g., as per an IAMAI (2019) report, of the 451 million monthly active Internet users, 385 million were over 12 years of age.

A structured questionnaire consisted of close-ended questions was administered on a purposive sample of 522 kids from different areas of Delhi (India). Delhi being an epicentre of political activities and prime decisions, hub of business activities, adorned with historical monuments, habituated by people from every part of the country belonging to varied cultures, ethnicity, and economic background, is truly a specimen of India.

For sample selection, initially fifteen schools and five colleges were approached with the detailed survey plan via e-mail, out of which concerned authority of nine schools and three colleges sought further discussion in this regard, and finally five schools and two colleges agreed to participate in this study. Quotas were established for different age group students (class VII to undergraduates) and the questionnaire with a small introductory note was shared with the relevant students through e-mail. Response frequency was restricted to one-child-one-response, and the response gathering window was opened for one month, i.e., February 2021. Responses were received from 711 kids out of which 189 were rejected (incomplete), leading to the final sample size of 522 (response rate 73.4 percent).

Measurement
The questionnaire was inspired by Chan and Fang (2007). Questionnaire and was generated on Google Forms. A pilot study of forty respondents aged 15-18 was conducted to check the flow, language used, and continuity of the questions. The internal consistency of the four scales included in the pilot questionnaire was assured through Cronbach alpha coefficients ($\alpha_1 = .61$; $\alpha_2 = .64$; $\alpha_3 = .79$; $\alpha_4 = .84$). Pilot study results led to the incorporation of few modifications in the questionnaire.

The questionnaire comprised of three parts wherein Part 1 focused on the time distributed by the kids, in general, across various activities such as watching television, reading, studying (online/offline), and surfing internet. Kids were asked to identify their most preferred media choices for nine activities such as information search, homework, weather forecast, entertainment, and shopping. Questions related to the activities for which the internet can be used (twelve in total) were enlisted in part II of the questionnaire. Kids were asked to report the frequency with which they use the Internet for these purposes on a five-point scale ranging from always (5) to never (1). Further the respondents were asked to specify the ways (seven in total) they locate the useful and relevant web sites on a five-point scale (5 = always; 1 = never). The last question of this part inquired the kids about the listed sources which they may prefer the most to gather information about the sensitive issues under the conditions of confidentiality, speed, privacy, comfort, and ease. Demographic related questions were covered in Part III. The response rate was restricted to one child-one response.

Sample profile
The surveyed sample consisted of 522 kids, out of which, 234 were males and 288 were girls spread across two age groups, i.e., from 13 to 16 years (N = 289), and 17 to 20 years (N = 233). Majority of the kids (59 percent) were from nuclear families and the rest of them (41 percent) were from joint families. Sixty-three percent of the respondents had their own mobile phones.

Results

Usage of type of media

The first research objective of this study attempts to examine quantum of time allocation by Indian kids across traditional (television, books, radio, study, and mobile) and Internet. Seven such activities were identified where the kids can possibly spend their time on daily basis (Table 1). The results reveal that more than 60 per cent of the kids spend more than three hours on studies both offline (36 per cent) as well as online (32.3 per cent).

Table 1
Time spent across activities

Activity	0 to 1 hour %	1 to 2 hours %	2 to 3 hours %	More than 3 hours %	Mean hours
Studying (offline)	11.9	26.6	25.5	36.0	2.36
Studying (online)	15.7	23.6	28.4	32.3	2.27
Surfing Internet	39.1	30.7	14.9	15.3	1.57
Reading books etc.	44.8	33.5	13.8	7.8	1.35
Chatting/messaging on phone	59.4	23.9	9.8	6.8	1.14
Watching television	65.3	24.7	6.7	3.3	0.98
Listening to radio	76.4	17.4	4.6	1.6	0.81

The second research objective of this study aimed to find out the possible variations in kids' media choices across selected activities. In this regard, data pertaining to kids' most preferred choice of media across nine activities were obtained and summarized in Table 2. Out of the five selected media choices, Internet is the most preferred media option by majority of the respondents for most of the activities, e.g., homework (94.6 per cent), shopping (93.5 per cent), and search for restaurant/eating joints (87.5 per cent). The usage of radio for all the listed activities is the least preferred media by the surveyed sample.

Table 2
Media choice for varied activities

Activity	Internet %	Magazine %	Newspapers %	Radio %	Television %
Information Search	84.3	1.5	7.9	0.6	5.7
Homework	94.6	3.3	1.7	0.0	0.4
Weather forecast	61.9	1.3	7.3	1.5	28.0
Health related information	84.1	3.3	6.3	0.8	5.6
Entertainment	51.5	1.3	0.6	1.0	45.6
Shopping	93.5	4.0	0.8	0.0	1.7
News/current events	43.3	3.4	19.2	0.6	33.5
Restaurant/eating joints	87.5	6.9	2.7	0.6	2.3
Travel and tour	84.7	7.9	4.6	0.4	2.5

Internet usage

The third research objective examines the purposes for which the kids in India can most frequently use the Internet. Kids' responses were contained for twelve such purposes and summarised in Table 3. The frequency of Internet usage, as reported by kids, is found to be

highest for gathering information for further education (M = 3.92), weather (M = 3.54), health (M = 3.51), homework (M = 3.47), address of a place (M = 3.27), listening music (M = 3.24), watching movies or shows (M = 3.00), and least for making friends (M = 2.09).

Male and female children were found to be significantly different only in five out of the twelve proposes for which they use the Internet. As compared to girls, higher Internet usage was reported by distributes for homework, games, and making friends. However, the Internet usage was comparatively higher for obtaining health related information, listening to music, and fashion in case of girls.

Significant age-wise differences were observed across majority (9 out of 12) of the twelve selected purposes. Younger kids (13-16 years) used the Internet comparatively less for all the activities except for playing games and making friends. Older kids (17-20 years) used the Internet for gathering information for various listed purposes.

Table 3
Internet usage by gender and age

Usage	Mean[a]	Male	Girl	t-value	13-16	17-20	t-value
Further education information	3.92	3.83	3.99	-1.477	3.70	4.19	-4.828*
Weather information	3.54	3.44	3.61	-1.536	3.33	3.79	-4.153*
Health information	3.51	3.38	3.61	-1.968*	3.23	3.85	-5.592*
Help for homework	3.47	3.50	3.45	0.491	3.39	3.56	-1.728
Search of address/place	3.27	3.20	3.32	-0.997	3.08	3.51	-3.552*
Listening to music	3.24	3.07	3.37	-2.440*	2.90	3.55	-4.665*
Watching movies/shows	3.00	2.88	3.08	-1.779	2.79	3.24	-3.918*
Travel and tour information	2.86	2.74	2.96	-1.768	2.67	3.10	-3.507*
Shopping	2.51	2.54	2.48	0.641	2.42	2.61	-1.870
Games	2.50	2.90	2.18	5.793*	2.65	2.32	2.562*
Fashion	2.35	2.09	2.56	-4.090*	2.12	2.63	-4.379*
Making friends	2.09	2.24	1.96	2.411*	2.11	2.06	0.408

Note: [a] 5-point scale (1 = never to 5 = almost every time); * $p < .05$

The fourth research objective focuses on the ways with which the kids locate the relevant web sites. Kids' responses were obtained for seven possible options to locate the required web sites (Table 4). Analysis result indicate that majority of the kids find out about the relevant web sites through browsing the search engines (M = 3.88) followed by next most used option of asking friends (M = 2.82). Advertisements of all mediums are not an extremely popular way used by kids to know about the useful web sites. Sex-wise, no significant difference was observed in the ways kids locate the useful web sites. However, age-wise significant differences were observed across majority (4 out of seven ways) of the ways kids locate the relevant websites.

Table 4
Age-wise and sex-wise ways to locate web sites

Way	Mean[a]	Male	Girl	t-value	13-16	17-20	t-value
Browsing search engines	3.88	3.94	3.83	1.022	3.74	4.05	-2.913*
Ask friends	2.82	2.82	2.81	0.010	2.78	2.88	-0.957
Newspapers advertising	2.23	2.24	2.23	0.052	2.06	2.45	-3.510*

Television advertising	2.21	2.26	2.20	0.552	2.17	2.30	-1.115
Billboards/posters	2.08	2.04	2.11	-0.638	1.96	2.23	-2.524*
Magazines advertising	1.97	2.03	1.92	1.025	1.88	2.08	-1.896
Radio advertising	1.73	1.76	1.70	0.528	1.61	1.88	-2.827*

Note: ª 5-point scale (1 = never to 5 = always); * $p < .05$

Communication sources for sensitive personal issues

The last objective of this study seeks to explore the sources from which the kids obtain the information under five conditions such as when the information is needed fast, or when the privacy is important. The respective results are summarized in Table 5. To make the results more readable, mean percentage was calculated for each source for the selected five conditions, and thereafter ranks were assigned to each source based on calculated mean scores. Results show that most of the surveyed kids relied on the Internet (M = 42.0), followed by parents (M = 32.3), friends (M = 16.78), and teachers (M = 8.9) for gathering information about sensitive issues. Kids perceived the speed of the Internet as the most important feature to choose this medium over other sources of information to gather information about sensitive issues. After Internet, and parents, kids preferred to consult friends rather than teachers to obtain information for the sensitive issues.

Table 5
Communication sources for sensitive personal issues

Conditions	Parents	Teachers	Friends	Internet
	%	%	%	%
Speed	25.2	6.1	5.9	62.8
The easiest way	17.4	8.0	19.5	55.1
Confidentiality	37.8	17.0	18.2	27.0
Comfort	31.6	8.8	23.6	36.0
Privacy	49.6	4.6	16.7	29.1
Mean (%)	32.3	8.9	16.78	42.0
Ranking	II	IV	III	I

Discussion and Conclusion

This study aimed to examine the media usage habits of Indian kids in the age group of 13 to 20 years. The study focused on various media usage related aspects including the time spent by these kids across the traditional (television, radio, and print) and Internet, the purpose for which different media are preferred by kids, and finally the media most preferred by kids to gather information for sensitive issues. Further, the study aimed to gain deeper insight into the Internet consumption behaviour of Indian kids by examining two related dimensions, i.e., the frequency of usage of Internet for twelve listed activities (e.g., information gathering for further education, homework, shopping, watching movies), and the ways to locate the useful web sites. Aggregative results suggest that the Internet is emerging as a popular media form for the young generation in India for various activities around information gathering, studies, and entertainment.

Majority of the surveyed kids reported, in terms of an average time spent on these activities on a normal weekday, to spend their maximum time on studies (offline) followed by studies (online), surfing Internet, reading, chatting on phone, watching television, and listening

radio. The traditional media (television and radio) previously used for entertainment and information are becoming less popular amongst kids.

Internet emerged as the first choice of media for kids for all the nine selected activities that include homework, shopping, restaurant/food-ordering, travel and tour, information search (general), health related information, weather forecast, entertainment, and news/current events. Respondents reported television as the second obvious choice for entertainment, news/current events, and weather forecast. The third obvious choice of kids amongst the listed activities was newspapers for getting information for news and current events. The results suggest radio to be the least preferred media across all the activities.

The possible explanations for the phenomenal popularity of Internet amongst Indian kids could be (i) presently it is the most powerful medium of communication which connects people across different parts of the world free and fast; (ii) being a source of information, it has opened a new world for them by providing quick, inexpensive, and easy availability open access to the previously inaccessible things, facts and figures, and information worldwide; (iii) the Covid-19 induced restrictions on travelling movements outside homes, quarantines, closure of schools thereby forcing everyone including kids to work and study at home through the Internet; (iv) wide variety of study related services provided by Internet such as inter-linked hypertext documents, the World Wide Web, notifications, e-mail, e-classrooms, and file sharing networks; (v) easy access to government policies, rules, schemes through government run web sites; and (vi) source of enjoyment (online games) and entertainment (access to movies/shows/videos).

Gender-wise analysis of result indicates that as compared to girls, the usage of Internet for playing games is more prevalent amongst distributes. This finding is parallel to previous research findings (Gross, 2004). The online games, in general, are action-oriented containing too much violent and gender-role related content (Chan & Fang, 2007) that generates more rewarding feelings in men than women during video-game play, hence, male kids are two to three times more likely than girl kids to feel addicted to video games (Hoeft et al., 2008). Similarly, due to the safety concerns girls, as compared to males have used Internet less frequently to make friends online. Another probable reason for this difference may be the gender socialization of kids in a patriarchal Indian society which equates masculinity with aggression, power, authority, toughness, ambitious, and ruthless, and femininity with nurture, care, inferior and subservience, accordingly, girls are socialised as risk-averters and distributes as risk-takers.

The Internet usage as a source to learn about fashion (trends) and health related issues is used more by girls than distributes. This finding is consistent with literature (Nam et al., 2006) in which girls are found to be more fashion and physical appearance conscious than distributes. The gender induced differences also exists in the shopping behaviour of males and girls such as compared to men, women tend to shop for leisure and enjoyment, spend more time browsing, research and evaluate more about the available options, make informed decisions, and buy more clothing (Hensen & Jensen, 2009). Girl respondents also used Internet more frequently for listening to music than male respondents. These findings are important for the advertisers to select the appropriate content and mode (web sites) to promote their products.

Age-wise analysis of results indicates the existence of significant differences in the motives for which kids use Internet across age groups. For instance, all the surveyed kids used Internet for run and entertainment, younger kids (13-16 years) did this more via playing games, but older kids (17-20 years) did this more via listening to music and watching movies and shows. Compared to younger kids, older kids are found to be more interested in the informative content

available on Internet in terms of information for further education, weather, health, address, travel and tour, fashion, and homework.

Most of the kids surveyed located relevant web sites by browsing search engines followed by asking friends, advertising in newspaper, television, billboard, magazine, and radio, irrespective of their gender and age. Amongst all the available options to locate a useful web site, advertising on radio happened to be the least used way. These results indicate that in India, for advertising, both traditional media (television/radio/magazines/newspapers) and modern media (Internet) are needed to supplement each other.

Surveyed kids' most preferred option was Internet for gathering information about sensitive issues followed by parents, friends, and teachers. This information is important for policymakers and social marketers who deal with social issues: (i) which are not openly discussed in a society such as sex-education, contraceptives, AIDS; (ii) that need proper, adequate, authentic, and timely information such as ways to mitigate Covid-19, vaccination drives, availability of options for consumer grievance redressal, government schemes for social welfare; (iii) where mass awareness is needed such as risks associated with smoking and drink driving; and (iv) that pertains to the busting of prevailing myths and superstitions. Amongst all the listed options to congregate the information about sensitive personal issues, Internet stands out because of the qualities it entails as it is place where the information on almost every topic and issues is available in volumes across the globe that can quickly be searched and used without any hassle at no cost or very less cost, and that too with full confidentiality and privacy. Searching Internet for sensitive and personal issues can also save kids from troubles and embarrassments which may occur if such issues are discussed with known ones this is the reason kids preferred Internet over parents, friends, and teachers.

Government organisations can make effective use of Internet in spreading important messages to families through targeting kids by making web sites more useful, attractive, and interactive. Marketers can also tap this huge opportunity to reach out to young consumers through Internet.

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General Election in Pakistan: A critical study

Imrana Begum
NED University of Engineering & Technology, Karachi

An election is a critical component of democratic governance. In the formation of an elected government, elections play a decisive role. The Election Commission of Pakistan derives its authority from the constitution of Pakistan 1973. It deals with conducting elections in constitutional intervals. The Chief Election Commissioner of Pakistan is the head of this institution. However, the forty-eight-year electoral history of Pakistan is full of accusations, rigging, and malpractices. The defeating parties do not accept the electoral results that create uncertainty, political instability, and erode democracy. The paper examines the "Part VIII of the constitution of Pakistan." It delves into the electoral history and critically evaluates the role of subsequent elected governments in manoeuvring the disagreements over the results of the General Election. It argues with electoral reforms and analyses their applicability in the next general elections. It answers why these reforms did not resolve electoral issues. The paper contributes to clarifying ambiguities that persist with elections. It identifies issues and suggests recommendations to make the electoral process transparent. This research is conducted using various approaches, i.e., critical, analytical, deductive, and qualitative.

Keywords: constitution, democratic governance, vote, rigging, political instability

In a modern state, citizens keep themselves involved in governance through the representatives they elect through the election. The election legitimises a person's assignment to an office of authority in the state. The electoral system establishes a link among the citizens, government, and lawmakers. The Election Commission of Pakistan (ECP) is an independent institution. The Constitution of Pakistan stipulates the role and responsibilities of the election commission and specifies the electoral laws. With all constitutional directions, the election process remained controversial in Pakistan. The recurrent practices during elections are targeted killings of rival political parties, allegations of fraud, fake vote casting, attacks on polling stations, and pre-poll rigging. The elected governments have made several amendments and introduced reforms and Acts to overcome these issues to make elections transparent, but their efforts did not yield effective results. In 2017 the legislative body passed a bill regarding Electronic Voting Machines (EVMs) and the right of overseas Pakistani to cast a vote. There was a consensus among all political parties to initiate pilot projects for these two developments. The subsequent government passed the Election Second Amendment Bill 2021, approved EVMs in the 2023 election, and fulfilled an old demand of overseas Pakistanis to cast a vote. However, there was a political change in Pakistan, and the new government passed another Amendment Bill in 2022 that reversed all the progress. Neither the usage of EVMs nor overseas Pakistanis would be allowed to cast a vote in the 2023 general Elections.

Correspondence concerning this article should be addressed to Dr. Imrana Begum, Associate Professor, Humanities Department, NED University of Engineering & Technology, Karachi. Email: imrana@neduet.edu.pk

Elections: in the Constitution of Pakistan

The constitution is a supreme law of every state. It embodies fundamental principles to govern a country. In the Constitution of Pakistan 1973, Part VIII deals with Elections. It states all aspects of the election commissioner, election commission, electoral laws and conduct of elections. The Part is divided into two Chapters, the first deals with "Chief Election Commissioner and Election Commissions." It has nine Articles from 213 to 221. The second chapter deals with "Electoral laws and Conduct of Elections." It has five Articles from 222-226.

Chapter 1, Article 213 states that the President shall appoint the Chief Election Commissioner (CEC) (Rizvi, 2002). A high court or supreme court judge would be elected for this position. The Chief Election Commissioner shall serve the office for three years (p.1260). According to Article 214, the Chief Justice of Pakistan shall take the CEC oath. The CEC's term is set to be three years in the following Article. Article 216 bars the CEC from holding any other lucrative position while serving Pakistan. Then it provides that in the absence of the CEC, a Supreme Court judge appointed by Pakistan's Chief Justice shall act as Commissioner. Article 218 deals with the establishment of an election commission to conduct elections in a fair, just, and honest manner. The preparation of election rules is addressed in Article 219. Article 220 is to assist the Commissioner, and the Election Commission shall be the duty of all executive authorities. In the subsequent Article, "until (Majlis-e-Shoora) Parliament by law otherwise provides, the Commissioner may, with the President's assent, establish regulations governing the appointment of officers and employees for use in connection with the Commissioner's or an Election Commission's duties as well as the terms and conditions of their employment (p.1267)."

Chapter 2, Article 222 specifies seat distribution in the National Legislature, constituency delineation by the Election Commission, compilation of electoral rolls, election administration, and election petitions; the decision of doubts and disputes, and matters related to corrupt practices (p.1268). The next Article put a bar against double membership, i.e., both houses (p. 1271). Article 224 states that in line with election and bye-election when the National Assembly or a provincial assembly is dissolved, a bye-election shall be conducted within sixty days prior to the day on which the term of the assembly is scheduled to expire. A general election for the assembly shall be held within ninety days, and the results shall be announced no later than fourteen days after the election. 2) No sooner than thirty days prior to the expiration of the members of the Senate's terms, elections shall be held to the vacant positions in the Senate (p. 1273)." Article 225 is related to election disputes (p. 1277), and the following Article avers the mode of election to be by secret ballot (p.1283).

Election in Pakistan: through the prism of history

General elections have been held ten times in Pakistan since the adoption of the third Constitution on August 14, 1973. The first was held in 1977 under Justice Sajjad Ahmad Jan, the Election Commissioner of Pakistan. The Pakistan Peoples Party won a resounding victory, obtaining 155 out of 200 seats in the National Assembly. The opposition parties established the Pakistan National Alliance (PNA), which won only 36 seats (Volume 2 Index of Electoral Record: 1977, 2013).

The political upheaval again directed the country to third martial law, enforced on July 5, 1977. The Chief Martial Law Administrator put the constitution in abeyance. The second general election was held under Martial Law in 1985. Justice S. A. Nusrat, Judge of the Supreme Court, was the CEC (Report on the General Elections 1988, 1988). He served seven years from March 1982 to April 1989, contrary to the constitutional period of three years. He was the author

of General Zia's Provisional Constitutional Order (PCO). He supervised the presidential referendum in 1984 and the elections of 1985 and 1988. He did not earn the repute for holding local or general elections in a fair, free and transparent manner. After passing the 8th Amendment in 1985, General Zia restored the 1973 constitution. The amendment authorised him to designate the Chief Election Commissioner.

The third general election was held in 1988 and proved to be free and fair (H. Khan, 2011). There was some displeasure about the requirement of voter identification cards (CNIC) and suspicions of manipulation in some places, but these were by and large reported impartial (Zafarullah & Akhter, 2001). In 1990 the fourth general election was conducted between two alliances, the Peoples Democratic Alliance (PDA) and Islami Jamhoori Ittehad (IJI). The election was accused of widespread rigging. On October 6, 1993, the fifth general election was held, but the results dissatisfied all political leaders because of the split decision.

The PML-N won the sixth general election held on February 3, 1997, by a decisive number of two-thirds of the National Assembly members. It was the second time in the history of Pakistan that a party earned such a large majority. ("The General Election in Pakistan, February 3 1997," 1997). In this election, a new political party, the Pakistan Tehreek-i-Insaf (PTI), participated for the first time. However, out of 134 candidates for national seats, no one came in at even the runner-up position. Imran Khan was the candidate who received the most votes as he polled just over 10,000 votes in two of the nine seats that he contested. As per international observers, the elections met the minimum requirements but were not free and fair.

On October 10, 2002, a general election was held under General Pervaiz Musharraf, who lessened the voter's age from 21 to 18 years (K. A. Khan, 2011). He executed a coup d'état on October 12, 1999, and the constitution of 1973 was once again suspended. The leaders of two major political parties, the PPP and the PML-N were exiled. A new faction PML-Q, from PML-N, has arisen in the election. Musharraf endorsed support to this new faction, which won the general election in 2002.

Justice (retd) Qazi Mohammad Farooq became the CEC in 2006, committed to holding elections as per international demand (I. Khan et al., 2021). Musharraf called for the eighth general election in 2007. A settlement was reached on October 5, 2007, known as the National Reconciliation Order (NRO) (F. Khan, 2016) that provided immunity to public officials accused of corruption between 1986 and 1999 ("Shahbaz Joins Legal Battle against NRO," 2007). Following the signing of the NRO, the leadership of two major political parties returned to Pakistan. The PPP chairperson Benazir Bhutto landed on October 18, 2007, and Nawaz Sharif on November 25, 2007, to participate in the general election 2008. Unfortunately, the PPP chairperson was slain on December 27, 2007, during the election campaign. The election was postponed from January 8 to February 18, 2008. The Pakistan Peoples Party earned the most seats, but not enough to establish an independent government. It established a government coalition. President Pervez Musharraf resigned due to the threat of impeachment on August 18, 2008 (Perlez, 2008). The widower of Benazir Bhutto, Asif Ali Zardari became the President of Pakistan on September 5, 2008. He easily won a parliamentary vote (Shah & Tran, 2008).

Table 1 below presents the election year, winning party, the opposition party, voters' turnout, electoral dissentions, and dissolution of the National Assembly.

Table. 1
General Election in Pakistan under the Constitution of 1973 (1977-2008)

Election Year	Winning Party	Opposition Party	Voter turnout	Electoral dissentions	Dissolution of the National Assembly
March 7, 1977	PPP	Pakistan National Alliance (PNA), nine parties	55 %	PNA rejected the election results	The National Assembly dissolved on January 10, 1977
February 28, 1985	Election on a non-party basis	Movement for the Restoration of Democracy (MRD)	52.93%,	the main opposition alliance (MRD) boycotted the polls	premature dissolution on May 29 1988
November 16, 1988	PPP	Islamic Democratic Alliance (IJI)	43%.	Free and impartial, accepted by all political parties	premature dissolution on August 6, 1990
October 24 1990-1993	Islami Jamhoori Ittehad (IJI)	Peoples Democratic Alliance (PDA)	40%	fraudulent election to defeat PDA	premature dissolution on April 18, 1993
October 6 1993-1997	PPP (after securing support from minor parties and independents)	PML-N	40.54% (Khan 2011, p. 426)	no serious irregularities	premature dissolution on November 5, 1997
February 3, 1997-1999	PML-N	PPP	36%	Election met basic conditions	Military coup on October 12, 1999
October 10 2002	PML-Q		40.59% (The Herald Magazine, November 2002)	Seriously flawed	Constitutional tenure completed on November 15, 2007
February 18 2008	PPP	PML-N	45%	Free and fair	Completed five years on March 16, 2013

Source: The data in the table is collected from the reports on the General Elections available on the Election Commission of Pakistan website. https://www.ecp.gov.pk/frmGenericPage.aspx?PageID=3274

Electoral reforms: 2008-2013

After nine years, the civilian government took office. The Pakistan Peoples Party, that formed government in the centre, was determined to restore the original constitution and incorporate certain amendments in Part VIII to improve the integrity, impartiality, and transparency of the electoral process; it initiated working on the eighteenth amendment. Following the parliamentary procedure, it was endorsed by the President on April 19, 2010 (Shah, 2010). General Zia and Musharraf had distorted the Constitution. The 18th amendment made the CEC's appointment more transparent and subject to parliamentary oversight. In the past, the President had sole authority in appointing the CEC and the four members of the Election Commission. The Prime Minister (PM) and the opposition leader in the National Assembly shall now consult on the issue, which shall then be examined by a joint parliamentary committee formed of legislators from the ruling or coalition parties and an equal number from the opposition will make the final decision. Furthermore, the 18th Amendment set up a sufficiently self-contained ECP, and a method for holding elections under an interim setup was also devised.

The eighteenth amendment amended Article 48, falls in Part III, and deals with "The President." It is related to the appointment of a caretaker cabinet. From Part VIII, Chapter 1, amended Articles 213, 215,216,218, 219, 221, and from Chapter 2, Articles 224 and 226 were amended (The Constitution (Eighteenth Amendment) Act, 2010, 2010).

To enhance electoral integrity, the twentieth Amendment Bill was passed on February 28, 2012. It established a neutral caretaker government with an independent Election Commission to oversee polls (Adil & Afridi, 2020). A neutral caretaker setup was not a novel concept; PPP and PNA had proposed it in 1977. The amendment provided that a caretaker government would take control and convene general elections in ninety days at the end of the National Assembly's five-year constitutional term. Within three days, the caretaker PM and his cabinet will be chosen by a parliamentary committee consisting of four Treasury officials and four opposition members. The provinces would go through the same process. The Election Commission will appoint the caretaker PM if the parliamentary committee fails to elect him in three days.

The 20th amendment amended Article 214, 215, 216, 218, and 219 from chapter 1 of Part VIII, and in chapter 2, a sub-article 224A was inserted entitled "Resolution by Committee or Election Commission ("Senate Approves 20th Amendment Bill after Consensus," 2012)It ensures that if the PM and Opposition Leader do not come to a final naming decision for the caretaker prime minister, the matter shall be referred to a parliamentary committee with four members from each party to finalise the decision on the caretaker PM's appointment. The caretaker setup must be unbiased and free of any political attachments.

Another change was made to the Constitution's Second Schedule. "Election Commission of Pakistan" was substituted for "Chief Election Commissioner(The Constitution (Twentieth Amendment) Act, 2012, 2012)." The Constitution's Third Schedule was also amended. The words "or A MEMBER OF THE ELECTION COMMISSION OF PAKISTAN" put after the term "COMMISSIONER" in the title (p.97).
The government constituted after the 2008 general election was constitutionally dissolved on March 16, 2013. It was a time to evaluate the applicability of legislative revisions.

General Election 2013: applicability of electoral amendments
According to Article 52, "The National Assembly shall continue for a term of five years from the day of its first meeting, unless sooner dissolved, and shall stand dissolved at the end of its tenure." After February 2008 general election, on March 17, the first session of the National Assembly was convened. At midnight on March 16, 2013, the National Assembly was dissolved constitutionally (Gishkori, 2013). It was the first assembly that completed a constitutional term. Article 224(Clause:1) required general elections to be held within 60 days to carry on the democratic process.

The 18th Amendment mandated collective decision-making in the appointment of the CEC, a parliamentary process that involved the opposition instead of only presidential discretion. According to the 20th amendment, Prime Minister and the opposition leader had to agree upon a caretaker PM within three days. Both tabled three names ("Parliamentary Committee Constituted to Select Caretaker PM," 2013), and the PM remained in his seat without cabinet members until a caretaker PM was selected. However, the PM and the opposition leader disagreed on the name of a caretaker PM, and the matter was moved on to an eight-member parliamentary committee composed of former National Assembly members. The committee was formed of four representatives from each administration, and the opposition (constituted by the speaker as per constitutional provisions inserted under the 20th amendment) would have to decide on the caretaker PM within three days, failing which the matter would go to the ECP. The committee also failed to elect the caretaker PM and finally the ECP had to enter into this political matter, which made the Commission controversial. It was not new in Pakistan's politics that politicians themselves could not rise above their personal and party interests. The ECP had to choose one of the six proposed names ("Caretaker PM: Political Disharmony," 2013). All the mainstream

parties proved unable to draw consensus over this significant issue. It further indicated that the pool of politicians in Pakistan was too incompetent to bring forth a person, being not objectionable for a caretaker PM. It was also embarrassing for the bastion of Parliament's supremacy that failed to find a man up to the mark (2013).

The ECP elected retired justice Mir Hazar Khan Khoso as caretaker PM on March 25, 2013 (Khan et al., 2019), by a 4-1 majority. The CEC, Fakhruddin G. Ibrahim, who was then 84 years old, announced the name of a caretaker PM. Mir Hazar Khan Khoso, also 84, was the first caretaker PM to be chosen under the 20th constitutional amendment.

The next general election was held on May 11, 2013, and the following day protest began in Karachi and Lahore against the election results. An opposition party Pakistan Tehreek-e-Insaf (PTI), had reservations over the results of 25 National Assembly seats (Gishkori, 2013). The Party head raised allegations of systematic rigging and asked the ECP on May 15 to order recounting of votes, with forensic examination of voters' thumb impressions, in four constituencies of the National Assembly "to regain public confidence in the elections." He also asked ECP to remove reservations three days before announcing the results (Malik, 2013). The Free and Fair Election Network (FAFEN), established in 2006, also not found discernible improvement in polling station management. It reported that unprecedented anomalies persisted, including polling officials interfering with voting and unauthorised people in polling booths and stations (*2013 General Elections Observation and Analysis of Election Day Processes*, 2013). The other two main political parties were also found dissatisfied with the results. The PML-N, that won the election, claimed that rigging took place in Sindh, and the PPP said it was the returning officers' election. Hence all parties declared the election controversial (Media Talk of the Prime Minister of Pakistan, 2020). A three-judge inquiry commission rejected the PTI allegations. A 237-page report wrote that despite some lapses on the part of ECP, "the 2013 general elections were in large part organised and conducted fairly and in accordance with the law (Malik, 2015)." However, the verdict did not satisfy the opposition parties.

Electoral reforms during 2013-2018

The next civilian government also passed an amendment and Election Act 2017. The 22nd Constitution Amendment Bill was signed by the President on June 8, 2016, after being passed by the two houses of the Parliament. This amendment made bureaucrats, government officers and technocrats eligible for appointment as the CEC and members of ECP in addition to serving or retired judges of apex courts ("President Approves 22nd Constitution Amendment," 2016). Previously, only former Supreme Court or High Court judges were qualified to become CEC members. The 22nd Amendment amended Articles 213, 215, 216, 217, 218, 219, 221 and 222 (The Constitution (Twenty-Second Amendment) Act. 2016, 2016). It also sets the maximum age limit for the CEC and members of the ECP at 68 and 65 years, respectively (Mohal, 2016). A Parliamentary Committee on Electoral Reforms (PCER) was also constituted on July 25, 2014. Ensuing detailed deliberations extending over about three years, the Electoral Reforms Package was put forth by the PCER to the Parliament for approval in 2017 ("The Elections Act, 2017 An Overview," 2018).

Elections Act, 2017

For further improvement in the general elections, the "Elections Act 2017" was passed by the Parliament on October 2, 2017, with barely ten months till the National Assembly's term ended. The Act introduced new election regulations with 15 chapters and 241 provisions, providing financial and administrative autonomy for PEC ("Major Reforms Approved in Elections Bill 2017," 2017). The final section 241 of the Act repealed eight election laws and

strengthened the ECP by making it independent and autonomous. The eight laws were consolidated in this Act included "Electoral Rolls Act 1974, Delimitation of Constituencies Act 1974, Senate Election Act 1975; Representation of the People Act 1976, Election Commission Order 2002, Conduct of General Elections Order 2002, Political Parties Order 2002, and Allocation of Symbols Order 2002 (*The Gazette of Pakistan*, 2017) ." The PML-N government had to face public outrage over the changes made in sections 7B and 7C of the Conduct of General Elections Order, 2002. The change was made in the declaration form of the public office holders. The ruling party was accused of the legislation that removed the requirement of the declaration regarding *Khatm-e-Nabuwwat* (finality of the Prophethood) in a candidate's election pro-forma (Shafiq et al., 2017). In a provision referring to a candidate's belief in the finality of Prophet Muhammad's (peace be upon him) prophethood, the words 'I solemnly swear' have been substituted with 'I declare' in the new Form-A. Furthermore, it did not apply to non-Muslim candidates.

As per law experts, the changed statement in the form converted it into a mere declaration rather than an affidavit (Haq, 2017). The opposition parties demanded the restoration of the original form. The immense pressure from opposition parties compelled the government to table the 'Election Act 2017' again in the National Assembly to reinstate clauses 7A and 7B pertaining to the finality of the Prophethood in its original form (Chaudhry, 2017). Major reforms envisaged in the Bill included a strengthened, independent, and autonomous Election Commission. It entrusted powers of the High Court for specific directions, administrative powers to control the transfer of election officials and disciplinary action against them, full financial autonomy, and powers to make rules without prior approval of the President (The Gazette of Pakistan, 2017). In the Election Act 2017, two sections were significant, section 94, and section 103.

Section 94 stipulates that "(1) The Commission may conduct pilot projects for overseas Pakistanis to cast a ballot in bye-elections to determine the technical effectiveness, invisibility, reliability, and economic feasibility of the proposed voting. The Commission will share the findings with the Government and place the report to both Houses of Parliament within fifteen days of the inception of the project." (2) In the section, "Overseas Pakistani refers to a Pakistani citizen working or living in a foreign country either permanently or temporarily for a minimum period of six months and possessing a National Identity Card for overseas Pakistanis issued under the National Database and Registration Authority Ordinance, 2000 (VIII of 2000), (*Elections Act, 2017*, 2017)."

By section 103, the ECP was tasked with organising trial-run programmes for using EVM and biometric verification systems in bye-elections in addition to the currently used manual procedures for voter verification, casting, and counting of votes to evaluate the technical efficacy, secrecy, security, and financial viability of the EVM and biometric verification system and shall share the results with the Government, which shall, within fifteen days from the beginning of a session of a House after the receipt of the report, present the same before the Parliament (p.38). Since the general election 2013, the PTI had been requesting in parliamentary committee meetings to incorporate the provisions of electronic voting machines and the right of overseas Pakistanis to cast a vote to the Elections Act, 2017. As a committee member, Arif Alvi (the then secretary general of PTI) was at the forefront of persuading the ECP to adopt both provisions (Haq et al., 2019).

General Elections 2018: applicability of electoral amendment and Act
The third consecutive general elections held in 2018 could measure the applicability of the electoral amendment and Act made during 2013-2018. However, all such efforts seemed futile when next day of the elections, a multi-party conference (MPC) was held, excluding the

Pakistan Tehreek-i-Insaf (PTI), which rejected the poll results and called for a coordinated strategy to deal with alleged election meddling (Hussain, 2018). It was evident that neither the 22nd amendment nor the Elections Act 2017 brought transparency to the general elections held on July 25, 2018. A difference in complaints was recorded as in the 2013 elections, 133 persons submitted complaints, whereas only 102 petitions were filed in the 2018 elections, indicating that fewer people claimed election rigging ("Opposition Invited for Electoral Reforms," 2020)

The pilot projects regarding sections 94 and 103 were in progress and not implemented in those general elections.

Table: 2 below presents the election year, winning party, opposition party, voters' turnout, electoral dissentions, dissolution of the National Assembly, and voter's age.

Table: 2

General elections in Pakistan 2013 and 2018

	Election Year	Winning Party	Opposition Party	Voter turnout	Electoral dissentions	Dissolution of the National Assembly	Voter's age
1	May 11 2013	PML-N	PPP	55.75%[1]	International observers called elections partly fair, Most violent in Pakistan's history	Completed five years on May 31, 2018	18
2	July 25 2018	PTI	PML-N, PPP	51.7 %	Opposition parties alleged that election was stolen	Will be dissolved on August 13, 2023	18

Source: The table is developed by the author. The data is collected from the website of the Election Commission of Pakistan. https://www.ecp.gov.pk/frmGenericPage.aspx?PageID=3274

Electoral reforms during 2018-2022

The third uninterrupted civilian government approached the opposition leader in the National Assembly and expressed readiness to form a commission on electoral reforms. The government was determined to make a transparent election system in which even the losers would admit their defeat.

The Elections (Amendment) Bill, 2021

Two years later, an Elections (Amendment) Bill, 2020, comprising 49 amendments to Elections Act, 2017, was introduced in the National Assembly on October 16, 2020. It focused on transparency and emphasised the yearly declaration of holdings and accountabilities to be submitted by the members of the Federal and Provincial legislative body members to the ECP. Moreover, the declaration should be available on the ECP website. It further proposed an open ballot for Senate elections (*The Elections (Amendment) Bill, 2020*, 2020). A presidential ordinance called the "Elections (Second Amendment) Ordinance 2021" was promulgated on May 8, 2021, under Article 89 of the Constitution. It further amended the Election Act 2017, when the Senate and the National Assembly were not in session (The Elections (Second Amendment) Ordinance, 2021, 2021). It obliged the ECP to buy EVMs so that expatriate Pakistanis could exercise their right to vote in the next general elections (Haq, 2022). The President presented two amendments to Section 94(1) and Section 103 of the Elections Act 2017 via ordinance. The Bill passed by the "Standing Committee on Parliamentary Affairs" on June 8, 2021, despite the fact that there were only 8 of the 21 members present. The law was passed without any debate. The National Assembly passed 20 other Bills on this day, and the opposition walked out when its desire to debate the Bills was denied. On November 17, 2021, a joint session of Parliament passed the Bill (Muhammad, 2021). According to the Bill, the ECP with the technical assistance

of NADRA or another body, shall authorise Pakistanis abroad to cast a vote subject to secrecy and security. The Bill also allowed the ECP to purchase electronic voting devices for general elections ("Parliament Passes Bills for Use of EVMs in Elections, Right of Vote to Overseas Pakistanis," 2021). The ECP raised 37 objections to the plan in a document submitted to the Senate standing committee on parliamentary affairs. However, the EPC constituted three committees on November 23, 2021, to calculate the cost of EVMs and alter the existing norms and regulations for their use (Virk, 2021).

When these developments were in progress, a political change took place in Pakistan. A no-confidence resolution was passed by the National assembly on April 9, 2022, against the PTI Prime Minister. The PML-N formed the next government, and within two months, another Bill was passed, the Election Amendment Bill 2022 (*Elections (Amendment) Act, 2022*, 22 C.E.), that reversed the election reforms to the year 2017. Although the ruling party was same in 2017 and 2022. The lack of consensus among the political leadership of Pakistan over electoral reforms has been an impediment to improving the electoral process.

Issues and Challenges
The following issues and challenges confront Pakistan's election process:
- They are held in a hostile environment rather than a conducive.
- Defeating political parties raise allegations of rigging and election manipulation.
- The electoral controversies weaken democracy rather than strengthen it.
- A democratic system entails political parties that build the groundwork for a robust legislature. Political parties in Pakistan were created when their leaders broke ranks with military dictators or by supporters of the military rulers.
- The role of the CEC remained controversial because of the manipulation of the electoral system by influential players to their advantage to rout their archrivals.
- The high illiteracy rate is also a major issue that gives precedent to personalities over principles.
- The rigid attitudes of political leaders pave the way for judiciary, bureaucracy, and military involvement in the election.
- About nine million patriotic overseas Pakistanis cannot vote in the election due to the lack of an online or postal ballot system.
- Pakistan's prevailing political and electoral system disengages the citizens in civic and political processes.
- The ECP declares and revises the limit of the election expenditures on candidates for National and provincial assemblies separately. As per records about all candidates cross the limit.

Recommendations
- A political impasse must be averted, and an agreement over election ethics, acceptance, and tolerance.
- The political leaders should continually collaborate to improve the election system of Pakistan unless it turns transparent.
- All political parties must resolve to protect the national interest, deepen democracy, and safeguard state sovereignty.
- Influencing the electoral process should be a criminal offence.
- Every political party's manifesto must include a 10% rise in literacy rate during a five-year tenure.
- Politicians, not the judiciary, bureaucracy, and military should resolve political disputes.
- The involvement of citizens in political processes should be made essential.
- The cost limit for contesting an election must be strictly adhered to.

- An agreement must be attained over the right to vote for overseas Pakistanis.
- EVM deployment should not be politicised.

Conclusion

The citizens of Pakistan elect their representatives in elections, and their elected representatives possess absolute power, but this power is not used to strengthen the state, its people and institutions. The Constitution's Part VIII addresses every facet of elections, but a trustworthy election process remained an unmet goal in Pakistan. The elected governments have made numerous reforms and enacted Acts by the Parliament to make elections free, fair, and transparent. All such efforts did not produce desirable results as political parties did not give preference to national interest over party interest. The Election Amendment Bill 2022 is a recent example of this practice. The electoral reforms made by various governments were adequate to make elections transparent. Nevertheless, the lack of consensus, coherence, delaying tactics and political impasse among political parties remained the main hurdles to overcoming electoral issues in Pakistan. The general election in 2023 will be held within the same process that did not satisfy politicians or citizens in the past. The election controversies of Pakistan will not be abated unless the political parties keep national interest at the top of their priorities. Setting aside political differences and developing consensus over electoral issues is imperative to save democracy.

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