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## **The Investigation of the Entrepreneurial Intention of the Younger Generation in the Tourism and Hospitality Industry**

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The hospitality and tourism industry is considered as one of Thailand's most important industries. This current study thus pursues to investigate the significant influences of subjective norms, attitudes toward hospitality, perceived behavioural control, and hospitality behaviour on the hospitality entrepreneurial intention. The data used for this current study was collected from 414 respondents from college students in tourism and hospitality programmes in Thailand. The data was systematically analysed adopting the statistical technique of Structural Equation Modelling after reliability and validity testing. The findings showed that perceived behavioural control, hospitality behaviour, attitude towards hospitality, and subjective norms, had positive influences on the hospitality entrepreneurial intention. The originality and benefits for the practitioners of this study included the expansion of the use of the theory of planned behaviour from the field of psychology into tourism, hospitality and entrepreneurship. The implications and practical recommendations included the government and agencies should enhance the positive image of the hospitality industry to create the positive attitudes towards the hospitality and tourism industry. In addition, policy makers, related hospitality managers and education institutions can provide supports, such as promoting clubs or associations for young entrepreneurs to raise the awareness and interests for becoming entrepreneurs in the future.

**Keyword:** Entrepreneurial Intention, Attitudes, Hospitality Behaviour, Perceived Behavioural Control (PBC), Subjective Norm, Tourism and Hospitality Industry

For several emerging countries, the hospitality and tourism industry is a vital mechanism for the survival and growth of the Thai economy. However, the more competitors there are, the higher the competition. This may lead to a lower competitive advantage. Thus, to succeed in business, entrepreneurs must not only acknowledge business environments but also understand entrepreneurial intentions. Such an approach could lead businesses to sustainable growth. It is well known that the roles of entrepreneurship are core to development in any industry, and tourism and hospitality is no different (Cetin, Altinay, Alrawadieh & Ali, 2022). Hallak, Lindsay, and Brown clearly (2011) stated that entrepreneurs in the tourism industry can create positive impacts on the economy, including promoting economic wealth creation and job development. Furthermore, long-term career development in tourism and hospitality is also crucial to attracting younger generations to start their careers in this growing tourism and hospitality field. In addition, Kokkranikal and Morrison (2011) highlighted that entrepreneurship can lead to innovation and the impact of innovation is not only beneficial to private enterprises but also helpful to local communities and societies.

Furthermore, the obviously significant role of entrepreneurship in tourism can also further extend to the expanded focus on the study of entrepreneurship, which provides crucial and influential impacts and implications in the field of sustainable tourism developments and strategies to achieve sustainable development goals (Dahles, Khieng, Verver, & Manders, 2020). The development of the expanded hospitality and tourism businesses depends on

the young generation, particularly their expected future career, to lead to the sustainable growth of the hospitality and tourism industry, as suggested by Ahmad, Ramayah, Mahmud, Musa and Anika (2019) Liu and Zhao (2021), highlighting the entrepreneurial intention of the college and university students in hospitality and tourism programmes, specifically their intention to pursue their entrepreneurial careers in this field.

Moreover, based on the work of Sansone, Ughetto and Landoni (2021), to support the development of entrepreneurship can be effectively crucial to support for young people during colleges or universities. Moreover, Maheshwari, Kha and Arokiasamy (2022) conducted the systematic review of student's entrepreneurial intentions and suggested that the application of theory of planned behaviour is appropriate for the research in entrepreneurial intention.

Several scholars (Oshriyeh, Ghaffari, & Nematpour 2022; Altinay, Madanoglu, Daniele & Lashley, 2012) addressed the importance of entrepreneurial intention as one of the influencing determinants to have many impacts on the growth of the hospitality industry, especially among developing countries around the world. However, in the Thailand context, the development of entrepreneurial intention is still at the early stage (Wannamakok & Chang, 2020). This raises the urgency of studying the factors affecting entrepreneurial intention in order to identify the significant constructs to promote the success and fundamental development of Thai tourism and hospitality industry in response for increasing demand of both domestic and international tourists.

The originality and contribution of the very current research had fulfilled the gaps in the literature. Firstly, the study adopted the theory of planned behaviour, which is highly important theory in hospitality research areas, with their related factors, including attitude and others as the antecedents. Secondly, the authors also emphasise the hospitality behaviour of the college students as a critical predictor of the entrepreneurial intention. The concept of hospitality behaviour can be considered traits or personality of individuals, but past research studies paid little attention to this factor. It can be concluded that this study had developed inter-disciplinary by applying the planned behaviour theory with entrepreneurial intention theory in hospitality industry. Thirdly, the field of study was the hospitality and tourism industry, playing a crucial role to support economic development, especially in the context of emerging countries, such as Thailand.

The aims of the study are firstly to systematically explore the effects of attitude toward hospitality, hospitality behaviour, and other determinants on the hospitality entrepreneurial intention. In addition, this current investigation also aims to present the most influential factors or constructs on entrepreneurial intention. After achieving the objectives, the authors also aimed to provide practical recommendations for the development of hospitality entrepreneurs. Moreover, the directions for the researchers in the related tourism and hospitality fields are suggested in order to assist the researchers to discover new and insightful research investigations in the future.

## **Literature Review**

### **Entrepreneurship in Hospitality**

Goryushkina et al., (2019) defined entrepreneurship as professional employment within the framework of well-established management that aims to provide and develop new benefits and values for the state and society. They also highlighted that a successful entrepreneur-hotelier should build basic qualities and accumulate abilities for both self-organisation and self-development (Haram, Shams & Gohar 2021; Gohar & Abrar, 2016; Uyilowhma, Okon & Unim, 2021).

Fu et al., (2019) offered the past literature on entrepreneurship in the research and investigations related to the services and hospitality industry and categorised the research domain to be in the two aspects: antecedents and entrepreneurial outcomes. 'Personal' aspects, including demographic factors, (including sex and education level in the respondents in the hospitality and tourism industry) and motivations, drive entrepreneurs to open businesses in the hospitality and services industry and are thus a variable of the antecedents. Another variable is the 'destination environment' aspect, including economic factors, socio-cultural factors, government policies, and technological advancement. By contrast, the entrepreneurial outcomes are firm performance and destination development.

Specifically concerning the motivation aspects (Fu et al., 2019), the study has categorised motivation into two types: growth-oriented and lifestyle-oriented. While growth-oriented entrepreneurs focus more on the economic

benefits resulting in competency, growth, and job creation, lifestyle-oriented entrepreneurs build social networks or become part of the community rather than being driven by profits. Hence, lifestyle-oriented entrepreneurs tend to develop more innovative products and services for the destination than growth-oriented entrepreneurs.

García, Meneses, and Sandoval (2022) reviewed the definition of entrepreneurship in various dimensions and some also include the importance of entrepreneurship roles and impacts in the related fields of general and social entrepreneurship. In addition, the entrepreneurship characteristics can include managing uncertainty and risk, developing managerial competence, and cultivating creative opportunities.

Even though the topic of entrepreneurial intention has been studied for decades, the entrepreneurial intention in the field of hotel, services and hospitality is still quite limited. This current study aims to expand the scope of knowledge for hospitality entrepreneurial intention, especially when the trend of young generation pays more attention to become the entrepreneurs, comparing to the past decades.

### **Theory of Planned Behaviour**

Referred to as one of the critically acclaimed theories in tourism, services, hotel and business research investigation, the theory of planned behaviour (TPB) is recognized as a prominent reasoned action model (Khan, Mahmood & Younas 2024). The TPB is also a crucial structural framework for knowing, forecasting, and transforming the human behaviour. The concept of intention is the instantaneous precursor of the human behaviour and is a representation of the three main predictors, including attitude toward an action or a certain behaviour, subjective norms or the inclination to be influenced by other people, and PBC (Osman, Cheng & Wider, 2022). In addition, these predictors come after the beliefs about the behaviour's probable impacts or significances, about normative potentials of vital others, besides around existence of influences governing behavioural presentation (Ajzen, 2012). To support this definition, Dai and Xu (2021) identified that the three main factors of TPB are positively consistent to predict the entrepreneurial intention, while other factors, such as financial support, had the positive effect on entrepreneurial intention.

Otache (2021) also applied the factors of TPB to assess the intentions to becoming an entrepreneur based on the university students in the area of tourism and hospitality management, ascertaining that, attitudes towards becoming the entrepreneur, subjective norms and PBC had an important relationship on the students' entrepreneurial intentions. Similarly, Al-Jubari, Mosbah and Anor Salim (2021) applied the TBP on the study of entrepreneurial intention in the context of tourism and hospitality college students and gained comparable results. The study tested the effects of self-efficacy, attitude and the role of subjective norms and found that attitude and self-efficacy have a statistically significant role on predicting entrepreneurial intention. Another study (Zhang & Sorokina, 2022) on the higher age group samples to study their entrepreneurial intention also in the scope of tourism business industry found that attitudes and the effect of PBC showed an important influence towards the entrepreneurial intention.

### **Entrepreneurial Intention in Hospitality**

Intention is a fundamental notion based on the theories related to the physical activity and behaviours, and explains as well as predicts the individual behaviours, offering the role of mediator towards people's behaviours or actions in a specific context or environment. The role of intention has been studied variously in consumer and entrepreneurial research investigations (Rhodes & Rebar, 2017).

Hospitality involves businesses relating to traveller journeys such as hotels, restaurants, tour operators, and health and wellness centres. Thus, previous studies reviewed the entrepreneurial intentions of those businesses.

Njoroge et al., (2020) explored the dimensions of entrepreneurs and their behaviours in the tourism and hospitality industry in the areas of competitive environment, business innovation and experimentation and risk tolerance, considered to be the core factors driving the behaviours and intention of the entrepreneurs. Further, these characteristics of entrepreneurs are tested and challenged in the competitive business context, while there are opportunities and risks that they have to encounter to achieve the business goals, especially in the hotel business contexts where the demand for high quality of services and the ever-changing expectation for new service innovation.

Furthermore, Saadin and Daskin (2015) apparently studies the young generations and their interests and intention towards entrepreneurship with the factors of social norm, significantly demonstrated the statistically influential role towards the intention to be an entrepreneur.

In general, Ambad and Damit (2016) recognised that perceived relational support, attitude and PBC can significantly influence the intention to become the entrepreneurs. Additionally, Zhang et al., (2020) found that the concepts of social worth, individual education, and risk-taking characteristics played crucial roles and indicated the strong effects on entrepreneurial intention.

### **Attitude Towards Hospitality Industry**

An attitude of an individual can indicate a person's foundation and belief as well as understanding of certain issues. In the literature related to entrepreneurship research, attitude represents a person's belief and understanding about being an entrepreneur in the near future (Liñán & Chen, 2009; Ishrat & Rahman, 2019), with the literature defining that attitude as an inclination to have either positive or negative assessment about certain issues or topics. Shook and Bratianu (2010) argue that the degree of positive attitude can enhance the perception of individuals about their environments and the views towards the world around them and attitude can affect significantly on self-efficacy or PBC and also subjective norms.

Additionally, Solnet and Hood (2008) indicated the relationship between the attitudes of young employees and their hospitality behaviours, showing that positive attitudes can directly impact the behaviours of hospitality employees to provide high quality services for hospitality customers.

Sivarajah, and Achchuthan (2013) found main driving determinants, which are also known as the independent variables in the theory of planned behaviour to have the influence on behaviours and also on intentions.

Shin and Hancer (2016) examined the antecedents to the intention to purchase local food and discovered that attitude, moral norms, PBC, and subjective norms, either directly or indirectly affect the intention to purchase the food in the local areas.

**H1:** Attitude towards the hospitality industry has a statistical and significant impact on hospitality behaviour

**H2:** Attitude towards the hospitality industry has a statistical and significant impact on entrepreneurial intention

### **Hospitality Behaviour**

The concept of hospitality behaviour can be defined as the acts or actions of hospitality staff towards the customers including welcoming gesture, proactive verbal and nonverbal communication, caring, empathy, quick and complete response to the needs or concerns of the hotel customers (Golubovskaya, Robinson & Solnet, 2017; Wu, Han & Moon, 2023).

It is expected that the hosts, staff, or service providers take good care of their guests or customers. Consequently, hospitality or hospitable behaviour can be considered the foundation for all staff in the industry. Hospitality behaviour or hospitable behaviour (Golubovskaya, Robinson & Solnet, 2017) is an important focus of the services and hospitality industry, in which employees or staff act as hosts, possessing the necessary skills and ability to offer care, pleasure, and ensure good services for their customers or guests. Telfer (2000) stated that the hospitable behaviour of the hosts should derive from sincere concern, truthful care, altruistic motives, and hospitableness to ensure the guests feel welcomed and valued.

Lashley (2015) explained that hospitable behaviours are considered a good trait and even a religious obligation that has been required by many religions for centuries. The study further explained that hospitality dimensions can be represented in three dimensions including commercial dimension, social dimension and private dimension, while in the private sector issues about hospitableness are being discussed. Before hospitality was commercialised, which drove people to focus on the benefits that they would receive from the hospitality transaction, hospitality was just an act of providing food, beverages, and accommodation for people outside of one's household, which is considered an act of friendship between hosts and guests (Lashley, 2015).

Lynch et al., (2011) mentioned previous literature on the theme of hospitality, referring a way of social dominance, as it could help people develop relationships, transforming enemies and strangers alike into friends. In other dimensions, the study also explained that hospitality reflected the behaviour of sharing and exchanging, which could be seen as a reciprocal relationship.



**H3:** Hospitality behaviour has a statistical and significant impact on entrepreneurial intention

#### **Perceived behavioural control**

Perceived behavioural control (PBC) is the perception of an person in controlling one's environment and actions as well as behaviours. PBC is an important determinant of the key determinants in TPB. To a great extent, beliefs on self-efficacy influence the selection decision of an individual to select a certain choice of works, in addition to the ability and attempts to take on a certain activity (Bandura, 1981). Ajzen (2002) distinguishes the concept of PBC from the concept of the internal locus of control, that was earlier presented in the work of Rotter (1966). Additionally, the concept of PBC is a perceived command towards a certain performance of an individual, reflecting the ability to control the situation and self-efficacy of an individual. In other words, there were internal and external drivers as the components of PBC (Ajzen, 2002).

Namasivayam and Guchait (2013) confirmed the idea that self-esteem of a single person and the idea of trust is based on the perception of control that a person has towards a certain context and this can affect the customer satisfaction and also the intention to take some action. This clearly signifies the important and vital role of PBC of consumers or even entrepreneurs, related to the future actions.

Kraft et al., (2005) has used the theory of planned behaviour to investigate the recycling intention of the consumers and they showed the results in their research study that perceived control has an important influence on the intention of the individuals towards recycling activities.

Additionally, Noone (2008) provided another evidence in the research in the context of employee research with the use of perceived behavioural control and the findings of the research demonstrated that perceived behavioural control can directly lead to the greater degree of employee performance in the context of restaurant business environment.

Furthermore, Namasivayam and Mount (2006) showed the fascinating results in their findings that perceived control can play a crucial role on the satisfaction of the customers of the hotels, implying the intention to revisit the hotels in the future.

**H4:** Perceived behavioural control has a statistical and significant impact on entrepreneurial intention

#### **Subjective norms**

Subjective norms can be described in the context where individuals have the influence on a person towards encouraging or discouraging the certain actions of the person. Furthermore, subject norms are evaluated or assessed by inquiring the person regarding how people encourage the person to participate in a certain activity, including acting as an entrepreneur (Liñán & Chen, 2009; Ajzen, 2001). Additionally, subjective norms or in some cases, also are referred to social influences and are adopted in many research areas as a factor to explain or to influence the intention or the behaviour of the individuals (Liñán & Chen, 2009).

Hsu (2012) studied the attitudes towards the actions, PBC, and subjective norms and their influences on the behavioural intention in the context of hospitality and tourism students and the study results provided that all the proposed relationships had significant relationship with the intention. Furthermore, Hsu (2012) also demonstrated that intention offered a positive effect on the actual behaviour of the hospitality and tourism students.

Rhodes and Courneya (2005) researched the significant and influential effects of the factors, such as of attitudes towards a certain activity and subjective norms on the intention and behaviour and the positive and significant effects were confirmed.

Ajzen (2012) Vries, Dijkstra and Kuhlman (1988) provided the empirical evidence to show the overall impacts of attitudes towards a certain situation and the influence of subjective norm, which is used in the research to replace the concept of perceived behavioural control, on the behaviours and intention. Their studies showed the significant effects among those relationships. One important aspect is that the concept of perceived behavioural control and self-efficacy were used interchangeably in some studies.



Wan, Shen and Choi (2017) also investigated the impact of subjective norms, together with attitudes, to explain the behaviours and the intention in the recycling activities to measure the sustainable behaviour and intention of the consumers. Their findings confirmed the positive relationships among these factors or constructs.

**H5:** Subjective norms have a statistical and significant impact on entrepreneurial intention

## METHOD

This quantitative research used questionnaires as the research instruments and was designed as a survey field study. Regarding the questionnaire development, the authors adapted the measurements from the previous studies for each construct as provided in Table 1 under the sources of the measurements.

The authors tested the reliability analysis and significant role of validity of the study to ascertain that the collected data were appropriate for further data analysis. To ensure the appropriateness of measurements, the Index of Item-Objective Compatibility (IOC) was used. According to this IOC process, the authors invited five experts to give the values as follows; -1 (represented the meaning of clearly no measurement), 0 (demonstrated the meaning of unclear), and 1 (showing the meaning of clear measurement). As a result, the IOC score for everyone of the questions ranged from the values 0.8 to 1.0 based on the experts, providing the acceptable and objective questionnaires (Jusoh, Zubairi, & Badrasawi, 2018).

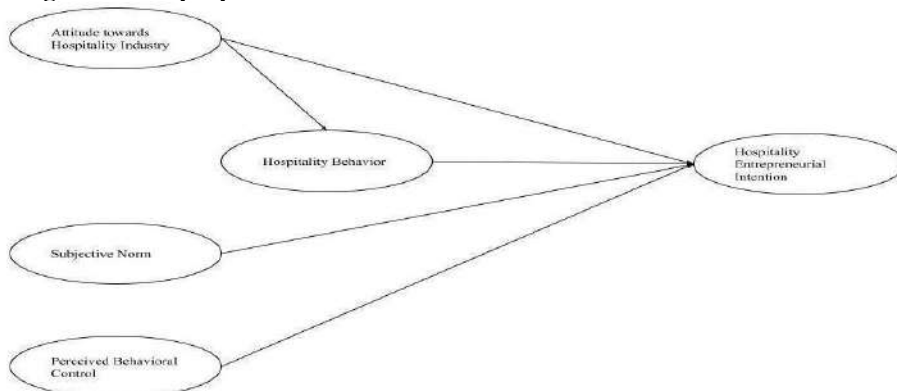
The population of current research was the students who studies in the tourism, hospitality and related fields in Thailand. Through the screening questions to ensure the appropriate sample characteristics, a total of 414 respondents were sampled from college students in tourism and hospitality programmes in Thailand. The questionnaires were distributed through an online survey and developed based on past literature.

Additionally, the SEM technique was adopted in order to analyse the proposed statistical and significant relationships of the constructs. SEM has several advantages over the linear regression, including the ability to verify all the relationships in the conceptual model at once and the greater power to measure the strengths of relationships among factors or constructs in the proposed model (Mia, Majri & Rahman, 2019).

### The proposed model

The study's proposed model or theoretical framework demonstrated the network of associations among the constructs or factors as discussed and presented in the literature review. This study had a number of the predictors to influence the dependent variable, which is hospitality entrepreneurial intention (HEI). There are four independent variables: attitude toward hospitality industry (ATH), hospitality behaviour (HPB), perceived behaviour control (PBC), and subjective norms (SJN). These four factors determine the roles and influences on entrepreneurial intention. The relationships of all the factors and each line presented each hypothesis (Figure 1).

**Figure 1. The proposed model.**



In addition, the hypotheses were developed to represent the relationship between attitude towards the hospitality industry, hospitality behaviour, PBC, and subjective norms towards hospitality entrepreneurial intention of the young generation. Thus, all the hypotheses are as follows:

**H1:** Attitude towards the hospitality industry has a statistical and significant impact on hospitality behaviour

**H2:** Attitude towards the hospitality industry has a statistical and significant impact on entrepreneurial intention

**H3:** Hospitality behaviour has a statistical and significant impact on entrepreneurial intention

**H4:** Perceived behavioural control has a statistical and significant impact on entrepreneurial intention

**H5:** Subjective norms have a statistical and significant impact on entrepreneurial intention

## RESULTS

Descriptive statistics showed that out of 414 samples, all of the respondents were students in programmes related to tourism and hospitality education. Additionally, 53% of the respondents were female and 47% were male. In addition, 43% of the respondents were the fourth year students, 25% were third year students, and the rest were the first and the second year students. Around 53% were students from the public colleges and universities and the rest were from the private colleges and universities. Moreover, 35% of the respondents indicated their entrepreneurial intention in restaurant and food services, whilst 31% focused on hotel business entrepreneurial intention and the rest possessed mixed intention across various areas, including wellness, spas, and other tourism and hospitality businesses.

In order to properly evaluate the quality of the collected data, many types of validities, including content validity and discriminant validity, were performed to identify whether the data meet with the acceptable qualities. Later, the authors performed the model testing to evaluate the hypotheses of the study. For each factor or constructs, the questions or instruments for measurements were adopted from the empirical studies as presented in the previous section. In addition, the author tested the convergent validity and the satisfied results were demonstrated in Table 1. The AVE of all the factors indicated the values much greater than the value 0.5, above the acceptable requirements (Awwad, 2012; Dedeoğlu & Demirer, 2015). Additionally, to evaluate the value of the discriminant validity, in this case, the acceptable and standard criterion is that the values of the square root of AVE should be more than values of squared correlation coefficients of each pair of two constructs (Pantouvakis & Bouranta, 2013).

**Table 1**  
*Statistical values*

Factors/Items	Standardised loadings	AVE	Square root of AVE	Composite Reliability	Cronbach's alpha
<b>Hospitality entrepreneurial intention (HEI)</b> <i>Adapted from Al-Jubari, Hassan &amp; Liñán (2019) and Isiwu &amp; Onwuka (2017).</i>		0.756	0.870	0.781	0.812
My professional goal is to become an entrepreneur in the hospitality industry.	0.874				
I have the firm intention to start a hospitality firm someday.	0.810				
I am determined to create a hospitality firm in the future.	0.887				
I am serious about having a hospitality firm.	0.876				
I will make every effort to start and run my own hospitality firm.	0.877				
I am ready to do anything to become an entrepreneur in hospitality.	0.891				
<b>Subjective norms (SJN)</b> <i>Adapted from Dinc &amp; Budic (2016) and Moriano, Gorgievski, Laguna, Stephan &amp; Zarafshani (2012).</i>		0.777	0.882	0.798	0.823
My close family would approve of my decision to be an entrepreneur in the hospitality industry.	0.891				
My friends would support my idea to be an entrepreneur in the hospitality industry.	0.862				
People who are important to me would approve	0.897				

[of the idea] that I could be an entrepreneur in the hospitality industry.				
My colleagues would approve [of] me [being] an entrepreneur in hospitality.	0.898			
People who are influential to me believe in my ability to become an entrepreneur in the hospitality industry.	0.859			
<b>Attitude towards the hospitality industry (ATH)</b>		0.694	0.833	0.731
<i>Adapted from Robinson, Stimpson, Huefner &amp; Hunt (1991) and Stamboulis &amp; Barlas (2014).</i>				0.804
Being a part of the hospitality industry implies more advantages than disadvantages to me.	0.820			
The hospitality industry is attractive to me.	0.850			
The hospitality industry is acceptable for me.	0.829			
Being a part of the hospitality industry is suitable for me.	0.832			
<b>Hospitality behaviour (HPB)</b>				0.835
<i>Adapted from Golubovskaya, Robinson &amp; Solnet (2017).</i>				
I go "above" and "beyond" to serve others.	0.854	0.734	0.857	0.763
I offer personalised attention to other people.	0.857			
I care about the happiness of others.	0.884			
I prioritise other people's needs and feelings.	0.832			
<b>Perceived behavioural control(PBC)</b>				0.827
<i>Adapted from Youssef, Boubaker, Dedaj &amp; Carabregu-Vokshi. (2021).</i>				
I can control the creation process of becoming an entrepreneur.	0.861	0.775	0.8810	0.797
I know the necessary practical details to start a business.	0.89			
I would have a high opportunity [to develop] my own business.	0.926			
I could start an entrepreneurial firm based on the results of my knowledge and ability.	0.843			

In the process of evaluation of the values of measurement model, the values of fit indices from SEM analysis offered the following satisfactory indicators, including NNFI=0.991, NFI=0.982, RMSEA=0.045, IFI=0.992, and CFI=0.987. With the results above, the measurement model is considered a suitable and acceptable fit for further data analysis for the structural model. Based on the definition regarding Hair et al., (2006), convergent validity demonstrated the quality of questionnaire items to have relatively high correlation with another or other measurement items of the same or similar factors (or also known as the constructs). Furthermore, the high quality of convergent validity can be presented when each measurement item of the factor loadings has values more than 0.6 (Anderson & Gerbing, 1988). To further explain the critical criteria of the data, the critical values of AVE are more than the standard and acceptable numbers of 0.50. Another requirement is that the values of the factor loadings must be more than the required values of 0.6. The values of the analysis presented the satisfactory outputs, meaning that the convergent validity was adequately acceptable. (Anderson & Gerbing, 1988; Anderson & Gerbing, 1992; Hair et al., 2006).

Referring to Table 1, Cronbach's alpha were presented the acceptable characteristics of reliability analysis. It is expected that the construct can claim the high reliability when the alpha of the factor or construct is greater than 0.7. For this reason, the factors selected in the current study provided satisfactory results with alpha values.

Table 2 offered the values and results of discriminant validity. To present the acceptable discriminant validity, Hair et al., (2006) and Fornell and Larcker (1981) recommended that the values of square roots of the AVEs have to be greater than the values of the squared correlation of a pair of two factors and the data from this study showed the satisfactory discriminant validity properly.

**Table 2**

*The values of correlation coefficients and the square root of AVEs*

Items	HEI	SJN	ATH	HPB	PBC
HEI	<b>0.870</b>				
SJN	0.383	<b>0.843</b>			
ATH	0.587	0.420	<b>0.865</b>		
HPB	0.584	0.457	0.642	<b>0.837</b>	
PBC	0.554	0.330	0.537	0.625	<b>0.884</b>

Note;

HEI: Hospitality entrepreneurial intention, SJN: Subjective norms, ATH: Attitude towards hospitality industry, HPB: Hospitality behaviour, PBC: Perceived behavioural control

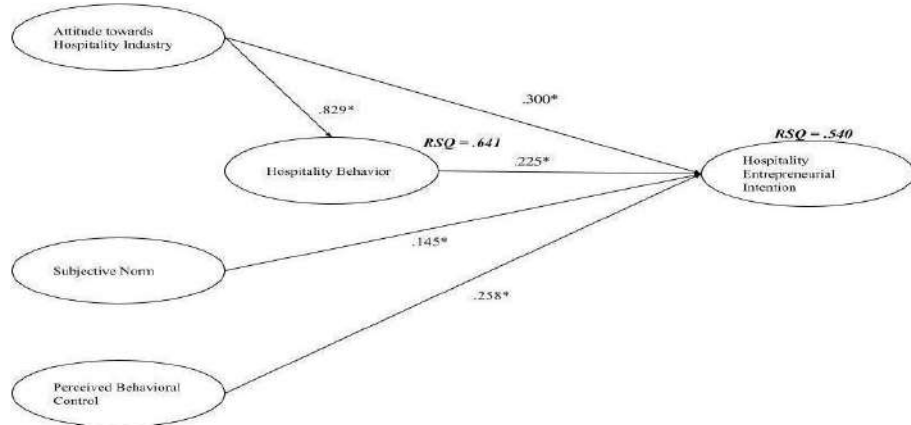
Additionally, based on the tested model results and fit indicators, the basic requirements based on the criteria of good fit were effectively met (Hair, Tatham, Anderson, & Black, 2006) as clearly presented below (Table 3). The structural model testing was crucial to be conducted properly prior to the further interpretation of the research findings and prior to discussing the hypothesis testing.

**Table 3**

*The indices of model fit*

Fit Indices	Value	Criteria
Chi-square/df (400.845/220)	1.822	<3
NFI	0.982	>0.9
NNFI	0.991	>0.9
CFI	0.992	>0.9
IFI	0.992	>0.9
RMSEA	0.045	<0.05

Figure 2. The model and coefficients



\*indicated significance level at 95%  
 Note: RSQ = R-squared

The findings from the data analysis revealed that attitude towards hospitality resulted in hospitality behaviour and hospitality entrepreneurial intention. Additionally, hospitality behaviour also influenced hospitality entrepreneurial intention. Furthermore, subjective norms and PBC have statistically significant impacts on hospitality entrepreneurial intention (as illustrated in the above Figure 2). Table 4 indicates the antecedents demonstrated the significant impacts on hospitality behaviour/entrepreneurial intention. Therefore, hypotheses 1 to 5 are supported.

**Table 4**  
*Summary of hypothesis testing*

Hypothesis	B	p*	Results
H1: ATH→HPB	0.829	0.000	Supported
H2: ATH→HEI	0.300	0.000	Supported
H3: HPB→HEI	0.225	0.000	Supported
H4: PBC→HEI	0.258	0.000	Supported
H5: SJN→HEI	0.145	0.000	Supported

Note: \*significant at  $p < 0.05$ .

**DISCUSSION AND CONCLUSIONS**

This research offered impacts of the attitude towards hospitality, subjective norms, PBC, and hospitality behaviour on hospitality entrepreneurial intention. The findings found that (1) attitude towards hospitality, (2) subjective norms, (3) PBC, and (4) hospitality behaviour all have a significant role on intention to become an entrepreneur, whilst (5) subjective norms demonstrated a significant influence on young generation’s entrepreneurial intention.

Referring to the results of this study, attitude towards hospitality thus has an impact on hospitality behaviour and entrepreneurial intention. Additionally, from this study, the finding offered the similar discovery with the work of Hsu (2012), Shook and Bratianu (2010) Sivarajah, and Achchuthan (2013), concluding that attitude, subjective norms and PBC directly affected the behavioural intention. Additionally, perceived behaviour control has a significant and direct effect on entrepreneurial intention, implying by the research work of Namasivayam and Guchait (2013). Another crucial research work in the area showed that PBC is considered the crucial dominant on the behavioural intentions and also relevant to the research of Additionally, Ajzen (2002).

Furthermore, subjective norms had a statistically impact on entrepreneurial intention. The results support previous studies, such as Liñán and Chen (2009) Ajzen (2001), with the latter concluding that subjective norms influence engagement in entrepreneurial activities.

Wan, Shen and Choi (2017) also provided the in-depth findings in that subjective norms and attitude demonstrated the crucial and vital influence on intention and also the interaction between these two antecedents also provided the significant impact on the intention.

Lastly, hospitality behaviour is the basis of the services, hotel, restaurants and hospitality industry and the hosts, the staff, and the employees in this area of research related to tourism and hospitality. This research investigation tested the impact of hospitality behaviour on the young generation's entrepreneurial intention and this research outcomes demonstrated hospitality behaviour had a statistical influence on hospitality entrepreneurial intention. This is supported by Ligthelm (2008) Scholl-Grissemann, Kallmuenzer and Peters (2021).

Based on these findings, interestingly attitudes towards hospitality industry showed the highest influence on entrepreneurial intention and had the strong and positive effect on hospitality behaviour. The role of attitudes of the young generations is vitally important to affect the behavioural intention and also influence the actions.

### **Recommendations and Directions for Future Research**

As the current research achieved its objectives with the research results of the antecedents including attitude toward hospitality industry affect hospitality behaviour, and attitude, hospitality behaviour, PBC, and subjective norms and intention to be an entrepreneur. These could lead directly and effectively to the perception and action of both entrepreneurship and customer perspectives. These factors therefore likely result in successful entrepreneurship and earn higher returns. Additionally, the results could help entrepreneurship in hospitality to understand the attitudes, behaviours, subjective norms, and PBC of their target customers. Thus, they can launch products/services, as well as strategies to be appealing to the new groups of buyers or customers and increase sales from current customers or buyers.

As a positive attitude toward hospitality is crucial for hospitality entrepreneurial intention, the government and other related agencies should maintain and enhance the good image of the hospitality industry to make the industry attractive and acceptable for entrepreneurs to join the hospitality business. In addition, they need to ensure that entrepreneurs that join the hospitality industry would gain more benefits as it directly impacts their attitude toward hospitality.

Enhancing attitudes toward hospitality would not only impact students' hospitality entrepreneurial intention but would also impact hospitality behaviour. As entrepreneurs have a higher level of hospitality behaviour, this would be a strong foundation and would elevate the multidimensional quality of the services offered to the current buyers or customers. Furthermore, entrepreneurs with hospitality behaviour appear to possess the intention to open businesses in the hospitality field. Schools and universities or informal institutions such as family are the core players that could shape hospitality behaviour. However, these institutions must also provide sufficient knowledge and practical details, as well as the PBC that leads to hospitality entrepreneurial intention. Furthermore, the policy makers and education institutions can provide support for setting up associations for young entrepreneurs, especially in hospitality and tourism by arranging activities or competitions to raise the awareness and interests for becoming entrepreneurs in the future.

As for the theoretical contribution from the study, the authors extended the benefits and applications of the TPB from psychological areas in order to explain the empirical investigations and studies in tourism and hospitality. In addition, this research expanded the concept of intention, developed by Ajzen (2012), into entrepreneurial intention, useful also for the study in another research field of entrepreneurship. Moreover, the additional factor, hospitality behaviour, was introduced to the theory as the past research had limited use of this factor.

This current research has an emphasis on the intention of the young generation to be an entrepreneur in the hospitality industry, with a sample population of 414 students. Future studies could enlarge the sample size. Additionally, the literature could explore the entrepreneurial intention of the young generation about to enter business or who are existing business owners. The findings may be able to compare their attitudes, PBC, hospitality behaviour, and subjective norms toward their entrepreneurial intention in the hospitality industry.

Furthermore, the directions for future research can be provided as follows. Firstly, the researchers may include other moderators, including personal profiles (such as age and gender), to expand the details of the generalisation. Secondly, several colleges offered internships or training for students during their study and the perception of the college students related to their experience from internship and professional training may play an important role towards their entrepreneurial intention in the hospitality industry. Thirdly, the concept of hospitality behavior is considered crucial for the hospitality research community and therefore, in the future research, the

scholars may explore the predecessors of hospitality behaviour, such as perceived behavioral control and personality traits. Next, qualitative investigation should be further explored in order to discover in-depth insights and to investigate additional factors to help explain the relationship among the antecedents and the entrepreneurial intention. Lastly, researchers may also adopt new theories to explain entrepreneurial intention, such as Social Cognitive Theory (SCT), for example, based on the scholarly works of Bandura(1989) and Entrepreneurial Event Model (EEM), which is primarily based on the most acclaimed works of Shapero and Sokol (1982) in order to offer the new perspectives towards the concept of entrepreneurial intention.

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## **Achieving Attractions in the Historical Drama**

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This study aims to reveal the effect of dramatic treatment elements and their ability to attract audiences to historical dramas. The study employed a quantitative approach as descriptive research, by the collection of quantifiable data for statistical analysis using SPSS. The study conducted multiple linear regression analyses to identify the effects of variables on the attractiveness of historical drama. The study concluded that the combined effect of content, dramatic structure, accuracy of information, educational level, and watching the drama factors on the attractiveness of historical drama to viewers is 61.1%. This means that the attractiveness of the dramatic work is influenced by the following factors: content 34.8%, dramatic structure 19.7%, accuracy of information 23.4%, educational level 8.7%, and watching drama 8.7%. Therefore, increase in interest in these elements leads to heightened attractiveness of the dramatic work, consequently encouraging viewers to continue watching the drama. This article makes a valuable academic contribution by providing scientific insights that aid in understanding the appeal of certain series and movies to audiences, as well as identifying weaknesses in attracting viewers to other works. Furthermore, it offers guidance to producers and scriptwriters in enhancing the overall performance of their dramas.

**Keywords:** dramatic treatment, historical drama, attraction of drama, Arab series.

The audience watches many dramas, but not all dramatic productions are equal in their ability to attract the audience and push them to watch, some attract more than others do. Therefore, the number of audience views of each dramatic work varies, and the price of the dramatic product varies with it, also, the popularity of the dramatic work appears in its ability to attract the audience.

Attraction is one of the important issues that are related to influencing on the audience and their eagerness to watch the drama, so it is important in the production process, to understand how it happens and what factors achieve the attraction, knowing it is necessary for drama producers during the production process.

Historical dramas that present for the audience the historical Characters and events, like any other dramas, vary in the audience's attractiveness to them. In the Arab world, historical dramas have gained significant popularity, attracting audiences who have a keen interest in watching series of this nature. Some historical series have even garnered high viewership ratings, underscoring the immense importance of this genre (Aljazeera net, 2021). Consequently, researchers have been motivated to delve deeper into the study of historical dramas and explore the reasons behind the audience's fascination with them (Abusalah & Kanaker, 2021).

Therefore, this research focuses on a significant and novel subject, particularly as it seeks to explore the mechanisms through which historical dramas captivate viewers, by studying the elements of dramatic treatment that form the foundation of any dramatic production. Some of these elements play a role in increasing the audience's attraction to watching drama and incentivizing their viewership (Adway, 2023). So, this study sheds light on the factors that make historical dramas appealing to viewers and provides valuable insights into their effectiveness as a storytelling medium.

Furthermore, examining the attraction of series and dramas to the audience holds importance within the realm of film development. So, this research provides valuable insights for the film production industry, enabling them to enhance their creative output and maximize the impact of their films, by knowing the factors that attract audiences to series and dramas, practitioners can make informed decisions to improve the quality and effectiveness of their productions.

The problem addressed in this study is to comprehend the methods for achieving attractiveness in historical dramas by examining the influence of dramatic treatment elements on achieving attractiveness in the historical

drama. Therefore, the article seeks to answer the following question: **"What is the impact of dramatic treatment elements in achieving audience attraction to the historical drama?"**

This study aims to assess the impact of the elements of dramatic treatment on the attraction of historical drama and to determine the ability of dramatic treatment to attract audiences to historical dramas.

### **Literature Review**

Drama is doing (Wessels, 1987). Drama is a Greek word meaning "action," but the term connotes the art of representation and simulation. Although its meaning in Greek does not indicate that, in all other languages it indicates the art of simulation. Drama is one of the most important methods of effective communication, Babin says:

Every communication that aims to excite the interest of its audience should be dramatic. The main reason for dramatic is interest. If the audience is passionate about a topic because of desires or convictions, there is no need for drama, but if a means of communication wants its programs to be watched by an increasing number of followers, it should go to the dram (Babin, 1991).

Dramas excite one of the most important human instincts, it is the instinct of simulation and imitation, in addition, the modern person who suffers from a lot of life's worries and pressures finds in drama a way out of these concerns, here emerges the status of television drama, which has the ability to attract audiences, gather them and compensate them for the problems of their social cohesion (Yasin & Khan, 2022).

The reason for the power of drama in presenting meanings and ideas comes from the viewer receives information or value indirectly, so that he lives its advantages while watching it, and he may live its disadvantages if they are negative. In addition, that the drama is a reflection of the viewer's circumstances and his life. It presents his problems, his reality, and his circumstances. Therefore, it will be close to him and inspiring him in finding the solutions he needs to face his challenges and problems.

All dramas seek to achieve a degree of attractiveness to their audience, when the series or movie is attractive to the audience, its viewership increases. Therefore, the drama seeks to achieve attractiveness by evoking emotional tension in viewers, Drama aims to excite emotional tension followed by the viewer's relaxation, this passage from tension to relaxation constitutes the main motive for pleasure, this connection is sequential, from tension to pleasure, and from pleasure to interest (Babin, 1991).

Many of studies have dealt with the subject of drama and its effects on the audience. Drama is a force with an influential dimension in the minds of viewers; it contains excitement and the interest of the audience. One of these studies is (Adway, 2023) study that discussed the relationship between the Elements of Dramatic Treatment and the Effectiveness of Historical Drama.

Dramas in order to reach their attractiveness try to take advantage of different methods in addressing a diverse audience in mass communication. The message of rational, emotional, frightening, rewarding, and motivational appeal makes the film suitable and interesting to be watched by all audiences with varying levels of education and social strata, relating to aspects of humanity, such as helping, helping, feeling struggling in life, compassion, mutual respect, teachings to thank the Creator and to others, without seeing the difference (Andayani, 2020).

The cinema presents, through a good script, the pleasure of watching and experiencing the revival of history in an aesthetic format through an attractive dramatic language (Rasselma, 2021)

The attractiveness of television drama to the audience is considered a mediating factor to attract their interest in other things, such as tourism, where for example, study (Liu, 2019) that explored the influence of a television drama on tourist motivation and behavior. It concluded that the series raises awareness of the attraction and stimulates motivation for traveling through specific motivational factors; it shows that audience involvement significantly affects Prestige, Personalization, and Fantasy.

The study (Ali, 2021) dealt with the employment of visual and audio effects in the cinematic film and their impact on the viewer; it examined the preferences of the viewers and the characteristics of the cinematic elements that affect their emotional response, especially cinematic music.

In addition to these studies, a study conducted by (Al-Aishi, 2023) examined the extent of university students' exposure to Turkish dramas and their impact on their cultural identity. The study concluded a significant prevalence of Turkish drama viewership among the youth, especially the historical series that is the most favoured

genre, this preference for Turkish historical dramas has a profound impact on their attraction towards the Turkish language and culture.

This study stands out due to its focus on exploring the elements of dramatic treatment that contribute to the appeal of historical dramas, rather than solely examining the reasons behind viewership. It delves deep into the intricacies of dramatic works and their underlying structure, going beyond surface-level explanations to comprehensively understand the factors that create such a compelling effect.

Due to the significance of the attraction to the dramatic work, this study focuses on knowing the relationship and the impact of the elements on which drama depends in achieving the attraction. Thus, it benefits from some of the previous studies, in addition, being distinguished in dealing with the topic from a new side, this study focuses on historical drama. Moreover, it differs from other studies by seeking to understand the elements that generate attraction and the proportions of their influence.

### **Elements of Dramatic Treatment**

Studying the impact of the effectiveness of dramatic treatment elements in improving attracting audiences to historical dramas, requires knowledge of the elements that constitute the structure and shape the framework within which dramatic series are crafted. These items are:

#### **Dramatic Structure**

Any dramatic actions are composed of various elements that contribute to their construction. These elements include plot, dialogue, and conflict. The plot is known as a structured sequence of actions or events, typically involving a conflict, climax, and resolution. This arrangement implies causality and aims to a specific effect (Hammouda, 1998). Moreover, the plot, serving as the framework of the drama's action, is perceived as a sequence of key scenes and shots arranged chronologically, beginning with an introduction, then a series of complications leading into conflict, a climax that determines the fate of the main characters, in addition, a resolution and denouement for the conflict (Lim, 1993).

The dramatic conflict arising from this narrative system generates constant tension in the scenes of the dramatic work, and the driving force that shapes the content of the story (McKee, 1997).

#### **Characters**

Dramatic characters are considered human models who play roles in events in the dramatic work. Through their voice and physical expressions, dialogue revolves around real characters being simulated (Ghoneim, 2003). These embody the heroes of the drama, serving as the primary catalysts for the creation of a series of events that unfold through the dialogue of the characters with each other (Hamada, 1977). Consequently, the character is considered one of the basic elements for the success of a dramatic work. The characters as they navigate a sequence of conflicts and crises, undergo development, ultimately contributing to a resolution that aligns with the coherence of the structure of the dramatic work.

Aristotle asserts that plot resolutions to plots should come about as a result of the very plot itself. Most notable examples of dramatic structure follow this line of reasoning. Forming a rational play is essential to all modern playwriting, and it is therefore an important aspect to measure within play consistency (Yavuz, 2020).

#### **Accuracy of information**

The concept of Accuracy of information refers to the reliability of relying on accurate narratives found in historical books (Adway, 2023). In the context of a drama series, ensuring the accuracy of information becomes crucial for depicting historical events faithfully. However, the accuracy of information depends on several factors, including the accuracy of narrations in history books, and the availability of information and details about historical figures, as they may be few and limited at times.

#### **Locations**

The Locations and backgrounds are important elements in dramatic works, as they achieve the visual meaning that the dramatic scene needs. In historical drama, there is special attention to historical Locations and backgrounds that should correspond to the appropriate historical environments of the events, to ensure the transmission of a close picture of the social environment that is being simulated. Which leads to achieving realism in dramatic representation. The result will be reflected in the audience's conviction in the credibility of the acting.

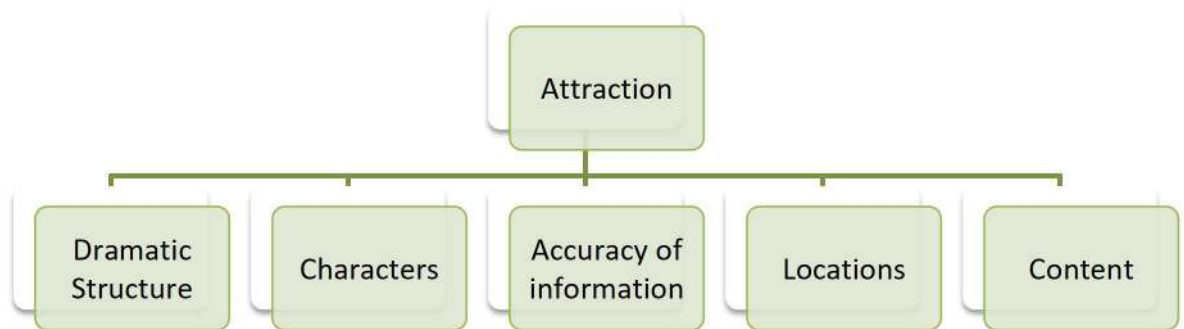
There are two types of places in drama; (ALnadi, 1987) one external and one internal. External places filmed outside of the studio (e.g., deserts and seas) and internal places are scenes that are filmed inside the studio.

### Content

The content is defined as the subjects or topics covered in the film or series. The content of the dramatic work includes many topics such as: social, political, economic, historical, religious, and others. Drama content refers to the cultural resources that infuse...activity with signs, which dramatically highlight and portray confirmatory facts that might otherwise remain unapparent or obscure (Moisio, 2005).

In historical drama, the content is more related to the lives of the characters and reflects the environment, social, political, cultural, and other life at that stage.

### Concepts Framework



*Figure 1. Conceptual framework of the elements of dramatic treatment and the Attraction of historical drama (This framework is specific to this study)*

As shown in Figure 1, the conceptual framework of the dramatic model signifies an understanding of the impact of the Elements of Dramatic Treatment (Characters, Information accuracy, Content, Location, and Dramatic structure) on the effectiveness of the historical drama in achieving an Attraction.

### Historical Drama

Historical drama means dramatic works that deal with historical issues and events, in addition to simulating the lives of historical figures, by re-enacting reality according to historical texts that are transformed into narrative drama. This also includes the drama of Islamic history, which deals with events and characters from Islamic history, and recreates that reality through simulation. (Adway, 2021)

The Historical drama is a dramatization for theatre, radio, or television that deals with historical events and issues, and/or portrays the biographies of historical figures in accord with historical texts (Wagner, 2022).

Historical drama since the early part of the last century has attracted the attention of the Arab media, a lot of series and films were produced, that treated different periods of Arab and Islamic history, and dealt with the biography of historical figures from different eras. In some years, there was an intensification of historical dramatic productions. Satellite broadcasting contributed to the spread of these works to various Arab countries.

Individuals like to learn about the experiences and times of their predecessors, so they are interested in history and wish to learn about their grandparent's era. Individuals like to learn about the experiences and times of their predecessors, so they are interested in history and wish to learn about their grandparent's era. This is dealt with by some studies that researched the attachment of Arabs to history and the attractiveness of historical drama to them, According to the Kasem study, (Kasem, 2021) that is attributed to a combination of economical, historical, political, artistic, and other factors. Ideologically,

Arab culture has romantic bonds with the glories of the past.

In the Arab world, great interest in the past and history has emerged in dramas. Production companies have produced historical dramas that have gained great interest among the audience, such as the series "Bab Al-Hara", which was shown to the audience in seven years, in seven seasons, in addition to many other series.

Turkish historical drama has also appeared in a number of series that have achieved high viewing rates, and presented different stages of Ottoman and Seljuk Islamic history, Such as the series' Ertugrul, Osman, the capital of Abdul Hamid, and other series.

Ertugrul<sup>1</sup> and Osman<sup>2</sup> series were of great importance in Turkey, the two series topped the list of the highest views in Turkey, (Sabah newspaper, 2020) (Aljazeera net, 2021) Also, in Europe it was shown on several channels such as (ABC 1, AB and TOTAL). In Pakistan, Ertugrul series has been dubbed into Urdu language. Also, YouTube data showed that the episodes of the series reached 3.3 billion views on YouTube only in one year. (Aljazeera net, 2021)

### **The Series of Omar**

The series of Omar is considered one of the most important historical series in the history of Arab drama. The series consists of 31 episodes that were filmed across various regions in Morocco and Syria. In this series, recreates a seventh-century Arab community in its entirety. The portrayal of Mecca's reconstruction on the outskirts of Marrakesh, along with its villages and major cities from that era, is based on extensive research derived from detailed historical sources (mbc, 2012).

The series delves into the life of Omar bin al-Khattab, commencing with his upbringing as a camel herder in a society plagued by injustice. After converting to Islam, he emerges as a prominent Muslim leader, His period in power witnessed many great victories and conquests. The series vividly depicts the dramatic conflicts between Muslims, Romans, and Persians.

Until 2012, "Omar" stood as the largest television series ever produced in the Arab world, showcasing its grand scale and significance (mbc, 2012). The series was produced by MBC channel and Qatar TV. The writer of the series is Walid Saif and it is directed by Hatem Ali.

### **Method**

This study is one of the descriptive studies that relied on the quantitative approach in collecting data, then analyzing this data through a program SPSS.

The MBC channel, one of the most popular Arab satellite channels, attracts a significant viewership according to statistics (mbc, 2012). In 2012, during the holy month of Ramadan, a significant period for the Muslim audience who often watch television after completing the nightly Tarawih prayer, MBC streamed the Omar series.

The study relied on the study population of Palestinians, who were watched of MBC1 Television. The sample of study involved a randomly selected sample consisting of individuals who had watched the 'Omar' series either through television broadcasts or on YouTube. The researcher administered a questionnaire specifically to respondents holding a university degree, including doctorate, master's, bachelor's, and diploma holders. This particular category of the sample population was chosen due to their higher educational attainment, which indicated their greater ability to comprehend and respond to the survey questions compared to other groups in society. The study sample consisted of 300 people who watched the series, including 144 males and 156 females.

This study seeks to answer the following question: What is the impact of the dramatic treatment elements on achieving the Attraction in a historical drama? To achieve this purpose, the researcher used multiple regression analysis.

Multiple linear regression is a statistical method that relies on data to reveal the relationships between variables in the study, and through the values of independent variables, the values of future variables are predicted

<sup>1</sup> Ertugrul series: produced by Turkish channel TRT1, it consists of five parts (2014-2019) and has 150 episodes.

<sup>2</sup> Osman series: produced by ATV channel, it consists of five parts (2019-2024).



(Salman, 2012). There are many regression analyzes according to the number of independent variables. The regression that uses one independent variable is known as univariate regression analysis, while the analysis that uses more than one independent variable is known as multivariate regression analysis (Tabachnick, 1996).

### Results and Discussions

In this study, multiple linear regression analysis was used, for the purpose of studying the relationship between several independent variables (dramatic structure, locations, characters, accuracy of information and contents), with the attractiveness of drama as a dependent variable. This analysis allows us to predict the dependent variable. Depending on the independent variables. In other words, multiple linear regression analysis contributes to knowing the effect of independent variables on dependent variables.

Table of Model Summary revealed that there is a significant relationship between the independent factors and the Attraction of the historical drama, (correlation is (.782<sup>a</sup>), also, the analysis result showed that squaring this value of up to 0.611, indicates the combined influence of these factors in attracting of the historical drama. As for squaring this value in showing that the impact of all the factors to Attraction of drama of up to 0.611. This ratio is called "R square". It means that 61.1% of the Attraction of the historical drama due to the factors dramatic structure, characters, accuracy of information, Locations, contents, gender, education, age, and watch the drama.

This finding shows the strength of the independent factors in influencing the Attraction of historical drama, taking into consideration the existence of other factors that affect the Attraction of the historical drama. It also shows that the correlation ratio of the square (Adjusted R Square= .598), so this ratio can be generalized. See Table (1)

**Table 1**

<i>Model Summary</i>			
<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>
1	.782 <sup>a</sup>	.611	.598

The analysis found a relationship between some factors and Attraction of the historical drama. table (2) shows this relationship in detail.

The content factor is the largest index of the Attraction of historical drama, the result is (beta = 0.348, sig = .001). this means that the contents of drama have an impact on the audience's Attraction of the topic by 34.8%, it is a large percentage, it is meaning that the contents positively affect the viewers' eagerness to watch the drama. The subject of the drama attracts viewers, and the most important topic to them is the most attractive.

The Dramatic Structure factor also affects on Attraction of the historical drama (beta .197, sig = 0.001), it positively affects the drama's attractiveness to viewers by 19.7%, this means that there is a positive contribution for the plot, conflicts and dialogue in the series in achieving the Attraction of the historical drama by up to 19.7%.

The results also revealed the impact of informational accuracy on the audience's attractiveness towards historical drama (beta .234, p = .001), the effect of informational accuracy on the attractiveness of historical drama reached 23.4%, this is an important percentage that reflects the positive impact of informational accuracy in attracting the audience to watch a series or drama.

Table (2) shows that the educational level of the viewers is related to their attraction towards the historical drama. The education factor (beta .087, p = .034) has a positive relationship with the attractiveness of the historical drama at a rate of 8.7%, its explanation is that the lower the level of education, the more attractive the drama is to viewers.

Regarding to watching drama, it also has a positive effect on the attractiveness and impact of historical drama (beta .087, p = .044). Meaning that watching drama in general contributes and affects the attractiveness of historical drama by 8.7%. This explains that when the viewer watches dramas a lot, he becomes keen to increase watching historical dramas, as if the viewer is under the influence of addiction to watching dramas, so dramas attract him easily.

There are factors that have no impact on the attractiveness and impact of historical drama; as the factors of characters, location, gender, age, and watching historical dramas, these factors do not effect on the effectiveness in attracting viewers to the TV drama.

The results of the analysis show that increasing the desire of viewers and enhancing their eagerness to watch historical TV dramas requires the attention of the producers of drama to some of the elements that contribute to attracting viewers to dramas. These elements are the dramatic content that is dealt with in the series. When the importance of the topic or topics is greater, the viewer's desire to watch increases and enthusiasm and eagerness to watch increases, In addition, the director has to attend to the dramatic structure and the strength of the plot that attracts viewers, also, the informational accuracy that achieves the trust of the viewers and encouraging them to watch it.

**Table 2**

*The relationship between factors and Attraction of the historical drama (Coefficients)*

Model	Unstandardized Coefficients		Standardized Coefficients	T	sig
	B	Std. Error	Beta		
Constant	.291	.254	-	1.147	.252
Dramatic Structure	.202	.059	.197	3.432	.001
Characters	.046	.047	.055	.976	.330
Accuracy of information	.228	.056	.234	4.058	.001
Locations	.066	.049	.071	1.332	.184
Content	.366	.057	.348	6.419	.001
Gender	-.002	.036	-.002	.047	.963
Educational level	.066	.031	.087	2.131	.034
Age	-.005	.026	-.008	-.180	.858
watching drama	-.066	.033	-.087	-2.027	.044
Watching Historical Drama	.033	.033	.044	1.013	.312

## Discussion

The study revealed that there is an effect of the elements of dramatic treatment on the attractiveness of historical drama; the effect ratio reached 61.1%, so we reject the null hypothesis. This means that several elements have an effect on the attractiveness of historical drama. The effect of these elements is detailed as follows:

### Content

The findings of this statistical analysis revealed that the content factor has the ability to attract the audience to the dramatic work, and it has proven that the subject of the film or the drama series and its contents are related to the ability of this dramatic work to attract the audience to watch, It contributes to the excitement of the viewer to watch the drama, as the content affects the increase in attractiveness by 34.8%.

The producer of the film or series seeks to include in its productions topics of interest to the audience, so each group looks for its interests. Islamic history is the focus of the Arab viewer's interest, especially as he finds hope in changing his difficult reality, the Arab viewer today is looking for about victories and strength in history.

In addition, the content deals with contemporary problems through the past. The historical series, such as the series of Omar, dealt with political, economic, social, and other topics, from the reality of contemporary life, but it was given the context of the events of the historical series, which attracts the viewer is that it is important to him, in addition to its from history.

The attractiveness of historical drama refers to the economical, historical, political, artistic, Ideologically, Arab culture, and other factors. (Kasem, 2021) Therefore, the viewer looks at the various contents and compares them with the past, especially since the Arab lacks many of them, while the past is rich in them.

This result cannot be Decisiveness in blinding them; the researcher did not find studies researched that in other series and films or in non-Arab environments.

### **Dramatic Structure**

The study also proved that there is a positive and strong statistically significant relationship between dramatic structure and attractiveness. The dramatic structure has an impact on the viewers' attractiveness towards the drama. This means that the success of the dramatic structure and the plot of the series, and the conflicts and tensions that it contains, creates the suspense that attracts the viewer towards the dramatic work.

The tight and strong dramatic structure contributes to increasing the number of viewers and their interest in continuing to watch the episodes, and their keenness not to miss any of the episodes of the series encourages viewers to be careful to watch the series repeatedly without getting bored.

The study revealed that the dramatic structure has an impact on the viewer's attractiveness to the dramatic work by up to 19.7%. Which requires the directors to pay attention to the strength of the dramatic plot and support it with conflict scenes, and to be keen on the closing scenes of the episodes, and concluding it with an interesting scene that keeps the viewer tight for the next episode.

This result agrees with (Babin, 1991) that achieving attractiveness by evoking emotional tension in viewers, which depends on the strong plot and conflicts of the dramatic structure that create this tension. In addition, it agrees with Andiani study (Andayani, 2020) that revealed the role of arousing emotional, frightening, rewarding, and motivational in attracting the viewers to watch the movie.

### **Informational Accuracy**

The results of the analysis revealed a positive, statistically significant relationship between informational accuracy and attractiveness, and this relationship is strong. Information accuracy has a role in increasing the effectiveness of historical drama.

This result is consistent with Rania's study (Mostafa, 2006), which concluded that the high level of acting and dazzle is one of the first reasons which push the young to watch series, this is an indication of the importance of the dramatic structure and it contains as the dazzling and tension in increasing the effectiveness of attraction in the dramatic work.

The role of historical information accuracy has focused on the positive impact on the audience's attractiveness towards dramatic work, and the impact of informational accuracy has reached 23.4% in increasing the attractiveness of dramatic work.

This is a high percentage. The explanation for this is that when the viewer is assured that the drama series takes into account the correct information and narrations in its events, and stays away from filling, excess and incorrect narrations. This motivates him to pay attention to it and enhances his confidence that it is worth watching. In addition to the supervision of specialists from historians and Sharia on the production of historical drama and review of texts gives legitimacy to the dramatic work, which is reflected in the viewer's increase in confidence in the dramatic work and the keenness to watch it and be affected by it. The psychological state of the viewer at that time is the submission to the series and the distance from skepticism, as he receives the information and is confident of its health and safety. The psychological state of the viewer at that time is the acceptance of the series and the avoidance of skepticism, as he receives the information and is confident of the correctness and integrity of the information.

This result regarding informational accuracy cannot be generalization, it applies to series and movies that information is available such as the Omar series, and which treat sensitive characters, but some historical series have little information, and despite that attracted viewers like the Ertugrul series.

### **Education Level:**

The results of the analysis also showed that the education level of viewers played a role in attracting viewers to the dramatic work. The results of the analysis revealed that the lower the educational level of the viewers, it positively affects 8.7% of viewers' attractiveness to historical drama and their interest and eagerness to watch it.

The interpretation of the result is that the lower the educational level of the viewers, means they are attracted to watching drama, this indicates that the high education groups in society have interests other and watching the drama is not a priority for them, they have less free time than the less educated groups.

### Watching of Drama

The results indicate that watching the drama has a role in the drama's attractiveness to the viewer by 8.7%, this means that the frequent watching of the drama keeps the viewer tense to watch the dramas, this explains the addiction of some viewers towards the drama, as some viewers move from one series to another.

This result is similar to a (Mohamed, 2000) study which revealed that repeatedly watching dramas is a motivation for watching more dramas. Also, motives for entertainment and enjoyment are among the main factors for watching television drama, it is an indication of the role of the dramatic structure in enhancing the watching the dramas and increasing its attractiveness.

In addition, the study proved that there is no relationship between characters and achieving the attractiveness of the historical drama. The characters are not an attraction factor that contributes to increasing the audience's eagerness to watch, the Actors play roles, and the roles they play excite the audience's interest and attract the viewer, the viewer does not follow the series for the character of the actor, but rather Because of content, dramatic structure and other factors.

The study proved that the location had no effect on attracting viewers to the historical drama and increasing their attachment to the series, the viewer does not watch the movie because of places.

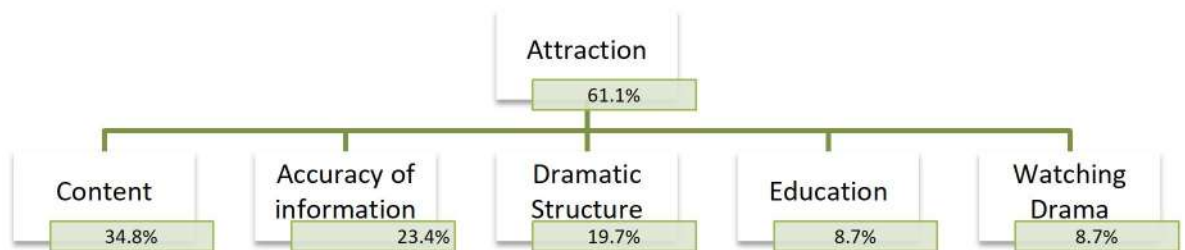


Figure 2. Impact on attraction historical drama

### Conclusion

The conducted study has revealed that there is an effect of the elements of dramatic treatment on the attractiveness of historical drama, based on the findings, it can be concluded that the combined effect of independent factors on the attractiveness of historical drama to viewers is 61.1%. This means that elements such as Content, Dramatic Structure, Accuracy of Information, educational level, and watching drama contribute to increasing the viewer's attraction towards historical drama.

Moreover, the study reveals that as interest in historical drama grows, so does the overall attractiveness of the dramatic work. This, in turn, encourages viewers to continue watching the drama. However, it's crucial to recognize that the aforementioned result suggests the presence of additional factors that have not been studied, which also influence the attraction towards dramatic works. Elements such as sound effects, music, editing, and others may have a significant role in increasing the attraction of the dramas. So, investigating these factors would provide a more in-depth understanding about factors that play a role in increasing the attraction of dramas.

The analysis revealed significant findings regarding the factors influencing the attractiveness of dramas. Specifically, the analysis emphasized the pivotal role of the content factor in attracting the audience. The subject of the film or drama series was found to be closely linked to its ability to attract viewers. It was observed that the

content factor has a 34.8% increase effect on the attractiveness, thereby arousing viewers' interest and excitement about the drama.

In addition, the study found that the dramatic structure factor can increase the attractiveness of drama by 19.7%. This indicates the importance of the arrangement and organization of plotlines, scenes, and storytelling techniques to attract the audience.

Furthermore, the study determined several other factors that impact attractiveness, Accuracy of Information was found to influence attractiveness by 23.4%, this indicates the significance of presenting historically or factually accurate information. The educational level of the viewers also played a role, causing 8.7% of the attractiveness. Moreover, the repeated watching of the dramas carried a similar weight of 8.7% in influencing the overall attractiveness.

These results collectively emphasize the multifaceted nature of factors contributing to the attractiveness of series and dramatic works. By understanding the influence of Content, Dramatic Structure, Accuracy of information, Educational level, and watching drama, creators and producers can strive to enhance the appeal of their productions to a wider audience.

This article contributes to the scientific understanding of what makes certain series and movies attractive to viewers while other works don't attract the audience's attention. The factors illustrated assume a role in achieving attractiveness, so, gaining knowledge about them empowers producers and scriptwriters to improve the quality and performance of their dramas, by leveraging these insights, the filmmaker industry can also make informed decisions, refine their storytelling techniques, and create dramas that impact with viewers on a deeper level.

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## **Relationship of Smartphone Use and Job Performance: Insights from Electronic Media Industry in Pakistan**

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This research article explores the relationship between smartphone usage and job performance among professionals working in the leading electronic media channels in Pakistan. Furthermore, it also examines how gender, education, and age act as moderators in the relationship between smartphone usage and job performance. For this purpose, a survey was carried out involving professionals belonging to the electronic media industry in Pakistan. The findings revealed a positive and significant relationship between their smartphone usage and job performance. The results also showed that the gender of employees did not moderate this relationship, while the education and the age were found to be significant moderators. The study will help the media owners in devising the policies and strategies to facilitate their workers in easy utilization of smartphones for work related tasks.

**Keywords:** job performance; journalistic practices; media professionals; Pakistan; smartphone usage

Technology has revolutionized the world with its novel innovations and interventions aimed at enhancing human productivity. Likewise, digitization has emerged as a pivotal force in journalism, empowering journalists to streamline their brainstorming process and execute their daily tasks more effectively (Bakirmekik, 2022). It is observed that cell phones are extensively regarded as a cheapest and easily accessible source of satisfaction for its users, as they spend a major portion of their day on these devices for interaction with others, data sharing and making different contacts/relationships. Hence, cell phones give liberty to the individuals especially youth for internet surfing and other online activities (Ali, 2014). The trend of using smartphones, equipped with latest features like sound recording camera, internet and messaging, in every field including mass media has transformed the process of news production, dissemination and its utilization hence resulting in introducing new advanced system (Gambarato & Alzamora, 2018; Westlund, 2013). The technological evolution from traditional way to digitalization especially mobile phones is a continuous process since 1990s and now media industry is massively adopting the smartphones (Kalorth et al., 2020).

Smartphones are taken as a game changer in media industry because they have not only influenced the news collection, reporting, news editing, news dissemination but also job performance of the media reporters as they now can use their handheld sets to also capture live pictures from the scene even in the absence of heavy broadcast systems (Gambarato & Alzamora, 2018; Westlund, 2013). Opting for smartphone use in journalism is also known as Mobile Journalism or Mojo Journalism. It is described as a “Type of digital storytelling where the primary device is used for writing, editing and designing.” It is a novel term in which personnel belonging to different media outlets are equipped with smartphones to disburse the multimedia story (Lydersen, 2020). Like other countries, smartphones are also becoming famous in Pakistan as a total of 188.9 million cellular mobile connections are active in the country (We Are Social & Meltwater, 2024). Netizens in Pakistan surged by 4.4 million (+5.4 percent) between 2022 and 2023. A total of 87.35 million internet users was recorded in Pakistan at the beginning of 2023. In January 2023, 71.70 million social media users were present in Pakistan, encompassing 30.1 percent of the overall population. There were 71.70 million digital media consumers in Pakistan in January 2023. With the increasing trend of mobile phones in journalism, journalists are now well-equipped for the rapid generation and circulation of news, specifically in remote and rural areas (Umair, 2016). The job performance and job satisfaction of electronic media personnel are improving due to approachability, accessibility, work credibility and easiness of smartphone use (Podger, 2018). However, Information and Communication Technologies (ICTs), despite being an essential part of the organizational technological environment, also cause mobile technostress when the users undergo an imbalance due to continuance intentions of using cell phones (Khlaif et al., 2023).



This study examines the relationship between smartphone usage and job performance of the employees working in electronic media houses in Pakistan. Smartphones are moveable handheld computers that install and uninstall software as per requirements. Also, they include video recorders, messaging, e-mail, digital cameras, internet access, and apps (Suleman et al., 2021). They provide an easy medium to users for immediate connectivity, leading the present information technology environment. On the other hand, job performance is basically a way to achieve an objective or aim in a role, work, or company, however, the actual repercussions of the performed duty in a job are often ignored (Campbell et al., 1990). Job performance is also traditionally described as behaviors and actions within the control of the individual who serves the company's objectives (Rotundo & Sackett, 2002).

Historical records reveal that smartphone usage has satisfied the thirst for immediate connectivity as it has led the present information technology environment. Various elements of smartphone addiction in the perspectives of social and academic learning, mobile phone messaging and following the latest trends by its users have been observed. The findings of previous studies concluded that smartphones have direct or indirect impact on its consumers. Several researches have been carried out to explore the role of handheld technologies on the students of mass communication in America and UAE (Ayish & Dahdal, 2017) and work efficiency of the mobile or field journalists through smartphones (Vaataja, 2012). In the Pakistani context, researches have also been conducted to investigate ethnic news media in the digital age, mobile journalism and changing patterns of news production and fake news culture (Jamil & Appiah-Adjei, 2019) and usage of X (formerly known as Twitter) by journalists that positively impacts their job performance (Shah et al., 2022). However, the relationship between smartphone usage and job performance of electronic media personnel, especially in Pakistan, is least explored. Therefore, the influence of extravagant usage of smartphones needs to be analyzed on the level of professional proficiency of electronic media personnel in Pakistan. The primary aim of this study is to investigate the role of smartphone usage on the job performance of electronic media personnel in Pakistan.

### **Literature Review**

Salah (2017), in his qualitative research, discovered that the individuals engaged in journalism profession find handheld sets or smartphones an effective tool as they can comfortably report from remote areas or where they cannot reach easily. Hence, positively affecting their job performance. This emerging technology has offered a great opportunity for both journalists and media houses to increase their connections across the world. Vaataja (2012) stated that the work efficiency of smartphone-laden mobile journalists increases when they are in the field as the mobiles help them in capturing, finalizing and sending the story or footage or any new related material directly from the field. The acknowledged benefits of handheld mobile devices for field journalists include monetary gains, workflow improvement, job satisfaction, access to information, convenience, communication enhancement, temporal flexibility, and location independence.

Ayish and Dahdal (2017) surveyed students of media and communication studies and concluded that the respondents were in support of preparing their assignment on video storytelling on portable devices like iPads and smartphones in comparison to other procedures. This termed the mobile phones reliable media collecting tools for better journalistic practices. Jamil (2023) investigated that the digital incompetency of Pakistani journalists negatively affects their job performance and digital trends installed in newsrooms in the mainstream media. The findings revealed by Nauman et al., (2023) identified that the individuals with strong self-emotional regulation skills are more proficient at controlling their smartphone usage and display decreased work withdrawal behaviors, eventually leading to enhanced job performance.

Some researchers like Shah et al., (2022) also explored that Pakistani journalists use digital technologies, including smartphones to use social networking sites like X, formerly known as Twitter, and this positively affects their job performance. An empirical research study of US print media editors and reporters revealed that journalists who use smartphones are more likely to generate content like video, audio and photo, which ultimately improves their job performance; but, many respondents also complained that using smartphones keeps them tied to their work every day of the week (Molyneux, 2014). History shows that journalists accept new technologies for collecting the news if such tools are easy to use, can help in enhancing the storytelling procedure, and even assist in accelerating newsgathering (Quinn, 2011).

Workers who utilize advanced digital technologies can improve not only their job performance but also other office-related mechanisms like work knowledge, collaboration and self-confidence (Pitafi et al., 2018). Employees also use smartphones to achieve organizational goals and objectives by getting information faster through these gadgets as compared to the typical notice boards (Bambang & Putri, 2023). Using certain social media

platforms like Facebook and instant messaging software KakaoTalk in offices positively influences job performance at the individual level, therefore, helping the employees become more fluent with technology (Lee & Lee, 2020).

Li (2019) disclosed that depending on smartphones for official tasks appears to boost the job performance of the employees. Not only this, but it can also turn into obsession and fade their work efficacy. As media houses run operations around the clock with morning, evening and night shifts, the employees who work in late hours also have to interact with the technologies. According to a study by Cheung et al., (2020), using smartphones for work at night negatively impacts workers' organizational well-being. Nevertheless, the study also discovered a positive relationship between smartphone use for work at night and employees' job satisfaction.

By synthesizing and categorizing the existing literature, this research seeks to analyse the prevailing trends and knowledge gap. Additionally, it aims to contribute to the state-of-the-art research by presenting novel findings that address unexplored areas and bridge existing knowledge gaps.

This study employed Uses and Gratifications Theory as a theoretical base stating, "What does an active audience do with the media, why, and with what effect?". According to this theory, individuals tend to select media and content that align with their interests in order to satisfy them. Particularly, the theory intends to investigate what social or psychological needs stimulate people to use a variety of media (Katz & Blumler, 1973). It also deals with the impact of technologies comprising both traditional and new media: radio, television, smartphones, internet, Twitter and Facebook (Roy, 2009). This theory also tells that people are not passive, while they have some goals for which they seek indulgence, leading to active media consumption. The Uses and Gratification Theory has been identified as suitable and feasible for journalism and mass communication fields (Moon et al., 2022). As this theory is based on the concept of an active audience, it is possible to apply it to new computer-mediated communication and smartphones (Foregger, 2008; Logan, 2014; Ruggiero, 2000). Bautista and Lin (2017) applied the Uses and Gratification Theory to identify the impact of mobile instant messaging applications usage by nurses on their work-related performance. The study found that the mobile applications gratify the need of the respondents for information exchange and socialization. Another study exposed a statistically significant relationship between school principals' usage of smartphones regarding performance and their job satisfaction while applying the Uses and Gratification Theory as a theoretical base (Thomas, 2021).

In addition to investigating smartphone usage's relationship with the job performance of electronic media personnel in Pakistan, the study also explores how gender, education, and age serve as moderators in this relationship. The following hypotheses have been formulated to meet the objectives of this study.

H1: There is a positive and significant relationship between smartphone usage and job performance among electronic media personnel in Pakistan.

H2: Gender (male and female) moderates the relationship between smartphone usage and job performance among electronic media personnel in Pakistan.

H3: Education (BA/BS, Master's, and MPhil degrees) moderates the relationship between smartphone usage and job performance among electronic media personnel in Pakistan.

H4: Age (younger, middle-aged, and old age groups) moderates the relationship between smartphone usage and job performance among electronic media personnel in Pakistan.

## Method

To assess the relationship between smartphone usage and job performance, a cross-sectional research design was employed. A quantitative research technique was adopted for which a survey (N=400) was conducted among the electronic media professionals of the prominent media outlets in Pakistan to meet the objective and nature of the study.

## Sample

The population for this study was confined to individuals with specific occupation and characteristics. The employees working in Pakistani electronic media houses who engage with smartphones on daily basis at their workplace were target participants. A purposive sampling technique was used to collect the data from the respondents spanning ages 19 to 50 years and residing in Lahore. Homogeneous sampling, a type of purposive sampling, was employed to select the very relevant sample with similar characteristics or traits. The population of this research was media professionals who regularly use smartphones, includes reporters, anchor persons, digital media experts, producers, newsroom employees, and researchers. However, employees from sections unrelated to

news, interns, and managerial staff have been excluded from the study. As determined by the exclusion and inclusion criteria, out of the total number of employees (ranging from 500 to 800) in each media house, approximately 90 of them use smartphones for designated work-related tasks. A total of 500 questionnaires was handed over to the media personnel and 455 were returned. However, all questionnaires containing missing values were omitted and only 400 questionnaires (80 per media house) were included as a final sample in the study. These individuals were employed by Express News, Dunya News, Lahore News, City 42, and Din News, working in all three shifts (Morning, Evening and Night). Additionally, the participants demographically showed an equal representation of both males and females. In this way, the population was filtered out to get a fine sample of the respondents.

**Measures**

Smartphone Addiction Scale developed by Kwon et al., (2013) was adapted to determine smartphone usage. It was a 19-item tool with Cronbach’s Alpha value of 0.844, as shown in Table 1. Job Performance Scale developed by Goodman and Svyantek (1999) was adapted to determine job performance. It was a 16-item tool with Cronbach’s Alpha value of 0.908 as shown in Table 1. Each statement of both tools was measured on a five-point Likert scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree.

**Table 1**

*Descriptive Statistics and Reliability Coefficients for Study Variables*

Scales	$\alpha$	$k$	$M$	$SD$	Range	
Smartphone Usage Scale	.844	19	65.82	10.897	19-95	37-85
Job Performance Scale	.908	16	61.44	10.644	16-80	17-80

Note:  $\alpha$ = reliability coefficient,  $k$ = no. of items in scale and subscale

Table 1 shows that Smartphone Usage Scale and Job Performance Scale indicate a high level of internal consistency and accuracy of the measures with Cronbach Alpha Values of 0.844 and 0.908 respectively.

**Procedure**

For data collection purpose, a formal permission was obtained from the Human Resources and Administration departments of the respective news channels. A questionnaire comprising written consent form, demographic information sheet, smartphone usage and job performance scales was given to the respondents. It was communicated to them that their participation is voluntary in nature. The information taken from them during data collection will be kept confidential and will not be used other than for research purposes.

**Results**

**Sample Demographic/Description**

The statistics related to the demographic characteristics of the sample can be found in Table 2. There was an equal representation of male ( $N = 200, 50%$ ) and female ( $N = 200, 50%$ ) participants. Similarly, an equal number of participants were selected from each TV channel i.e. Dunya News ( $N = 80, 20%$ ), Lahore News ( $N = 80, 20%$ ), City 42 ( $N = 80, 20%$ ), Express News ( $N = 80, 20%$ ) and Din News ( $N = 80, 20%$ ). The majority of them possessed a master's degree ( $N = 216, 54%$ ). While all resided in Lahore city, the majority hailed from rural backgrounds ( $N = 344, 86%$ ) and the rest of them were from urban settings ( $N = 56, 14%$ ). Moreover, the demographic sheet further asked about the smartphone brand and found the 112, 28% respondents were users of the iPhone, 252, 38% respondents had Samsung while 136, 34% participants were using other brands. Descriptive and inferential tests were run in Statistical Package for Social Sciences (SPSS) for data analysis.

**Table 2**

*Demographic Details of Participants*

Descriptive	Frequency	Percentage
<b>Gender</b>		
Male	200	50%
Female	200	50%
<b>Education</b>		
BA/BS	96	24.0%
Master	216	54.0%
MS/MPhil	88	22.0%

<b>Organization</b>		
Dunya News	80	20%
Lahore News	80	20%
City 42	80	20%
Express News	80	20%
Din News	80	20%
<b>Family System</b>		
Joint	196	49.0%
Nuclear	204	51.0%
<b>Locality</b>		
Rural	344	86.0%
Urban	56	14.0%
<b>Brand of Smartphone</b>		
IPhone	112	28.0%
Samsung	152	38.0%
Others	136	34.0%

### Hypotheses Testing

The main hypothesis stated, "There is a positive and significant relationship between smartphone usage and job performance among electronic media personnel in Pakistan." Pearson Product Moment Correlation Analysis was applied to ascertain any relationship between the independent variable Smartphone Usage and the dependent variable Job Performance. It also provides a measure of the strength and direction of the relation as to which extend, one variable changes when the other variable changes.

The result indicates a positive, strong, and significant relationship between smartphone usage and job performance ( $N=400$ ,  $r = .518$ ,  $p < 0.001$ ) among electronic media personnel in Pakistan (see Table 3). Hence, H1 is supported.

**Table 3**

*Pearson Product Moment Correlation Between Variables (Main Hypothesis)*

Variables		Smartphone Usage	Job Performance
Smartphone Usage	Pearson Correlation	1	---
	N	400	---
Job Performance	Pearson Correlation	.518**	1
	Sig. (2-tailed)	<.001	---
	N	400	400

\*\* Correlation is significant at the 0.01 level (2-tailed).

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

The second hypothesis H2 of this study assumed a more positive and significant effect of gender on the relationship between smartphone usage and job performance. Simple moderation analysis (model 1) was performed in Process Macro v4.2 to measure the moderating role of gender (male or female). This analysis was employed to evaluate whether the association between smartphone usage and job performance varies depending on gender. Understanding such moderation effect is important for recognizing differences in how smartphone usage influences job performance based on gender.

Table 4 shows that the gender of employees did not moderate the relationship between smartphone usage and job performance ( $B = -.0067$ ,  $t = -.076$ ,  $p = .939$ ). Thus, H2 is not supported. This means that the gender differences happen to have no connection to the employees' smartphone use for work purposes.

**Table 4**

*Moderation Effect of Gender on Relationship Between Smartphone Usage and Job Performance*

Variable	B	SEB	t	Sig.	LLCI	ULCI
Constant	30.820	9.836	3.13	<.0019	11.48	50.15
Smartphone Usage	.523	.148	3.51	<.0005	.230	.814
Gender (Male=1, Female=2)	-2.095	5.771	-3.62	.717	-13.4	9.26
Smart Phone Usage*Gender	-.0067	.0869	-.076	.939	-.177	.164

Note:  $R$  square change = .283,  $F(3,396) = 52.112$ ,  $p < .001$

The third hypothesis H3 of the study assessed the moderating role of education level (see Table 5) in the relationship between smartphone usage and job performance. For this purpose, simple moderation analysis was performed in Process Macro v4.2 to measure the moderating effect of education level. By taking education as a moderator, the study intended to find whether the strength or direction of the relationship between smartphone usage and job performance differs across different levels of education, unveiling significant insights for researchers and practitioners in the field.

Table 5 shows the analysis of the unconditional interaction indicating a significant change in the R-squared value ( $\Delta R^2=.057$ ) due to the interaction between smartphone usage and job performance, confirming the presence of a moderation effect of education.

**Table 5**  
*Moderation Effect of Education Level on Relationship Between Smartphone Usage And Job Performance*

Variable	B	SEB	t	Sig.	LLCI	ULCI
Constant	51.25	8.64	5.93	<.0001	34.26	68.26
Smart Phone Usage	.208	.124	4.676	<.0002	-.367	-.4532
W1 (Master, BA/BS)	22.980	9.38	2.445	.014	-41.4	-4.54
W2 (MPhil, BA/BS)	29.14	9.91	2.94	.004	-48.6	-9.67
Int_1	.293	.137	2.15	.032	.025	.561
Int_2	.350	.145	2.43	.016	.066	.634

Note: *R square change*=.057, *F* (2,394) = 24.91, *p*<.001

The results revealed that employees holding master’s degrees demonstrate significantly higher job performance compared to those with BA/BS degrees (W1,  $p < 0.05$ ). Furthermore, employees with MPhil-level education exhibit significantly higher performance than those with BA/BS level education (W2,  $p < 0.05$ ). Both interaction effects (Int\_1) are significant and it is evident that the relationship between smartphone usage and job performance of employees with master’s degrees considerably differs, being notably higher than those having BA/BS degrees. In addition, the relationship between smartphone usage and the job performance of employees holding MPhil degrees is significantly higher than those having BA/BS level degrees. These results confirm the moderating role of education. Thus, H3 is accepted.

The fourth hypothesis H4 of the study assessed the moderating role of age level (see Table 6) on the relationship between smartphone usage and job performance. For this purpose, simple moderation analysis was performed in Process Macro v4.2 to gauge the moderating effect of age on the relationship between independent and dependent variables. Taking age as a moderator, the current research sought to identify potential variations in smartphone usage influencing job performance depending on age. This test gives a clear and straightforward measure of moderation effects to better understand the nuanced association between smartphone usage, job performance and age.

Table 6 shows the analysis of the unconditional interaction indicating a significant change in the R-squared value ( $\Delta R^2=.102$ ) due to the interaction between smartphone usage and job performance, confirming the presence of a moderation effect of age.

**Table 6**  
*Moderation Effect of Age on Relationship Between Smartphone Usage And Job Performance*

Variable	B	SEB	t	Sig.	LLCI	ULCI
Constant	33.55	3.75	8.95	<.0001	26.19	40.92
Smart Phone Usage	.429	.056	7.61	<.0001	.318	.540
W1 (Middle-age, Younger)	8.79	6.30	-5.39	.004	-21.1	-3.59
W2 (Old-age, Younger)	-18.82	7.81	-4.41	.016	-34.1	-3.47
Int_1	.101	.094	4.07	.021	.083	.286
Int_2	-.312	.117	5.66	.008	.081	.543

Note: *R square change*=.102, *F* (2,394) = 10.35, *p*=.021

The results revealed that middle-aged employees have significantly higher job performance than younger employees (W1,  $p < 0.05$ ). Furthermore, older employees exhibit a significantly lower level of performance in comparison to middle-aged employees (W2,  $p < 0.05$ ). Both interaction effects (Int\_1) are significant and it is evident that the relationship between smartphone usage and the job performance of middle-aged employees

considerably differs, being notably higher than younger employees. Moreover, the relationship between smartphone usage and job performance of older employees significantly differs, being notably lower than that of younger employees. These results confirm the moderating role of age. Therefore, H4 is supported.

### Discussion

The findings of the study reveal a positive and significant relationship between smartphone usage and job performance among electronic media personnel in Pakistan which means that digital devices, especially smartphones, serve as a valuable tool for them to potentially enhance their productivity, communication, and access to information, ultimately raising their job performance. The findings of the main hypothesis are consistent with previous studies carried out on evaluating the relationship between smartphones and job performance as Vaataja (2012) noted that the job competency of smartphone-laden media men surges when they are in the field as the mobiles assist them in capturing, finalizing, and forwarding the footage or any news-related material to the team directly from where they are standing. Similarly, Hessari and Nategh (2022) found that smartphones enhance job performance among its users. The results are also aligned with the former research of Ayyad et al., (2022) who discovered a strong support from journalists regarding ICTs use in media houses in order to have a robust impact on their job performance and stability. Furthermore, mobile journalists asserted that learning journalistic skills like crafting catchy headlines, capturing real-time stories for viewers and quickly editing different recordings from their smartphones is a favorable approach to improve their work efficiency (Lee, 2021). This demonstrates that electronic media personnel use smartphones to boost their journalistic practices and increase their job performance with prompt submission of assignments.

Electronic media personnel in developing countries like Pakistan are persistently relying on smartphone technologies to stay in touch with their sources and colleagues along with completing their tasks on time. This practice has not only enabled the media professional to carry out their task and cover stories but also curbed the need for state-of-the-art equipment as most of the small media houses in Pakistan cannot afford such technologies to run their transmission. Hence, smartphones streamline the workflows of Pakistani journalists including managing their schedules, and deadlines more efficiently while offering greater flexibility in the fast-growing media industry.

In the context of the electronic media field in Pakistan, the relationship between smartphone usage and job performance is underscored by gender differences as both males and females engage with smartphones for their work, which in turn affects their job performance. The study indicates that gender (male and female) did not moderate the relationship between smartphone usage and job performance among electronic media personnel in Pakistan. The evidence turned out in denial to the previous study of Chesley (2006), who found that the relationship of smartphone usage patterns, work, and family-related tasks differed by gender and the type of technology used. Similarly, Lee et al., (2013) and Deursen et al., (2015) also found a strong role of gender regarding smartphone usage, with females demonstrating a higher tendency to develop habitual smartphone attitudes due to spending more time on their smartphones compared to males. Moreover, the results of the current study also oppose the findings of Nayak (2018), who revealed that male respondents were observed to ignore their work due to smartphone usage rather than utilizing them for job-related tasks.

While exploring the moderating role of education between smartphone usage and the job performance of Pakistani media personnel, the results show that employees with higher educational qualifications demonstrate a significant relationship between smartphone usage and their job performance. This suggests the need for organizations and policymakers to consider the academic background of employees in regard to smartphone usage in the workplace. The result aligns with the past study of Permana et al., (2021), who explored the moderating effect of education level and age factors etc on the acceptance and usage of advanced technology by its users. The findings also come in contradiction to the research of Kee (2019), who found no significant effect of education on the attitude toward using smartphone applications for work.

The last hypothesis H4 which states, “Age moderates the relationship between smartphone usage and job performance among electronic media personnel in Pakistan”, is supported by the results of the study. This indicates that younger individuals, middle-aged workers, and those in old age experience distinct effects of smartphone usage on their job performance within the electronic media sector in Pakistan. The findings correspond with prior studies conducted by Ng and Feldman (2008) and Tams (2022), which concluded that older employees exhibit lower job performance in ICT-related tasks compared to younger counterparts. Likewise, Deursen et al., (2015) found that elderly users are less likely to develop addictive or habitual behaviors towards smartphone use. The results also differ from the findings of some existing studies (Almahdi, 2017; Shely Khatun et al., 2017; Connolly et al., 2018).

This is frightening at a time when employees are rapidly getting old and technologies are booming.

Analysing the relationship between smartphone usage and job performance through the lens of established theories, electronic media professionals use smartphones to gratify their several needs. The study finds that they primarily utilize handheld devices to efficiently carry out work tasks and access relevant information using desired mediums. This aligns with the fundamental principle of uses and gratifications theory (Thomas, 2021). Recognizing these dynamics can help in formulating different strategies to embrace smartphone usage in media houses to improve the job performance and overall well-being of the personnel. This research intends to contribute to the existing literature on ICTs, especially from the perspective of smartphone usage and journalism, through empirical evidence to provide a strong base for future researchers aspiring to explore this area more. Additionally, it can help the media owners devise the policies and strategies to facilitate their workers in easy utilization of smartphones for work-related tasks. Understanding how smartphone influences the work efficiency of their users is crucial for both field practitioners and academics.

This study is well-founded as it employs valid and reliable research instruments that have undergone pilot testing procedures. The sample size possesses all the characteristics to provide sufficient statistical support for conducting empirical study along with application of appropriate analyses. Furthermore, ethical guidelines are religiously adhered to keep participants' information confidential to avoid biasness and disclosure of identity.

Despite the abovementioned contributions, the research has certain limitations which can be overcome in future studies. The research work is limited to discussing the relationship between smartphone usage and job performance with exploring moderating effects of gender, education and age. However, the impact of specific individual applications and online portals can also be explored along with inspecting the moderating effect of regional affiliation (Urban or Rural) and organizational experience. The study solely deals with quantitative methodology, but the impact of technologies on job performance through examining the experiences of the users by employing interviews/phenomenology approach can further be investigated. Research can also be carried out on evaluating the association between technologies and other variables like job satisfaction, job turnover intention, etc. Moreover, as this study is restricted to a specific target audience and location, therefore, it may not be generalizable to other professions/industries or localities.

### Conclusion and Recommendations

The rapid evolution of digitization demands a thorough approach of how to quickly adopt and use advanced technologies. It is concluded that collective efforts from media practitioners, media owners, and technology specialists are required. By working jointly, they can recognize emerging tech trends, challenges, and develop innovative solutions to ensure the smooth adoption of ICTs. There is a dire need of arranging special sessions and training for media personnel to make them aware of new technologies. Moreover, providing an environment of learning within media outlets can notably alleviate other technology-related issues, such as technostress, which leads to job dissatisfaction and turnover intention.

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## **Socio-Cultural and Religious Narratives and Practices Regarding Lunar Eclipse in Village Communities: A Study of Central Punjab, Pakistan**

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In the history of humankind, lunar eclipse has always captured attention and imagination of human beings. This study is an anthropological attempt to describe prevailing perceptions and myths about lunar eclipse and resultant religious and cultural practices in some of the rural areas of Central Punjab, Pakistan. For this purpose, qualitative research techniques of in-depth interviews and focus group discussions have been used to understand and untangle the strings of indigenous perpetuations about a celestial phenomenon. The research findings showed multiple sets of socio-cultural and religious beliefs and practices which have been followed through generations that demonstrate the richness of culture and mythological value of local verbal tales. Perceptions include fear of God, remembering the day of judgment, good or bad luck, and occurrence of disease. Practices include praying, charity, taking certain precautions to avoid the disease, and doing some religious and cultural rituals. Some unique folktales are also narrated by the respondents of the locale which have specific socio-cultural meanings for them. The paper describes all these perceptions and practices in two main parts: socio-cultural perceptions and practices and religious perceptions and practices.

**Keywords:** lunar eclipse, socio-cultural, religion, perceptions, myth, Pakistan

Lunar eclipse, a celestial event that captivates human imagination and cultural belief, has long been a significant phenomenon shaping perceptions and actions across various societies (Rasheed et al., 2022). From ancient times to present day, the lunar eclipse has always been a noticeable chronological marker influencing religious festivals, horoscopes and the development of calendars (Wendling, 2019; Brown, 2000). From a scientific perspective, a lunar eclipse has also been a vivid celestial happening that has contributed significantly to human knowledge and logical reasoning (Sánchez-Giraldo & Quintero-Salazar, 2023). This celestial phenomenon, an alignment of the sun, moon and the earth, cannot go unnoticed by human beings (Burgdorf et al., 2023). Lunar eclipses have often sparked mixed emotions of fear, anxiety and amusement among people leading to diverse interpretations based on local knowledge and cultural traditions (Beinorious, 2016; Lee, 2014). Therefore, different cultures emerged with many mysterious myths and folktales to interpret the lunar eclipse. These interpretations often involve supernatural powers, demons, vampires and monsters (Reis, 2008), with people taking precautions to prevent harm, such as beating cooking utensils or drums to expel the demons of the moon (Kim, 2007; Izzuddin et al., 2022).

Similar patterns are also observed in Pakistani culture where people interpret the lunar eclipse in several ways. Although, some of the literature is available covering sociocultural aspects of the lunar eclipse in Pakistani Culture (Rasheed et al., 2022; Ali et al., 2002; Burfat, et al., 2013). However, very little is explored about

sociocultural and religious narratives surrounding lunar eclipse in village communities specifically of Central Punjab, Pakistan. Therefore, the present study is important as it unfolds the phenomenon from both socio-cultural and religious perspectives. Specifically, the study anthropologically examines the beliefs, customs, rituals, and folktales associated with lunar eclipse among village communities in Central Punjab. Basic research questions include how lunar eclipse is perceived in the study locale, what socio-cultural and religious practices are performed in response to it, what meanings are attached to these perceptions and practices, and what impact it casts on the daily lives of the people of the community. In trying to explain this, Carl Gustav Jung's theory of archetypes is utilized which is appropriate to explain the socio-cultural and religious aspects regarding lunar eclipse. Although, some already published studies about lunar eclipse are somehow in line with the findings of the present research. However, folktales presented in this study, meanings those are attached to the perceptions and practices and gendered aspect of the findings are unique to this research. So, it would be a valuable addition to the existing literature of socio-cultural and religious perspectives of lunar eclipse.

The legends surrounding the lunar eclipse vary widely from linking it to plagues, earthquakes, deaths and other disasters (Baig et al., 2016; Vahia et al., 2016) to some societies considering it beneficial or lucky for people, crops or animals (Beinorious, 2016). Whether the eclipse brings good or bad luck, it prompts precautions and local practices reflecting how local people interpret eclipses (Legare et al., 2020). Many of the previous studies shed light on diverse interpretations of the lunar eclipse such as Javanese villagers and Mexicans interpret the lunar eclipse as trouble for pregnant females and their livestock (Izzuddin et al., 2022; Maldonado-Duran, et al., 2002; Maestas & Erickson, 1992). Likewise, in Pakistani culture expectant women are advised not to stare at the Moon and lie flat on their bellies to avoid deformities (Burfat et al., 2011). It can be observed from studies that many factors affect the practices and perceptions about the lunar eclipse such as locality, religion, education level, family, or age group (Ezzi, 2017).

For some people, it is not more than just news or a mere celestial event. However, for some societies and individuals, a lunar eclipse is of utmost importance that affects their lives. Nevertheless, these beliefs are part of the overall culture of human societies and if we compare these narrations, we can say that despite many commonalities, there is an element of uniqueness in each culture's beliefs and practices regarding lunar eclipse. From all these traditional beliefs and narratives, we usually see that the absence of proper astronomical knowledge led people to establish different stories and resultant practices. However, it does not mean that the change has not happened. It is observed that some of those conceptions have already evolved, and people have abandoned many of the practices and beliefs (Musharraf & Dars, 2021). Thanks to the social media that disseminates the information in seconds worldwide (Habib et al., 2024). Nevertheless, the narratives about lunar eclipse in the form of myths are still prevalent (Rana, 1995). As the present study is an attempt to find out perceptions and practices about the lunar eclipse in village settings, the collected data is culturally rich and interesting because village communities in Pakistan hold a mixture of religious and local beliefs to a substantial extent.

### **Theoretical Framework**

Carl Gustav Jung's theory of archetypes for mythology is most suitable to apply for this study as it probes myths holistically. We also have adopted Walker (2014) critique on Jung's theory of archetypes where he differentiates between archetypes and archetype images. We have discussed and applied Jung's theory of archetypes in two aspects: archetype and archetype images; collective unconsciousness and its manifestations in the form of beliefs (narratives) and practices, and mythology as meanings of the world around us.

Archetypes can be defined as instinctual forms of mental functioning (Walker, 2014). Instincts are biological urges which are felt by the senses but at the same time these urges produce manifestations in the form of fantasies and symbolic images which are actually called archetypes (Jung & Von, 1968). According to Walker (2014), from the treasure of archetype images, archetypal motifs: mythology, is drawn. Whether represented verbally, visually, musically or dramatically, these motifs are usually linked in a sequence which we call a myth. Myths are culturally elaborated narratives and mythology as a whole represents collective unconsciousness. Every myth is peculiar and exotic which has the potential for indirectly revealing some unforeseen or neglected aspects of human psychology (Walker, 2014). The collective unconsciousness creates certain archetypes as images of the world such as ruling powers, the gods, events in the soul's cycle of experience, and images of the dominant laws and principles (Jung, 1953). Jung (1968), calls mythology as the textbook of the archetypes and as a narrative it can be considered superior to conceptual modes of thought because lively stories narrated through myths reflect a more faithful image of the

archetype realm. Myths are culturally elaborated representations of different situations which enables us to re-experience consciously the unconscious instinctual processes of the psyche (Walker, 2014). It is human imagination that creates myths out of archetypal images.

According to Walker (2014), Archetype and archetype image are two different concepts which Jung has used interchangeably. The categorization of Walker seems logical. Archetype is inherited and part of the collective unconsciousness. However, archetype image is a content that is a response of the conscious mind which results into some particular belief and practice. That is why, collective unconsciousness results into variations in beliefs and practices about a certain phenomenon in different cultures. Image is the symbolic representation of the instinct itself which is conscious. However, archetype is a pattern of human mind about which the mind is not aware of. So, in order to describe the belief and practices regarding lunar eclipse in this study, we would apply the term archetype images rather mere archetypes. Walker (2014), further elaborates that there is a single archetype for a particular human situation but there are infinite manifestations or empirical expressions of each archetype which can be called an archetype image. Thus, each archetype can create unlimited number of archetypal images in the form of visualizations or personifications. In this way, socio-cultural and religious aspects regarding lunar eclipse can be considered as archetypes while its perceptions and resultant practices can be categorized as archetypal images which are varied in extent and number. Apart from archetype aspect, another interesting aspect of Jung's theory is the compensation aspect. Mythical world is a potential means of compensation for the sense of meaninglessness that has cursed the modern culture which is proud of its rationality but at the same time is full of doubts (Walker, 2014). It means that myths provide meaning to the world around us and those meanings compensate the thought patterns of the people in different forms.

### Review of Literature

We would mention a few of the available studies regarding lunar eclipse to support and explain the topic more appropriately. Many studies of lunar eclipse demonstrate religious, mythical, exorcism, and disease-related aspects of it. Duane and Ray (2011) reported the beliefs of Aborigines about the lunar eclipse. Aborigines view the moon as a self-oriented and greedy man who steals food. For them, stealing food is a taboo, so the moon is punished during the lunar eclipse while cutting it into pieces, eventually its death. Lee (2014) mentioned a few practices and perceptions of Mesopotamians and the Luiseno tribe concerning the lunar eclipse. For the Luiseno tribe of southern California, the Lunar eclipse makes the moon ill. Therefore, their chants or prayers are the remedies to bring back the moon to health. However, Mesopotamians see the lunar eclipse as an assault on their king and the moon by seven demons. Thus, they make a lot of noise by beating drums and making their dogs howl and bark to threaten those assailants on the moon. Litina (2020) narrated another interesting myth from the *Batammaliba* community of Togo and Benin in Africa that the lunar eclipse happens because of the quarrel between the sun and the moon. Thus, people come together to resolve their issues and tend to reconcile and plead with them not to fight.

Vahia et al., (2016) stated that Indians consider an eclipse as an event when the gods are in trouble. Therefore, for them, donations and gifts are the best way to lessen the gods' problems. These donation practices are a prominent feature of their belief system. That's why they are still carrying those practices of donations to temples on stone or copper plates with inscriptions. Stephenson and Said (1997) explained the records of lunar eclipses in Medieval Arabic chronicles in which specific terminologies coincide with lunar eclipse: *Khusuf-al-Qamar*; means Sinking of the moon or failing of the moonlight. Besides, they described various beliefs of Medieval Arabic people related to the lunar eclipse as omens.

Literature about the lunar eclipse also demonstrates its relationship with diseases. Loh and Ascoli (2011) explained multiple attitudes of local people towards a birth defect of Cleft Lip and Cleft Palate among Indians, Chinese and Africans. Indians believe that deformity in a newborn baby is caused by staring at the moon during an eclipse in pregnancy. A similar myth is prevalent in Africans that going out during an eclipse causes damage to the baby's organs in the womb of the mother. Hamachar and Norris (2011) described various stories and beliefs of Australian aborigines that lunar eclipse makes them afraid. They think that the moon is hiding from the Sun or is covered with fur resembling a solar eclipse. In short, the lunar eclipse is a symbol of anxiety, so they hide under fig trees to keep themselves safe from diseases caused by the lunar eclipse.

Some scholars have also come up with a scientific interpretation of the lunar eclipse. Baig et al., (2016) related lunar eclipses with superstitions and stated that in the age of science, people of different cultures still believe

in superstitious perceptions and perform various practices accordingly. People join the lunar eclipse with the demons and other supernatural creatures that capture the moon. Consequently, they face fear, anxiety and depression because of those mythical beings. Haristiani et al., (2017) revealed that with time it was noted that teachers were more concerned with getting the mythical perceptions changed from the minds of young students by relating scientific realities like eclipses with cosmological happenings. However, irrespective of technological advancements, different socio-cultural and religious narratives are built in a society on the basis of enculturation as Boulter et al., (1998) reported that narratives are the fundamental elements to construct perspectives about different things.

### Method

Qualitative data collection tools are used for this study to investigate the perceptions and beliefs concerning lunar eclipse and how these perceptions shape the actions and practices.

#### Data Collection

For this study, we utilized a semi-structured interview guide as a primary instrument to collect the data from the participants. Based on the research topic, the interview guide covered all the possible questions. Semi-structure interviews were designed to accommodate multiple new perspectives and insights during the interview and discussion. This flexible approach ensured holistic coverage of the topic. Besides, this approach also helped in adding novel viewpoints and findings during the discussion.

#### In-Depth Interviews

24 in-depth interviews were conducted with the respondents of Muhammad Pur, and Chak No: 111/9-L of Sahiwal District, Punjab, Pakistan. Each interview was of 50 minutes on average. Interviews were then transcribed, and labels (codes) were assigned to extract themes.

#### Focus Group Discussion

Apart from interviews, focus group discussions (FDG) were also conducted to gain more fruitful insights. Three FGDs were conducted, having 4 to 5 respondents each and it took almost 90-115 minutes (about 2 hours) for each FGD.

#### Field Notes

Field notes were prepared during fieldwork to write down every point of the collected data for analysis and to overcome the fear of loss of information. Purposive and snowball sampling techniques were used to find the respondents. As per the topic of the study, rich information was available with the elderly people having indigenous knowledge along with the people who have some supposed experience of disease, deformity or any other calamity caused by the lunar eclipse. That is why these sampling techniques are justified.

#### Participants

The participants in the research were local people from above mentioned villages of Sahiwal District, Punjab. Out of 24 respondents, 15 were females while 09 were males. The age of the respondents was between 25 and 77 years.

Table 1  
*Characteristics of respondents*

List	Count
<b>Total Respondents</b>	24
<b>Age group</b>	25-77
Male	09
Females	15
<b>Education Level</b>	
Uneducated	08
01-05	07
06-08	04
08-10	02
10-14	03

### **Process of Analysis**

The present study employed thematic analysis to uncover recurring themes and patterns within the data, allowing for a comprehensive understanding of the socio-cultural and religious significance attributed to the lunar eclipse. Through a meticulous analysis of the data, distinct themes emerged shedding light on multiple unique rituals, attached meanings and community responses. The process of analysis involved a systematic categorization of the data into themes and sub themes by labelling (coding) re-occurring aspects in the data in form of qualitative narratives.

### **Trustworthiness**

Due to the qualitative nature of the research topic, qualitative content analysis is crucial. The trustworthiness of qualitative content analysis is often presented in terms of credibility, conformability, dependability, authenticity and transferability (Elo, et al., 2014) . This study focuses on trustworthiness based on participant observation, interviews, and rapport building. For the study, it was crucial to maintain a respectful and unprejudiced approach towards participants' perceptions and beliefs. By allowing them to freely share their cultural myths and folktales, researchers gained the trust of the participants. Therefore, researchers can ensure that their findings accurately reflect the complex nature of socio-cultural and religious interpretations and practices of people about objectives of the study. Additionally, researchers triangulated the data by cross-referencing information from different people of both villages. Furthermore, transparency and accountability throughout the research process also ensured trustworthiness of the data.

## **Results**

### **Perceptions and Practices**

The findings of the study have informed us about the intricate web of socio-cultural and religious archetypes that translates into perceptions and practices (archetype images) surrounding lunar eclipse in the community. These archetype images (perceptions and practices) are deeply intertwined, necessitating a deep holistic discussion of these aspects.

First, we would discuss the socio-cultural archetype images (narrative interpretations and practices) of the local community in relation to the lunar eclipse. The data showed that the respondents expressed a wide range of archetype images including fear, panic, omen and sometimes luck about lunar eclipse. The villagers interpreted lunar eclipse as a sign of violence, murder, attack on moon, demonic possession, revenge and aggression. These interpretations underscore the complex and multifaceted nature of community's archetypes which are perceptions and beliefs surrounding lunar eclipse. These perceptions are rooted in unique socio-cultural patterns of the locale and are reflected in resultant practices. As walker (2014) believe that archetype images have no limits because they spring from a variety of cultural contexts.

Next, we would debate about religious archetype images (interpretations and practices) associated with lunar eclipse in the community. These religious beliefs and rituals are integral part of the community members' worldview and shape their behavior and responses. The resultant practices are unique, keeping in view the socio-cultural and religious patterns of the study's locale. The practices to avoid 'negative impact' of lunar eclipse are even more interesting to note. By exploring the interplay between socio-cultural and religious perspective, we can gain a comprehensive understanding of meaning and actions that are linked with the lunar eclipse. As Walker (2014) says that mythology compensates the meaninglessness. It means that it provides meanings to the archetype images to societies around which cultural narratives are interwoven.

### **Socio-Cultural Perceptions and Practices**

#### *Socio-Cultural Interpretations of the lunar eclipse (folktales)*

The study presented a broad spectrum of socio-cultural interpretations. These narratives show a diverse nature of archetype images in the form of folk tales. Many respondents narrated folktales which are fascinating to be noted. A respondent, namely Khizer, aged 40 narrated that: A lunar eclipse occurs when there happens some massive violence or injustice somewhere in the world which is hated by the God and it turns the moon black in response to God's resentment. Similar stories relating bloodshed and violence to the lunar eclipse were also common among the respondents. Another respondent, Khan, aged 63, quoted a unique story that:

Once the moon and sun's mother asked for water from the sun, and the sun gave his mother hot water. The mother got furious and cursed the sun to live ablaze always as he had burnt her. Then the mother demanded water from the moon. The moon gave icy water to his mother, so the mother prayed for the

moon. Since then, the sun has a grudge over the moon that why did the mother curse the sun and pray for the moon. Now, the sun comes for revenge and tends to show its power turning the moon black.

A similar myth was narrated by a respondent, Bibi, aged 56, that:

The moon took salt as a loan from the Sun. The moon could not make to pay back the loan of the sun. That is why the Sun shows its aggression to the moon. The moon comes in its original bright color when the sun stops threatening the moon and gives the moon another chance with a promise of coming back to get its salt after some time. And when it returns, it turns the moon black again.

#### *Socio-Cultural Practices*

Lunar eclipse is considered an extraordinary event that can be disastrous mostly for pregnant females and farm animals and to avoid that disaster they must perform some rituals and ceremonies. If they do not practice those traditional rituals the fetus might be deformed. The people have a tradition to make their pregnant women awake during this celestial phenomenon of lunar eclipse. This ritual is performed by advising women to take a bath, apply some makeup, and fragrance and walk all night until the eclipse is over or lying straight on their bellies and stay inside in some traditions. Pregnant females and their husbands are also advised not to use any sharp or metal objects otherwise their baby could be born with any deformity. Farah, a 26-year-old housewife, narrated that:

My grandmother used to say that a woman must bear labor pain until the eclipse is over because a newborn in the eclipse night might encounter demons of the moon. Apart from this, pregnant women are advised to lose their trousers' string, not work with metal or sharp objects, not to chew anything, keep walking unless the eclipse ends, not to sleep, take a bath, and apply some makeup. If they do not follow these instructions, it might deform the fetus. Elders in the households make sure the application of these traditions.

Bushra, a 45-year-old housewife and a tailor, shared her experience about the lunar eclipse's outcome. Her son was born with a difference in eye size (one of his eyes is smaller in size) because of her apathetic behavior as she was unaware of the eclipse. Although, the boy's eyesight is good like that of normal children. Naseema, aged 32, also shared similar birth deformity experience. She said that she was four months pregnant when the lunar eclipse happened. She did not notice and could not walk as instructed. Therefore, her baby had an Anorectal malformation. She believes that it was all because of her negligence that she made her baby suffer. An 18-year-old Shahid's mother explained that he had a cleft cut lip because she was cutting vegetables when she was pregnant with Shahid. Therefore, he was born with this deformity and was unable to pronounce things clearly. A 22 years old, Sarah's grandmother explained:

I could not tell my daughter to keep moving as she was unaware of the lunar eclipse because we did not have television from where we could get the news of it. Eventually, Sarah was a club foot baby, and now with my daughter's later pregnancies, I was overly concerned about the eclipse not to repeat the same mistake again. I took a lot of care in case of another daughter and her baby was born normal with the grace of God.

The research findings showed that in several birth deformity cases, mothers attributed the deformities in their children to their own carelessness and unawareness. As per locals' views, absence of media or any other information source was a key reason that kept them unaware of eclipse. Had they known about it, they would have performed relevant practices to keep their newborn children safe.

Besides this, a few people were also conscious about their young girls and children. For them, the eclipse is a demonic possession of the moon, so protecting beautiful young girls and children from demons is as much crucial as for pregnant females and farm animals. People believed that the lunar eclipse is because of supernatural powers like demons, or monsters, who possess teenage girls and newborns. Additionally, they believed that pregnant women and children must stay inside, girls should not wear black color and should not comb their hair when an eclipse is there to keep themselves safe from demons of moon. Ayesha, aged 22, a student, said:

My grandmother scolds me if I wear black clothes on the eclipse night. She advises to stay inside and not to comb in the open spaces such as the courtyard because monsters are all around the moon looking for young girls who fascinate them. Therefore, I must stay in the room. Additionally, Ayesha said that we



spin thread for years, but we avoid spinning on the eclipse night. Because spinning yarn during the lunar eclipse brings hard luck to human beings.

Likewise, local people also believe that eclipse rays are not good for their health. According to their tradition, they try to cover their water pots and tanks, do not consume food, and try not to travel during the eclipse night. For some villagers who are agriculturalists, the eclipse could be disastrous for their crops, so they tend not to sow a new crop or harvest during the eclipse night. If they do not perform any one of the rituals mentioned, the eclipse could harm their newborns, young girls, crops, and animals. A newly married girl, aged 23, explained that: My mother-in-law advised me not to eat anything throughout the time lunar eclipse happened and to lay straight but to avoid sleep. If I would eat something by chewing it, it would cause my fetus to develop deformity.

However, bad luck and birth deformities are not the only mythological archetype images, admirers of the lunar eclipse also exist. They consider the lunar eclipse to be a harbinger of good luck for their unborn child. These individuals perform specific practices such as loosening their trouser strings and uncovering their belly, especially when the eclipse is about to end, to allow the eclipse rays cast on their belly because this has striking effects on the baby. A 33 years old, Bibi explained:

In my pregnancy, my mother rang me to talk about the coming eclipse. She advised me to take a bath, wear new clothes, apply makeup on my face and lay down on my back with an overt belly. As I am supposed to let the eclipse rays cast on my overt belly for a beautiful baby like the moon. I did the same and had a beautiful, healthy, and fair complexion boy after three consecutive daughters.

Above mentioned viewpoints of respondents reflect a deep-rooted relationship between the lunar eclipse and daily life of the community. Besides, it also shows that these narratives are meaningful for the indigenous people and this constellation of archetypes make up the overall fabric of the society.

### **Religious Perceptions and Practices:**

#### *Religious Interpretations of the lunar eclipse*

The study's finding revealed that the local community's engagement with the lunar eclipse extended beyond just socio-cultural archetype images. Many respondents related celestial phenomenon of lunar eclipse with the religious archetype images. Their religious interpretations and practices were diverse in scope and extent. Some respondents believed that the lunar eclipse symbolizes the Day of Resurrection, viewing it as a time for spiritual introspection and repentance. These people would perform specific Islamic rituals, such as offering *Salat-ul-Khasuf* (a specific pray dedicated to the lunar eclipse), doing charity, and seeking forgiveness from God. For them, the lunar eclipse is a divine sign that prompts them to strengthen their connection with Allah. Others interpreted the lunar eclipse as manifestation of God's power and a reminder of the transient nature of the physical world. A farmer, namely khan, aged 47, shared his perception about the lunar eclipse as:

Allah shows his creations that he has control over the moon, so humans should realize His omnipresence. It is a period of the moon's curse as the God counts on its actions too. Despite being a celestial body and of course sinless, the moon must pass through divine accountability. So, humans should learn a lesson that one day they will be held accountable for their wrongdoings. This is God's signal to humans to kneel and ask for forgiveness.

Another respondent, namely Nisa, aged 77, narrated similar thoughts to symbolize lunar eclipse with the day of judgment. Many such beliefs and perceptions were narrated by the respondents who find answers of this celestial happening in theology.

#### *Religious Practices*

In the locale of study, respondents relate the lunar eclipse with some archetype images based on theology passed to them generation over generation from their ancestors. These myths translate their functional aspect into religious sphere. Therefore, practicing Islamic rituals was common in local narratives. These religious rituals may include praying, asking forgiveness and giving charity. These practices during lunar eclipse of course depend on the religiosity of the people that the more they are religious, the more they tend to pray. Musa, aged 67, an imam in a mosque narrated:

I perform *Nafl* (supererogatory prayer) and *Salat-ul-Khasuf* (a prayer specific for lunar eclipse). Being Muslims, we are told to pray for the forgiveness of our wrongdoings on such occasions, so we must follow it. Many people in our locality do not know much about specific eclipse prayers, so they perform *Nafl* and recite the holy verses of the Quran.

Another respondent, namely Haji, aged 53, stated that:

In the mosque of our locality, many times when the lunar eclipse happens, we pray *Salat-ul-Khasuf* in congregation. Especially, when the lunar eclipse happens around the time of any *Farz Namaz* (Obligatory Prayer), we must pray *Salat-ul-Khasuf* in congregation because people are already there in the mosque for obligatory prayer. However, even if lunar eclipse happens at some odd time, we try to get people together for congregational prayer as it is proved from the *Hadith* (Sayings and actions of the Prophet Muhammad SAW).

Similarly, Khatoon, aged 71, responded that: Their whole family would ask forgiveness from the God whenever eclipse happened because the eclipse is not understood as a good omen rather it shows the wrath of Allah when we are beset with sins. Another respondent, Bibi, aged 50, described another kind of religious practice namely, *Pun Daan*, (Charity). According to Bibi:

We distribute *Shakar Paray* (Sweets) to the children of the street or the whole locality as charity because distributing something to eat as a charity to children brings good luck and nullifies the bad effects of the lunar eclipse. Children pray to God and the God listens to the children more as they are innocent and free from sins. Many other similar religious practices were found which allowed the people to cope with the anxiety and stress originated from the event of lunar eclipse.

Another respondent, Mirza, aged 46, stated that:

Whenever an event such as lunar eclipse happens, my father prays to God in loud voice. May be in this way, he is able to satisfy himself that he might be saved from the wrath of God which is supposedly evident in the form of lunar eclipse. He goes on further to say that we normally attribute any action of nature such as excessive rain, earth quacks, windflaws to the wrath of God and try to seek forgiveness from Him. He says that surely all these catastrophes are because of our own sins.

The detailed picture of religious archetype images (perceptions and practices) of natives showed that for them, an eclipse was an opportunity to reaffirm their faith in Allah and engage in supplicatory prayers. The study's exploration of religious interpretations and actions also provided an understanding of the local community's belief system which shaped their engagement with a celestial event.

### Discussion

Data shows that people maintain beliefs and practices regarding lunar eclipse because of stress, panic, or omen which is caused by the archetype images held by the them. This fear could be any loss in their economy, bad luck for their babies, any deformity in newborns, bad luck for business and agriculture, fear of being sinful, fear of God's wrath and to avoid supposed negativity from supernatural beings. Nevertheless, supposed negativity is not the only outcome of mythical belief on lunar eclipse. Respondents also showed positive perceptions such as good luck and health seeking beliefs. As described in the above sections, in the case of pregnancy, many elderly women advised the young girls with pregnancy to uncover the belly, so that the rays of the eclipsed moon may cast on it, specifically when the eclipse is about to end, which could result in a healthy and beautiful baby in the womb of the mother. This variation in archetype images of same locality could be due to ethnicity, impact of different folktales, or personal experiences of the past which is a research gap to be filled by someone.

The study has showed somehow gendered results as mostly females were more active members in harboring these archetype images and practicing proper measures while the male members were not that particularly interested in it. However, it does not mean that men are totally uninterested regarding implications of lunar eclipse but we can say that comparatively women are more abiding to hold socio-cultural and religious archetypes regarding it. There might be a reason that more archetype images of harm are related to women in case of lunar eclipse that is why it seems logical that women are more concerned about it. The role of elderly women in households is also important in

harboring the perceptions and making the females of the family act accordingly. This study coincides in development of related archetype images with the previous studies done by other researchers such as Vahia et al., (2016), Loh and Ascoli (2011), or Hamacher and Norris (2011). However, this study is unique in terms of its folktales that are perpetuated over the generations in the communities of the locale.

The people of the study area maintain those long-inherited traditions and abandoning them could be disastrous according to their beliefs. Theory of archetypes regarding myth helped a lot to explain the phenomenon that how and what functions this mythical belief plays to sustain mythical patterns and what meanings people attach to these myths which in turn make the narratives meaningful for them. Although, now people somehow know scientific reasonings of the phenomenon of lunar eclipse due to rapid flow of information in today's world, but they still tend to believe and act according to their traditional thoughts because of cultural learnings. This rigid belief in the eclipse mythology plays a significant role in maintaining their identity as a community or social group. However, the sustainability of local culture and local identity is at stake because of the rapid development of the internet and technology. In some way, these religio-cultural traditions and rituals might also imply a sense of belonging among local people. Being a qualitative study, this research is limited to the locale and variety of perceptions and practices specifically folktales derived from the study are also location bound. It is an addition to the previous knowledge of mythology regarding lunar eclipse but its findings cannot be applied to the whole of Punjab Province of Pakistan as this province has multi-ethnic composition.

### Conclusion

The patterns of socio-cultural and religious mythical beliefs about lunar eclipse enjoy popularity in the study area in Punjab, Pakistan and influence the decisions and attitudes of people in different spheres of their daily life. We have tried to elaborate socio-cultural and religious aspects of perceptions and practices regarding lunar eclipse with help of the theory of archetypes and have come out with the deep understandings of the phenomenon. The theory has helped us particularly in two ways: to know that what type of socio-cultural and religious archetype images are associated with the lunar eclipse in the study locale and what meanings are attached to these archetype images in socio-cultural and religious spheres in the community. The myths which were found to be mostly talked about and cared for were regarding pregnancy of women and animals. All other aspects of these myths can be categorized in second tier. Role of elder women of household is an important aspect to consider here as the perpetuation of such beliefs depends upon them.

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## **The Multilateral Behaviour of Awkward Powers: A Thai Case Study**

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This study examines the multilateral behaviour of Thailand, an awkward power, through the lens of the regional group formation (RGF) theory, using the formations of the Asia Cooperation Dialogue (ACD) and the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS) as examples. The RGF theory postulates that states establish smaller regional multilaterals to secure exclusive leadership and international recognition. However, Thailand's regional multilateralism and its manoeuvring in launching the ACD and the ACMECS unveiled deviation in multilateral behaviour. Specifically, Thailand's leadership in the ACMECS formation is consistent with the hypothetical explanation, whereas its bridging role in the ACD, inviting major Asian powers as founding members, deviates from the expected scenario derived from the theory. This discrepancy questions the applicability of the RGF theory to smaller powers, especially awkward ones, implicitly suggesting that their multilateral behaviour appears to be multifaceted. The study recommends theoretical refinement to better explain the behavioural nuances of non-major powers in regional multilateralism.

**Keywords:** ACD, ACMECS, awkward power, multilateral behaviour, Thailand

Since the 1980s, regional multilateralism—more commonly, albeit not identically, referred to as 'regionalism' or 'regional groupings'—has prevailed and evolved at multiple levels, from continental to sub-regional. Although varied in degree and context, several regional multilaterals outside the West have followed the steps of the European Union (EU) in their institutional development. The Association of Southeast Asian Nations (ASEAN), a template of non-Western multilateralism for developing nations, and the bodies under its umbrella are no exception (Katsumata, 2011). In academia, similar to policymakers who craft institutional design, regional multilateral models have largely been Euro-centric; that is, they have been constructed based on EU specificities. For instance, Balassa's (1961) theory of economic integration was modelled on multilateral groupings in Europe. However, it has been extensively adopted to explain regional multilateralism in Asian regions. Furthermore, the theory has been applied as a yardstick for the success or failure of regional multilaterals.

Models of regional multilateralism (e.g., Balassa's theory) have been heavily criticised for their EU-centrism and deep-seated Western-centric biases (Iroulo & Lenz, 2022). The rapid growth of multilateral institutions outside Europe, notably the ASEAN-centred regional architecture (Rahman, 2018), has encouraged scholarly efforts to theorise regional multilaterals grounded in non-EU-centric experiences (Acharya, 2011, 2012). For instance, Dent (2016) proposed a conceptual framework of analysis, drawn on regional multilateralism in East Asia, treating regionalism, in a broad sense, as a form of regional coherence, covering ordering structures, processes, and multilateral arrangements. However, the nation-state is not the unit of analysis (Dent, 2016); that is, it does not explain how a state will behave in regional multilateralism.

As the present study focuses on the behaviour of a state concerning regional multilateralism, Hamanaka's (2009, 2018, 2023) regional group formation (RGF) theory deserves attention. The theory provides assumptions demonstrating a hypothetical pattern of behaviour of a state when dealing with the formation of regional multilaterals and offers causal explanations about what drives a state to behave in the way it does. Arguably, the RGF theory has claimed its validity in explaining Japan's behaviour on regional multilateralism (Hamanaka, 2023).

The key theme of the RGF theory is pivotal to the logic of exclusivity among nations in regional multilateralism, especially in the early years of the multilaterals. In essence, the central argument is that ‘[it] is better to be the head of a small group than to hold a less powerful position in a large group’ (Hamanaka, 2009, p. 1). The RGF theory begins with *a priori* assumptions, as presented below:

- Assumption 1: All states are egoist in nature and intrinsically search for international status, which is always relative.
- Assumption 2: Holding the leading position in a regional multilateral, wherein the state assumes primacy over others, is beneficial overall, preponderantly, though not exclusively, because of status factors (e.g., prestige and recognition).

The inference of the two assumptions is forthright in terms of multilateral behaviour. To wit, *ceteris paribus*, an egoist state is driven to create a regional multilateral in which it can assume the number one position by excluding more powerful states to gain greater international recognition (Hamanaka, 2018, 2023). In other words, the multilateral behaviour of a state, especially a smaller one, is that it strives to form a smaller regional multilateral institution wherein it can assume the lead position by excluding larger rivals.

In this study, we examine the multilateral behaviour of ‘awkward powers’ in regional multilateralism—more precisely, regional multilateral formation—considering the RGF theory. An awkward power refers to ‘a state with significant capabilities and influence, which defies neat categorisations onto the conventional power hierarchies, on account of its contested, neglected or ambivalent international status’ (Abbondanza & Wilkins, 2022). That is to say, it is a state, which lacks existing literature appropriately explaining its politics and foreign relations.

Thailand has been identified as an awkward (middle) power (Freedman, 2022). Regarding regional multilateralism, Thailand has long experience as an initiator of several multilaterals at multiple levels (Busbarat, 2014). In 2002, it initiated the Asia Cooperation Dialogue (ACD), a continent-wide multilateral arrangement. A year later, it launched the Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy (ACMECS), a sub-regional multilateral mechanism. Yet, the literature on Thai-led regional multilateralism has remained scarce. Thus, Thailand is aptly used as our case study.

The objectives of the present study are three-fold:

- Explaining the behaviour of Thailand in regional multilateralism, based on the formations of the ACD and the ACMECS, using the RGF theory as the theoretical lens.
- Explicating whether the aforesaid theory would suffice to explain the Thai case, as mentioned above.
- Offering alternative explanations of the Thai multilateral behaviour, if the RGF theory is found to be insufficient.

### Literature Review

As aforementioned, Thailand is labelled as an awkward power (Freedman, 2022), which implies that the existing literature on the nation’s politics and foreign policy has been contested and, to a certain extent, has paid little attention to Thai affairs (Abbondanza & Wilkins, 2022). This is truer in the case of Thailand’s regional multilateralism and the country’s multilateral behaviour. In this section, we review scholarly work on the preceding topic.

Regardless of the outcomes, Thailand has been an active pioneer in regional multilateralism at varied regional scopes, from Asia-wide to sub-regional (Busbarat, 2014). Bangkok played key roles in creating an array of multilaterals at the regional level, such as the ACD and the ACMECS. Regarding Thai behaviour in regional multilateralism, particularly in multilateral formation, leadership-seeking; that is, searching for leadership recognition, has driven Thailand’s efforts to establish new, ‘self-centring’ multilaterals (Busbarat, 2012, 2014; Chachavalpongpun, 2010). Thailand’s leadership-seeking behaviour appears to be bold in continental Southeast Asia (Busbarat, 2012; Chambers & Bunyavejchewin, 2019) where it has created smaller multilaterals—sometimes called ‘minilaterals’ (Singh & Teo, 2020)—such as the Quadrangle Economic Co-operation (QEC), established in the early 1990s. The QEC is a ‘self-centring’ minilateral, whereby Thailand could play a leading role. The Thaksin Shinawatra government established the ACMECS shortly before the QEC ceased (Chambers & Bunyavejchewin, 2019). The zenith of Thai behaviour in search for leadership recognition in regional multilateralism is the creation of

an Asia-wide multilateral, the ACD, which was the brainchild of the Thaksin government (Busbarat, 2014; Chachavalpongpun, 2010).

We further explain the formations of the ACD and the ACMECS to outline the multilateral behaviour of Thailand and determine if that behaviour is consistent with the hypothetical explanation of the RGF theory.

### **Method**

In this study, we employed a case study method with process tracing for qualitative enquiry (Gerring, 2017; Maoz, 2002). The case study method has several advantages, making it a preferred methodology in political research. These include, *inter alia*, enabling the use of a process-tracing technique (Maoz, 2002). Hence, case study research goes beyond mere storytelling. Specifically, it incorporates ‘...the identification of a hypothesis or theory...[and] constructing testable hypotheses’ (Gerring, 2017).

According to Maoz (2002), incorporating a theory would outline a process, telling a story. The idiosyncratic feature of a case study method is the competence to match a hypothetical story, derived from a process of the theory, with reality. In other words, it exposes similarities and differences between the expected scenario and the actual event, whereby the latter includes the facts of the case.

Therefore, based on the assumptions of Hamanaka’s (2009, 2016, 2023) RGF theory, the hypothetical scenario concerning a state’s behaviour in the formations of regional multilaterals is driven by the pursuit of higher status; a smaller state creates a smaller regional multilateral, wherein it takes the lead by excluding its rivals from more powerful states.

Considering the hypothetical scenario, the following hypothesis (H1) was formulated:

H1: Thailand creates a smaller multilateral where it can assume exclusive leadership by excluding its rivals and stronger powers.

### **Data Collection and Analysis**

In this study, we relied on data from both primary and secondary sources. The former was archival materials released by the Thai Foreign Ministry, made available at the formal request of the first author under the Official Information Law. The latter was publicly accessible scholarly publications.

Both primary and secondary data were closely read to outline real stories about the multilateral behaviour of Thailand in the ACD and the ACMECS. The actual stories were compared with the hypothetical explanation, thereby testing H1 derived from the RGF theory.

## **Results**

### **Relevant Facts of Example I: ACD**

The ACD is a continent-wide, multilateral association initiated by Thailand in June 2002. Even within the Asia-wide scope of membership, little is known about this association. Hence, rather than immediately undertaking hypothesis testing, this section begins with a brief account of the early development of the ACD from the Thai perspective.

Owing to its continent-wide aspirations, it may be difficult to accept that the ACD is the brainchild of the policymakers in Bangkok. For instance, Hamanaka (2009) suspected that the ‘...ACD was possibly proposed by Thailand on behalf of China’ (p. 192). Nevertheless, this observation is not true. Originally, the ACD was the product of a broad concept paper on Asian cooperation prepared by the advisory team of the former Prime Minister, Thaksin Shinawatra, before his Thai Rak Thai (TRT) party had a landslide victory in the 2001 general election. The Thaksin government had central foreign-policy goals, including, *inter alia*, gaining international prominence by differentiating the nation from the image of TPI (i.e., Thailand, Philippines and Indonesia). To achieve this goal, under Thaksin, Thailand assumed a proactive and leading role by linking East and South Asia (Ministry of Foreign Affairs [MFA], n.d.).

To make the TRT-led government’s policy campaign tangible, the Foreign Ministry materialised the party’s vague concept of Asian cooperation and connectivity into a proposal for the formation of a continent-wide

multilateral association. Its institutional design was based on ASEAN modalities. Nonetheless, the distinct features of the ACD process include informality, voluntarism, and non-institutionalisation (Ahmad, 2003).

As the realisation of pan-Asian multilateralism would consume excessive diplomatic and political capital, Thailand could not expend alone. Thus, decision-makers in Bangkok invited Beijing, Tokyo, and New Delhi to join the soon-to-be-established multilateral. Thailand believed that if these three nations—Asia's big powers—supported the initiative, their positive responses would generate political momentum for the ACD and smaller Asian nations would be willing to join (MFA, 2002a). In June 2002, the ACD was officially launched with 18 founding members, including China, India, Japan, and Indonesia (Bunyavejchewin & Nimmannorrawong, 2016).

Notably, convincing China and India to play active roles in the ACD was among the top priorities of Thai foreign affairs (MFA, 2003). For Thailand, China's support was deemed the decisive factor for the success of the inauguration and initial evolution of this new multilateral association (MFA, 2002b). In short, it was Thailand's deliberate decision to include Asia's big powers as the founding members of the ACD.

Consequently, the example of ACD does not support H1.

### **Relevant Facts of Example II: ACMECS**

While promoting the Asia-wide multilateral, the Thaksin government launched a new sub-regional multilateral in continental Southeast Asia—the ACMECS—in which Thailand could take the lead. As the ACMECS has been extensively discussed in other studies (Chachavalpongpun, 2010; Sucharitanarugse, 2006), its commonly known details will not be repeated here. Instead, we shall turn to the ACMECS membership.

The ACMECS was initiated by Thailand in April 2003 with four founding members— Cambodia, Laos, Myanmar, and Thailand. Vietnam was the only continental Southeast Asian nation excluded from the founding membership. Even though the rationale for excluding Vietnam has remained confidential, Thailand's enduring effort to split a Vietnam-led coalition might explain the reason for the exclusion (MFA, 1992). Regardless, the ACMECS served as a multilateral platform for Bangkok to play the role of a donor nation, self-promoting its higher status internationally.

Its status factors are evident. In March 2006, Cambodian Foreign Minister, Hor Namhong, invited Thai leaders to participate in the Cambodia, Lao PDR, Myanmar, Vietnam (CLMV) Summit and proposed renaming the summit from 'CLMV' to 'CLMTV' ('T' for Thailand; MFA, 2006a). The message implied the potential merging of the ACMECS and the CLMV Cooperation. Thailand subtly dodged the summit participation and discreetly rejected the idea of the CLMTV. The unstated reasoning was that Thailand perceived the CLMV Cooperation as a 'recipients' multilateral forum' (MFA, 2006b). Joining the summit would produce a negative effect on the image of Thailand as a donor, which it sought for itself.

In consequence, the example of the ACMECS supports H1.

### **Discussion**

The example of the ACD does not support H1, whereas the example of the ACMECS supports H1. All the founding members of the ACMECS (i.e., Cambodia, Laos, and Myanmar) were weaker than Thailand in nearly all dimensions. By incorporating those countries into the ACMECS, a Thai-led small-scale multilateral, Thailand could easily take the number one position and assume leadership as a foreign aid donor (Chachavalpongpun, 2010). Vietnam was excluded, even though Hanoi (the capital of Vietnam) lagged behind Bangkok in the early 2000s. Nevertheless, considering Vietnam's latent power, notably the potential of the Vietnamese economy, and its political influence over Laos and Cambodia, it was safer for Bangkok to exclude Vietnam from the ACMECS membership, albeit only for a year. In addition, policymakers in Bangkok had historically perceived Hanoi as a rival, if not a threat (Viraphol, 1982). The exclusion of Vietnam from a smaller, self-centring multilateral was reasonable for Thailand. Hence, the RGF theory explains the multilateral behaviour of Thailand in establishing the ACMECS.

Contrary to the Thai behaviour regarding the ACMECS, the example of the ACD does not support the hypothesis derived from the RGF theory. Thailand invited a considerable number of Asia's big powers, including ASEAN leader, Indonesia, to join the continent-wide multilateral association as founding members. Ostensibly, during the ACD process, Thailand did not intend to acquire the number one position. Even if it would like to do so, it could not realise such an intention.



This is not to say that Thailand showed no political will to gain international status. Taking the lead of a smaller-scale multilateral is not the sole choice for an aspiring power to elevate its standing in the international hierarchy. For the ACD formation, policymakers in Bangkok expected the continent-wide multilateral to serve as a venue wherein Thailand could be in the international spotlight, allowing it to reap prestige, praise, and profile at varied levels. This was achieved by acting as a ‘bridge’ between world leaders from Asia’s major capitals and bringing them to sit at the same table and talk to each other. Accordingly, in pursuit of a higher status, smaller powers, especially awkward ones, like Thailand, could behave in ways other than creating smaller regional multilaterals to grasp exclusive leadership.

Hence, the RGF theory cannot explain the multilateral behaviour of Thailand in establishing the ACD. In this example, the ‘bridging behaviour’ is how Thailand manoeuvred to gain international recognition, elevating the nation’s position within a world community. Note that, since the early 1990s, Thailand’s regional multilateralism has regularly functioned as a bridge for outside powers, notably China, to have a multilateral dialogue with Southeast Asian nations and vice versa (Tungkeunkunt & Bunyavejchewin, 2022). This may hold for other awkward powers as well.

### Conclusion

In this study, we examine the multilateral behaviour of awkward powers using Thailand’s regional multilateralism as a case study. We explain how Thailand behaved in the process of multilateral formation in light of the RGF theory, which has been validated through numerous cases of Japan’s multilateral behaviour (Hamanaka, 2023) and other major powers (Hamanaka, 2016). We took the ACD and the ACMECS as examples. Although the RGF theory could explain the Thai behaviour in the case of the ACMECS, it failed to explicate the ACD case.

The logic of exclusive leadership in regional multilateralism, the cornerstone of the RGF theory, does not hold when it comes to smaller powers, such as Thailand. The results indicate that the multilateral behaviour of creating a smaller self-centring multilateral to assume leadership and seek higher international standing is not the sole behaviour of a state in regional multilateralism.

Theoretically, as the Thai case implies, the RGF theory should be refined by diversifying the multilateral behaviour. Bridging should be incorporated into the theory’s hypothetical explanation. The multilateral behaviour of other awkward powers should be further explored.

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## **Political Determinants Influencing Foreign Direct Investment Inflow in Pakistan**

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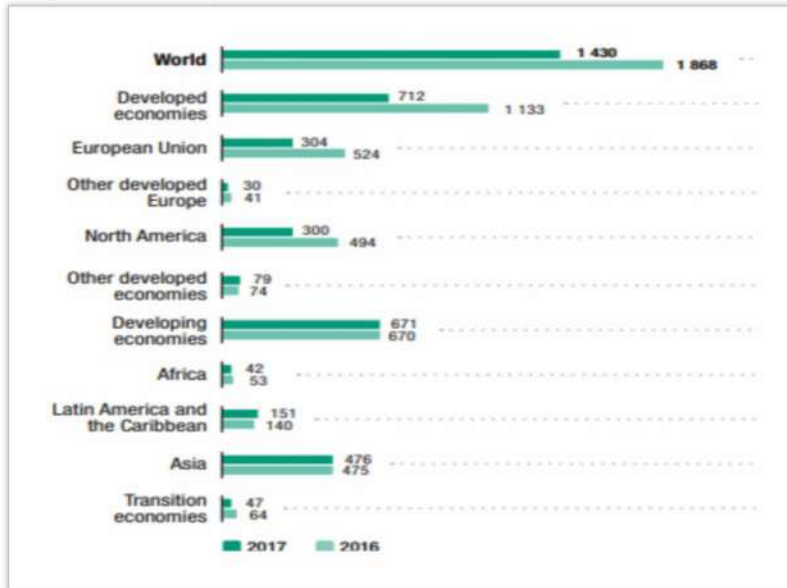
Numerous research, economic theories, and real-life examples suggest that political variables significantly impact foreign direct investment (FDI) inflow. This research proposes to assess the impact of political factors of FDI inflow in Pakistan by applying the autoregressive distributed lag model simultaneous integration (ARDL) technique from 1990 to 2017. The dependent indicator is FDI, while the regressors are government effectiveness, regulatory quality, and political stability. The empirical evidence recommends that all political variables are significant in the short run and long run as they have an immense effect on FDI inflow in Pakistan. These outcomes will help policymakers devise a strategy to ensure that economic growth and policies for such political factors help boost FDI inflows to the host economy.

**Keywords:** FDI, ARDL, political determinants

FDI has been extremely important in propelling the economic growth of emerging economies, often being hailed as a vital element that spurs development in underdeveloped nations (Khan, 2007). It not only accommodates employment opportunities by increasing the production volumes of the host country but also allows mobility of intangible assets—such as technologies, processes, products, corporate strategies, and management skills—from developed to developing nations. This transfer fosters more backwards and forwards linkages with the global economy (Ho & Rashid, 2011). Moreover, a study by (Kumar 2022) states that there is a positive significant correlation between FDI, economic growth and regional integration between the SAARC nations. FDI inflows, particularly from developed economies, usually have a favorable impact on the economic growth of developing economies by augmenting production capacity and labor productivity through technological diffusion (Borensztein et al., 1998).

In general, FDI inflows are perceived to positively influence the economic growth of the hosting nations. However, the realization of widespread benefits from FDI inflows necessitates a well-functioning political system, effective government, and high-quality regulatory frameworks. Conversely, countries under authoritarian regimes, often characterized by underdeveloped political systems and markets with minimal competition, tend to attract less technology-focused foreign investment, skewing more towards market-focused investments. Consequently, the potential benefits to the overall economy are diminished. Political instability, defined as a propensity for governmental collapse potentially due to conflicts or intense inter-party competition, can deter FDI (Alesina et al., 1996). Similarly, political risk can adversely influence the investment decisions of multinational companies (Dunning, 1993; Hailu, 2010). Factors such as forfeiture, property damage, production interruptions, threats to personal safety, and production restrictions, often stemming from frequent shifts in regulatory or macroeconomic environments, impede an investor's operational efficiency (Daniels et al., 2002). A multitude of developing countries, plagued by political insecurity and weak governance—often a byproduct of frequent governmental changes—face an increased probability of policy framework alterations. Given that foreign investors weigh political risks and instability when making investment decisions (Dunning, 1993; Moosa, 2002), they are often hesitant to invest their capital in unstable environments. Barro (1991) and Fosu (1992) have respectively concluded and corroborated that political instability is negatively correlated with economic growth, particularly noting its detrimental impact on the investment environment by diminishing current FDI inflows and decelerating economic growth.

Kurul and Yalta (2017) contend that certain institutional aspects are more influential in attracting higher volumes of FDI. Their empirical analysis, encompassing 113 developing nations from 2002 to 2012, reveals that institutional parameters, notably those related to corruption control, government efficacy, and the presence of voice and accountability mechanisms, exert a positive impact on FDI influx. Amal, Tomio, and Raboch (2010) utilized data spanning from 1996 to 2008 to analyze the influence of macroeconomic and institutional factors on FDI in Latin America. In terms of governance indicators, they explored political stability, government effectiveness, regulatory quality, rule of law, and corruption control. While it was discovered that FDI was greatly positively impacted by political stability, government effectiveness was observed to exert a significant negative effect. Other governance attributes exhibited a less pronounced impact.



**Figure 1: FDI inflows by region, 2016-2017 (Billions of Dollars)**  
Source: UNCTAD

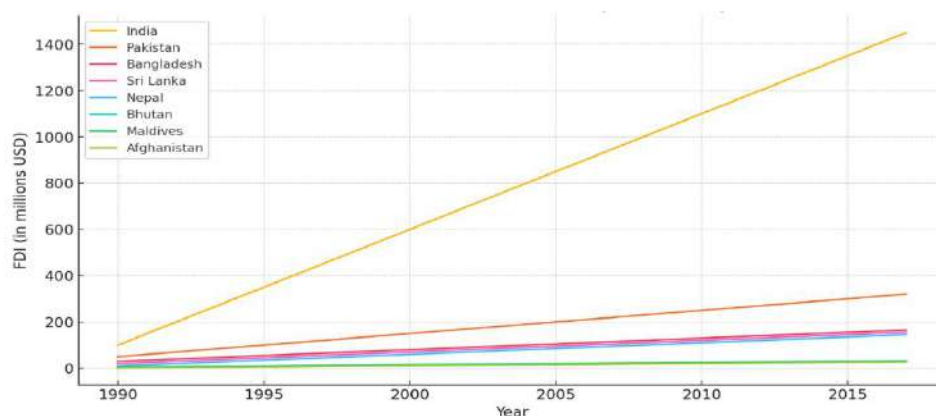
In 2017, Global FDI flows fell 23%, falling to \$1.43 trillion, compared to \$1.87 trillion in 2016 (Figure 1). Contrarily, in 2017 other macroeconomic indices, such as GDP and trade, experienced significant enhancements. This dip was mostly caused by a 22% drop in the value of net cross-border mergers and acquisitions (M&As). Even after adjusting for major one-off deals and company reorganizations that buoyed FDI in 2016, the drop in 2017 remained notable. In addition, the value of announced greenfield investment dropped by 14% to US\$720 billion, which is regarded as a significant predictor of future trends (World Investment Report, 2017). In same year, global FDI inflows reached to \$1.43 trillion, with developed countries, Asia, and Pakistan receiving \$712 billion, \$476 billion, and \$2.496 billion, respectively (Figure 1).

Despite the fact that FDI's contributing components have been extensively studied in literature, the causal relationships among FDI and growth, and the effect of each deciding variable on FDI inflows, it is undeniable that these issues have inspired numerous publications. Consequently, we do not purport that our research will offer a comprehensive literature review. Instead, this research aims to conduct a selective review of literature focusing on the influence of political variables—including political instability, government effectiveness, and regulatory quality—on FDI inflow to Pakistan from 1990 to 2017. The aim of this research study is to analyze the effects of political factors, thereby contributing to an advancement in understanding the dynamic relationship between FDI and the political system.

### Related literature

FDI entails a form of transnational investment where companies from one country are controlled by investors from another, exerting significant influence in the latter over the long term. FDI and financial development contributes majorly in the economic advancement of emerging economies. (Kumar et al., 2022). Moreover, FDI in South Asian countries as line graph illustrates (Figure 2) from 1990 to 2017. Over this period, India consistently attracted the highest levels of FDI, showing a significant upward trend, particularly from the mid-2000s onwards.

Pakistan and Bangladesh also experienced gradual increases in FDI, yet significantly less than in India. Sri Lanka and Nepal followed similar trends with moderate growth. Bhutan, Maldives, and Afghanistan attracted relatively minimal FDI throughout the years, with only slight increases observed. This graph highlights the varying degrees of investment attractiveness among South Asian nations over nearly three decades.



**Figure 2: FDI inflows in South Asian countries from 1990 to 2017 (Billions of Dollars)**

Key elements influencing investment decisions in a place include political stability and risk attached with it (Dunning, 1993; Moosa, 2002). Production limits that impair a business's efficacy or efficiency, as well as government measures that result in property damage, employee injury, or forced asset acquisition, provide challenges (Daniel et al., 2002). To draw in FDI and give investors' confidence, political stability is essential. Political instability can put lives in danger and jeopardize even the most profitable enterprises, a fact that is highlighted by several cases around the world when ignoring this element has come at a heavy cost (Jegathesan, 1995).

Political stability is an index comprise of corruption, law and order, bureaucracy quality, democratic accountability, and government stability. Pakistan's political instability, notably between 1988 and 1996, characterized by frequent government changes and stark policy and plan variations, has historically discouraged foreign investment. Numerous studies, including those by Harms and Ursprung (2002), Jensen (2003), Jakobsen and de Soysa (2006), and Busse and Hefeker (2007), indicate that politically developed nations with robust institutions tend to attract more FDI flows. Busse (2004) demonstrates that this correspondence was more pronounced in the 1990s compared to the 1970s and 1980s, making the beneficial link among democracy and FDI flows more evident. Conversely, Moon (2015) explores the time frame of dictatorships and domestic institutional commitment, identifying scenarios that elucidate variations in dictatorships' ability to attract FDI. Utilizing an Error Correction Model (ECM) across all authoritarian countries from 1970 to 2008, he found that nations with better property rights protection under autocratic regimes attracted more substantial FDI inflows. Consequently, Moon argued that the government type is less significant to foreign investors than the specific institutional qualities of the host country.

Kaufman, Kraay, and Zoido-Lobaton (2007) consolidated a repository of numerous transnational governance factors into six primary variables: Voice and Accountability (VACR), Political Stability and Violence (PSR), Government Performance (GER), Quality of Governance (RQE), Rule of Law (RLR), and Control of Corruption (CC). Studies by Kim and Trumbore (2010) Asiedu (2011), indicate a robust long-term relationship between corporate governance measures and FDI. While results may not always establish a significant correlation between governance variables and FDI, most studies confirm the importance of this relationship, suggesting that governance improvement can foster foreign capital and create optimal conditions for the flourishing of multinational companies.

Studies have indicated that the effectiveness of institutions in safeguarding market participants' interests plays a pivotal role in drawing foreign investments, as noted by (Masharu & Nasir, 2018). This influx of foreign capital is identified as a major factor in the while undergoing economic development, a sentiment echoed by (Acemoglu et al., 2002; Williamson and Kerekes 2011). A study examines the institutional and political aspects of FDI in the economies of Brazil, Russia, India, China, and South Africa (BRICS) between 2000 and 2010. It emphasizes the favorable correlation between FDI flows in the BRICS nations and regulatory quality and government effectiveness. Government efficacy is determined by the standard of public services, the expertise of civil servants, the level of political pressure independence, the quality of policy formulation and execution, and the legitimacy of the

government's adherence to its policies. Comparably, the capacity of the government to create and carry out the appropriate laws and policies to support and enable the growth of the private sector is referred to as regulatory quality (Jadhav & Katti, 2012).

Research indicates that the quality of the institutional and regulatory quality can diminish business operation costs and enhance corporate profitability, which in turn affects foreign investment attraction. This correlation is evidenced in the works of (Corcoran & Gillanders 2015; Jandhyala 2015; Sabir et al., 2019; Trevino et al., 2008).

### **Assessing Pakistan's Economic Position: FDI Contributions and Political Dynamics**

Pakistan's economic structure is intricately woven with both local and global elements, making it a distinct entity in the worldwide economic arena. The inflow of FDI into Pakistan has been inconsistent, swayed by the nation's geopolitical positioning and the internal political climate. Major contributors to Pakistan's FDI are nations such as China, primarily due to projects like the China-Pakistan Economic Corridor (CPEC), alongside the USA and EU countries. Predominantly, these investments target sectors like energy, telecommunications, and infrastructure (State Bank of Pakistan, 2021). Over time, the pattern of FDI in Pakistan has ebbed and flowed, mirroring regional upheavals and spells of economic openness.

Politically, Pakistan has experienced various forms of governance, ranging from military to democratic regimes. This evolution has shaped both local and international perceptions of the nation's stability. Despite recent endeavors to solidify its political framework, issues of transparency and governance persist (Transparency International, 2022). The prevailing political instability in Pakistan has been identified as a significant factor contributing to policy and decision-making ambiguities. This situation necessitates a thorough investigation into viable approaches that can bolster economic stability and foster growth in the region, as highlighted in the works of Mengyun et al., (2018) Irshad (2017). Hayat (2019) conducted a research study of Pakistan's economic trajectory from 1951 to 2014, juxtaposing periods of democracy with those of dictatorship. The study's conclusions posited a superior economic outcome under dictatorial regimes compared to democratic ones. Concurrently, Qadeer and Jehan (2021) pursued a similar inquiry, assessing the influence of political systems on Pakistan's economic growth. Their research reinforced the notion that autocratic governments yielded more favorable results in the concept of economic growth, inflation control, and debt management.

Similarly, Anwar et al., (2020) did a thorough study on the impact of key macroeconomic variables on Pakistan's economic growth during democratic and authoritarian regime. The argument centered on the positive long-term influence of variables such as remittances, exchange rates, and exports on economic growth. Interestingly, their findings suggested that the economic achievements in nondemocratic eras did not surpass those observed under democratic governance in Pakistan. On the global stage, Pakistan's diplomatic ties are influenced by its crucial geographical location, managing relationships with major powers such as the U.S. and China, and navigating its intricate ties with India. The country's transparency level remains a point of ongoing debate, with prevalent concerns about corruption and administrative inefficiency affecting both its domestic and international economic interactions (World Bank, 2022). Collectively, these aspects delineate Pakistan's economic outlook, unveiling a mix of potential opportunities and challenges within the sphere of global economics.

## **Method**

### **Data Description and Sources**

The empirical study analyzes the impact of political variables on FDI inflow in Pakistan from 1990 to 2017. The dependent indicator in the model is FDI/GDP, and the independent indicators are a log of Government effectiveness, a log of Political Stability, and a log of Regulatory Quality. The data was gathered from the World Bank's World Governance Indicators Database.

**Table 1**

*Variable Description and Data Source*

<b>Variables</b>	<b>Meaning</b>	<b>Data Source</b>
FDI	Foreign direct investment, net inflows/GDP	World Bank's World Development Indicators
GE	Government Effectiveness: rank	Worldwide Governance Indicators
RQ	Regulatory Quality: rank	Worldwide Governance Indicators

PS	Political Stability and Absence of Violence/Terrorism: Number of Sources	Worldwide Governance Indicators
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The model applied in this research to estimate the effect of political determinants on FDI inflow in Pakistan gives the following quotation:

$$FDI_t = \beta_0 + \beta_1 LGE_t + \beta_2 LRQ_t + \beta_3 LPS_t + \epsilon_t$$

Model Specification

T = Time period.

LN: denotes the logarithm.

$\beta_0, \beta_1, \beta_2, \beta_3$ : coefficients,  $\beta_0$ : A constant value representing FDI unrelated to independent variables.

FDI: Foreign direct investment, net inflows in GDP at time t.

LGE: the log of Government effectiveness at time t;

LRQ: the log of Regulatory quality at time t.

LPS: the log of Political Stability and Absence of Violence/Terrorism at time t:

$\epsilon_t$ : random variable of the estimated regression.

Random variables represent the effect of other variables and measurement errors not included in the model.

#### Political stability (PS)

Political stability is attributed to the public's perception of the government's potential to be rocked or toppled by political or unconstitutional means (such as politically motivated violence and terrorism). Or stable political systems preventing significant changes in political governments over extended period of time. It was taken by the Number of Sources of Political Stability and Absence of Violence/Terrorism.

#### Regulatory Quality (RQ)

It describes a government's ability to develop and enforce sound rules and laws. This facilitates and fosters the growth of the private sector. This is reflected in the rating scores for quality of supervision.

#### Government effectiveness (GE)

The initial impression of the quality of government service is referred to as Government Effectiveness. The level of self-reliance from political pressure and the quality of government personnel, the government's ability to keep its word to specific programs, and the quality of policy formulation and implementation. Government effectiveness rank has been taken.

### Model Specification

#### Unit Root Tests

Every indicator must wait a certain amount of time (known as the lagged gap) for its enactment to show up in the dependent element, influenced by cognitive, political, technological, and constitutional aspects. For instance, when raising investment, there ought to be a time limit before the consequences of the boost can be seen in a hike in GDP.

The content of the single root is related to the instability of the time series for a variable, so tests for a single root are essential to evaluate the cohesion of the time series data for the examined indicators and the extent to which they are linked. Even though there are various tests for a single root, we will focus on the accuracy and prevalence of the following two tests.

#### Augmented Dickey–Fuller test (ADF)

$$\Delta Y_t = a_0 + a_1 t + a_2 Y_{t-1} + \sum_{j=1}^p a_j \Delta Y_{t-j} + \epsilon_t$$

where:

t: the year, j: the time-lapse, p: the number of lagging gaps,  $Y_t$ : the variable to be tested's year t value,  $a_j, a_2, a_1$ , and  $a_0$  are model parameters that have been estimated.  $\epsilon_t$ : the random error variable's value per year t.

Depending on the model, series duration, and significance level, we distinguish the computed value  $\tau$  of the parameter ( $a_2$ ) to the tabular value.

#### Phillips and Perron (PP) test

The Phillips-Perron test is more generic than the ADF test because it assumes the time series is created by the autoregressive integrated moving average (ARIMA) process and uses the nonparametric correction technique to deal with sequential correlation.

$$\Delta Y_t = a_0 + a_1 t + a_2 Y_{t-1} + \epsilon_t$$

The Phillips-Perron test is carried out the same way as the prior ADF exam. Many statisticians think that the PP test is superior to the ADF test by means of accuracy and precision, mainly if the sample size is modest. When the findings of the two tests disagree or are inconsistent, it is preferable to rely on the ADF test results. We move on to the following step, which involves determining the extent of a long-term link among the time series of variables and their joint integration.

**ARDL Cointegration Test**

The Autoregressive Distributed Lag (ARDL) technique distinguishes itself from conventional integration testing methods, offering several advantages. Firstly, it can be applied to variables irrespective of whether they are integrated of order zero (I(0)) or order one (I(1)), utilizing either levels or a combination of levels. Secondly, unlike most traditional integration methods that necessitate large samples, ARDL provides robust results even when the series of integration of all research variables is not the same and the number of observations is relatively modest. Thirdly, it facilitates the evaluation of both long-term and short-term components within a single equation, rather than requiring two separate equations. The ARDL approach is implemented in three steps as a working method: In the first phase, an integration test is performed in the Unrestricted Error Correction Model (UECM) using the formula below:

Assume that Y (dependent variable) and X (independent variable) have a connection.

$$\Delta Y_t = a_0 + \sum_{i=1}^m \beta_i \Delta Y_{t-i} + \sum_{i=0}^n \theta_i \Delta X_{t-i} + \lambda_1 Y_t + \lambda_2 X_t + \eta_t$$

The long-run coefficient connections are represented by  $\lambda_1, \lambda_2$ , whereas the short-run connection data is represented by  $\beta$  and  $\theta$ . The symbol  $\Delta$  represents the initial discrepancies between factors, whereas m and n denote the lags of the elements. It's worth mentioning that the number of lag periods for the parameters does not have to be the same as the number ( $m \neq n$ ),  $\eta$  the random error limit has a constant variance and an arithmetic mean of zero, and there are no self-continuous relationships among them. The boundary-by-procedure test determines whether the two factors have a long-term connection. Pesaran et al., (2001) utilize the F test (Wald test) to determine the long-term equilibrium connection between factors and to test the hypothesis of non-complementary of the factors against the presence of co-integration.

The second step, in the event of co integration between variables, is to estimate the long-term equation using the formula below:

$$Y_t = a_0 + \sum_{i=1}^p \delta_i Y_{t-i} + \sum_{i=0}^q \delta_i X_{t-i} + \epsilon_t$$

Where  $\vartheta, \delta$ , denote the coefficients of the variables, p and q represent the slowdown duration, and  $\epsilon$  marks the random error limit.

Before the OLS technique checks the stated model for serial or autocorrelation in random errors, the disclosure rule in the ARDL model is determined using the Akaike standard (AIC) or the Schwarz Bayesian criteria (SBC). According to Ghorbani and Motallebi, (2009), the maximum annual data should be two slow periods. The ARDL specifications for short-term dynamics can be acquired in the third step by constructing the error correction model (ECM):

$$\Delta Y_t = c + \sum_{i=1}^p \vartheta_i \Delta Y_{t-i} + \sum_{i=0}^q \delta_i \Delta X_{t-i} + \psi YECT_{t-1} + U_t$$

The error correction limit is  $ECT_{t-1}$ , and the coefficients of the short-term equations are those connected to the model-steady-state convergence's short-term kinematics. However,  $\psi$  denotes the error correction factor assessed at modulation velocity at the disequilibrium imbalance will be corrected in favor of long-term balance.

Finally, we would like to point out that we will be using the E-Views 10 statistics tool to compile all tests.



## Results

**Table 2**

*Descriptive Statistics and Correlation*

<b>Panel A: Descriptive Statistics</b>				
Variable	FDI	LGE	LPS	LRQ
Mean	1.211053	3.431782	1.820504	3.272321
Median	0.832159	3.410237	1.94591	3.327927
Maximum	3.668323	3.721505	2.079442	3.535545
Minimum	0.375528	3.10346	1.386294	2.875483
Std. Dev.	0.979525	0.218166	0.284408	0.1692
Skewness	1.55374	-0.02506	-0.67456	-0.7822
Kurtosis	4.043451	1.49176	1.79871	2.84107

<b>Panel B : Correlation Matrix</b>				
Variable	FDI	LGE	LPS	LRQ
FDI	1			
LGE	0.27245	1		
LPS	0.197587	-0.60884	1	
LRQ	0.51955	-0.33727	0.578147	1

The data series for the study encompasses the years from 1990 to 2017. Descriptive statistics for the annual dataset utilized in the investigation are presented in the table above. The skewness and kurtosis statistics are crucial as they are utilized to calculate the Jarque-Bera statistic, which is employed to test for a series' normality or asymptotic characteristic. The mean and median values are found to be nearly identical, indicating that the data is symmetrically distributed. The Jarque-Bera statistics significantly accept all variables, revealing that their conditional distributions are normal.

The aforementioned table illustrates the associations among all the studied variables and the degree of positive correlation, both high and low. An increase in regulatory quality is associated with a rise in FDI, exhibiting a correlation of (0.27). Similarly, an enhancement in government effectiveness is correlated with an increase in FDI, with a correlation degree of (0.27). However, these associations might not be fully elucidated and characterized due to operational correlations potentially being influenced by coordination and differences due to a number of innate elements amongst them, which may not provide sufficient evidence of the causal relationship. Consequently, an examination will be conducted using various test methods to determine whether these correlations are valid or not.

### Unit Root Test

We assessed the stability of the study indicators to determine the operational status of the autoregressive distributed lag (ARDL) test, which requires time series of the study variables to have an integration level of I(0) or I(1) or both numerous tests are available in this domain. The statistic illustrates the stability of the time series to determine and assess their level of integration, and the table below delineates the level of integration of the considered time series. Both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were employed to assess the statics of the variables. Table 3 presents the results of these two tests.

**Table 3**

*Unit Root Test Results*

Variable	Level		First difference	
	Constant	Constant with Trend	Constant	Constant with Trend
<b>ADF TEST</b>				
FDI	-2.264 (0.1929)	-2.2094 (0.4568)	-2.9142** (0.049)	-2.6615 (0.2611)
LGE	-1.3894 0.5653	-1.3684 (0.8368)	-3.454** (0.0225)	-3.3579* (0.0889)
LPS	-1.2857 (0.6138)	-0.9348 (0.93)	-3.4641** (0.022)	-5.3095*** (0.0039)
LRQ	-2.0072 (0.2814)	-2.7352 (0.2349)	-4.1896*** (0.0051)	-4.2189** (0.0204)
<b>P-P TEST</b>				
FDI	-1.747 (0.3933)	-1.627 (0.7429)	-2.7142* (0.091)	-2.6615 (0.2611)
LGE	-1.3894 (0.5653)	-1.3684 (0.8368)	-3.4261** (0.0237)	-3.3283* (0.0934)

	-1.2857 (0.6138)	-1.0896 (0.9041)	-3.4602** (0.0222)	-3.6336* (0.0553)
LPS	-2.1099 (0.2431)	-2.7981 (0.2144)	-6.4854*** (0.0001)	-5.7859*** (0.0011)
LRQ				

Notes: (\*) Significant at the 10%; (\*\*) significant at the 5%; (\*\*\*) significant at the 1%, and (no) not significant.

The outcomes of the unit root stability test—which includes variations with a constant, with a constant and trend, and without a constant and trend—highlight that all the time series are unstable, and the probability values of these tests are high. Other models exceed the significance threshold of 0.05 or 0.1. The remaining time series shows Stability of the first difference across models. especially According to the results of the first differential stability test, FDI is significant at the 5% level and government effectiveness (GE) is significant at the 0.1 level, and their mutual probabilities are below the significance threshold (0.05 or 0.1). The coherence of the time series, in terms of both level and first-order difference as displayed in Table 4, suggests the possibility of cointegration among these time series.

**Table 4**  
*Bounds Test Results (ARDL)*

Model	F-statistic	No. of Regressors (K)
f(LogGE,PS,RQ)	17.19416	3
	Critical Value Bounds	
Significance	I(0) Bound	I(1) Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

The bound test outcomes are shown in the table that indicates that f statistic value of the 17.19416 bound that is above the upper limit at the 10%, 5%, 2.5%, and 1% level of significance. However, the f-statistic value is higher than the lower threshold of 10%, 5%, 2.5%, and 1% significance level. By keeping this into consideration, We can conclude that the factors under study have a long-term link.

**Table 5**  
*Long Run and Short Run Results*

Long-Run: Dependent Variable FDI					
Variable	Coefficient	Std. Error	t-Statistic	p-value	
LLGE	2.013835	0.332006	6.065659	0.0037	
LPS	-1.454789	0.239592	-6.07196	0.0037	
LRQ	4.392167	0.5089	8.630703	0.001	
C	-17.289395	2.405007	-7.18892	0.002	
Short-Run: Dependent Variable LFDI					
Variable	Coefficient	Std. Error	t-Statistic	p-value	
FDI 1(-1)	-0.821716	0.232452	-3.534995	0.0241	
LRQ	3.64729	0.748025	4.875892	0.0082	
LRQ(-1)	6.298396	0.79387	7.93379	0.0014	
LRQ(-2)	-0.844048	0.525275	-1.60687	0.1834	
LRQ(-3)	-1.100356	0.591092	-1.861563	0.1362	
LPS	-6.530754	0.783492	-8.335441	0.0011	
LPS(-1)	5.483953	1.025406	5.348081	0.0059	
LPS(-2)	3.063736	1.408613	2.175002	0.0953	
LPS(-3)	-4.667148	0.873714	-5.341735	0.0059	
LGE	-3.00755	0.743162	-4.046966	0.0155	
LGE(-1)	3.649942	0.72148	5.058963	0.0072	
LGE(-2)	3.026244	0.820174	3.689759	0.021	
C	-31.49637	6.365003	-4.948367	0.0078	

$R^2=0.99$ ; Adjusted  $R^2=0.98$ ; S.E of Regression=0.133; SSR= 0.070  
F-stat= 80.05056; Prob(F-stat)=0.000356; DW=2.08236

Table 5 unveils the long-run and short-run association between the factors, as indicated by the probability associated with the t-statistics. The most of the coefficients were significantly different from zero at the 0.01 mean in

the long run. The regulatory quality coefficient (4.39) shows that regulatory quality has a strong, favorable association with FDI in Pakistan in the long run. This means that for every additional unit of regulatory quality, FDI in Pakistan will similarly increase by 4.39%. The coefficient of the present value of regulatory quality is 3.64, which has a remarkable and beneficial effect on FDI in Pakistan in the short run. Each unit increases regulatory quality, increasing FDI by 3.64%. Comparable results were found by Buckley and Casson (1985) Aziz (2018). Consequently, regulatory quality can be affirmed as a potent variable in attracting FDI inflows to Pakistan.

Conversely, an increase in government effectiveness by one unit leads to an increase in FDI by 2.01 in the long run. However, Government effectiveness shows a negative and major association with a -3.00 coefficient in the short run. This suggests that FDI inflow into the country will decrease with every unit increase in government effectiveness. Furthermore, the long-run coefficient of political stability, which stands at -1.45 percent, suggests a negative and significant association, suggesting that a rise in political stability would result in a fall in FDI inflow into the nation. Furthermore, with a -6.530 coefficient and significant p-values, political stability shows an adverse and significant link in the short run. This runs counter to earlier studies (Aharoni, 1966; Jensen, 2003) that emphasize the importance of political stability for FDI inflow. Schneider and Frey (1985), studying 80 developing nations, discovered that political instability in a nation resulted in a substantial decline in foreign capital inflows. The results indicate that cointegration exists between the variables for FDI and government effectiveness, political stability, and regulatory quality as the interpreted variables. The empirical findings reveal that political stability and government effectiveness are crucial drivers of FDI inflows, with consistent models. The empirical evidences indicate that in BRICS nations there are two factors, namely Government Effectiveness and Regulatory Quality, that are positively associated to FDI inflow (Pravin, 2012).

Based on the ARDL regression model, various results were also robust, including  $R^2$ , Adjusted  $R^2$ , F-statistic, and p-value. The  $R^2$  of 0.995 suggests that the independent variables possess strong explanatory power, a notion also supported by the model's adjusted  $R^2$  value. The F-statistic, which evaluates the overall significance of the model, indicates that all regression models are statistically significant, as evidenced by the F-statistic (80.05056) and p-value (0.000356).

### Discussion and Conclusion

This research tries to elucidate the short and long-term effects of political factors on FDI inflows into Pakistan's economy between 1990 and 2017. To understand short- and long-term elasticities, the Unrestricted Error Correction approach was used, applying Pesaran et al. (2001) bounds testing technique to cointegration. Additionally, Pesaran and Shin's (1995) ARDL method was applied. The empirical evidence suggests that Pakistan's potential for FDI inflows is influenced by the LRQ, LGE, and LPS variables. Acemoglu and Simon (2005), Kaufmann and Aart (2002), Yassin, et al., (2020), Rodrik and Subramanian (2004) state that a host country's government effectiveness and regulatory quality tend to draw in more FDI. The correlation matrix revealed a robust link between LFDI and regulatory quality, government effectiveness, and political stability. The numerical research suggests that enhancements to these criteria could facilitate the attraction of FDI flows, thereby aiding the country's economic prosperity. Pakistan's challenge lies in sustaining economic progress while amplifying the flow of FDI. To lure more FDI, the Pakistani government must also optimize its economy. Policymakers must formulate a strategy to ensure that economic growth and policies for such political factors support and amplify FDI inflows to Pakistan. However, this research is not without limitations. Only three variables were investigated, all of which are deemed significant. Future studies could incorporate more variables to provide a comprehensive view of the issue. In conclusion, it is sincerely hoped that this research will serve to highlight the critical necessity for additional research on this pivotal topic.

**Policy Implication:** The study elucidated that all components, namely LRQ, LGE, and LPS, has a major pivotal role in attracting FDI, and comprehending these facets can empower policymakers to make more informed decisions to enhance the performance of the domestic economy. Furthermore, a conducive political environment, robust corporate governance, efficacious economic policies, and solid infrastructural measures can assist in bolstering business-facilitating dimensions, such as treaties and investment promotion organizations, to optimize the benefits derived from FDI. By meticulously understanding and strategically implementing policies that enhance these critical components, policymakers can create an environment that not only attracts FDI but also ensures that the domestic economy is positioned to reap the maximum benefits from such investments, thereby fostering sustained economic growth and development. This comprehensive approach, which blankets political stability, regulatory quality, and government effectiveness, provides a comprehensive framework for enhancing the appeal of the domestic economy to foreign investors while simultaneously ensuring that the resultant investments are channeled in a manner that substantively contributes to economic advancement.

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## **Asymmetric Effects of Economic Growth, Fossil Fuel Consumption, and Financial Development on Carbon Emissions in Ghana**

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This research analyzes the impact of economic expansion, non-renewable energy consumption (NonREC), financial sector improvement, and carbon releases in Ghana. The study used yearly data from 1971 to 2014 and applied the Nonlinear Autoregressive Distributed Lag (NARDL) method to examine the data. The NARDL approach facilitated the differentiation of variables into favorable and unfavorable adjustments by examining the short- and long-run effects. The results indicated that all the independent variables exhibited short-term asymmetries, while economic growth presented long-term asymmetry. Negative adjustments in economic expansion led to a decline in carbon releases in the long run but an increase in the short run. favorable and unfavorable adjustments in NonREC positively and negatively impact carbon releases in both the short and long term. Additionally, negative adjustments in financial development positively affected carbon releases in the long run. The cumulative dynamic multipliers graphs and impulse response function graphs illustrate the same impact pattern of the independent variables on carbon releases, confirming the findings' robustness. The study suggests implementing environmental policies in Ghana that promote renewable sources of energy and energy-conserving innovations to reduce environmental degradation. The findings recommend that the decision-maker prioritize effective environmental strategies like a green economy, renewable energy use, and energy-saving technologies. By adopting clean energy and implementing advanced technologies, sustainable economic growth can be achieved while preserving the environment and the ecosystem.

**Keywords:** carbon emissions, financial development, fossil fuel consumption, Ghana, NARDL

**JEL Classification:** Q32, Q43, Q53, Q54

Environmental degradation has generally been growing due to the increase in industrial and agricultural sectors, with carbon emissions in metric tons per capita rising from 0.21 in 1960 to 0.23 in 1980 to 0.32 in 2000 to its present level of 0.36 (WDI, 2012). Climate change has resulted from the emission of greenhouse gases, such as those from fuel combustion, urbanization, industrialization, and deforestation (Babar et al., 2015). However, environmental protection policies appear to have not kept pace with economic development. Economic growth has sometimes led to reduced spending on environmental protection, hastening environmental degradation.

Ghana lacks comprehensive research on the impact economic growth has on the environment, and this could rationally account for Ghana's lack of strict environmental rules, laws, and regulations and their inconsistent enforcement (Copeland & Taylor, 2004). A rapidly growing population in a developing economy like Ghana would most likely result in high emission levels of greenhouse gases where environmental regulations are not being followed as per the Environmental Kuznets Curve (Antweiler et al., 2001).

Ghana quickly industrialized after gaining independence in 1957 through solid government ownership, government regulation of foreign trade, and a sizable government bureaucracy. Rapid industrialization was an unsuccessful strategy that led to a decline in the economy. The government implemented the Economic Recovery Program as a cure for the unfortunate economic conditions. As a result, the economy responded favorably (Asante-Addo & Weible, 2019). For instance, the agriculture sector experienced an annual growth rate of around 18.15%

from the period of 1995 to 2001, which increased to 22.18% from 2002-2007. Similar improvements in performance have been noted over time in the industrial sector, which grew to a growth rate of 15.10% per year from 1997-2001 to 21.47% from 2002-2008 (WDI, 2012).

The Ghanaian government has outlined a policy scenario to curb environmental pollution. For instance, Ghana's GDP and demand for energy in the stated policy scenario are expected to be 9 Mtoe and 438 billion USD in 2040, respectively. Efficiency standards could allow an economy four times larger than today to require only three times more energy. Oil remains the most significant energy source, with two-thirds consumed in the transport sector, while hydropower and domestically produced gas and oil are the primary providers of electricity. According to stated policy scenarios, the electricity demand is expected to increase by about 350%, and by 2040, fossil fuel consumption<sup>1</sup> in Ghana is expected to be 13.4Mtoe, with an efficiency gain of -1.4Mtoe. Natural gas is replacing light crude oil in electricity generation rapidly, and by 2030, GHG emissions are expected to be reduced by 15% (unconditional) to 45% (conditional) compared to the business-as-usual scenario (around 74 Mt CO<sub>2</sub>-equivalent). Additionally, by 2040, the technological development goal is to achieve the production and processing of an anticipated 300 million barrels of oil and gas reserves.

Earlier research has extensively examined carbon dioxide emissions and their effects on nations worldwide. The neoclassical economic growth hypothesis backed the idea that increased industrial activity, population, and economic growth influenced CO<sub>2</sub> emissions. Kraft and Kraft (1978) initially proposed the connection between energy use and economic development. They found that in the post-war period, causality was unidirectional and solely ran from GNP to energy; no causality was found towards GNP from energy. Since that groundbreaking research, legion studies have extensively probed this subject and affirmed enduring or cause-and-effect connections among economic expansion/industrialization, energy usage, and ecological pollution (Ahmad et al., 2019; Aziz et al., 2020; Jalil & Feridun, 2011; Jebabli et al., 2023; Ozturk & Acaravci, 2013; Gokmenoglu et al., 2015; Abokyi et al., 2019; Saboori et al., 2012; Aboagye, 2017; Kwakwa & Alhassan, 2018; Kwakwa et al., 2014; Twerefou et al., 2016; Khan et al., 2019). Energy use has the capacity to both threaten the environment and drive rapid economic growth. Environmental deterioration and global warming have become serious issues, and CO<sub>2</sub> is thought to be a key contributor to these phenomena (Paul & Bhattacharya, 2004). Specifically, in Ghana, the consumption of fossil fuels has become more important than other forms of energy. Over the years, the percentage of NonREC has significantly accelerated from 22% to 52% between 1971 and 2014 (Abokyi et al., 2019). Consumption of fossil fuels has been the highest in Ghana's energy mix since 2009. It continues to rise, while the use of other sources of energy has been declining on average (WDI, 2017).

The financial sector is critical in providing businesses with easy, affordable, and adaptable financial resources and offering investment prospects to individuals (Ji et al., 2021). There are two ideas in the literature that aim to analyze the link between financial growth and the sustainability of the environment. The first one was introduced in the 1990s, known as the Pollution Haven Hypothesis (PHH), introduced in the early 1990s by Peter Neary and Gene Grossman. According to this hypothesis, multinational corporations (MNCs) focused on maximizing their profits and minimizing their production costs tend to move their operations to countries with less strict environmental regulations and standards, particularly in developing countries. This creates "pollution havens" where the environmental regulations are not very strict. The second idea is the Pollution Halo Hypothesis (PH), which Ramanathan and Collins introduced in the late 1990s. Birdsall and Wheeler (1993), Zhang (2011), Tamazian et al., (2009), Jalil and Feridun (2011), and Sadorsky (2010) contradict the "pollution haven" theory, while Gokmenoglu et al., (2015), Musah et al., (2021), and Shahbaz et al., (2018), found that financial growth contributes to how much CO<sub>2</sub> is emitted, hence supporting the Pollution Haven Hypothesis.

Recent limited literature has reiterated the importance of considering asymmetries in the relationships between environmental pollution and macroeconomic indicators (see Raggad, 2020; Basu et al., 2020; Musibau et al., 2021; Shahbaz et al., 2021; Ampofo et al., 2021; Shabestari, 2018). Shabestari (2018) notes that linear relationship models may result in biased and inaccurate greenhouse gas emission projections. Additionally, Shahbaz et al., (2017) and Baz et al., (2019) pointed out the possibility of favorable and unfavorable adjustments in exogenous variables affecting endogenous variables differently. Previous studies by Abokyi et al., (2019), Aboagye (2017), Kwakwa and Alhassan (2018), Kwakwa et al., (2014), and Twerefou et al., (2016) studied the

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<sup>1</sup> Fossil fuel and non-renewable energy consumption are used alternatively throughout the study and abbreviated as NonREC.

relationships between environmental pollution and macroeconomic indicators using linear technics for Ghana. To this end, we aim to build on the literature by posing the following questions: Do positive or negative adjustments to economic expansion, NonREC, and financial sector improvement have asymmetric impacts on CO<sub>2</sub> releases in Ghana in the short and long run? Ghana tends to have frequent policy changes due to political interest, which could result in frequent fluctuations in the policy variables. Thus, the assumption of symmetrical relationships can lead to biased conclusions. Based on this, this research analyzes the asymmetric influence of economic expansion, NonREC, and financial development on CO<sub>2</sub> releases in Ghana.

By examining the nonlinear impacts of economic expansion, the use of fossil fuel, and financial sector improvement on CO<sub>2</sub> emissions<sup>2</sup> in Ghana, this study builds on the existing works and includes a potentially meaningful non-linear relationship between economic expansion, NonREC, and financial development<sup>3</sup> on CO<sub>2</sub> releases. This aspect has not been given particular attention, especially in the Ghanaian case. Using the Nonlinear Autoregressive Distributed Lag (NARDL) model, our study is the first to consider asymmetries in this relationship, thus providing new insights into the empirical debate. To gain a better and more detailed understanding of how variables are related, the NARDL framework can help us observe how short-term and long-term adjustments occur after experiencing both positive and negative shocks. Additionally, our results are robust, as demonstrated by the consistent pattern of influence of the independent variables on CO<sub>2</sub> releases shown by both the cumulative dynamic multipliers graphs and impulse response function graphs. Finally, our study provides policy insights that would aid in designing relevant policy actions that could effectively reduce the environmental degradation caused by economic growth in Ghana.

## Method

### Data description

The study uses annual data from 1971 to 2014 to investigate the asymmetric effects of economic expansion, non-renewable energy (fossil fuel) consumption (Hereafter NonREC), and financial sector improvement on carbon releases in Ghana. Two reasons determine the timeframe of the study. First, after receiving financing from the International Monetary Fund (IMF) and instituting a structural adjustment package, fiscal discipline was restored in Ghana after 1983. Second, data availability limits the timeframe of the study. Considering data availability, carbon dioxide (CO<sub>2</sub>) intensity is used to measure carbon emissions. The CO<sub>2</sub> intensity is determined by the ratio of kilograms of CO<sub>2</sub> emitted to kilograms of oil-equivalent energy consumed. This is a measure of carbon emissions. Economic expansion is gauged using the real gross domestic product per capita (GDP) in 2015 US\$. The consumption of fossil fuel energy, including coal, oil, petroleum, and natural gas products as a percentage of aggregate energy used, provides a measure of NonREC. The level of financial sector improvement is gauged by the percentage of private sector credit to GDP. All the data was obtained from the World Bank Development Indicators (WDI) database. Also, all the variables are transformed into natural logarithms such that LCO<sub>2</sub>, LGDP, LFEC, and LFD denote carbon releases economic growth, NonREC, and financial sector improvement, respectively. Figures 1 and 2 present the graphical visualization of the time series. All the time series displayed a positive trend after 1990, which marks the beginning of the recovery period from the turmoil that started in the early 1980s.

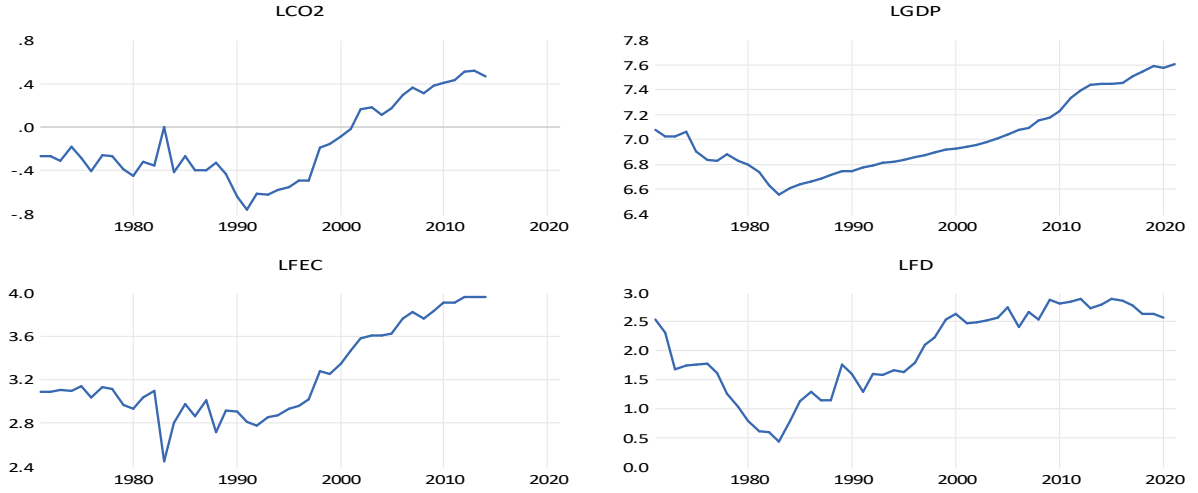
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<sup>2</sup> Carbon emissions and carbon releases are used interchangeably throughout the study.

<sup>3</sup> Financial sector improvement and financial development are used interchangeably throughout the study.

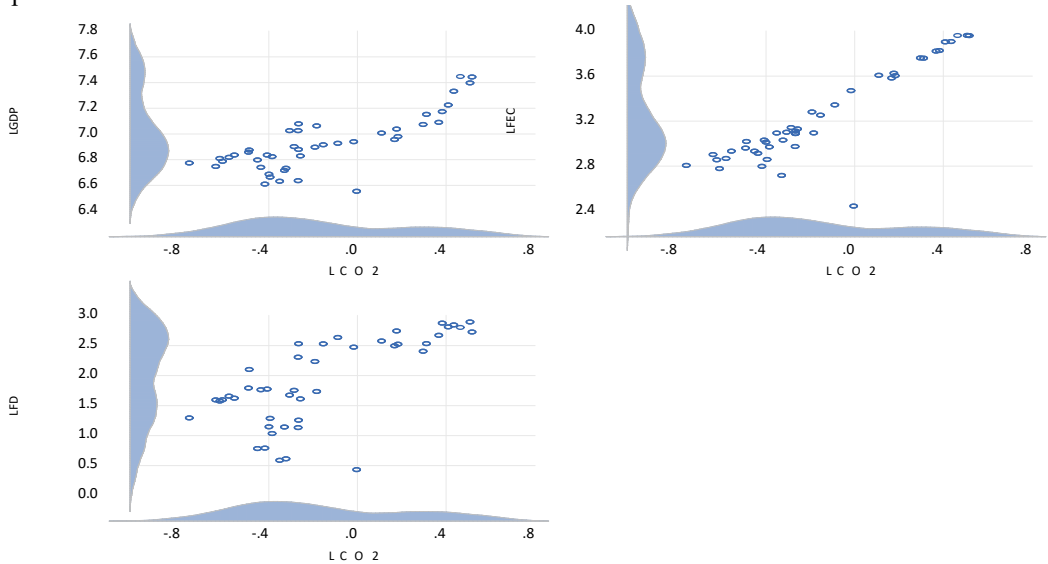


**Figure 1**  
Time series graphical representation



Source: Authors' creation

**Figure 2**  
Scatter plot representation of the data.



Source: Authors' creation

The summary statistics and the correlation matrix are displayed in Table 1 for all the time series. It is shown that the greatest mean, median, maximum, and minimum figures are recorded for GDP per capita (LGDP). However, the highest standard deviation is observed for the LFD time series. Additionally, the Jaque-Bera test recorded for all the time series is insignificant, showing that the time series has a normal distribution feature. Also, in Table 1, the correlation matrix is recorded, which shows that the correlation coefficient between all the explanatory variables and the dependent variable is positive, and the highest correlation coefficient is recorded for NonREC (LFEC).

**Table 1***Summary statistics + correlation matrix*

Time series	LCO2	LGDP	LFEC	LFD
Mean	-0.1567	6.9264	3.2347	1.8960
Median	-0.2674	6.8892	3.0951	1.7704
Maximum	0.5167	7.4476	3.9630	2.8943
Minimum	-0.7602	6.5545	2.4448	0.4332
Std. Dev.	0.3619	0.2196	0.4084	0.7249
Skewness	0.4782	0.7004	0.4860	-0.2841
Kurtosis	2.0264	3.0427	2.0708	1.9119
Jarque-Bera	3.4148	3.6011	3.3151	2.7626
LCO2	1.0000			
LGDP	0.7915	1.0000		
LFEC	0.9063	0.8778	1.0000	
LFD	0.7088	0.8397	0.8356	1.0000

**Source:** Authors' creation**Empirical Methodology**

This study adopts Abokyi et al., (2019) empirical model for Ghana in the Nonlinear Autoregressive Distributed Lag (NARDL) framework put forward by Shin et al., (2014) to assess the short and long-run nonlinear influence of economic expansion (LGDP), NonREC (LFEC) and financial sector improvement (LFD) on carbon releases for Ghana. The method offers a more thorough understanding of the potential short- and long-term asymmetric effects on Ghana's CO<sub>2</sub> releases (LCO2) of changes in the real gross domestic product (LGDP), NonREC (LFEC), and financial sector improvement (LFD). According to Granger and Yoon (2002), the NARDL not only allows the measurement of the favorable and unfavorable impacts of the explanatory variables through partial totals but also uncovers any concealed cointegration. Nevertheless, as in our current study, the NARDL can yield robust results when data observations are limited.

The framework of NARDL is a variation of the ARDL cointegration model that considers asymmetry. Originally, the unrestricted error-correction framework from the symmetrical ARDL model (Pesaran et al., 2001) does not have asymmetry for the short- /long-term. We represent it as in equation 1:

$$\Delta y_t = \alpha + \theta y_{t-1} + \delta x_{t-1} + \sum_{i=1}^{p-1} \pi_i \Delta y_{t-i} + \sum_{i=0}^{q-1} \mu_i \Delta x_{t-i} + \varepsilon_t \quad (1)$$

where  $\alpha$  connotes the intercept.  $\mu_i$  and  $\pi_i$ , and  $\delta$  and  $\theta$ , and  $\varepsilon_t$  stand for the short- and long-term coefficients and error term, respectively. The NARDL model utilizes a nonlinear long-run cointegrating model to examine the asymmetric impact. It is structured as:

$$y_t = \sigma^+ x_t^+ + \sigma^- x_t^- + u_t \quad (2)$$

where the symbols  $\sigma^+$  and  $\sigma^-$  stand for the coefficients of  $x_t$  in the long term, as it has been divided as;  $x_t = x_0 + x_t^+ + x_t^-$ . This division of the independent variable is represented by equation 3, which describes the process of breaking down  $x_t$  into its increases ( $\Delta x_t^+$ ) and decreases ( $\Delta x_t^-$ ) changes.

$$x_t^+ = \sum_{i=1}^t \Delta x_i^+ = \sum_{i=1}^t \max(\Delta x_i, 0) \text{ and } x_t^- = \sum_{i=1}^t \Delta x_i^- = \sum_{i=1}^t \min(\Delta x_i, 0) \quad (3)$$

By combining equation 1 and 2, we can obtain the nonlinear asymmetric model with error correction in the long run, as follows:

$$\Delta y_t = \alpha + \theta y_{t-1} + \delta^+ x_{t-1}^+ + \delta^- x_{t-1}^- + \sum_{i=1}^{p-1} \pi_i \Delta y_{t-i} + \sum_{i=0}^{q-1} (\mu_i^+ \Delta x_{t-i}^+ + \mu_i^- \Delta x_{t-i}^-) + \varepsilon_t \quad (4)$$

where  $\delta^- = -\theta\sigma^-$  and  $\delta^+ = -\theta\sigma^+$ . The symbols,  $\mu_i^+$  and  $\mu_i^-$  connotes the favorable and unfavorable short-term adjustments of the independent variable,  $x_t$ . The model illustrates the short-term and long-term asymmetric impact of the variables LGDP, LFEC, and LFD on carbon emissions in Ghana. As noted in Shin et al., (2014) work, the nonlinear ARDL approach estimation involves five steps. First, to prevent the event of having I(2) series among the series, unit root tests need to be performed. Second, equation 4 is estimated using the ordinary least square approach. Third, the bounds test approach, utilizing F-statistics ( $F_{PSS}$ ) proposed by Pesaran et al., (2001) and t-statistics ( $t_{BDM}$ ) proposed by Banerjee et al.,(1998), are employed to investigate the asymmetric long-term relationship between the levels of the series  $y_t$ , and  $x_t$ . We then state the null (no cointegration) and alternative (cointegration) hypotheses in Equation 5 using the  $F_{PSS}$ .

$$H_0: \theta = \delta^+ = \delta^- = 0 \quad \text{versus} \quad H_1: \theta \neq \delta^+ \neq \delta^- \neq 0 \tag{5}$$

In addition to the  $F_{PSS}$ , the  $t_{BDM}$  is also performed to search for cointegration relationships. The hypothesis are jointly tested as;  $H_0: \theta = 0$  versus  $H_1: \theta < 0$ . Four, we execute the Wald test on the null hypotheses of  $\sum_{i=0}^{q-1} \mu^+ = \sum_{i=0}^{q-1} \mu^-$  and  $\delta^+ = \delta^-$  to investigate short- and long-run symmetry, respectively. At the end of the test, rejection of both nulls will imply nonlinearities, and our model will then take the following form;

$$\Delta y_t = \alpha + \theta y_{t-1} + \delta x_{t-1} + \sum_{i=1}^{p-1} \pi_i \Delta y_{t-i} + \sum_{i=0}^{q-1} (\mu_i^+ \Delta x_{t-i}^+ + \mu_i^- \Delta x_{t-i}^-) + \varepsilon_t \tag{6}$$

$$\Delta y_t = \alpha + \theta y_{t-1} + \delta^+ x_{t-1}^+ + \delta^- x_{t-1}^- + \sum_{i=1}^{p-1} \pi_i \Delta y_{t-i} + \sum_{i=0}^{q-1} \mu_i \Delta x_{t-1} + \varepsilon_t \tag{7}$$

Equations 6 and 7 imply nonlinear specifications of the NARDL model in a cointegrating environment, respectively. Finally, the impact of favorable and unfavorable aggregate dynamic multipliers associated with unit adjustments in  $x_t^+$  and  $x_t^-$  on the dependent variable  $y_t$  is given as;

$$m_h^+ = \sum_{j=0}^h \frac{\partial y_{t+j}}{\partial x_t^+}, \text{ and } m_h^- = \sum_{j=0}^h \frac{\partial y_{t+j}}{\partial x_t^-} \tag{8}$$

where ( $h = 0, 1, 2, \dots$ ). In equation 8, if  $h \rightarrow \infty$ , then  $m_h^+ \rightarrow \sigma^+$  and  $m_h^- \rightarrow \sigma^-$ , the long-run coefficients ( $\sigma^+$  and  $\sigma^-$ ) concerning the favorable and unfavorable adjustments of the explanatory variables are computed as  $\sigma^+ = -\frac{\delta^+}{\theta}$  and  $\sigma^- = -\frac{\delta^-}{\theta}$ .

### Estimation Results and Discussions

#### Unit Root Testing

The Augmented Dickey-Fuller (ADF) (Dickey & Fuller, 1979) together with Phillips and Perron (1988) (PP) tests are utilized to check the unit root properties of the time series data to ensure that none of them are I(2). This aims to ensure that the NARDL cointegration approach employed in the study remains valid. The Zivot and Andrews (2002) (ZA) test is also conducted to control the robustness of the prior two tests' outcomes in the presence of an endogenous structural change. The outputs of all three tests confirm that all the time series have an I(1) integration property, thereby providing the basis for the application of the nonlinear ARDL framework (Shahbaz et al., 2017) to search for the validity of asymmetric cointegration between CO2 releases and LGDP, LFEC, and LFD. The next section presents the Wald test and bounds cointegration test.

**Table 2**

*ADF, PP, and ZA unit root test results*

Series	Test Statistics				Outcome
	Intercept (Level)	Intercept (1 <sup>st</sup> difference)	Trend & intercept (Level)	Trend & intercept (1 <sup>st</sup> difference)	
ADF test					
LCO2	0.063753	-8.637251***	-1.739671	-8.917452***	I(1)
LGDP	0.555610	-4.506547***	-2.218142	-5.425998***	I(1)
LFEC	0.698189	-9.070769***	-1.387315	-7.435281***	I(1)

LFD	-1.023102	-6.361505***	-3.235638*	-6.419758***	I(1)
PP test					
LCO2	-0.245713	-8.622571***	-1.561688	-8.983125***	I(1)
LGDP	0.768148	-4.458889***	-2.805444	-5.306963***	I(1)
LFEC	0.056011	-9.236689***	-1.746401	-10.36755***	I(1)
LFD	-1.153233	-6.348850***	-3.223210*	-6.410101***	I(1)
ZA test					
LCO2	-3.246234	-10.17267***	-4.357448	-10.11792***	I(1)
LGDP	-3.071854	-6.885847***	-3.985376	-7.241525***	I(1)
LFEC	-3.311102	-8.120690***	-3.992323	-8.413846***	I(1)
LFD	-4.052334	-8.377218***	-3.380518	-8.404519***	I(1)

\*\*\* indicates the significance level at a 1% level.

\* Indicates the significance level at a 10% level.

Source: Authors' creation

### Wald Test and NARDL Bounds Cointegration Test

In this section, by utilizing the bounds test, we assess the validity of a cointegration relation among LCO2, LGDP, LFEC, and LFD in the NARDL setting. In Table 3, panel A,  $F_{PSS}$  and  $t_{BDM}$  are reported as 4.46 and -4.03, respectively. The  $F_{PSS}$  exceeds the upper critical bound of 4.35 for  $k = 3$  at a 5% significance level. This implies an asymmetric cointegration between LCO2 and LGDP, LFEC, and LFD. Additionally, the absolute estimated value of  $t_{BDM}$  is over the table critical value in Banerjee et al., (1998) at a 5% significance level, implying cointegration between the LCO2 and the independent variables.

**Table 3**

*Wald test for asymmetries and bounds cointegration test.*

Panel A: Asymmetric cointegration test with Bounds			
Variable	F-test ( $F_{PSS}$ )	t-test ( $t_{BDM}$ )	Results
	4.46	-4.03	Evidence of cointegration
Panel B: Asymmetry in the short run with the Wald tests			
LCO2 =f (LGDP, LFEC, LFD)	LGDP on $LCOI$	LFEC on $LCOI$	LFD on $LCOI$
Variables	$WSR_{LGDP}$	$WSR_{LFEC}$	$WSR_{LFD}$
	6.247** (0.021)	18.810*** (0.000)	3.188* (0.089)
Panel C: Asymmetry in the long run with the Wald tests			
Variables	$WLR_{LGDP}$	$WLR_{LFEC}$	$WLR_{LFD}$
LCO2 =f (LGDP, LFEC, LFD)	3.344* (0.082)	0.061 (0.807)	1.366 (0.256)

Source: Authors' creation

Then, making use of the Wald test the short- and long-run asymmetry are investigated. Panel B of Table 3 reports the short-run nonlinearity test. Using the Wald test, the null hypothesis is stated as  $\sum_{i=0}^{q-1} \mu^+ = \sum_{i=0}^{q-1} \mu^-$  (meaning no validity of short-run asymmetry) is tested against the alternative hypothesis stated as  $\sum_{i=0}^{q-1} \mu^+ \neq \sum_{i=0}^{q-1} \mu^-$  (meaning validity of short-run asymmetry). The Wald test statistics calculated for LGDP, LFEC, and LFD are reported as 6.247, 18.810, and 3.188, respectively. The null is rejected at 5%, 1%, and 10%, respectively. It implies a short-run asymmetry between LCO2 and all the independent variables. In Panel B of Table 3, the Wald test outcome is reported to test the null; i.e.,  $\delta^+ = \delta^-$  (meaning no validity of long-run asymmetry) against the alternative;  $\delta^+ \neq \delta^-$  (meaning validity of long-run asymmetry). 3.344, 0.061, and 1.366 are the Wald test statistics calculated for LGDP, LFEC, and LFD, respectively. No validity of long-run asymmetry is rejected for the LGDP at a 10% significance level. On the other hand, we are not able to reject the lack of validity of the long-run asymmetry hypothesis for LFEC and LFD, meaning that only the LGDP exerts a long-run nonlinear influence on LCO2 releases.

### Long Run and Short Run Analysis

Before the analyses, the necessary diagnostic tests must be conducted on the estimated model. The Portmanteau ( $\chi^2_{SC}$ ), Breusch/Pagan ( $\chi^2_{HT}$ ), Ramsey Reset ( $\chi^2_{FF}$ ) and Jarque-Bera ( $\chi^2_{NORM}$ ) tests for testing serial correlation, heteroskedasticity, functional form, and normality, respectively, are conducted with respective null hypotheses: no serial correlation, homoskedasticity, misspecification-free, and normality. The empirical results for

these diagnostics are displayed at the bottom section of Table 4, which indicates the failure to reject the pre-stated null hypotheses. Nonetheless, the cumulative sums (CUSUM) and cumulative sum of squares (CUSUMSQ) test plots, as in Figure 3, ratify the parameter stability of the estimations.

In what follows, the estimation results, as displayed in Table 4, correspond with the mode specified in Equation 4. From the table, the long-run output shows that favorable and unfavorable adjustments in economic expansion (LGDP) impact CO<sub>2</sub> emissions (LCO<sub>2</sub>) negatively, implying long-run asymmetries, but only the negative adjustments have a statistically significant impact. A percentage decrease in the LGDP decreases LCO<sub>2</sub> by 1.18%. Additionally, the first lag of unfavorable adjustments in the LGDP has a statistically significant increasing effect (i.e., the estimated coefficient is 1.040) on LCO<sub>2</sub>, meaning that a decrease in economic growth in Ghana significantly reduces environmental degradation. It can be inferred from the study that Ghana's environment was not negatively affected by the country's economic expansion and improvement during the period examined. Ampofo et al., (2021) reported similar results for Bangladesh, Iran, and Turkey. For India, Akadiri and Adebayo (2022) also noted a similar effect of negative adjustments in economic expansion on CO<sub>2</sub> releases. In the short-run, the output indicates that favorable adjustments in economic expansion insignificantly decline LCO<sub>2</sub> whilst negative adjustments significantly increase LCO<sub>2</sub> for Ghana. For example, a 1% rise will decrease LCO<sub>2</sub> by 0.75%, while a 1% fall will raise LCO<sub>2</sub> by 2.19%. Our results support the short-run observations made by Abdul-Mumuni et al. (2022) for Ghana. The overall findings for LGDP corroborate previous findings (Abokyi et al., 2019; Twerefou et al., 2016), where the empirical output discovered that expansion in industrial production and gross domestic product, respectively, decreases LCO<sub>2</sub> emissions in Ghana. Contrary to our results, an adverse influence of economic expansion on LCO<sub>2</sub> emissions using linear techniques (Aboagye, 2017; Kwakwa & Alhassan, 2018; Kwakwa et al., 2014).

Additionally, in the long run, favorable and unfavorable adjustments in fossil consumption have positive and negative impacts on LCO<sub>2</sub>, respectively, as theoretically expected. A percentage change in positive and negative adjustments led to 1.149% and 1.219% increases and decreases in LCO<sub>2</sub> in Ghana, respectively. Our results show that the negative adjustment exerts a stronger effect than the favorable adjustments for long-run considerations. Notwithstanding, the first lag for favorable and unfavorable adjustments in LFEC exerts an increasing impact on LCO<sub>2</sub> in Ghana with estimated coefficients of 1.015 and 1.076, respectively. The results may imply that the efficient utilization of energy resources that are non-renewable can reduce the pollution of the environment in Ghana since negative adjustments have a greater impact. This was expected from the theoretical point of view as increases in NonREC are expected to increase environmental deterioration in Ghana as the economy heavily depends on obsolete technologies and non-renewable energy, such as crude oil, for growth. Additionally, the results suggest that alternative energy sources should be devised to mitigate environmental degradation in Ghana. The same pattern of LFEC's influence on LCO<sub>2</sub> is observed for the case of the short run. For instance, positive adjustments increase LCO<sub>2</sub> by 1.52% (1.516) per unit percentage increase at the 1% significance level, whereas negative adjustment decreases CO<sub>2</sub> emissions by 0.58% (-0.584) per unit percentage decrease at the 1% significance level. This also affirms the assertion that efficient use of non-renewable energy can hinder environmental degradation. The favorable result regarding the influence of using fossil fuels on LCO<sub>2</sub> supports previous research on Ghana (such as; Abokyi et al., 2019; Kwakwa & Alhassan, 2018; Twerefou et al., 2016). In several other researches, similar positive impacts of NonREC on environmental deterioration have been evidenced (see; Al-Mulali & Ozturk, 2016; Chen & Lei, 2018; Danish et al., 2017; Dogan & Seker, 2016).

**Table 4**

*Short-run and long-run analysis*

Variable	Coefficient	Std. Errs.	t	p>t
LCO <sub>2</sub> (-1)	-0.883***	0.219	-4.030	0.001
LGDP <sup>+</sup> (-1)	-0.261	0.295	-0.890	0.385
LGDP <sup>-</sup> (-1)	1.040*	0.521	2.000	0.059
LFEC <sup>+</sup> (-1)	1.015**	0.381	2.670	0.014
LFEC <sup>-</sup> (-1)	1.076***	0.242	4.450	0.000
LFD <sup>+</sup> (-1)	-0.099	0.143	-0.690	0.497
LFD <sup>-</sup> (-1)	-0.310**	0.132	-2.360	0.028
ΔLCO <sub>2</sub> (-1)	-0.015	0.120	-0.130	0.902
ΔLGDP <sup>+</sup>	-0.745	0.698	-1.070	0.298

$\Delta LGDP^+(-1)$	-0.028	0.919	-0.030	0.976
$\Delta LGDP^-$	2.190**	0.777	2.820	0.010
$\Delta LGDP^-(-1)$	0.900	0.572	1.570	0.130
$\Delta LFEC^+$	1.516***	0.247	6.140	0.000
$\Delta LFEC^+(-1)$	0.314	0.209	1.500	0.148
$\Delta LFEC^-$	-0.584***	0.136	-4.290	0.000
$\Delta LFEC^-(-1)$	-0.127	0.337	-0.380	0.710
$\Delta LFD^+$	0.042	0.125	0.330	0.741
$\Delta LFD^+(-1)$	-0.114	0.110	-1.040	0.310
$\Delta LFD^-$	0.081	0.106	0.760	0.455
$\Delta LFD^-(-1)$	0.328*	0.158	2.080	0.050
Cons.	-0.181*	0.098	-1.840	0.079
<b>Long run coefficients</b>				
Variables	Coef.	F-stat	P>F	
$LGDP^+$	-0.296525	0.719	0.406	
$LGDP^-$	-1.177*	4.075	0.056	
$LFEC^+$	1.149***	24.640	0.000	
$LFEC^-$	-1.219***	85.060	0.000	
$LFD^+$	-0.112	0.567	0.460	
$LFD^-$	0.351**	4.563	0.045	
<b>Diagnostics and statistics</b>				
Test	Stat.	Prob	Test	Stat.
$\chi_{SC}^2$	23.92	0.1992	R-squared	0.880
$\chi_{HT}^2$	.7744	0.3789	Adj. R-squared	0.7659
$\chi_{FF}^2$	.8793	0.4703	F-statistics	7.71***
$\chi_{NORM}^2$	.2594	0.8784	Obs	42
CUSUM and CUSUMQ			Stable	

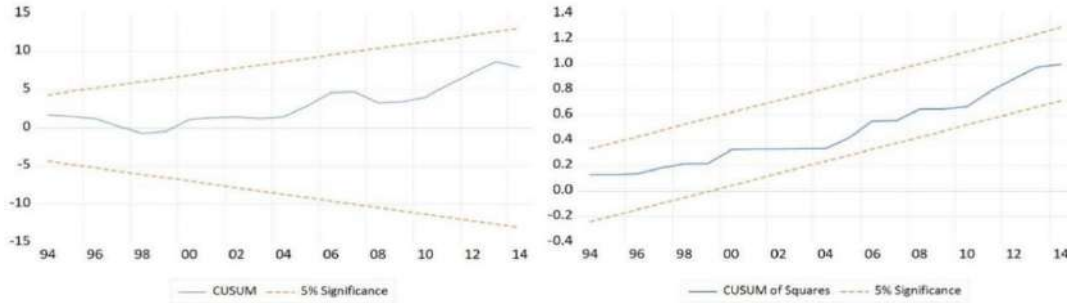
“\*” “\*\*” and “\*\*\*” indicate significance levels at 10%, 5%, and 1% respectively.  $\chi_{SC}^2$ ,  $\chi_{HT}^2$ ,  $\chi_{NORM}^2$  and  $\chi_{FF}^2$  denotes the Portmanteau test for serial correlation, the Breusch/Pagan heteroskedasticity test, the Jarque-Bera test on normality, and the Ramsey Reset test for functional form, respectively.

**Source:** Authors' creation

Further, we inquire the long-run case for financial sector improvement (LFD). Favorable and unfavorable adjustments to LFD negatively and positively impact LCO2. However, only the unfavorable adjustments have an impact at the 5% significance level. For instance, a 1% decrease in the LFD increases the LCO2 by 0.35% in the long run for Ghana contemporaneously. Additionally, a period lag of the negative adjustment of the LFD also enters the NARDL model with a significant estimate at a 5% level with an adverse impact. A 1% reduction of LFD causes a decrease of the LCO2 by 0.31% in the one-period lag. However, the contemporaneous impact of LFD negative adjustments is greater than the lagged effects. Though the coefficient of LFD positive adjustment is insignificant, our results partially support the findings in the previous literature. Our findings corroborate the findings of Jalil and Feridun (2011), Sadorsky (2010), Birdsall and Wheeler (1993), and Tamazian et al., (2009). On the contrary, Abdul-Mumuni et al., (2022), Shahbaz et al., (2016), Zhang (2011), Gokmenoglu et al., (2015), Musah et al., (2021), and Shahbaz et al., (2018) reported a likewise favorable impact of financial sector improvement on CO<sub>2</sub> releases. Our results for the short-run, however, depict that both the favorable and unfavorable adjustments have insignificant positive impacts, with the estimates being 0.042 and 0.081, respectively. The overall results suggest that decreased financial development (LFD) can significantly increase pollution levels in the long term, thus supporting the Pollution Halo Hypothesis. It emphasizes developing the Ghanaian financial sector to balance economic expansion with ecological preservation. The existing body of research agrees that the progress seen in Ghana's financial environment over the past thirty years has contributed to domestic investment,

reduced financial risk, and improved capital accumulation. As a result, it has attracted increased foreign direct investment and the embracement of contemporary friendly environmental innovations, causing a hindrance of ecological degradation (Abokyi et al., 2019). Additionally, developing the financial sector will enable corporations and production units to adopt friendly environmental technology and invest in environmental protection.

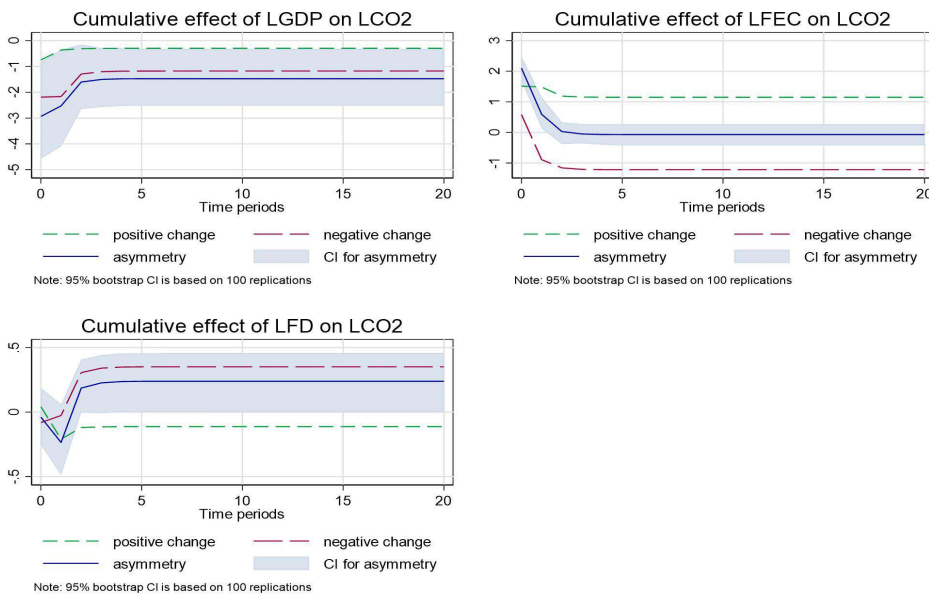
**Figure 3.**  
CUSUM and CUUSMSQ test Plots



Source: Authors' creation

The cumulative dynamic multipliers are shown in Figure 4 after we implemented a variety of dynamic adjustments. These multipliers show how carbon emissions respond to a positive or negative shock in economic growth, fossil fuel usage, and financial sector improvement separately as it moves toward a new long-term balance. Figure 4 shows positive economic growth (LGDP) increments do not impact CO<sub>2</sub> emissions significantly. Negative shocks significantly impact CO<sub>2</sub> emissions and dominate the effect of positive shocks. Hence, LGDP has an overall adverse influence on LCO<sub>2</sub>. Further, the consumption of fossil fuel exerts an overall adverse impact on LCO<sub>2</sub> because negative shocks have dominant effects, which confirms the earlier documented estimates for the favorable and unfavorable shocks of LFEC for the long term (i.e., 1.149 vs. -1.219). Additionally, positive shocks of financial development (LFD) exert a temporary unfavorable impact on LCO<sub>2</sub> (confirming the insignificant coefficient recorded for positive adjustments in Table 4), while negative shocks exert a dominant permanent influence on LCO<sub>2</sub>. Hence, the overall impact of LFD is favorable. This conclusion is coherent with the recorded coefficients for favorable and unfavorable adjustments, supporting the dominant positive effects in Table 4.

**Figure 4**  
Cumulative effects of independent variables on carbon emissions (LCO<sub>2</sub>)

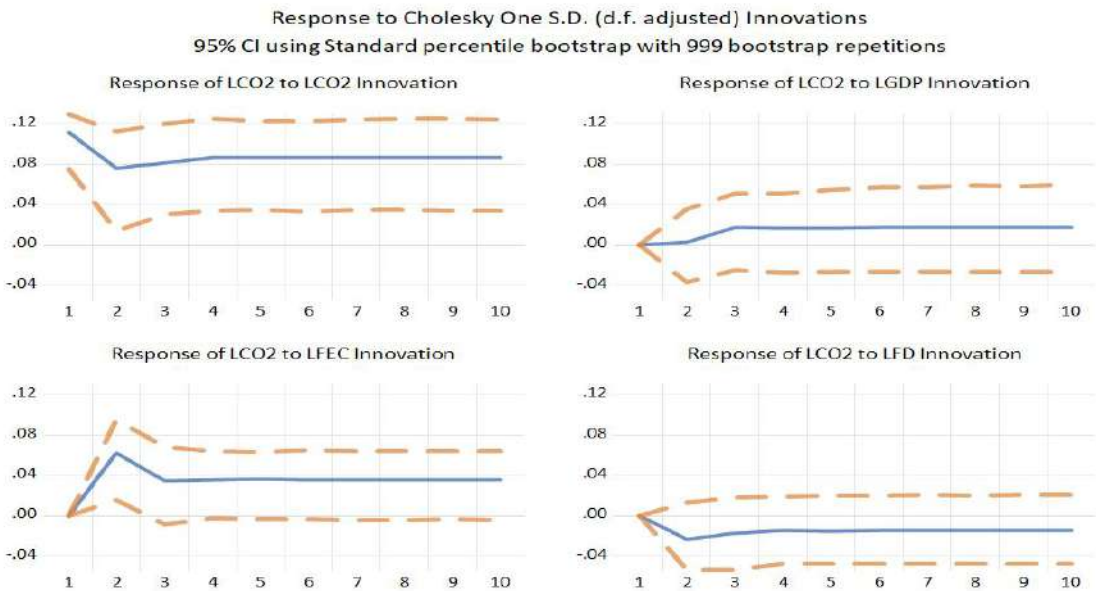


Source: Authors' creation

**Robustness Check Results**

We conduct further analysis to ascertain robustness. The vector error correction model (VECM) framework with Schwarz Information Criterion (SIC) for lag choosing procedure was used to conduct the impulse response analysis. Figures 5 and 6 show the reaction of CO2 emissions to unit standard deviation shocks of LGDP, LFEC, and LFD over a 10-year horizon. LCO2 emissions respond negatively to LGDP at first, positively to LFEC, and negatively to LFD initially before becoming positive through the forecast horizon. These responses are consistent with the NARDL model in Table 5, which recorded negative coefficients for positive and negative adjustments to LGDP, positive adjustments to LFEC, and negative and positive adjustments to LFD. The results suggest that economic expansion and financial sector improvement affect CO2 emissions differently. While LGDP and LFD initially negatively affect LCO2 emissions, fossil LFEC has a favorable effect. However, the influence of LFEC declines after the second forecast horizon.

**Figure 5**  
Impulse response functions

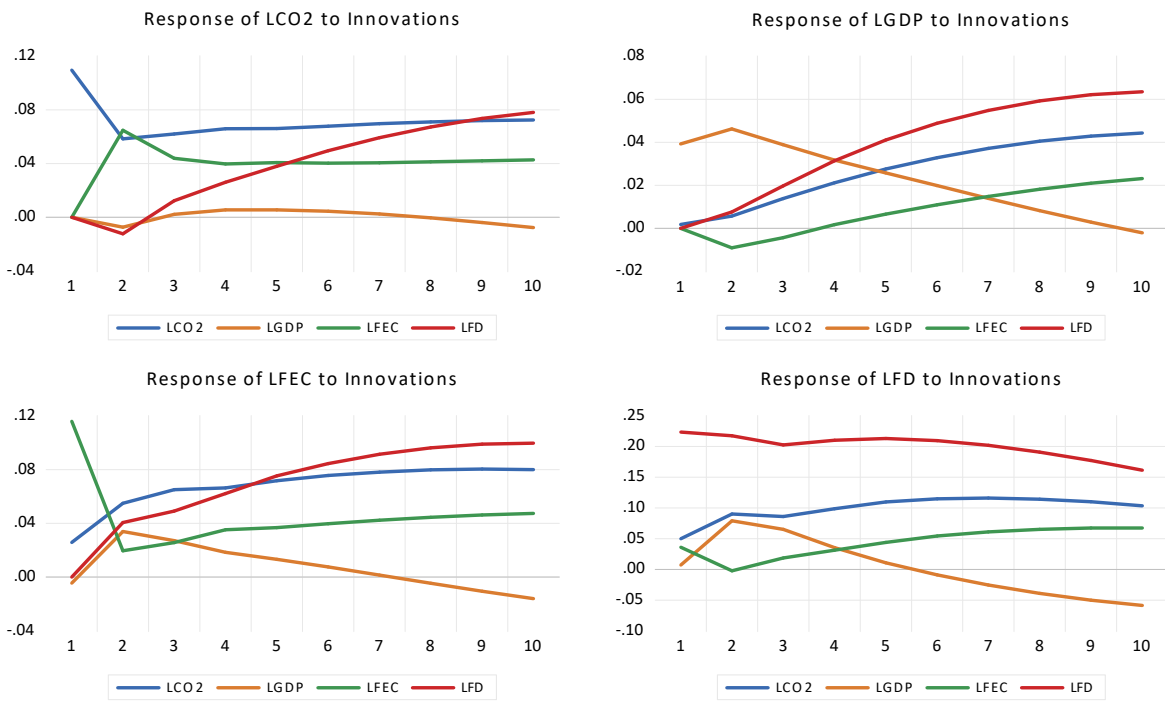


Source: Authors' creation

**Figure 6**  
Impulse response functions combined graphs



Response to Cholesky One S.D. (d.f. adjusted) Innovations



Source: Authors' creation

### Conclusion and Policy Implications

Ecological deterioration has become a grave concern in the context of the Ghanaian economy. Previous literature considered the linear relationship between CO<sub>2</sub> releases and their determinants for Ghana. However, using linear relationship models to predict future greenhouse gas emissions might produce somewhat biased and imprecise outcomes. This study explored the asymmetric influence of economic expansion, NonREC, and financial sector improvement on CO<sub>2</sub> releases for Ghana using the Nonlinear Autoregressive Distributed Lag (NARDL) model with annual data ranging between 1971 and 2014. The NARDL approach enables the separation of variables into favorable adjustments (shocks) and unfavorable adjustments (shocks), allowing us to grasp both the long- and short-run equilibrium alterations trends preceding favorable and unfavorable shocks and the sophisticated equilibrium dynamics among indicators, hence providing a more detailed and nuanced understanding of the interactions between the indicators. Therefore, the novelty of our study stems from taking care of potentially biased conclusions emanating from the assumption of symmetrical relationships between the considered variables, as favorable and unfavorable changes in exogenous indicators can affect endogenous indicators differently. The bounds test results indicate a cointegration between economic growth, NonREC, financial sector improvement, and CO<sub>2</sub> releases. The Wald test results indicate the existence of a short-run asymmetrical influence of economic expansion, NonREC, and financial sector improvement on CO<sub>2</sub> releases. However, asymmetrical long-run impact exists only in the case of economic growth. The NARDL output indicates that negative adjustments to economic growth significantly decrease (increase) CO<sub>2</sub> releases for the long run (short run), while positive adjustments do not significantly impact them. Positive adjustments and negative adjustments of NonREC have increasing and decreasing effects on CO<sub>2</sub> releases, respectively, in runs. The negative adjustments, however, have a larger effect than the positive adjustments, suggesting that the optimal utilization of NonREC has the prospect of decreasing environmental pollution in Ghana, which aligns with theoretical expectations and previous studies. The Ghanaian economy's heavy dependence on NonREC, such as crude oil, for growth, implies that increasing NonREC could result in more significant environmental degradation. This may also imply that both short-run and long-run measures can effectively reduce CO<sub>2</sub> emissions by reducing the consumption of fossil fuels. Therefore, we emphasize the importance of embracing environmental policies that promote the optimal utilization of NonREC in the 1-District, 1-Factory agenda. The findings suggest to the decision-maker the need to prioritize effective environmental strategies like a green economy, reusable energies, and energy-efficient innovations, specifically in

the transportation sector. In the One District One Factory agenda, Ghana should also diversify the energy complexity, with a greater weight towards all forms of renewable energy, such as solar, hydroelectricity, and wind. Furthermore, the government should encourage investors to invest more in firms focusing on environmental quality so that increases in carbon emissions will not accompany economic growth. Additionally, negative adjustments of financial environment improvement increase CO<sub>2</sub> releases in the long run, meaning long-term measures to enhance the financial environment can effectively address Ghana's environmental degradation issues. This highlights the importance of developing Ghana's financial sector to balance economic growth with environmental preservation. Providing financial aid to investors who intend to launch projects that advance environmental sustainability is crucial. Such support will play a significant role in enhancing public awareness about energy security and environmental protection. Financial policies are necessary to assist fossil fuel-oriented businesses in transitioning into eco-friendly operations. The dynamic multiplier graphs and the impulse response function plots largely support the conclusions from the NARDL model.

The study has a few limitations that are worth pointing out. Firstly, the study was conducted solely in Ghana; hence, only Ghanaian data was utilized for the analysis. Secondly, the sample range ended in 2014 due to limited data availability for the variables in the model. We recommend that future research explore this relationship further by utilizing methodologies that can account for structural breaks in the sample range. Furthermore, we suggest that researchers consider using data from sub-Saharan African regions to understand this relationship better and improve policy formulation in the subregion of Africa.

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## **Green Finance and Sustainable Development Nexus in Sub-Saharan Africa**

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This study comprehensively assesses the influence of green finance on sustainable development in sub-Saharan African countries from 1999-2023. The sub-Saharan African countries are considered most vulnerable to climate change due to their individual countries' geographical location, economic structure, population density, limited adaptive capacity to climate change, and social vulnerability. By examining the intricate linkages between green finance measured by financial development indicators, and institutional frameworks, technology, urbanization, and educational levels, the study aims to address environmental, social, and economic challenges and the trajectory of green development in sub-Saharan African countries. The pool mean group autoregressive distributed lags (PMG/ARDL) method was employed for its ability to rheostat endogeneity and serial autocorrelation, neglected by previous studies. The findings underscore the pivotal role of green finance, proxied by bank credit to the private sector, in promoting sustainable practices, through technological advancements and educational levels to increase investment in industries that prioritize sustainability, conservation, and biodiversity preservation. The negative nexus between foreign direct investment and the potential adverse consequences is associated with the influx of multinational corporations to sub-Saharan African countries, particularly due to lax environmental regulations linked to weak regulatory frameworks. In light of these findings, this study recommends aligning investments with sustainable development goals, enhancing regulatory oversight to improve environmental quality, and balancing economic growth and environmental stewardship through sustainable development strategies, given their countries' vulnerability to climate change.

**Keywords:** CO2 emissions, financial development, environment quality, greenhouse emission, economic growth

**JEL CLASSIFICATION:** O13; O16; GO; Q5; 6F64

The sustainability of Sub-Saharan Africa (SSA) financial and economic sectors, particularly after the 2020 recession induced by the Covid-19 (coronavirus) and the economic and financial crisis induced by the Russian invasion of Ukraine in 2022, places the sustainable development of the extremely diverse and environmentally degraded region at the forefront of global discussions on green finance and sustainable development (Udoh, et al., 2023; Udo et al., 2023). According to Peng and Zheng (2021), green finance embraces access to affordable, convenient, and flexible financial services for investment, development, protection, and promotion of sustainable operational and business activities that rejuvenate environmental quality and optimize resource usage (Xie et al., 2020).

Access to affordable, convenient, and flexible green financial services is a fulcrum for ecological development through the adoption of energy-efficient equipment for poverty alleviation through green product awareness for farmers to cultivate green and organic crops (Wang & Zheng, 2020). The development and stability of the green economy anchor the simultaneous implementation of green policy adoption across sectors of the economy. Green finance integration into ecological and environmentally safe projects, especially in rural areas in

SSA countries, is crucial because of the negative effects of climate change on the sustainability of the local economy due to environmental degradation.

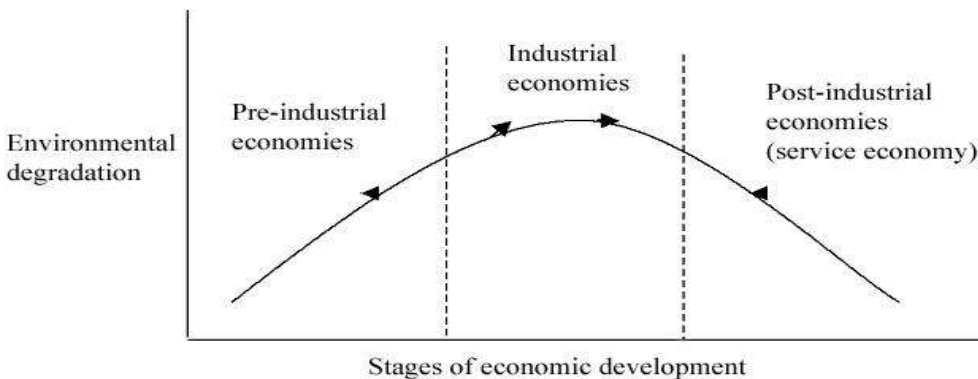
Environmental degradation not only stimulates health risks but also depletes resources and increases natural cataclysms through excessive reliance on fossil fuels; toxic emissions from vehicles; industrial waste; deforestation; and human operational and business activities in the agricultural, transportation, manufacturing, and energy production sectors (Udo, et al., 2023; Abner, 2023; Udo et al., 2024).

The increasing green energy supply-demand gap and escalating consumption of fossil fuel energy in SSA countries, where seven of the ten countries most vulnerable to climate change are in Africa, in the last two decades can be attributed to a lack of access to affordable energy. In SSA countries (excluding South Africa), the average energy consumption per capita is 180 kWh, while in the United States 13,000 kWh and 6,500 kWh in Europe. Access to green and affordable energy in the 21<sup>st</sup> century is considered a global fulcrum for sustainable economic and financial development and reduction in death rate annually due to fossil fuel energy, among others.

The growth of renewable energy potential in Africa and the stability of the economy at the primary stage of development, according to Patrick (1966) and Udo et al., (2019), is driven by the financial sector as the economy expands, and financial sector stability anchors on economic development and resourceful management system, for economies with limited financial resources to achieve maximum productivity, which stimulates economic growth (Furuoka, 2015), attracts investors, nurtures Foreign Direct Investment (FDI) inflows, boosts financing network deepening, reduces financial costs, and encourages industrial borrowing to increase green economic and financial stability through green production lines (Enoch, 2023; Udo, et al., 2023).

The financial-economic development nexus is explained by the Environmental Kuznets Curve (EKC), which posits that borrowing from the financial sector to enhance economic and financial stability through non-green industrial sector consuming fossil fuels reduces environmental quality. Similarly, structural financial and economic development posits that as the financial system and economy transit from a pre-industrial to an industrial stage of growth, environmental quality deteriorates due to fossil fuel energy consumption. In contrast, the transition from an industrial to a post-industrial economy improves environmental quality through green energy consumption (Figure 1). Theoretically, the need for increased emphasis on environmental quality and sustainable development is underscored.

**Figure 1: The shape of the EKC**



Source: Panayotou (2003:46)

The theoretical emphasis on environmental quality and sustainable development according to Enoch (2023), Haseeb et al., (2018), Shahbaz et al., (2018), and Udo et al., (2019), is evident in the profound financial shocks of the 2008-09 financial crisis on the entire economic system, raises the crucial question: on the extent of financial development influence on environmental degradation? Empirically, Tamazian and Rao (2010) argue that ecological degradation is regulated by institutional quality and financial development. Globally, African countries contribute approximately 4% of global greenhouse gas emissions at 1.45 billion tonnes.

On a per capita basis, Africa accounts for an average of one ton of CO<sub>2</sub> emitted annually by each individual. Notwithstanding the lowest emissions from Africa, seven of the ten countries most vulnerable to climate change are in Africa. In a bid to ease the adverse effect of CO<sub>2</sub> emissions on ecological quality and stimulate sustainable development through increased access to green energy consumption across SSA countries by 2050 and in reaction to the pulling out from the Paris Agreement in 2017 by the United States', SSA countries have developed models to achieve zero emission by 2060 and tackle ecological challenges by projecting about \$2.9 trillion of cumulative capital and expenditure in green-energy sources development. The Africa Climate Summit (ACS) report of 2023 revealed that regardless of Africa accounting for approximately 40% of the world's green energy resources, African countries have only access 2% (\$ 60 billion) of the US\$ 3 trillion green energy investments funds in the last decade.

The outbreak and exponential growth in COVID-19 cases in SSA countries and the ripple effect of the strictly imposed safety protocol of social distancing and lockdown to curtail the spread of COVID-19 for months induced the 2020 recession in SSA countries. The Russian invasion of Ukraine in 2022 is not without the economic and financial implications for the recovering SSA economy. These factors make SSA countries an apt scope for this study as a result of various climate change challenges, diminishing growth and development of SSA economies.

Previous studies of Ayesha et al., (2021); Ntow- Gyamfi et al., (2020); Nasir et al., (2019); Gorus and Aslan (2019); Haseeb et al., (2018), and Park et al., (2018) examining green finance and sustainable development nexus in developed and developing economies and economic bloc predominantly adopted the classical regression model, a single indicator of financial development. These studies focused on developed economies emitting from 50% to 80% of greenhouse gas into the atmosphere, ignoring SSA countries emitting 4% of greenhouse gas. Yet, seven of the ten most vulnerable countries to climate change are in Africa.

The extensive use of classical regression analytical models and the validity of research findings have raised questions in the empirical literature. Gunst and Mason (1980; 169–206) argued that inferences drawn based on a unique model are statistically suspicious. The adoption of a diverse paradigm to investigate this nexus, according to Udo et al., (2023), provides vital policy formulations and frontiers for this study. However, time-series data are skewed and leptokurtic (Brooks 2014). The spikes and variations render the regression model inappropriate for an accurate and reliable assessment of this link.

It is against this lacuna that this study delves into the dynamic interplay between financial development, environmental quality, and governance quality in selected SSA countries of Rwanda (GDP Growth: 6.2%), Côte d'Ivoire (GDP Growth: 6.2%), Benin (GDP Growth: 5.5%), Uganda (GDP Growth: 5.4%), Tanzania (GDP Growth: 5.2%), Kenya (GDP Growth: 5%), Togo (GDP Growth: 4.6%), Senegal (GDP Growth: 4.1%), Madagascar (GDP Growth: 4%), and Algeria (GDP Growth: 3.8%) considered in 2023 as stable and fastest-growing economies after the covid-19 pandemic from to 1999-2022.

This study measured green finance using the decomposed indicators of financial sector: openness (Foreign Direct Investment); efficiency (credit to the private sector) and market size (stock market capitalization); environmental quality is proxied by energy use, CO<sub>2</sub> emissions, greenhouse emissions, natural resource depletion, and institutional quality proxied government effectiveness to examine the individual effect disregarded by previous studies. The use of these financial development indicators to measure green finance revealed the extent and depth of investments and financial activities directly linked to environmental sustainability and these indicators reflect not only monetary flows but also broader trends in sustainable development, technology adoption, and market dynamics. By aligning financial resources with green objectives, countries and businesses transit towards a more sustainable and resilient economy.

The pooled mean group autoregressive distributed lag model (PMG-ARDL) was adopted to explore the multifaceted green finance and sustainable development nexus and for its ability to control for endogeneity and serial autocorrelation, which previous studies ignored. The results of this study contribute to the extant literature by providing multiple practical implications, a policy development guide for the finance sector, and evidence of the influence of green finance on environmental sustainability. The study findings reveal that institutional quality, technology, education, and civilization influence and prevent environmental degradation and increase environmental quality through awareness of the benefits of green energy. The findings of this study further stress

the need for institutional reforms to reduce GHG and CO<sub>2</sub> emissions, natural resource depletion, and investment and development of greener SSA economies.

### Literature Review

The sustainability of the financial sector is crucial for facilitating businesses' access to convenient, affordable, and flexible financial resources and providing investment opportunities for individuals (Ji et al., 2021). In light of the growing adverse effects of climate change on ecological quality induced by the increased consumption of fossil fuels, which increases CO<sub>2</sub> emissions, GHG emissions, and depletes natural resources globally, particularly in SSA countries, the need to embrace green financing as a traditional financing option becomes inevitable (Kim et al., 2020; Enoch, et al., 2023; Abner, et al., 2023; Udo, et al., 2023; Udo, et al., 2024). As investors progressively and consistently acknowledged the environmental benefits associated with green energy and green financing to reduce credit risk and business volatility (Umar, Ji, Mirza, & Naqvi, 2021). Ji et al., (2021) revealed that green financial assets outperform non-environmentally responsive assets in for the BRICS economies. The dynamic evolution in the nexus between the finance environment over the decades is explained theoretically by the EKC model, which posits a U-shaped curve. The EKC model posits that countries, principally in their initial stages of development, ignore environmental conservation due to the cost implications associated with green energy development and prioritize policies aimed at stimulating economic development as countries stabilize towards sustainable development, natural resource conservation, and green energy development; a U-shaped curve depicting the link between income and the environment is established. Dinda (2004) argues that economies begin to explore environmentally friendly solutions because of concerns associated with environmental quality.

Theoretically, the link between financial development and environmental quality is explained by two hypotheses: The Pollution Haven Hypothesis (PHH), postulated by Peter Neary and Gene Grossman in the early 1990s, and the Pollution Halo Hypothesis (PH), postulated by Ramanathan and Collins in the late 1990s. The PHH posits that environmental regulations and stringent standards in developed countries lead to the migration of polluting multinational corporations (MNCs) to countries with lax environmental regulations and stringent standards, particularly developing countries. The validation of this hypothesis is that MNCs seeking profit margin improvement and production cost minimization migrate to countries where environmental regulations and compliance are lax, creating "pollution havens."

This is evident in Africa, where seven of the ten countries most vulnerable to climate change are found. The findings of Mensah et al., (2020), Enoch (2023), Shahbaz et al., (2018), among others, support the PHH argument that financial sector development diminishes environmental quality through industrialization and expansion of infrastructure, while investment and consumption of green energy improve environmental quality. It has been argued that the financial sector funds most economic activities, and these activities impair environmental sustainability.

Empirically, Afzal et al., (2023), Basit, et al., (2021); Enoch et al., (2023), Marrasso et al., (2019), and others revealed that financial development influences ecological quality through economic growth, attracting Foreign Direct Investment (FDI), and increasing energy consumption; flourishing financial markets provide credit to consumers, which increases demand for energy-intensive products and subsequent pollution, and financial development increases the financial capacity of firms consuming fossil energy, which contributes to environmental deterioration.

On the divergent, the PH argues that the migration of MNCs from countries with efficient, eco-friendly technologies and high environmental awareness contributes to CO<sub>2</sub> emission reduction in host countries because their operational structure relies on green technology. Musah et al., (2021) Shahbaz et al., (2018) upheld the argument of proponents of the Pollution Halo Hypothesis. Based on these findings, we hypothesize a curvilinear nexus between financial development and environmental quality (H<sub>1</sub>).

This study explores the role of institutional frameworks in prompting the financial development and environmental sustainability nexus to expand the frontiers of previous studies in developed and emerging economies. Strong and high-quality institutional frameworks advocate for laws and regulations promoting greener development. The findings of Ntow-Gyamfi et al., (2020) in Africa support fiscal policies and institutional quality in promoting climate-friendly investment options.



Based on these findings, the study assesses the nexus between institutional quality and environmental degradation in the selected SSA countries (H<sub>2</sub>).

The impact of global milestones, such as the Paris Climate Conference and the United Nations' Sustainable Development Goals (SDGs), on environmental welfare is considered in this study. These global initiatives promote investment in sustainable business models and highlight the significance of green energy development for pollution decline (Ji et al., 2021; Taghizadeh-Hesary & Yoshino, 2020; Abner et al., 2023; Basit, et al., 2021; Enoch et al., 2023; Udo, et, al 2024). The advent of the Covid-19 pandemic and its ripple effect on the \$105 trillion global economy and the \$3.1 trillion African economy and financial markets revealed the impact of environmental quality on sustainable development. As such, lockdowns during the pandemic temporarily reduced CO<sub>2</sub> emissions by 45% through the suspension of business and economic activities, particularly in the transportation and industrial sectors (Tollefson, 2021; Hadi, 2019; Nundy et al., 2021).

Relaxation of the lockdown led to a geometric increase in CO<sub>2</sub> emissions due to production increase in industries consuming fossil fuel energy. Investment in green projects through the financial sector improves environmental quality. Recently, investment in green projects has significantly improved environmental quality, financial flexibility, and stability through the inflow of FDI from eco-friendly investors. These factors, among others, justify this study in the context of SSA countries, where seven of the ten countries most vulnerable to climate change are found. The theoretical underpinning and review of related literature provides a comprehensive overview of the evolving finance and environmental nexus. This study contributes to the extant literature by exploring the curvilinear financial development and environmental quality nexus and assessing the influence of institutional quality on this nexus in selected SSA countries considered in 2023 by the World Bank as stable and fast-growing economies after the COVID-19 pandemic. In addition, this study considers the impact of global initiatives on environmental sustainability.

### Method

The annualized time series dataset was collated from World Bank Indicators (2022) for a sample size of 10 SSA heterogeneous cross-sections for 25 periods from 1999 to 2023 was adopted using the *ex-post facto* research design. These countries are considered by the World Bank in 2023 to be stable and fast-growing economies after the COVID-19 pandemic, with gross domestic product growth between 6.2% and 3.8% of the population of 47 SSA countries recognized by the World Bank. Table 1 shows the sample population, with a GDP growth rate of 2023.

The panel model was adopted to account for the heterogeneity of the individual SSA countries. This study decomposes financial sector development into sub-indices of openness (Foreign Direct Investment) efficiency (bank credit to the private sector) and market size (stock market capitalization), environmental quality is proxied by energy used, CO<sub>2</sub> emissions, greenhouse emissions, and natural resource depletion.

The adoption of net foreign direct investment (FDI) inflow as an indicator for green finance stems from its positive and significant ability to attract investment and investors from eco-friendly countries with stringent environmental regulations and high compliance standards. Alfaro and Rodríguez-Clare (2012) utilized this indicator and highlight its relevance in promoting green energy initiatives. The use of credit to the private sector as a proxy of green finance, emphasises the role of banks and financial institutions in funding green projects and initiatives. This credit facilitates innovation, research, and the development of environmentally friendly products and services, that mitigate risks associated with climate change and environmental degradation. Beck, Demirgüç-Kunt, and Levine (2004) adopted this proxy in their study and reported its importance in driving sustainable investments. Stock market capitalization measures green finance, as higher market capitalization for green companies attracts investor interest and confidence in environmentally responsible businesses. Aicheche and Nguyen (2021) observed that market performance of quoted green companies serves as a market signal for the financial viability and attractiveness of green investments. This holistic approach underscores the importance of integrating environmental considerations into financial decision-making processes to drive meaningful progress towards a greener future. The influence of environmental quality on green finance was controlled by using institutional quality, technology, education, and urbanization to examine the individual effect, which previous studies disregarded (Table 2).

**Table 1**

*Sample SSA countries with GDP growth rate in 2023*

SSA countries	GDP growth rate
Rwanda	6.2%
Côte d'Ivoire	6.2%
Benin	5.5%
Uganda	5.4%
Tanzania	5.2%
Kenya	5%
Togo	4.6%
Senegal	4.1%
Madagascar	4%
Algeria	3.8%

Source; Author (2024)

**Table 2**

**Variables Description**

Variables	Indicators	Measures	Source	
Environmental (ENQ)	Quality	Energy Usage (EU)	Word Bank Indicators (2022)	
		CO2 Emissions (CO2)		
		Greenhouse Emissions (ERM)		
		Natural Resource Depletion (NRD)		
Financial (Green Finance)	Development	Efficiency	Bank credit to the private sector, per cent of GDP (BCP)	
		Openness		Foreign Direct Investment (% of GDP) (FDI)
		Market size		Stock market capitalization (% of GDP) (STM)
<b>Controls</b>				
Institutional (Governance)	Quality	Government effectiveness index (-2.5 weak; 2.5 strong) (GOV)		
	Technology	Mobile phone subscribers per 100 people (TEC)		
Urbanization		Urban population (% of total population) (URP)		
Education		Secondary school enrollment, per cent of all eligible children (EDU)		

Source; Author (2024)

**Model Estimation Approach**

**Pre-Test**

**Cross-Sectional Dependency (CD) Tests**

Prior to assessing the long-short-run nexus among the study variables, it is imperative to explore cross-sectional dependence, as the negligence of these tests, according to Shahbaz et al., (2018), will lead to spurious results. The CD test is expressed as

$$CD = \sqrt{\left(\frac{2T}{N(N-1)}\right) \sum_{i=1}^{n-1} \sum_{j=1}^{n-1} (p_{ij})} N(0, 1) \dots \dots \dots (Eq1)$$

Where N and T = cross-sectional dimensions and period, respectively, and p<sub>ij</sub> is the pairwise correlation of the errors.

**Unit Root**

The CADF and CIPS unit root models were adopted to examine the stationarity assets of the series. The equations are expressed as:

$$\Delta Y_{it} = \beta_1 + \rho_i Y_{it-1} + \beta_{iyit-1} + \sum_{j=0}^k Y_{ij} \Delta y_{it} - 1 + \sum_{j=0}^k Y_{ij} \delta y_{it} - 1 + \varepsilon_{it} \dots \dots \dots (Eq2)$$

$$CIPS = \left(\frac{l}{N}\right) \sum_{j=1}^k t_i(N, T) \dots \dots \dots (Eq3)$$

where β<sub>1</sub> = deterministic term k lag order, and y<sub>t</sub> = cross-sectional mean of time t.

**Pooled Mean Group Autoregressive Distributed Lag Model (PMG-ARDL)**

The PGM-ARDL was adopted for its ability to syndicate variables of diverse orders of integration (I(0) or I(1)) but not I(2), and control for endogeneity and serial autocorrelation, which previous studies ignored. The PMG-ARDL model is expressed linearly as

$$ENQ = \beta_0 + \beta_1BCP_{it} + \beta_2FDI_{it} + \beta_3STM_{it} + \beta_4GOV_{it} + \beta_5TEC_t + \beta_6URP_{it} + \beta_7EDU_{it} + \varepsilon_{it}.....(Eq4)$$

Where  $\varepsilon_{it}$  = error term,  $i$  = cross-section, and  $t$  = period.

**The PMG-ARDL model**

$$y_{it} = \sum_{j=0}^p Y_{ij}\Delta y_{it} + \sum_{j=0}^p \beta_{ij}X_{it} + \mu_i + \varepsilon_{it}..... (Eq5)$$

$$ENO_{it} = \psi_i + \sum_{j=0}^p \beta_{ij}BCP_{it-j} + \sum_{j=0}^p \chi_{ij}FDI_{it-j} + \sum_{j=0}^p \varphi_{ij}STM_{it-j} + \sum_{j=0}^p \gamma_{ij}GOV_{it-j} + \sum_{j=0}^p \theta_{ij}TEC_{it-j} + \sum_{j=0}^p \theta_{ij}URP_{t-j} + \sum_{j=0}^p \phi_{ij}EDU_{t-j} + \varepsilon_{it}.....(Eq6)$$

Where  $ENO_{it} = (EU_{it} + CO2_{it} + ERM_{it} + NRD_{it})$

$t$  = period ( $t = 1,2,3 \dots T$ )

$i$  = country ( $i = 1,2,3 \dots N$ );

$X_{it}$  ( $k \times 1$ ) = vector of explanatory variables for group  $i$ ;

$\mu_i$  = fixed effect

$(\gamma_{ij})$  = coefficients of the lagged dependent variable

$\beta_{ij}$  and  $k \times 1$  = coefficient vectors.

$\varepsilon_{it}$  = error term.

The error correction model for the re-parameterized ARDL ( $p, q, q \dots q$ ) can be specified as

$$\Delta y_{it} = \theta_i[y_{it-1} - \lambda_i X_{it}] + \sum_{j=0}^{p-1} \gamma_{ij}\Delta y_{it-j} + \sum_{j=0}^{q-1} \beta_{ij}\Delta y_{it-j} + \mu_i + \varepsilon_{it}..... (Eq7)$$

**Hausman Test**

The Hausman test was performed to determine the most appropriate estimator under the null hypothesis of homogeneity between:

Pooled Mean Group (PMG); ii. Mean Group (MG), and iii. Dynamic fixed effects (DFE).

The PMG is preferred when either the  $N$  or  $T$  values are small. The PMG pooled the MG estimators' features, such as averaging the individual equations for each cross-section, to produce consistent estimators.

**Results**

**Table 3**

*The Descriptive Statistics*

	EU	CO2	ERM	NRD	BCP	FDI	EDU	STM	GOV	TEC	URP
Mean	592.5255	0.566484	45630.50	5.390830	15.95063	-67305313	41.61987	29.81448	-0.643564	47.77435	8862079.
Median	434.8388	0.269675	24690.72	3.783930	13.25132	1.386471	39.21269	26.50727	-0.585880	45.95331	6993189.
Maximum	3912.261	3.994402	279200.6	24.64426	36.64775	13.84758	99.61435	80.54854	0.308449	162.1701	33575039
Minimum	54.73064	0.052654	3117.582	0.000283	3.112803	-1.27E+09	9.953290	0.000000	-1.534019	0.079282	1126468.
Std. Dev.	712.1401	0.929708	61720.20	5.499786	7.570022	2.32E+08	18.09238	29.29372	0.365703	39.65517	7074121.
Skewness	3.213731	2.662504	2.395848	1.317190	0.699779	-3.578365	0.726616	0.441452	-0.325568	0.386809	1.487646
Kurtosis	13.97430	8.706615	7.967385	4.338859	2.510225	14.81896	3.491607	1.565240	3.040190	2.121425	4.864629
Jarque-Bera	1603.995	558.4441	440.6261	80.04790	21.80321	1845.430	14.21943	24.71476	3.723931	13.13280	123.2920
Probability	0.000000	0.000000	0.000000	0.000000	0.000018	0.000000	0.000817	0.000004	0.155367	0.001407	0.000000

Source; Author (2024)

The descriptive statistics results in Table 3 for the study "Green Finance and Sustainable Development in SSA countries show that, the 10 selected SSA countries considered as fast-growing and stable after the COVID-19 pandemic use 592.53 kg of energy, emits 0.57 kilotons of CO2, releases 45630.50 kilotons of other greenhouse gases per capita, and deplete natural resources by 5.39% per annum. The high standard deviation of 712.14 indicates a wide dispersion in energy consumption levels and energy efficiency in SSA countries. The high average and median values of (15.95 and 13.25) indicate a generally positive trend in bank credit availability for private sector activities, and the standard deviation reflects the disparity in SSA countries' access to credit. The negative average value of net foreign direct investment and the high standard deviation indicate significant variability among SSA countries. The average and median values indicate variations in stock market capitalization, reflecting the differences in financial market development across the selected SSA countries.

The average and median values of government effectiveness in measuring institutional quality in the selected SSA countries promote sustainable development. A positive skewness indicates an inclination towards robust government effectiveness. The high standard deviation of 39.66 mobile phone subscribers per 100 people measuring technological development indicates significant variability in infrastructure development. The high standard deviation of 29.29 suggests diverse levels of urbanization, possibly reflecting differences in economic structure and development.

The results in Table 3 highlight the diversity among SSA countries in terms of energy usage, environmental impact, financial indicators, and institutional and technological factors. The utilization of PMG-ARDL provides a more robust assessment and policy inferences for stimulating sustainable development in the region, with a focus on the role of financial development and institutional quality.

### Cross-Sectional Dependence

The CD results in Table 4 show cross-sectional dependency among SSA countries, as such countries are not entirely independent from each other. Shocks experienced from global epidemics, financial crises, technological progress, and cross-border pollution can quickly spread across regions, economic bloc and nations.

**Table 4**  
*Cross-Sectional Dependence Test Results*

	Test-Statistic
Breusch-Pagan LM	103.604***
Pesaran scaled LM	20.712***
Bias-corrected scaled LM	13.309***
Pesaran CD	6.9018**

Source: Author (2024). \*\*\*\*\* significance level of 5%

**Table 5**  
*Second Generational Unit Root Test Results*

Variables	Constant and Trend			
	CIPS		CADF	
	Levels	1 <sup>st</sup> Difference	Levels	1 <sup>st</sup> Difference
EU	-3.981***	-6.012***	-0.081	-6.012***
CO2	-3.001***	-5.031***	-1.812	-5.031***
ERM	-2.891***	-6.012***	-2.061***	-6.012***
NRD	-3.080***	-4.925***	-0.021	-4.925***
BCP	-4.012***	-4.512***	-5.901***	-3.700***
FDI	-3.011***	-4.069***	-5.151**	-3.812***
EDU	-3.381***	-4.001***	-4.671***	-4.810***
STM	-4.012***	-4.512***	-3.991***	-5.151**
GOV	-4.802***	-6.126***	-3.671***	-4.671***
TEC	-5.102***	-7.923***	-3.881**	-5.405***
URP	-3.612***	-5.871***	-2.051**	-5.812***

\*\*\*Critical values of CIPS = 1% -2.250, -3.510, -2.130:

CADF= 1% -2.012, -1.958, -2.001.

Source: Author's (2024).

Before estimating the long-short-run nexus, determining the stationarity assets of the series is key to the dependability of the PMG-ARDL results. The unit root results in Table 5 reveals diverse orders of integration. Thus, providing credibility to adoption of the PMG/ARDL estimator.

The PMG/ARDL model was adopted as a more efficient model than the mean group (GM) results, and the long-run nexus is presented in Table 6.

**Table 6**  
Results of long-run PMG-ARDL Estimation

Variable	Panel A: Long Run Equation			
	EU	CO2	ERM	NRD
Models	(2,0,0,10,1)	(1,1,1,1,1,1,1)	(2,2,2,1,2,2,2)	(2,1,1,1,0,1,0,0)
BCP	0.8523 (8.6072)**	0.891 (5.6600)**	-0.363 (-5.663)**	0.860 (11.061)**
FDI	0.91143 (12.3475)**	-0.70115 (-14.9014)**	-0.196 (-4.543)**	0.4735 (10.769)**
STM	0.9601 (10.1716)**	0.5595 (7.5924)**	-0.697 (-6.611)**	0.399 (9.628)**
EDU	0.8114 (10.992)**	0.097 (3.294)**	0.307 (4.784)**	0.546 (1.782)**
GOV	0.8198 (7.9182)**	-0.3053 (-12.9166)**	0.196 (4.5433)**	0.5882 (9.2557)**
TEC	0.9119 (9.9049)**	0.8590 (9.8158)**	10.491 (9.435)**	14.681 (7.1001)**
UPR	0.940 (6.262)**	0.950 (5.289)**	14.681 (7.1001)**	0.7552 (11.666)**
Panel B: Short-Run Equation				
CointEq(-1)*	-0.8978 (-13.231)**	-0.5452 (-7.8406)**	-0.8378 (-8.7798)**	-0.7545 (-16.309)**
Hausman Test Results	5.8700 (0.3981)	6.901 (0.6891)	4.890 (0.5470)	8.920 (0.3012)

Source: Author (2024). \*\* significance level of 5%

## Discussion

### Greenhouse Emissions

The negative results imply that a 1% decrease in bank credit to the private sector may lead to the relocation of MNCs to countries with lax environmental regulations (pollution haven). Thus, increasing greenhouse gas emissions in industries may prioritize cost savings over environmental responsibility. The net inflow of FDI from countries with stringent and high environmental compliance costs to countries with lax environmental standards to reduce operational costs increases greenhouse gas emissions in the host country. In pursuit of short-term profits, companies listed on the stock market may prioritize cost-cutting measures to decrease environmental quality and increase emissions. Institutional quality, technology, and urbanization positively reduce greenhouse gas emissions through the investment and development of renewable energy. Urbanization supports energy-efficient infrastructure, public transportation, and waste management, thereby reducing per capita emissions. The findings of Khan, Polat and Bashir (2023); Udo, et al., (2023); Udo, et al., (2019), Enoch, et al., (2023), Abner et al., (2023), Udo, et al., (2024) support the study findings of regulatory environments, financial constraints, and urban development in influencing greenhouse gas emissions.

### Natural Resource Depletion

The diminution of natural resources is a significant environmental concern, and various economic and social factors have influenced the rate of depletion over the years. From the long-run results, a unit increase in bank credit promotes natural resource conservation and biodiversity preservation through investment in sustainable practices and technologies, leading to an 86% more efficient use of natural resources. The net inflow of FDI promotes investment in industries that prioritize sustainable practices, mitigating the negative impacts on natural resources by 47%. Companies with high market capitalization attract investments by 39% based on their commitment to sustainability and environmentally conscious practices. Robust institutional quality enforces and regulates environmental laws, prevents the overexploitation of natural resources, and leads to the development of eco-friendly technologies and processes, promoting sustainable resource management by 58%. Urbanization leads to 75 % more efficient resource usage, waste management, and sustainable consumption patterns. A high education level increases awareness of the environmental consequences of resource depletion, fostering conscious consumption. Green finance initiatives are crucial for directing investments towards sustainable projects and contributing to economic and ecosystem stability in the region.

### CO2 Emission

Green finance proxied by bank credit to the private sector (efficiency) and stock market capitalization (market size) positively and significantly influences sustainable development. This implied that a 1% increase in

bank credit to the private sector increases investments in cleaner technologies and sustainable practices, thus reducing the carbon intensity of industries. A 1% increase in stock market capitalization attracts investment in green and sustainable industries, promoting environmentally friendly practices. Findings revealed that higher educational levels lead to increased awareness of environmental issues and sustainable practices, which influences consumer behaviour and corporate responsibility and encourages reduction in fossil energy consumption to improve environmental quality. Urbanization increases the energy demand, which increases CO<sub>2</sub> emissions.

Similarly, urbanization can lead to a more efficient use of resources and energy because of the adaptation of cleaner technologies and sustainable urban planning through advanced technologies that reduce overall carbon emissions. Poor institutional quality, characterized by weak governance and corruption, hinders the effective implementation and enforcement of environmental regulations. Lack of regulatory oversight may lead to environmentally harmful practices by industries, contributing to higher CO<sub>2</sub> emissions. As such, most MNCs prioritize economic gain over environmental sustainability.

### **Energy Usage**

The positive and significant influence of green finance proxied by bank credit to the private sector (efficiency), foreign direct investment (openness), and stock market capitalization (market size) on sustainable development proxied by energy usage revealed that an increase in bank credit to the private sector facilitated investments in energy infrastructure and promoted the adoption of energy-efficient technologies and green energy development projects. An increase in net FDI inflow attracts capital and green technology nations with sustainable green energy projects to reduce CO<sub>2</sub> emissions and foster innovation in the energy sector through energy companies listed on the stock market with access to capital for investment and research in renewable infrastructure. Educational level, technology, institutional quality, and urbanization positively enhances the embrace of energy-efficient technologies and practices in cities through transparent and effective institutions. Fossil fuel consumption increases with population growth and urbanization. Balancing economic growth with sustainable practices is essential, especially in the context of the vulnerability of African countries to climate change.

### **Error Correction Model (ECM) Results**

From the short-run estimate in Panel B, the ECM values of CointEq(-1) of (-0.8978) for energy usage, (-0.5452) for CO<sub>2</sub> emissions, (-0.8378) greenhouse emissions, and (-0.7545) for natural resource depletion are correctly signed, which is negative and statistically significant, confirming the existence of a long-run speed of convergence from short divergence caused by economic pressures, lax regulatory frameworks, conflicts and instability, technological constraints, climate change impacts, and global market dynamics, among others, in SSA countries.

Findings reveals a multifaceted influence and implications of institutional quality, technology, and urban population on sustainable development, particularly through environmental quality in SSA, which is greatly affected by climate change. To circumvent the pollution havens effect, African countries must prioritize sustainable development, invest in green technologies, and strengthen institutional frameworks to ensure effective environmental governance. Balancing economic growth with environmental stewardship is crucial, especially since seven of the ten countries most vulnerable to climate change impacts in Africa. The findings of Udo, et al., (2024), Ji et al., (2021), Abner et al., (2023), Enoch et al., (2023), Udo et al., (2023), Ntow-Gyamfi et al., (2020) are consistent with the findings of this study.

### **Conclusion**

In conclusion, this study assesses and provides appreciated insights into the intricate nexus between green finance and sustainable development in 10 selected sub-Saharan Africa (SSA) countries considered in 2023 by the World Bank as fast growth and stable after the COVID-19 pandemic. The investigation focused on key environmental indicators of natural resource depletion, greenhouse gas emissions, CO<sub>2</sub> emissions, and energy usage, shedding light on the complex interplay of economic, social, and environmental factors. The results indicate that green finance, proxied by bank credit to the private sector, plays a pivotal role in promoting sustainable practices. An increase in bank credit to the private sector increases investments in industries that prioritize sustainability, conservation, and biodiversity preservation.

Similarly, the negative relationship between green gas emissions and net FDI inflow reveals potential adverse consequences associated with the risk of increased greenhouse gas emissions due to the relocation of multinational corporations (MNCs) to SSA countries due to lax environmental regulations associated with weak

regulatory frameworks. Educational development proxied by secondary school enrollment significantly improves environmental quality through awareness of the impact of climate change. In the long run, SSA countries investing in post-primary education will benefit from sustainable environmental quality.

The comprehensive findings of this study provide a foundation for holistic and informed decision-making. This study, among other things, recommends the formulation and implementation of strategic green finance policies to align investments with development goals, enhanced regulatory oversight to improve environmental quality by reducing harmful practices in industries. SSA countries must balance economic growth and environmental stewardship through sustainable development strategies to avoid long-term environmental degradation, given their countries' vulnerability to climate change.

This study provides empirical evidence on the multifaceted influence of institutional quality, technology, and urbanization on sustainable development in SSA and fills the knowledge gap. These findings underscore the importance of addressing environmental challenges in tandem with economic development.

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## **Obstacles to Marriage for Jordanian Persons with Visual or Hearing Disabilities from Their Perspectives**

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This study explores the obstacles to marriage for persons with physical disabilities (visual or hearing) from the perspective of persons with physical disabilities. To achieve the study's objectives, a questionnaire was developed and administered to a sample of 544 people with physical disabilities (201 female and 343 male). The results indicated that the obstacles to marriage for persons with physical disabilities, according to the participants' perspectives, were of a moderate degree. The most impactful impediments were found to be economic, followed by social and psychological ones, and challenges pertaining to the type of impairment had the least effect. When it came to the sample's responses to the scale's sections on gender, academic standing, marital status, and the existence of a handicap in the family, the results did not reveal any statistically significant differences. However, statistically significant differences were observed based on the specialization variable, in favour of scientific colleges.

**Keywords:** marriage obstacles, persons with physical disabilities, Jordanians

Jordan has a long history of addressing issues related to disability, and the country has been recognized internationally for its efforts. It is commonly regarded as a pioneer in matters pertaining to disabilities. However, some people with specific disabilities are kept hidden due to the persistent stigma attached to impairments. Many Arab societies have historically had a negative view of disabled people, viewing them as a burden or a disgrace. Furthermore, stigma surrounds health, indicating a lack of understanding of the potential of those with disabilities. Current evidence from Jordan shows that as more positive attitudes about disabilities are adopted, communities are becoming more inclusive. It is believed that biological, religious, and supernatural factors contribute to disability (Alshare et al., 2019; Alwagfi et al., 2020; Alzboon et al., 2022; Banikalef, 2020; Thompson, 2018).

When we discuss the impediments to marriage from the perspective of individuals with visual and hearing impairments, we find that this perspective plays a vital role in shaping the discourse and decision-making in this regard. Each individual among them has unique experiences and beliefs that can significantly influence their outlook and positions regarding marriage, and these perspectives are influenced by various factors such as the conditions of the impairment, personal life circumstances, culture, and surrounding environment (El Rabbaie et al., 2019; Hatamleh, 2021, 20023; 2024). The impediments facing this group may include non-compliance with existing traditions and social restrictions that hinder their freedom to choose a partner and marry freely. For some, personal challenges may include difficulty finding a life partner who understands their challenges and is willing to live with them, while others may have concerns about their ability to conceive and raise children due to the impairment. Therefore, it is of utmost importance to understand and respect the perspectives of individuals with visual and hearing impairments, and to provide them with the necessary support and resources to make independent decisions regarding marriage (Melhim et al., 2023; Obeidat et al., 2022; Wolor et al., 20022, 2023; Yassien et al., 2023). The entire community should work to alleviate barriers and discrimination and promote equal opportunities for all its members, including individuals with visual and hearing impairments, to ensure their marital rights with freedom and dignity (Alazzam et al., 2024; Bany Yassien et al., 2023).

The aim of this study is to explore the challenges and issues in marriage when one partner suffers from hearing or visual impairments. Since marriage cannot be viewed solely through the relationship between the individuals involved, but must also be placed in the context of family and broader social relations, the impact of hearing or visual impairments on the mutual relationships between the spouses and wider networks is a crucial aspect of this study. Such studies help bridge an important gap in our knowledge. Amin et al., (2020) acknowledge that despite the flourishing of social policy research on disability, marriage, and family life, studies on the marriage of individuals with disabilities remain rare, although disability-related literature contains some references to the experiences of married individuals and personal accounts.

The scarcity of research in this field may be related to the interests and focal points of various academic disciplines. Social policy literature has attempted to map out the impact of different disabilities on individuals, particularly the deprivation resulting from societal exclusion. Only after the deprivation aspects are clarified can attention be turned to their impact on relationships, particularly the psychological and social dimensions. Feminist literature also tends to overlook relational processes within families by focusing on the caregiving role of women in the family, exploring further diverse focuses, and showing little interest so far in spouses or in viewing this caregiving process as a mutual endeavour.

In the subject of special education, the question of marriage for people with auditory and visual impairments is a significant social issue. Families, people with disabilities, and the general public all have differing perspectives on this matter. Some people who believe marriage offers numerous interests and benefits are in favour of it for those with physical disabilities (Al Etoum et al., 2024). These views are consistent with the biological and human makeup, since people with disabilities are human beings first and foremost, with aspirations to establish families, procreate, attain social and psychological equilibrium, and lessen feelings of hopelessness and isolation. Even though laws and regulations protect their rights in social and economic domains—such as their ability to conceive and fulfil their sexual desires like any other person—other viewpoints are against their marriage, presumptively declaring it a failure and viewing it as a convoluted and embarrassing matter. Thus, the purpose of this study is to investigate, in the context of several variables, the most significant barriers and issues that prevent people with hearing or vision disabilities from exercising their right to marriage, as seen by persons with physical disabilities themselves.

### **The Problem of the Study**

One of the three significant life events, along with birth and death, is marriage. Gender continuity is preserved, interactions between men and women are given legitimacy, and societal well-being is attained through marriage. It plays a big role in their right to a life of dignity, which is protected by the majority of laws across various nations. Human values are in line with the way these connections are regulated. The topic of marriage and disability is regarded as a marginalised concern in the media, research, and society. Nevertheless, it has not received enough attention or investigation, despite its significance to an extensive range of parents, advocates, and those concerned with their issues in Jordanian society and the Arab world.

The present study aims to identify the main impediments preventing the marriage of a specific category of marriageable disabilities, namely individuals with visual or hearing disabilities. This perspective comes from persons with physical disabilities who are closest to the age of marriage or consider it a stage of stability after completing their studies. The study seeks to raise awareness among persons with physical disabilities about these issues, change their perceptions, and propose solutions to address these hindrances within Jordanian legislation. In light of this problem, the study addresses these questions:

1. What are the obstacles to the marriage of persons with physical disabilities from the perspective of persons with physical disabilities, and which ones have the most significant impact?
2. Are there statistically significant differences ( $\alpha \leq 0.05$ ) in the obstacles to the marriage of persons with physical disabilities from the perspective of persons with physical disabilities based on variables such as gender, specialisation, marital status, academic level, and the existence of disability in the participants' family?

### **Literature Review**

#### **Theoretical Framework**

Reliable data on the prevalence of disabilities in Jordan are scarce. According to current official estimates, about 1,100,000 persons, or 13 percent of the population, are estimated to be disabled. Jordan's 2004 census revealed

a 1.23 percent disability prevalence rate. According to data from 2010, the percentage of married people with disabilities (59%) was comparable to that of the general population (59.7%). While testing of a UNICEF-supported disability module revealed a disability prevalence rate of (13 %) for 2010, census statistics from 2015 suggested a disability prevalence rate of 2.7 percent. According to a different source, 11.2 percent of Jordanians who were five years of age or older had a disability, according to the 2015 census. Had children been counted, the predicted rate would have been 12 percent. The reason for this disparity is unclear. According to the Higher Council of Affairs for Persons with Disabilities (2016), the official estimate of the prevalence of disabilities is still 13% (Thompson, 2018).

According to Buchy et al., (2017), there is a sincere desire on the part of the highest authorities in Jordan to enhance the quality of data pertaining to issues related to disabilities. Progress has been made in raising the visibility of individuals with disabilities as a result of this political will; for instance, Jordan hosted a meeting of the Washington Group on Disability Statistics in Amman in 2013, which led to the inclusion of the Washington Group's questions in the 2015 census. Although Jordan has national legislation that upholds the rights of disabled people to participate in society, attitudes held by communities may prevent disabled people from participating as members of the community (Al-Zboon & Hatmal, 2016). In public spaces, schools, colleges, and on the streets, most individuals with disabilities experience prejudice and a lack of accessibility (Jordan Times, 2015a).

According to Jalal and Gabel (2014), there is discrimination, marginalisation, and prejudicial treatment of both men and women with disabilities in Jordan; nevertheless, women with disabilities are more likely to experience abuse and stigma than males. Disability and impairment are often used interchangeably. Some believe that it brings humiliation to the family as a whole (Jalal & Gabel 2014). Children with impairments encounter numerous impediments in their educational journey, one of which is the attitude of their parents (UNICEF, 2015). There are instances of favourable attitudes towards people with impairments, notwithstanding these negative ones. For instance, fifty-four dentists' opinions and attitudes toward people with intellectual disabilities were evaluated in a study conducted in Jordan. Extremely favourable sentiments for people with intellectual disability were noted. It was discovered that the dentists' gender or years of experience had no discernible impact on these opinions (Al-Zboon & Hatmal, 2016). Carr and Utz (2020), however, note that the stigma associated with disability is a serious problem, with cultural norms leading to the exclusion of persons with particular kinds of disabilities.

### **Previous Studies**

One important area of research in the realm of disability issues is attitudes toward dating and marriage for people with disabilities. Angermeyer and Dietrich (2006) sought to present an overview of the previous fifteen years' worth of population-based attitude research in psychiatry. A hand search of the literature and an electronic search utilising Academic Search Premier, Medline, and PubMed was conducted to find studies on public perceptions of mental illness and attitudes toward the mentally ill that were published between 1990 and 2004. There were found to be thirty-three national studies, largely from Europe, and 29 local and regional studies. More recent papers include analyses of historical trends and cross-cultural comparisons, assessments of antistigma interventions, and research testing theory-based models of the stigmatisation of mentally ill persons, even if the majority are descriptive in nature. Psychiatry's attitude research has advanced significantly in the last 15 years. There is still more work to be done, though, in order to give evidence-based interventions aimed at dispelling myths about mental illness and fostering more positive attitudes towards those who suffer from it an empirical foundation.

Cole (2022) stated that Asians make snap judgements on women based solely on appearance. Having a great body has been highly valued by society, with the implication that it equates to being sexual. As a result, it is believed that people with disabilities (PWDs) are asexual, flawed, and incapable of getting married and starting a family. Parents of PWDs contend that they only concentrate on rehabilitation to allow PWDs to reach and maintain their optimal physical, sensory, or intellectual functions because it is deemed more important than other issues, despite complaints from young people with disabilities that their parents rarely talk to them about gender issues or sexuality (Bao, 2020).

Teenagers with disabilities often struggle to make friends and date since they do not know enough about sex education. When their girls approach puberty, many parents become extremely cautious and restricted because they may have to deal with the risk of sexual abuse, assault, and rape; nonetheless, many parents still fail to address this issue (Dadkhah, 2009). Cole (2022) suggest that to solve this issue, people with disabilities (PWDs) should be educated by their family and the community on gender roles, sex education, and sexual health.

PWDs are often hesitant to start a relationship because they believe they are ugly and useless (Howland & Rintala, 2001). After researching dating challenges for single women with physical disabilities, a group of authors

concluded that PWDs always face nervousness, ignorance, or fear of burden when they meet someone with a handicap. Because of how society views physical attractiveness, people with disabilities are also reluctant to ask for or accept dates. Rather than waiting for others to step in, people with disabilities (PWDs) reject their marital rights (Howland & Rintala, 2001). PWDs' views on marriage have been impacted by societal restrictions. Many people with disabilities (PWDs), particularly women with disabilities (WWDs), believe they have no right to marry. Because of their extreme introversion, they occasionally may not have the same opportunities to form relationships (Do, 2011; Howland & Rintala, 2001).

Persons with impairments could have a harder time finding partners and developing intimate relationships than people without disabilities. There are myths and prejudices that say sexual and reproductive rights are unimportant to people with disabilities. PWDs are viewed as a sexually marginalised population group (Dadkhah et al., 2009). This shows that the broader public probably rejects the sexuality of people with disabilities.

Cuskelly and Bryde (2004) studied parents and caregivers, and a community sample of persons with intellectual disabilities were asked about their attitudes regarding the sexuality of adults with intellectual disabilities. A test-retest reliability and internal consistency were found to be good for an instrument that was constructed and included items related to eight elements of sexuality: sex education, masturbation, personal relationships, sexual intercourse, sterilisation, marriage, and parenthood. Attitudes and age were correlated, with people 60 years of age and older having more conservative attitudes. The sentiments of parents were different from those of professionals; parents were more conservative. Although the age disparities between the groups were the cause of this discrepancy, if it is not handled properly, it could cause some uncertainty for adults with intellectual disabilities. When comparing attitudes about motherhood with the remaining items on the scale, the community group's opinions remained unchanged. However, both the parent and staff groups expressed less positivity about parenthood than about other elements of sexuality.

In a similar vein, Jeffreys (2008) examined four common paradigms around the romantic relationships of four handicapped men in China, all of whom came to the same conclusion—that their marginalisation as PWDs makes marriage impossible for them. The study implies that women with disabilities (WWDs) in a traditional society have even fewer prospects for marriage, even though it solely focuses on males with disabilities in China (Jeffreys, 2008). When it comes to dating and their first voluntary sexual encounter, women with disabilities have to wait longer in the queue than men with disabilities.

Williams (2013) elucidates perceptions regarding the worth of marriage and alternatives to marriage among Vietnamese men and women living in rural and urban areas through an analysis of a case study in Northern Vietnam. In Vietnam, the topic of sexual and reproductive health care for people with disabilities has long been marginalised or disregarded. PWDs are not taught about these problems from an early age. According to the study, the majority of individuals view marriage as the milestone that marks each person's passage from infancy to adulthood. Therefore, someone will be viewed as "abnormal" if they are single or marry later than the average age—roughly 30 for women and 40 for men. In particular, single women may be "too ugly, blind, or too weak," whereas single males are "thought to have mental problems or diseases, or they are thought to be incomplete persons" (p. 293).

Dadkhah et al., (2009) study aimed to measure marriage motivation. A questionnaire made by the researchers using Maslow's hierarchy of needs, which contains 45 questions, was used to collect data. The participants consisted of 76 blind and 76 normal individuals. The two groups, with respect to age, sex, education level, employment, and income level, were matched. A statistical examination of the data indicated a substantial difference ( $P < 0.05$ ) between the two groups self-sufficient and respectful aspects of marriage motivation. In light of the findings, it appears that blind people are prepared to act in accordance with their internal values despite the relative deprivation they experience. Therefore, their relationships with others may be the cause of any motivational issues in their marriage.

Do (2011) looked at a few love tales and found that a lot of women with disabilities (WWDs) were insecure and generally believed they did not deserve love, so they did not even attempt. Rather than get married and have their wives desert them, WWDs would prefer to live alone. In a similar vein, people would laugh at how stupid they are if they fought for their rights and attempted to live "normal" lives by finding partners (Kohrman 1999). Several studies have come to the conclusion that there are three times as many married men with impairments as there are women with disabilities (Dadkhah et al., 2009; Lam 2012). According to Chen et al., (2002), college students in the US, Taiwan, and Singapore have different views on the dating and marriage of people with disabilities. US students' views are more favourable than those of Singaporean and Taiwanese students. When it comes to dating and

marriage, Asians seem to have the most negative opinions towards PWDs. Dadkhah et al., (2009) acknowledge that WWDs bear the "double burden of ableism and sexism," while nevertheless affirming that discrimination against them affects people of both genders (p. 112). As a result, if they get married, they probably have a higher probability of experiencing separation or divorce following marriage. It appears that WWDs have a harder time feeling welcomed in Asian cultures when it comes to gender and disability.

Yorgason et al., (2010) carried out exploratory research on clinical guidelines for working with clients whose spouses are deaf. Themes pertaining to couple dynamics, potential hearing loss scenarios in therapy, and associated facets of the therapist-client relationship were revealed in a focus group with marriage and family therapists. Couple dynamics were specifically proposed to be influenced by gender influences, communication processes, and caregiver processes by therapists. Therapists found concerns related to hearing loss that should be addressed in treatment, including changing communication patterns and accepting the loss. They also suggested intervention strategies, including psychoeducation and recognising one's spouse's hearing loss as a systemic issue. Finally, they recommended that healthcare professionals be cognizant of elements in the therapeutic alliance that may mirror or function as a stepping stone to hearing-impaired marital interactions.

McCnokey and Leavey (2013) researched Irish perspectives on marriage and sexual relationships for people with impairments. According to the study's findings, half of the participants thought people with intellectual and autism-related disorders had the right to marry, and a third thought they should be able to have children if they so wanted. A large number of research participants concurred that people with physical, visual, or auditory disabilities are more entitled than those with intellectual disabilities to have children and participate in sexual relationships. When a disabled person meets certain requirements—such as living outside of Dublin, knowing exactly what kind of marriage they want, being unmarried, and having some degree of psychological and financial stability—their acceptance of the right to marry has grown.

Jalal and Gabel (2014) used the experiences and viewpoints of three Jordanian males with physical disabilities to concentrate their study on gender and physical disability in Jordan. The study showed how people with disabilities are frequently stigmatised as asexual by referencing the body of existing material. Because their handicap is so obvious, those with physical impairments experience some of the highest levels of stigma. Women with disabilities experience more discrimination than men do since they are stigmatised on many levels. In addition, disabled women are twice as likely to get divorced from their spouses as they are to get married.

AlTarawneh et al., (2017) study looked at the opinions of Jordanians towards this marriage. The study revealed that the majority of Jordanians support the marriage of people with physical disabilities. The study found statistically significant differences in attitudes towards gender and age, but no differences were found when considering factors like educational attainment or whether the subject's family had a history of impairment.

Manor-Binyamini's (2020) study seeks to understand the reasons behind and significance of Bedouin women's marriages to educated Bedouin males who have intellectual disability (ID). Data were gathered from 15 educated Bedouin women who were married to Bedouin men with intellectual disabilities through in-depth, semi-structured ethnographic interviews. Thematic analysis was used to develop themes. There were six main reasons outlined: age, the need for independence, the desire for children, the necessity to get social protection from one's husband or man, family and societal pressures, and destiny. From the perspective of the women, the research findings provide an intra-cultural understanding of the reasons behind marriages. These explanations stem from societal and cultural norms. These findings offer a useful conceptual framework for comprehending the occurrence of educated Bedouin women marrying intellectually disabled Bedouin males.

## Method

### Study Approach

The study utilised a descriptive approach, allowing for the description of the phenomenon related to the impediments of marriage among persons with physical disabilities (auditory or visual) from the perspective of persons with physical disabilities and its correlation with certain variables.

### The Population and Sample of the Study

The study population consists of people with physical disabilities. The study's sample was made up of 199 male and 401 female persons with physical disabilities, chosen randomly. Table 1 displays the demographic characteristics of the study sample.

**Table 1**

*The sample's demographic characteristics*

variable	Category	Number	Precent
Sex	Male	201	36.9
	Feminine	343	63.1
Focus on Specialisation	Scientific colleges	155	28.5
	Colleges of humanities	389	71.5
Educational level	Diploma	334	60.4
	Bachelor's	210	40.6
marital status	bachelor	420	77.2
	married	104	19.2
	separate	20	3.7
The participants' family history of disability	Existing	41	7.5
	unavailable	503	92.5
Total		544	100.0

### Rationale for Selecting Individuals with Visual or Hearing Impairment

People who are blind and deaf face unique challenges in the field of marriage and romantic relationships, and these challenges may be influenced by many factors related to culture, education, and social environment. One of the challenges they may face is communication. For individuals with hearing impairments, communication and understanding can be particularly challenging. Effective communication relies on sign language or the use of visual communication methods, and the hearing partner may need to learn these languages or use assistive technology. Another challenge is independence and dependence. Individuals with visual or hearing impairments may face challenges in relying on others in daily life, which can affect the emotional and personal dynamics of the marital relationship.

There are also economic challenges. Economic opportunities may be limited for blind and deaf individuals, which can affect their ability to secure a stable financial future and contribute to marital life. Besides, blind and deaf individuals may face challenges in confronting social bias and discrimination, which can affect their opportunities to find a life partner who understands and accepts their needs and supports them. They may also struggle with understanding and expressing emotions accurately, which can affect the quality of the marital relationship and understanding between partners.

These are some of the general challenges that blind and deaf individuals may face in the field of marriage and romantic relationships. However, these challenges can be mitigated through awareness, education, and providing the necessary support to enable these individuals to build healthy and stable relationships. Choosing blind and deaf individuals as a sample to discuss challenges in the field of marriage and romantic relationships comes from the importance of understanding the challenges they face in society.

Thus, focusing on the challenges faced by this particular group of people can help understand the unique challenges they may face and how to effectively deal with them. By choosing this sample, we aim to understand the unique challenges that individuals with sensory disabilities may face in the field of romantic relationships and marriage, and how support and assistance can be provided to help them successfully overcome these challenges.

### Study Instruments

After examining the theoretical literature and other research, the researchers created a questionnaire to evaluate the study's issue and meet its aims. The tool included personal information about the participants' gender, major, degree of education, marital status, and whether or not their family has a history of impairment; and a questionnaire consisting of 26 items, distributed on four domains: physical disability-related impediments, psychological impediments, social impediments, and economic impediments.

### Validity of the Instrument

The study instrument was first shown to a panel of six specialised experts, including professors from Jordanian universities that specialise in counseling, psychological and educational evaluation, and special education, to confirm its validity. A total of eight experts provided feedback to confirm the validity of the survey. The domains included physical disability-related impediments, psychological impediments, social impediments, and economic impediments. Pearson's correlation coefficients were computed for every item and its correlation with both the instrument as a whole and the domain to which it belongs to derive indicators of the construct validity of the study instrument. These coefficients had to meet two major requirements: they had to have statistical significance and a corrected correlation coefficient of at least 0.30. To ensure the reliability of the instrument, the researchers calculated the internal consistency coefficient for the domains in the sample using Cronbach's Alpha equation.

## Results

In response to the first research question, which asks persons with physical disabilities, "What is the degree of impediments to marriage for persons with physical disabilities, and which ones have the most impact from their perspectives?", the means and standard deviations for the areas of the scale were calculated as illustrated in Table 2.

**Table 2**

*The means and standard deviations for the domains and the overall scale*

Rank	Domain	Means	S.D	Degree of approval
4	Impediments associated with the nature of physical disability (auditory or visual)	3.624	0.766	Medium
3	Social impediments	3.602	0.790	Medium
2	Economic impediments	3.302	0.712	Medium
1	Psychological impediments	3.209	0.650	Medium
	Scale of the study as a whole	3.401	0.547	Medium

The means for the study scale's domains ranged from 3. 209 to 3. 624, as Table 2 demonstrates, with reasonable levels of agreement. The means of the impediments pertaining to the nature of physical disabilities, social impediments, and economic impediments were the highest (3.624, 3.602, and 3.302, respectively), while the impediments relating to impediments related to psychological impediments had the lowest (3.209). The scale's total mean was (3.401), which is considered moderate.

The means of the participants' responses on the study scale domains based on study variables (major, gender, marital status, academic level, and the existence of a disability in the participants' family) were compared using a one-way ANOVA, as shown in Tables 3 and 4, in order to address the first research question, which asks, "Are there statistically significant differences at a significance level ( $\leq 0.05$ ) for impediments to the marriage of persons with physical disabilities from the perspective of persons with physical disabilities ascribed to gender, marital status, academic level, and the existence of a disability in the participants' family?"



**Table 3**

*The one-way ANOVA for variances between the means of the sample's answers on the fields of the scale based on study variables*

variable	Level	Statistics	Areas of study tool				
			The First	The Second	The Third	The Fourth	The Scale
			Domain	Domain	Domain	Domain	as a Whole
Sex	Male	SMA	3.344	3.411	3.455	3.566	3.402
		SD	.633	.644	.765	.722	.544
	Feminine	SMA	3.233	3.344	3.566	3.466	3.422
		SD	.624	.711	.788	.766	.622
Specialisation	Scientific colleges	SMA	3.244	3.322	3.566	3.644	3.532
		SD	.641	.683	.789	.723	.583
	Humanities colleges	SMA	3.121	3.242	3.583	3.311	3.188
		SD	.611	.635	.810	.772	.562
Educational level	Diploma	SMA	3.276	3.198	3.462	3.562	3.254
		SD	.634	.734	.789	.754	.576
	Bachelor's	SMA	3.478	3.134	4.167	4.121	3.643
		SD	.322	.421	.489	.543	.365
Marital status	Bachelor	SMA	3.244	3.311	3.425	3.632	3.289
		SD	.624	.690	.798	.782	.547
	Married	SMA	3.423	3.398	3.854	3.765	3.643
		SD	.534	.654	.745	.676	.524
	Separate	SMA	3.125	3.121	3.690	3.789	3.321
		SD	.0889	.373	.412	.434	.232
The existence of a disability in the family variable	Existing	SMA	3.347	3.342	3.534	3.789	3.434
		SD	.668	.754	.756	.645	.579
	unavailable	SMA	3.234	3.321	3.653	3.652	3.298
		SD	.632	.692	.785	.754	.582

Table 3 presents the mean and standard deviation for each variable in each domain of the scale. There seems to be a slight difference in the mean responses between males and females in a large group of scale domains, with females showing slightly lower mean scores than males. However, the differences appear not to be very significant. There is a significant difference in the mean responses between students of scientific and humanities colleges in most domains of the scale. For example, students of scientific colleges generally give higher ratings compared to students of humanities colleges.

Also, there are significant differences between bachelor's, master's, and doctoral students in their mean responses in scale domains. For instance, doctoral students generally give higher ratings than students in lower academic stages. The marital status of individuals seems to influence their ratings in some domains of the scale. For example, married individuals give higher ratings than single individuals in certain domains. There are some slight differences in the ratings of individuals who have a family member with a disability compared to those who do not,

but these differences do not seem significant enough to determine the impact of social status on their ratings. These results provide a general idea of how different study variables affect individuals' ratings in various domains of the scale. This information can be used to better understand individual needs and guide support and services to meet those needs more effectively. Table 4 presents the multiple analysis of variance for the scale's regions based on the study variables (the sum of squares, their means, degrees of freedom, and the value of F).

**Table 4**

*The multiple analysis of variance for scale's regions based on the study variables*

Source of variance	Domain	Sum of Squares	DF	Mean Square	F Value	p
Sex	Restrictions about the type of physical disability (auditory or visual)	.162	1	.162	.398	.544
	Economic impediments	.774	1	.774	1.644	.212
	Psychological impediments	3.234	1	3.234	5.233	.022*
	Social impediments	0.633	1	0.633	1.398	0.185
	The scale as a whole	.071	1	.071	.024	.860
Specialisation	Restrictions about the type of physical disability (auditory or visual)	7.655	1	7.655	23.565	.000*
	Economic impediments	8.757	1	8.757	17.866	.000*
	Psychological impediments	10.532	1	10.532	16.142	.000*
	Social impediments	17.766	1	17.766	28.688	.000*
	The scale as a whole	9.712	1	9.712	29.133	.000*
Educational level	Restrictions pertaining to the type of physical disability (auditory or visual)	.031	2	.015	.0399	.899
	Social impediments	.211	2	.096	.224	.798
	Economic impediments	.621	2	.311	.545	.599
	Psychological impediments	1.785	2	.885	1.611	.234
	The scale as a whole	.054	2	.032	.086	.896
Marital status	Restrictions about the type of physical disability (auditory or visual)	4.677	2	2.339	6.533	.002*
	Economic impediments	4.177	2	2.086	4.467	.014*
	Psychological impediments	9.142	2	4.568	7.355	.002*
	Social impediments	2.954	2	1.466	2.637	.074
	The scale as a whole	4.589	2	2.298	7.367	.004*
The existence of a disability in the family	Restrictions about the type of physical disability (auditory or visual)	1.711	1	1.711	4.568	.028*
	Economic impediments	.145	1	.145	.332	.558
	Psychological impediments	.021	1	.021	.023	.946
	Social impediments	.946	1	.946	1.688	.194
	The scale as a whole	.579	1	.579	1.833	.168
The error	Restrictions pertaining to the type of physical disability (auditory or visual)	214.122	588	.362		
	Psychological impediments	266.566	588	.462		
	Economic impediments	356.766	589	.615		
	Social impediments	318.411	611	.541		
The scale as a whole		178.515	611	.313		

\*p level ( $0.05 \geq \alpha$ ).

The MANOVA table presents the results related to the differences between study variables in the domains of the study scale. It reveals no statistically significant differences between genders in this domain, as the F-value and significance level do not indicate reliable differences. Regarding psychological impairments, similar to the previous

domain, there are no significant differences between males and females. For social impairments, statistically significant differences appear, as the F-value is greater than 1 and the significance level is less than 0.05, indicating reliable differences. Concerning economic impairments, there are no statistically significant differences between genders in this domain. Regarding specialisation, all domains show statistically significant differences between specialisations, as the F-values are greater than 1 and the significance level is less than 0.05, indicating reliable differences. Concerning educational level, there are no statistically significant differences between educational levels in all domains, as the F-values are less than 1 and the significance level is higher than 0.05. Statistically significant differences appear between social statuses in all domains except for economic impairments, as the F-values are greater than 1 and the significance level is less than 0.05.

For the presence of a disability in the family, statistically significant differences appear in auditory or visual impairments and in the overall scale, as the f-values are greater than 1 and the significance level is less than 0.05. There is a statistically significant error in all domains, indicating internal variability in the data. Overall, the results indicate statistically significant differences between gender, specialisation, social status, and the presence of disability in the family, while the educational level does not seem to play a significant role.

The means of participants' responses on the domains of the study scale regarding hurdles to the marriage of people with physical disabilities (impediments associated with the nature of physical disabilities (auditory or visual), psychological impediments, and economic impediments), and the overall scale, based on the gender variable, do not display any statistically significant differences at ( $0.05 \geq$  ), as can be seen from the preceding tables. In the area of social barriers, however, distinctions were apparent, and these distinctions were in favour of females.

The study scale included domains related to impediments to the marriage of persons with physical disabilities (impediments linked to the nature of physical disabilities (auditory or visual), psychological impediments, social impediments, and economic impediments), and the overall scale, based on the major variable. An analysis of the sample members' responses revealed statistically significant differences at a significance level ( $0.05 \geq$  ). Scientific colleges benefited from the differences, but no statistically significant differences were found at a significance level ( $0.05 \geq$  ) in the means of sample members' responses on the overall scale based on the academic level variable and the domains of the study scale regarding impediments to the marriage of persons with physical disabilities (social, psychological, and economic impediments).

No statistically significant differences at ( $0.05 \geq$  ) were observed in the means of sample members' responses on the domain of economic impediments based on the marital status variable. However, variances emerged in the domains of impediments relevant to the nature of physical disabilities (auditory or visual), psychological impediments, social impediments, and the overall scale based on marital status, and these variances were in favour of the married persons.

The means of sample members' responses on the study scale's domains regarding barriers to the marriage of individuals with physical incapacities (social, psychological, and economic impediments) and the overall scale based on the variable of the existence of disability in the family did not show any statistically significant differences at a significance level ( $0.05 \geq$  ). However, distinctions between the types of physical disabilities—visual or auditory—arose, and persons with a family history of impairment supported these distinctions.

## Discussion

The results signposted that the degree of impediments to the marriage of individuals with physical disabilities, from the perspective of persons with physical disabilities, came at a moderate level. Impediments associated with the nature of physical disability (auditory or visual) had the greatest impact, followed by social impediments, and then economic and psychological impediments. The lowest impact was observed for impediments related to impediments and psychological impediments. Scholars attribute this to the general idea among participants that impediments associated with the nature of physical disability are critical in front of individuals who want to marry. The problem becomes more pronounced when the person has a physical disability, as they often face challenges in securing employment and adequate income, especially given the limited provision from foundations and the government for the marriage issues of people with disabilities. These results do not align with Buchy et al. (2017) study, which showed positive and high attitudes towards the marriage of individuals with disabilities, or with the study by McCnokey and Leavey (2013), which found significant societal approval for the marriage of physically-disabled individuals. Additionally, they differ from the findings of Jalal and Gabel (2014), which identified economic difficulties and unemployment as major challenges faced by the wives of individuals with disabilities.

In reference to the findings of the second question, sample members' answers on the study scale's domains concerning barriers to the marriage of people with physical impairments did not show any statistically significant variations (impediments interrelated to the nature of physical disabilities (auditory or visual), psychological impediments, economic impediments), or the overall scale based on the gender variable. Both males and females shared similar views on these impediments. However, differences emerged in the domain of social impediments, in favour of females. This is attributed to female participants' being more aware of the problems faced by disabled females, such as rejection or the lack of acceptance for marriage despite their ability to reproduce and fulfill familial responsibilities. This result is in line with the study by Buchy et al., (2017), which found statistically significant gender-related differences in favour of females, and with the study by Jeffreys (2008), which noted a higher marriage rate for disabled males compared to females. However, it differs from other studies, including those by Williams (2013) and Do (2011), which reported no gender-related differences in attitudes towards the marriage of persons with disabilities.

### **Conclusion and Recommendations**

Due to the stigma attached to disabilities, many people with physical disabilities—visual or auditory—withdraw partially or entirely from social interactions, including marriage. As a result, this study examined the impediments and challenges that people with physical impairments encounter when getting married from the viewpoint of a well-educated group of young people getting ready for marriage. Among these barriers, the most significant ones were economic ones, which were followed by social issues, psychological difficulties, and barriers pertaining to the nature of disability. These results held true for participants' gender, majors, academic standing, socioeconomic position, and family history of physical impairments. The study suggests that, in light of the findings, governmental and private sector organisations should step up to support people with physical impairments in exercising their inalienable right to marriage by offering them moral and financial assistance. The report also highlights the need to correct those who violate or prevent these people from enjoying their legal rights. It also suggests using a variety of media platforms to educate the public about the nature of physical disabilities and the inherent right of those who experience them to marry, start families, and live independently.

The marriage of individuals with visual or auditory impairment is a fundamental issue that affects their quality of life and their ability to participate effectively in society, with marriage being particularly significant in this context. People with visual or auditory impairments face difficulties in social integration due to various factors, including ignorance, bias, and the inability to understand the specific needs of these individuals. When it comes to marriage, individuals with visual or auditory impairments face a unique set of challenges. These range from financial difficulties that may hinder their financial independence necessary for starting a family to social and psychological constraints that impede their ability to form serious and stable relationships.

Economically, individuals with visual or auditory impairments may struggle to find suitable employment opportunities that provide them with the financial independence necessary for marriage and family formation. This situation can increase their level of psychological pressure and tension, making it difficult for them to consider marriage. Socially, individuals with visual or auditory impairments may face challenges in establishing healthy and sustainable social relationships. They may lack suitable opportunities to meet suitable partners or encounter bias and discrimination in public relations. Psychologically, the social stigma and personal challenges may affect their self-confidence and ability to succeed in emotional relationships and marriage. They may feel isolated and marginalised due to society's lack of understanding of their needs and challenges.

To make progress in this regard, raising awareness of the rights of individuals with visual or auditory impairment and ensuring equal opportunities for them in various aspects of life, including marriage and family formation, is essential. It is also important to encourage society to accept and support these relationships and achieve social solidarity by providing the necessary support for these individuals and helping them overcome the various impediments they face.

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## **Creating Core Cultural Values for Building Excellent Schools: Current Situation and Solutions for Schools in Vietnam**

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In the world, building excellent schools often relies on a certain school model. For example, models such as “Happy School”, “Amazing School”, “Cultural School”, “Brand School”, and “Student-Centered Schools” have been implemented quite successfully. The common purpose of these models is to create an excellent school; the core of these models is the core cultural values. Through studying the models, the article draws out the core cultural values to create an excellent school. Community culture, religious doctrines, laws, state management policies, and knowledge management are factors that influence school culture and are also mentioned. Based on that, a survey was conducted with 1,517 subjects including school managers, teachers, and parents of students at preschool, primary, lower secondary, and upper secondary levels representing four different regions of Vietnam. The results show that school managers can express very well the school's vision and mission but have a vague perception of the essence of school culture and the specific approach to building school culture. In management, school principals lack creative measures in both approaching general culture and in creating core cultural values for the school; the influence of the impacting factors has not been effectively utilized; therefore, the results of building excellent schools are very limited. Solutions to build excellent schools by creating core cultural values are proposed in the context of Vietnam and can be referenced for countries with similar conditions.

**Keywords:** culture, values, core, excellent school, building, Vietnam.

Today, when it comes to a good school, there are many approaches to defining it. One notable example is "happy schools" (UNESCO, 2016). This educational model proposed by UNESCO aims to create a positive, safe, and friendly learning environment for students, teachers, and parents. The model revolves around three main elements (the three Ps): 1) People, which is the most important element, involving relationships and interactions among members of the school community. A happy school is a place of friendliness, respect, cooperation, and mutual support; 2) Process, which relates to the processes, policies, activities, and curriculum of the school. A happy school has an effective education system tailored to students' needs and abilities; and 3) Place, which concerns the physical and cultural environment of the school. A happy school has a clean, safe, well-equipped, and green environment free from violence, discrimination, or bullying.

The term "Amazing School" has gained recent prominence. Catherine O'Farrell, one of the co-founders of an organization that provides professional support services for child development in the UAE, notes that many schools in the UK have lost their rankings as "Amazing Schools," while only a few schools in the UAE have achieved this desirable title (O'Farrell, 2022). She believes that achieving this requires a system based on three elements: inputs (students who have not yet attended), processes (educational organization), and outputs (students with higher academic achievements). For this system to function effectively, schools must establish five elements: 1) Great Leadership: key to promoting excellence in education; the most important aspect being defining the school's vision and mission; 2) Inclusion: encompassing and welcoming all students regardless of their backgrounds and abilities; 3) Teachers: crucial for schools aiming for excellence; 4) Student behavior and Engagement: essential for making a school outstanding; and 5) Wellbeing: schools' prioritized support for the well-being of teachers, students, and staff.

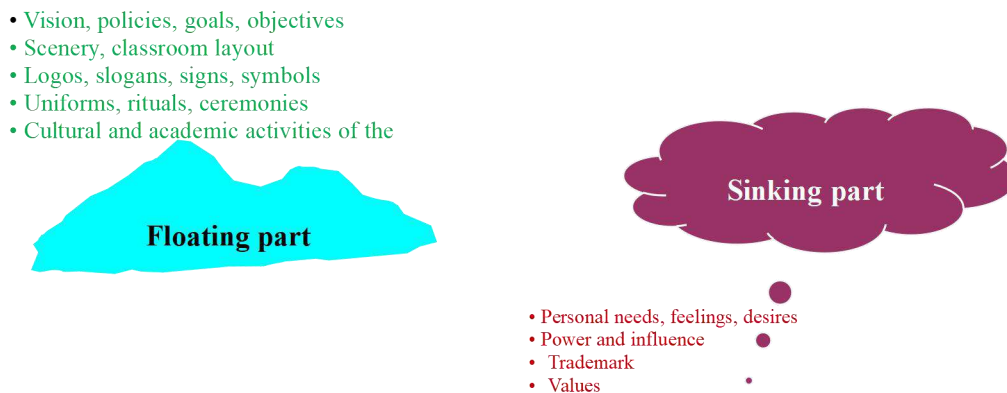


Speaking of "Happy school" and "Amazing school," we can associate them with the elements that make up a school's brand. According to Godin (2018), a brand is a collection of expectations, memories, stories, and relationships, combined to explain a consumer's decision to choose one product over another. Developing from Godin's ideas, Tigchelaar (2022) presents seven elements of a brand for an institute: 1) Brand promise, which involves letting people know your purpose and ensuring that your promise is genuine; 2) Position Statements, which are concise and memorable phrases summarizing your brand promise; 3) Visual identity, including the organization's logo, one of the first things customers notice; 4) Creating distinctiveness for the organization by visually conveying its unique points; 5) Discovering the organization's voice, allowing your personality to shine through; 6) Brand-building communication that is consistent and never neglectful; 7) Establishing trust with your customers.

Following the approach to a brand in general, some researchers have also defined the branding of schools with specific elements. DiMartino and Jessen (2016) examine school branding by exploring how schools market themselves and the target audience they aim to reach, as well as the nature and type of information provided to students and parents. This is done through two typical studies conducted in New York City. This research indicates that marketing and branding activities for public education hold significant importance. According to Hidayatun (2017), building a school brand is closely tied to establishing the brand of the school culture, and this model is an effective marketing strategy in the present era. Krueger and Perez (2017) point out that the focus of school design is campus identity. The physical campus factor was studied by the authors in three exemplary schools in the US, and they drew conclusions about each case as follows: 1) At Small Learning Communities, changes to the campus were effectively communicated to the community, generating interest and awareness. This attracted new students to the school, connected students to the institution, and helped students understand that their school would also have a brand; 2) At Portola High School, the new campus was open for only one semester for 9th-grade students, yet it provided them with a unique identity and brand to develop. It nurtured a sense of community consciousness and pride in the school; 3) At Double Peak K-8 School, the school assessed the brand-building process through variations in logo, usage guidelines, branding, typography, mascot imagery, colors, etc. This was found to be an exceptional experience, creating an incredible sense of school spirit, unity, and ownership.

Inheriting from the above models, in Vietnam today, preschool education is implementing the construction of a nurturing and caring environment for children based on core cultural factors with the model of "student-centered School" (MOET, 2020). The goal of this model is to ensure closeness, friendliness, physical and mental safety for children; the behavior, gestures, words, and attitudes of teachers towards children and others are always exemplary; the physical environment in and out of the classroom minimizes the risk factors that cause unsafe, injurious situations for children, meets the needs and interests in play, eating, sleeping, personal hygiene activities of children; the areas in the school are planned to take advantage of the spaces for children to engage in appropriate, flexible, diverse, and rich activities; create conditions and opportunities for children to act, experience, explore in various forms; ensure the conditions for organizing meals for children that meet the requirements of food safety, balance and rationality in nutrition, friendliness, suitability with individual children; and ensure the basic conditions for clean water, sanitation that suit the needs and abilities of children according to each age group and meet the requirements of education.

Thus, "Happy school", "Amazing school", "school brand" and "child-centered School" are all formed from factors related to image, reputation, values and identity of an educational institution, such as: vision, mission, core values; leadership style, communication approach, delegation, encouragement, conflict resolution, and trust-building within the school; the teaching and staff team; students and parents; the learning and working environment. At this point, we would like to address another aspect, which is "school culture." Together with core teaching quality, school culture contributes to the depth of the school's brand (Le, 2023). So what is school culture? There are various approaches to this concept, but overall, they all converge on the idea that school culture is a complex system of values and norms surrounding the function of human education. It is voluntarily accepted and respected, guiding the collaborative implementation of the school's mission by its members (Nguyen, 2021; Pham, 2021; Thai, 2021; Huynh, 2021). In 1976, Edward T. Hall developed the 'Iceberg Model of Culture' and explained that organizational culture is like an iceberg floating in the sea. What you see is just the tip of the iceberg, underneath which is a huge, invisible mass that holds everything together (Singanamalli, 2022). Accordingly, the school culture is concertized and described as shown in Figure 1.



**Figure 1:** Iceberg model of school culture

**Source:** Singanamalli, 2022

From the iceberg model of school culture, we can infer that school culture is a complex entity, an aggregate of features encompassing spiritual, material, intellectual, and emotional aspects that depict the identity of a school community. School culture encompasses tangible and intangible cultural elements such as vision, mission, core values of the school, which serve as guiding principles for all educational and managerial activities; leadership style of the principal and administrative team, including communication methods, delegation, encouragement, conflict resolution, and trust-building within the school, when leadership is shared and emergent, it will be the main motivation for the performance of an agile team (Gohar et al, 2023); the faculty and staff, who play crucial roles in implementing the educational program, caring for and developing students, as well as maintaining collaborative relationships and sharing experiences within the school; students and parents, who directly benefit from the quality of education and school culture, and also contribute opinions and participate in school activities; the learning and working environment, including the physical and psychological space of the school, encompassing infrastructure, equipment, facilities, symbols, banners, slogans, rituals, events, and extracurricular activities. It should be noted that the influence of the external environment on school culture is extremely powerful, especially the value system of the religions that dominate the community where the school is located. A study by Shafiq et al., (2021) showed that Islamic philosophy focuses on the virtues of kindness, love and compassion when dealing with children, while also supporting physical punishment according to specific guidelines. In that environment, schools that want to become excellent must have appropriate training for teachers on alternative behavior methods, modifications in dealing with students to suit the supervision and accountability mechanism, comply with the law and follow the true meaning of Islamic doctrine. Similarly, the policies, laws of the state, the regulatory role of the management agencies also have a positive impact on the risk management of the related organizations (Rehman & Ishak, 2022).

This commonality between "Happy School," "Amazing School," "school culture", "student-centered School" and "school branding" lies in the fact that these titles are all shaped by specific core elements. While their essence is similar, they differ in their approaches to making a school exceptional. Among these elements, both educational quality and cultural factors contribute to building a school's reputation and excellence.

In summary, school culture and the creation of core cultural values to build excellent schools have existed for many years with innovative models; however, research on them is always a timely issue. Especially for countries that start later, the meaning of these studies is still very valuable. A study in Indonesia showed that economic prosperity and the educational needs of the people are increasing, creating a change in their views on education and its necessity. Therefore, promoting a conceptual model of building cultural brands in schools and revealing why this model becomes an effective marketing strategy in this era is very important (Hidayatun, 2017). One thing that schools always care about is the relationship between cooperative culture in schools, teacher quality has a positive impact on students' liking to go to school. Matthew Ohlson, Swanson, Adams-Manning and Byrd (2016) conducted a study based on data collected from 50 public schools across the Southeastern United States to analyze the input characteristics of teachers such as certificates, years of teaching, teaching rate... the findings show: When teacher collaboration increases, the predictive model of student dropout rate will decrease; this finding provides a valuable insight into the characteristics of teaching quality and school culture that have a great impact on students' attendance and suspension of study and

may affect education policy, teacher training, education leadership and school reform initiatives. Currently, the research on building school brands from culture is also of interest, even in developed countries. Recently in Turkey, the authors Bayar and Karaduman (2021) conducted a study to examine in detail the school culture and its effects on students' academic achievement; by answering the questions "What is school culture?", "What is the effect of school culture on learning?" and "What needs to be done at school to create a strong and positive culture?", the analysis showed that creating a strong cultural environment at school has a positive and strong impact on students' academic achievement; therefore, the proposals to improve school culture should be applied in practice. Moreover, when it comes to schools, one must mention effective knowledge management. A study by Ahmed et al., (2015) showed that, even in banking activities, the impact of knowledge management practices also contributed to improving the performance and reputation of the organization.

Schools in Vietnam have absorbed and built school culture slower than its appearance in the world for several decades. The reality is that school leaders often do not fully understand, and are confused in approaching school culture and school branding. Schools at all levels have set out a very comprehensive and progressive vision and mission; however, they lack specific measures to turn the vision and mission into reality. School principals are quite vague about school culture and very confused about the approach to creating core values for the school to become excellent (Nguyen, 2017; Nguyen, 2020; Do, 2021; Le, 2023). In addition, the insightful perception and appropriate application of the external context and environment to the construction of school culture is quite biased; the factors of community culture, values of religions, laws, and policies of the State have not been paid attention by schools properly, making schools like an island, not deeply penetrating the social life outside the school gate (National Assembly, 2021; Huynh, 2021; Nguyen, 2021; Pham 2021; Thai, 2021). Therefore, the research to connect, systematize the problem, and orient the approach to create core cultural values to build excellent schools is very necessary and has high practical value. This study can also be a valuable reference for countries with similar conditions.

## Method

As mentioned earlier, an excellent school is formed by excellent educational quality and an excellent school culture. Educational quality arises from a system that transforms inputs into outputs through the education process: Input

→ Education Process → Output (O'Farrell, 2022). Alternatively, through a different approach, the quality of education is synthesized from eight elements of a school, namely input, output, educational methods, educational environment, school's purpose, school's behaviors and operation processes, school culture, and school's organizational structure (Le, 2018). The quality of education in schools is a broad issue that will be discussed in another topic. In this article, we attempt to identify only the cultural factors that make up an excellent school as a basis for assessing the current situation at preschool and general education schools in Vietnam and building solutions to improve the situation.

### *Core cultural values that contribute to creating an excellent school*

The iceberg model (Singanamalli, 2022) presents a group of tangible and intangible factors of school culture. Referring to the studies by Deal and Peterson (2009, 2016), we identified the core cultural values that need to be established to build an excellent school as follows: 1) Values formed from intangible elements: Open atmosphere, democracy, collaboration, trust and mutual respect; valuing individuals, encouraging efforts to complete tasks and recognizing the success of individuals and organizations within the school; progressive standards for continuous improvement, advancement in teaching, learning, and scientific research; an atmosphere of creativity and innovation in activities; motivation to encourage administrators, teachers, and students to improve methods and enhance quality; participation in providing opinions in all school activities; promoting dialogue, collaboration, teamwork, sharing experiences, and professional exchange; sharing visions, supporting each other's development; care, cooperative relationships, attracting involvement in solving teaching and educational issues within the school; 2) Values formed from tangible elements: Each person in each position in the school knows their responsibilities, understands responsibilities, shares consciously, actively participates in making decisions; physical environment stimulates creativity and innovation; assignment and decentralization ensures power sharing, empowerment, and personal responsibility for tasks; green, clean, beautiful, and friendly campus and landscape values from symbols, banners, slogans, rituals, events, and extracurricular activities of the school.

### *Survey method and assessment of the current situation*

From the identification of the above core cultural values, we conducted a survey to assess the current situation of establishing these core values in preschool and general education schools in Vietnam. Survey questions were posed

for two groups of factors: 1) Group of tangible factors including the school's mission, school vision, school development goals and landscape, campus, logo, signboard, clothing, uniforms, rituals, ceremonies; 2) Group of intangible factors including Individual needs, emotions, desires; respect for different ideas; relationships and sharing of work vision; personal abilities and values; sharing opinions and reinforcing work relationships; friendly, comfortable, genuine, and trusting atmosphere; sharing power and influencing.

The survey form asked respondents to assess the level of achievement for each factor on a 4-point scale: excellent, good, fair, and poor. The survey was conducted at four educational levels: The preschool, primary, lower secondary, and upper secondary, in four different regions of Vietnam with 1,517 participants. Among them, preschool level with 265 people who are managers and preschool teachers in Hoc Mon district, Ho Chi Minh City; the primary level involves 280 individuals (180 administrators, teachers, and 100 parents from 5 primary schools in Hoai Nhon District, Binh Dinh Province); the lower secondary level involves 476 individuals (136 administrators and teachers, 240 students, and 100 parents from 4 lower secondary schools in Duong Minh Chau District, Tay Ninh Province); and the upper secondary level involves 496 individuals (164 administrators, teachers, and 332 students from 4 upper secondary schools in Cao Lanh District, Dong Thap province). To make the research results widely applicable, the sample selection was conducted according to the representatives of 4 levels of education (Preschools, Primary School, Lower Secondary School, and Upper Secondary School) and the representatives of the favorable region (Ho Chi Minh City), the difficult region in the mountainous area (Tay Ninh province), the less difficult region in the plain (Dong Thap and Binh Dinh provinces), including both urban and rural areas.

The assessment results were converted into scores: 4, 3, 2, and 1, corresponding to the levels of excellent, good, fair, and poor, respectively. To consolidate the evaluation of the current situation, we utilize the average score. The formula for calculating the average score based on frequency is as follows:

$$\overline{inx} = \frac{\sum_{i=1}^k x_i f_i}{\sum_{i=1}^k f_i}$$

Where:

- x is the average score.
- xi is the i-th data point in the dataset.
- fi is the frequency of the i-th data point in the dataset.
- k is the number of distinct data points in the dataset.

Based on the average scores obtained from the survey results and selected evaluation opinions from practical school management and local management levels, the article draws conclusions about the current situation of establishing core cultural values to build an excellent school and proposes solutions to leverage strengths, address existing issues, and make the school outstanding.

## Results

**Table 1**

*Evaluation results of the level of achievement of cultural factors*

Factors	Level of achievement (average score)			
	Preschools	Primary School	Lower Secondary School	Upper Secondary School
<b>Tangible factors</b>				
1 School's mission	3.80	3.10	3.10	3.00
2 School's vision	3.77	3.00	3.00	3.00
3 School development goals	3.70	2.50	2.80	3.00
4 Landscape, campus, logo, signboard; clothing, uniforms, rituals, ceremonies	3.82	3.00	3.10	3.25
<b>Intangible factors</b>				
5 Individual needs, emotions, and desires	3.68	3.00	2.90	3.80
6 Respect for different ideas	3.70	2.90	2.70	3.20
7 Relationships and sharing of work vision	3.76	2.60	3.00	3.85
8 Personal abilities and values	3.75	2.80	3.10	3.80
9 Sharing of opinions and reinforcement of work	3.73	2.80	3.00	3.65

	relationships				
10	Friendly, comfortable, genuine, and trusting atmosphere	3.77	2.70	3.10	2.85
11	The sharing of power and ways of influencing each other	3.69	2.80	3.00	3.30

Source: Authors's survey data

Table 1 shows the assessment results of 1,517 participants including school administrators, teachers, students, and parents of students regarding the level of achievement of core cultural values in preschool, primary schools, lower secondary schools, and upper secondary schools in Binh Dinh, Tay Ninh, Dong Thap Provinces, and Ho Chi Minh City of Vietnam. The assessment level was converted into an average score (Conventions: 1.0 - 1.75 is poor, 1.76 - 2.5 is average, 2.51 - 3.25 is good, and 3.26 - 4.00 is excellent). Based on the data obtained and the conclusions drawn from school reports or related scientific documents (Nguyen 2017, Nguyen 2020, & Do 2021), the assessments were found as follows.

*In general, it can be seen that:* According to the scale from 1 to 4, the level of achievement of the core cultural factors at different levels of education varies quite a lot. In general, preschool has the highest level of achievement, while primary and lower secondary schools have the lowest level of achievement. Tangible factors such as mission, vision, development goals and landscape, campus, logo, signboard; clothing, uniform, ritual, ceremony have a higher level of achievement than intangible factors such as needs, emotions, personal desires; respect for different ideas; relationships and sharing of work vision; capacity and personal values; sharing opinions and strengthening work relationships; friendly, comfortable, honest and trusting atmosphere; sharing of power and ways of influencing each other. This shows that schools tend to focus more on external factors than internal factors of school culture. Among the intangible factors, the friendly, comfortable, honest, and trusting atmosphere has the lowest level of achievement at the upper secondary school level (2.85 points), while the needs, emotions, personal desires have the highest level of achievement at the same level (3.80 points). This may reflect the difference between the needs and desires of individuals with the atmosphere and relationships of the collective. Among the tangible factors, the school's mission has the highest level of achievement at the preschool level (3.80 points), while the school's development goals have the lowest level of achievement at the primary level (2.50 points). This result shows some serious contradictions: 1) Most schools set very high mission and vision while the solutions to achieve that vision are not as expected; 2) Schools focus more on realizing tangible factors while the core values that create excellence for schools achieve lower results (as shown in Figure 2). These are critical weaknesses that need to be improved.

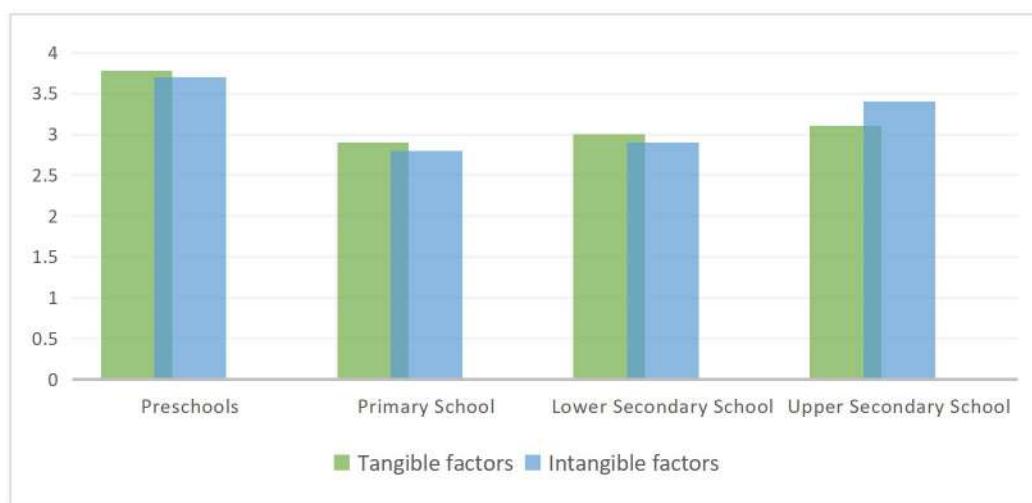


Figure 2. Comparison of average values between tangible and intangible factors

Source: Analysis from survey data

*For preschool level:* This is the level that has achieved good results in building a friendly school for many years with a team of managers and teachers who are very dedicated to their profession; the survey was conducted in Ho Chi Minh City, where the living standard is high, so the results are the highest. However, the common weakness is still revealed:

The tangible factors are high such as “landscape, campus...” (average score 3.82) showing the external appearance, the construction of “school mission (average score 3.8) mainly shows high determination. Meanwhile, the factors “Needs, emotions, personal desires”, “sharing of power and ways of influencing each other” and “respect for different opinions” are all low (average score below 3.7). This situation shows that the creation of core factors to build excellent schools has not really focused on the right focus (the dispersion of the results is shown in Figure 3).



**Figure 3.** Degree of dispersion of factors in preschools

**Source:** Analysis from survey data

*For primary schools:* Among the tangible factors, the establishment of school development goals received the lowest assessment (average score of 2.5), with 55% of participants rating it as average or poor. The factor defining the school's mission received the highest evaluation (average score of 3.1) while defining the school's vision and environmental features was rated equally (average score of 3.0). Primary schools have defined good missions and visions but have not fully realized them. This is evident in other assessments as well: the missions and visions are defined correctly, but there is room for improvement in translating them into actual school development goals. Among the intangible factors, individual needs and emotions are rated highest (average score of 3.0), likely due to the movement towards creating a friendly school environment and the positive behavior of students in previous years.

However, the elements of building a comfortable and reliable atmosphere, recognizing capabilities and personal values, and sharing expertise and sharing power are evaluated as low. These are the points that need to be recognized for improvement, as they are factors influencing self-learning, mutual development, respecting differences, etc. which are essential and important in creating the school's brand (although the degree of differentiation is not high, it can be seen in Figure 4).

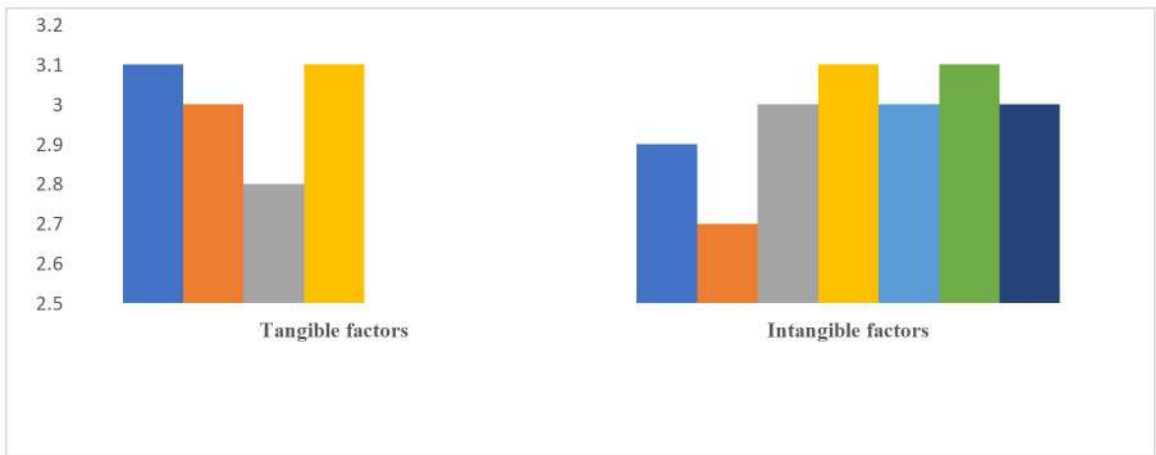


**Figure 4.** Degree of dispersion of factors in primary schools

**Source:** Analysis from survey data

*At the lower secondary level:* Interestingly, the evaluation opinions are quite similar to those at the primary level. For tangible factors, the actualization of the school's goals reaches the lowest level (average score 2.8); factors

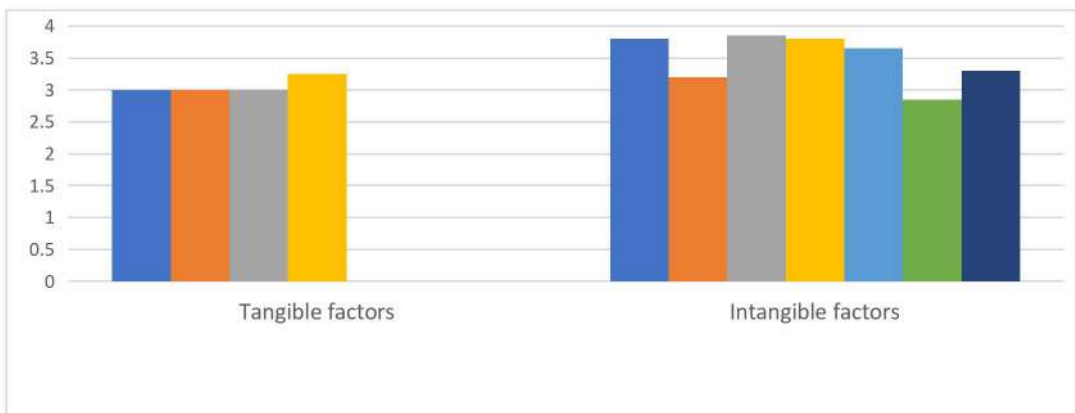
related to vision, mission, and aesthetics are at a satisfactory level. Lower secondary schools lack specific measures to implement the set mission and vision and achieve the school's development goals. The determination of mission and vision mostly remains on paper, not truly becoming the determination and specific actions of administrators and teachers. In the intangible factor group, factors like capabilities and personal values, psychological atmosphere are highly rated (average score 3.1), with over 70% rated as excellent and good. This is followed by the group of factors regarding relationships and sharing of vision, the sharing of power and influence, effective competition, and cooperation. However, there are two factors that are rated low: respecting different ideas with 40.5% of respondents rating it as average and poor (average score 2.7); personal needs, emotions, and desires with 32.3% rated as average and poor (average score 2.9). The lack of acceptance of differences means that the implementation of the pillar of learning-to-be is facing difficulties; "authoritarian teaching," training according to models, lack of multidimensional thinking on different value systems, etc. are expressions of the school, influencing the school's brand considerably (the degree of differentiation between factors is clearly seen in Figure 5).



**Figure 5.** Degree of dispersion of factors in lower secondary schools

**Source:** Analysis from survey data

*At the upper secondary level*, the perception and evaluation of participants are more optimistic, but the general reality of creating core cultural values for schools is fairly consistent. The group of tangible factors has an average score of 3.0 and above, and in the lowest group, the realization of school development goals is still an issue. Factors like landscape, campus, logo, signboards; uniforms, rituals, and ceremonies are highly rated, aligning with the reality of educational activities. In the intangible factor group, the affirmation of competence, personal values, and mutual sharing are well-rated. However, the creation of a friendly, authentic, trusting atmosphere and respect for differences are still in the lowest group with average scores of 2.85 and 3.2. These are worrying weaknesses; they are clearly shown in Figure 6.



**Figure 6.** Degree of dispersion of factors in upper secondary schools

**Source:** Analysis from survey data

## Discussion

### *Advantages and Disadvantages draw*

The assessment results of the current situation in surveys in four different regions, while not representative of all regions show that the establishment of core cultural values to make schools excellent in Vietnamese basic education has been relatively consistent at the preschool, primary, and lower and upper secondary school levels. Some forms of school culture building, such as "building a friendly, active student school," and "building a happy school," and "building a student-centered school" have had effects on promoting cultural factors like relationships in school, sharing work vision, improving psychological atmosphere... developing in the right direction; as a result, consensus and unity in basic education schools are gradually improving. However, there are still many difficulties and shortcomings drawn from the evaluation results by scores, as analyzed above, including:

- The perception of school culture is incomplete, schools often tend to show off tangible factors, while the intangible core cultural values are less cared for. Measures to realize the vision and mission of the school are lacking.
- The strategy to create strong cultural nuclei to make the school excellent only stops at the general orientation and the realization of the objectives of the strategy depends on the determination of the management staff and teachers. At the preschool level, the management staff and teachers have more enthusiasm and determination, so the preschools have a better approach, and the scores are evaluated as high. The general trend is that the higher the level of education, the lower the evaluation results.
- The comfortable atmosphere, trust in each other; the recognition of abilities and personal values; the sharing of expertise, sharing of power; the respect for different opinions ... have not been highly evaluated (average score mostly below 3) and lack specific actions to form, maintain, and develop these core values.
- The prerequisites for building and developing the school into a learning community and protecting and promoting professional ethical values are not strong enough. The evidence is the evaluation results of the self-learning environment, everyone learns; the respect for different ideas; the sharing of work vision; the respect, correct evaluation of abilities and personal values; the sharing of power and the way of influencing each other ... receive low scores. This is also consistent with the reports and evaluations of the management levels.

### *Cause of the problem*

The causes of existing shortcomings in establishing core cultural values for schools focus on problem groups (National Assembly, 2021): 1) Awareness of stakeholders in schools is not sufficient, leading to insufficient participation, consensus, and commitment of members, especially school leaders lacking a holistic view and practical management skills; 2) Identifying, disseminating, and maintaining the core values of school culture, as well as resolving conflicts and contradictions, is not effective; 3) Flexibility, adaptation, and continuous improvement to fit the external environment and internal needs of the school are not being addressed; 3) The uniqueness and differences of school culture are still being copied, losing their uniqueness; 4) Lack of democracy, disrespect for different opinions, leading to underestimating the role of teachers and staff in building school culture.

### *Proposed solutions*

Based on promoting advantages, overcoming the disadvantages, and the causes of the problems drawn from reality, we propose five solutions to create core cultural values to build excellent schools in the context of Vietnam.

*Solution 1. Raising awareness among school management staff about the role of core cultural values in building an excellent school and forming an overall, comprehensive, and accurate vision of school culture*

Having accurate awareness and determining a strategy to establish core cultural values for the school are crucial. In the strategy, each school needs to build a specific orientation on the beliefs, values, and norms that need to be formed, the strong cultural nuclei that need to be prioritized to create... placed by the context and cultural environment of the community and society; from there, build measures to make managers, teachers, staff, students voluntarily accept those good beliefs and norms and express them into specific cultural behaviors and together determined to create and preserve tangible and intangible cultural elements. With the right strategy, the principal, teachers, and other members of the school will have a complete understanding of activities, determine priorities accurately, and proactively prepare supporting conditions.

To establish a strong cultural environment, schools need to develop core cultural values that members willingly accept and commit to; then, form cultural behaviors so that the school becomes a place where adults set an example for learning, with a good learning environment and effective management of changes (Saphier & King, 1985). All of these factors will create conditions for students to study better and the school to excel.



*Solution 2. Creating the core elements of a strong cultural environment for the school*

A strong cultural environment is one with consistency and creativity, reflects the identity, mission, and vision of the school, as well as aligns with the demands of educational innovation and societal development. Therefore, the focus should be on creating an environment that fosters learning and improvement; promotes a sense of ownership, safety, and enjoyment; encourages dedication and hard work; and instills responsibility and commitment to the work. According to Saphier & King (1985), the core elements of a strong culture include 1) Team spirit, experiential learning, an approach to knowledge improvement to support continuous learning and teaching enhancement; 2) Evaluation and recognition, care and satisfaction, traditional values to create a sense of ownership, safety, and enjoyment for all members of the school; 3) High expectations, value protection, direct support to build trust and confidence, fostering commitment and hard work; and 4) Involvement in decision-making; providing accurate information, openness to help members believe they can make a difference, encouraging responsibility and investment in work.

To establish the core elements of a strong cultural environment for the school, it is necessary to clearly define the core values of the school, based on national cultural traditions and social ethics. These core values must be publicized, promoted, and adhered to by all members of the school. It is advisable to develop cultural behavioral guidelines for staff, teachers, and students to reflect the core values in the educational and managerial activities of the school. These cultural behavioral guidelines should be monitored, evaluated, and adjusted over time to align with practical situations. The organization of extracurricular activities for students should also be focused on enhancing bonding, enthusiasm, and creativity in teaching and learning. Additionally, it is suggested that a clean, beautiful, airy, safe, and friendly cultural space for the school be created, by taking care of the environmental landscape, decorating banners, posters, logos, slogans, songs, etc. related to the core values of the school. Cultural spaces must be protected and maintained by all members of the school. At the same time, it is necessary to expand exchanges and learning with domestic and foreign schools to broaden knowledge and experience, as well as absorbing the positive points of other cultures. These exchanges and learning opportunities should be collaborative, dialogue-driven, and respectful of cultural differences.

*Solution 3. Creating, maintaining, and developing progressive beliefs and value orientations for the school*

Based on the school's development strategy and rooted in the core elements of a strong cultural environment, the content of this solution involves shaping beliefs and standards that dictate interactions and communications among students, between students and teachers, among teachers, and vice versa. It involves establishing value orientations regarding learning and knowledge acquisition, as well as forming the educational philosophy of the school through communication behaviors, attire, and interactions with the physical environment. This approach considers these aspects as pivotal in nurturing character and educating the younger generation into individuals with aspirations and positive ideals.

The objectives of this solution focus on two groups of cultural values: 1) Promoting and preserving positive values within the school, nurturing an atmosphere of openness, democracy, cooperation, trust, and mutual respect; each person knowing their tasks, understanding their responsibilities, sharing awareness, actively participating in decision-making, valuing individuals, encouraging effort, and recognizing success; having standards for continuous improvement, innovation, and progress. The school's leadership should encourage teachers to improve methods to enhance quality; participate in contributing opinions to all school activities; encourage dialogue, cooperation, and teamwork; and share experiences and exchange professional knowledge. Through assignment mechanisms, job assignments should be shared, granting authority and responsibility, sharing visions, showing care, cooperative relationships, and attracting managerial, teaching, administrative, and student involvement in problem-solving. 2) Overcoming and minimizing uncultured behaviors, such as blaming and accusing each other (blame culture); in management, overly tight control, loss of freedom, autonomy; autocratic leadership, mechanical principles; frequent reprimands, lack of encouragement; lack of openness, lack of trust; lack of cooperation, sharing, mutual learning; internal conflicts and contradictions.

It is essential to understand that the school's culture is shaped by multiple factors, with the most significant being the school itself, the teachers, and families. Based on this: i) Organize discussions, consultations, and surveys involving stakeholders within the school, including the school's management board, staff, teachers, students, parents, the community, and businesses, to propose and agree on core values for the school. These core values should align with the school's identity, mission, and vision, as well as with the demands of educational innovation and societal development; ii) Announce and promote core values to the entire school community through public information

mediums, banners, posters, logos, slogans, songs, etc. The values should also be memorized and well understood by all members within the school; iii) Implement and maintain core values in the educational and managerial activities of the school. They should be reflected through behavioral guidelines, quality standards, reward and disciplinary policies, teaching and learning programs, extracurricular activities, students' activities, etc. They should also be monitored, evaluated, and adjusted over time to suit real-world situations.

To achieve this, it is necessary to enhance ethical education, lifestyles, aesthetics, and cultural behavior for staff, teachers, and students. This can be accomplished through teaching activities, learning experiences, volunteering, and student movements. Serious implementation of cultural behavior rules within the school should be established, publicly displayed, and monitored for compliance by all members of the school community, while promptly and transparently handling cultural behavior violations within the school, alongside appropriate measures of reward and discipline, should be applied. Creating a clean, pleasant, safe, and friendly cultural environment for the school can be achieved through environmental landscaping, decorating banners, posters, logos, slogans, songs, etc., all of which are linked to the core values of the school.

#### *Solution 4. Establishing and safeguarding professional ethics standards*

The content involves establishing ethical teaching standards based on regulations regarding professional standards and other provisions related to educators. This ensures unanimous and voluntary adherence by the administrative staff and faculty, setting a positive example for students.

The approach entails effectively executing the following principles: i) The school - assuming the role of guiding and emphasizing the importance of moral education and cultivating refined and courteous behavior; ii) Teachers - acting as guides, thereby integrating guidance and setting examples for students in cultural greetings, queuing, reading, thriftiness, environmental protection, online behavior, phone etiquette, etc.; iii) Principals - comprehensively managing and focusing on developing vision, mission, and plans; enhancing awareness; organizing, directing, supervising; concentrating on safeguarding core standards of tradition and modernity, such as continuous learning, good perception, diligence, and confidence to make a difference; and iv) Families - cooperating, preserving, and advancing.

#### *Solution 5. Building the school as a learning community*

The school leadership should make every member of the school understand that a learning institution can alter thinking and actions flexibly. If they can do things previously unaccomplished, they will continue expanding the capability to create a better and more sustainable future by fostering an environment of continuous shared learning (Senge, 1990). A school is a community of learners where everyone is a student; the school's potential for change depends on their learning. Among them, teachers are mature learners, and principals are learners who lead. Especially in the current context, schools must learn to balance the knowledge of their team with outside experiences by integrating theory into practice, connecting learning with the creation of tangible societal values for students.

To build the school into a learning community, the school leadership needs to foster the participation of stakeholders, including teachers, students, parents, local communities, and other partners, in defining and pursuing common learning goals. They should create opportunities for teachers and students to learn from each other, share experiences, knowledge, and skills, as well as provide constructive feedback and assessment. Encouraging creativity, research, and exploration in the learning process while respecting the diversity and differences among individuals and groups is essential. Utilizing tools and learning resources such as information technology, libraries, laboratories, playgrounds, and extracurricular activities is crucial. Establishing connections with organizations and individuals with expertise and experience in relevant fields can expand the scope of learning for administrators, teachers, and students, continuously enhancing the quality of education.

#### **Conclusion**

Creating a "Happy School," an "Amazing School," a "friendly, active student school," or a "school brand" all fundamentally entail establishing progressive values regarding administrative personnel, teachers, students, teaching processes, and the environmental landscape, allowing the school to achieve the management goal of further development, meeting the expectations of learners and society. Among the values that constitute the school's brand, core cultural values play a profound and crucial role in making the school outstanding. Therefore, devising solutions to form core cultural values for the school is one of the paths toward constructing an exceptional school. The solutions proposed in this article are derived from analysis and evaluation of the current state of schools and are in line with

regulations at various management levels in Vietnam (Communist Party, 2014; MOET, 2020a; MOET, 2020b; Government, 2014). It is hoped that they will meet the management requirements posed in the context of educational innovation and training today./.

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## **Correlation of Reaction Times and Body Mass Index among Female University Athletes, Accounting for Urban and Rural Environments**

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Body mass index (BMI) is a significant human health fitness gauge. The purpose of the study was to investigate the relationship between BMI and reaction time of female university athletes, considering urban and rural community influences. A sample of 60 players (mean age =  $20.45 \pm 2.29$  years) was selected from three leading women's universities in Lahore, Pakistan. Reaction time was assessed through a ruler drop test. Data normality was examined using the Kolmogorov and Shapiro-Wilk tests. Pearson's correlation coefficients, trend lines, and independent samples t-test were used for statistical analysis. Results indicated mean reaction times were  $0.164 \pm 0.031$  and  $0.158 \pm 0.026$  seconds for urban and rural community athletes respectively. The average BMIs were  $21.03 \pm 1.77$  and  $19.64 \pm 2.84$  for urban and rural community athletes respectively. Rural players exhibited healthier BMIs, and overweight players displayed superior reaction time. There was a non-significant correlation between reaction time and BMI, explaining 3.9% of reaction time variability. Locality had a significant effect on BMI but not on reaction time. There was no significant association between reaction time and BMI was observed. However, locality significantly influenced BMI. Maintaining healthy BMIs and incorporating agility drills are recommended for optimal performance.

**Keywords:** BMI, Reaction time, Athletes, Community

The relationship between body mass index (BMI) and athletic performance has been a subject of considerable interest in sports science research. BMI, a commonly used measure of body composition, provides valuable insights into the impact of body weight and composition on performance outcomes in female athletes. One crucial aspect of athletic performance is reaction time, which plays a vital role in determining an athlete's ability to respond quickly and effectively to various stimuli. Exploring the relationship between BMI and reaction time in female athletes can provide valuable insights into the influence of body composition on performance and inform training protocols tailored to individual needs.

In a study by Zhang et al., (2021), the impact of body mass index (BMI) on reaction time in elite table tennis athletes was investigated. The research involved 30 athletes (male & female) with an average age of 22 years. A visual reaction test using a computer program was used to measure their reaction time. The study revealed that BMI did not significantly affect reaction time in either gender. However, women exhibited significantly faster reaction time overall compared to men. Additionally, a positive correlation was observed between BMI and reaction time in men, indicating that higher BMI was associated with slower reaction time. These findings suggest that gender has a greater influence on reaction time in elite table tennis athletes than in BMI, and men with higher BMIs may experience slower reaction time.

Several studies have examined the relationship between BMI and athletic performance across different sports and populations. These studies have demonstrated that body composition, as measured by BMI, can influence various performance parameters, including speed, agility, and power (Hespel et al., 2021; Ostojic et al., 2018). Athletes with lower BMI tend to exhibit faster running times and improved agility, suggesting that lower body weight relative to height may confer mechanical advantages, allowing athletes to move more efficiently and react more quickly (Cobley et al., 2014; Clark et al., 2015).

Furthermore, specific factors within body composition, such as muscle mass, body fat percentage, and weight distribution, can impact reaction time in female athletes. Studies have consistently demonstrated that athletes with higher muscle mass and lower body fat percentage generally exhibit faster reaction time (Horslen et al., 2021; Neumayer et al., 2016; Marques et al., 2013). The presence of lean muscle mass facilitates rapid neural signaling and movement execution, potentially contributing to faster reaction time in athletes (Travieso et al., 2019).

Understanding the relationship between BMI and reaction time in female athletes requires consideration of potential gender-based differences. Males and females may exhibit distinct physiological and anatomical characteristics that can influence athletic performance. Therefore, focusing specifically on female athletes allows for a more targeted examination of how BMI relates to reaction time within this population (Close et al., 2019; VanDusseldorp et al., 2018; Sandbakk et al., 2018).

Based on previous findings suggesting that lower body weight, lower body fat percentage, and higher muscle mass contribute to improved reaction time, it was found lower BMI values could be associated with faster reaction time in female athletes (Gualdi-Russo et al., 2014). However, it is important to consider potential moderating factors that may influence this relationship, such as sport-specific demands and individual variations. Factors like the nature of the sport, technical skills required, and training history may interact with BMI to influence reaction time in female athletes (Cobley et al., 2012; Meylan et al., 2017).

Understanding the relationship between BMI and reaction time in female athletes has practical implications for training and performance optimization. By identifying the influence of body composition on reaction time, coaches and trainers can tailor training programs to address individual athlete needs, optimize performance, and enhance competitive outcomes (Lloyd et al., 2016; O'Hara et al., 2017; West et al., 2014). For instance, athletes with higher BMI values may benefit from targeted strength and conditioning programs to improve muscle mass and overall body composition, potentially leading to faster reaction time (Lloyd et al., 2015).

The effect of urban and rural communities on BMI and reaction time of female players can be influenced by multiple factors. While urban areas may present challenges related to unhealthy dietary choices and sedentary lifestyles, they also offer diverse cognitive stimulation. On the other hand, rural areas may provide healthier dietary patterns and opportunities for physical activity but may have less environmental stimulation. Individual choices and circumstances will play a substantial role in determining the ultimate impact on BMI and reaction time.

The current gap in research is the lack of studies examining the relationship between body mass index (BMI) and reaction time specifically among Pakistani female athletes, particularly while considering the influence of urban and rural localities. While research on BMI and reaction time exists in other populations, there is a need to investigate this relationship in the specific context of Pakistani female players. Furthermore, considering the influence of urban and rural backgrounds on this relationship is crucial as it can provide insights into the unique factors affecting the performance of female athletes in Pakistan. Filling this gap can contribute to a better understanding of factors influencing athletic performance and guide training strategies for Pakistani female players.

The significance of this study lies in its exploration of the relationship between body mass index (BMI) and reaction time among university female players. Understanding how BMI affects reaction time in this specific population can provide valuable insights into the performance and training strategies of female athletes in Pakistan. Additionally, considering the influence of urban and rural backgrounds can shed light on the unique factors that may impact athletic performance in these different contexts. The findings of this study can inform coaches, trainers, and athletes in developing tailored approaches to optimize performance and enhance the overall athletic development of Pakistani female players.

Therefore, it was hypothesized that the reaction time has no significant association with BMI. Additionally, the hypothesis suggests that the locality, whether urban or rural, does not exert a significant influence on the BMI and reaction time of female players enrolled in Lahore College for Women University, Kinnaird College University for Women, and Home Economics College, Lahore, Pakistan.

### **Literature Review**

Body mass index (BMI) is a widely used measure to assess an individual's body composition and is often considered in various aspects of health and performance. One such area of interest is the correlation between BMI and athlete reaction time. Reaction time is a key component of athletic performance, affecting agility, speed, and decision-making. Understanding the impact of BMI on an athlete's reaction time is essential to optimizing training programs and competition results. Physical exercise positively impacts school teachers by helping to maintain a healthy BMI and improving reaction times. Regular physical activity enhances cognitive function, reduces stress, and boosts overall well-being, leading to more effective teaching performance (Sharif et al., 2021).

Jordan et al., (2023) found the relationship between BMI and psychological issues, which is complex, involving depression, anxiety, body dissatisfaction, eating disorders, stress, sleep problems, low self-esteem, social isolation, and reduced quality of life.

Bibi (2021) investigated that games and physical activities significantly impact students' BMI, promoting healthier weight by increasing physical activity levels, reducing sedentary behavior, and fostering better physical (speed) and mental health.

Horslen et al., (2021) examined the effects of BMI, gender, and use of hormonal contraceptives on reaction time in elite athletes. The study involved 48 elite athletes from various sports, including Football, Basketball, and Handball. They found that BMI did not significantly affect reaction times in both men and women, while men had faster reaction times than women.

Truong et al., (2021) investigated the impact of BMI on the reaction time of elite table Tennis players. The study involved 30 elite table Tennis players with an average age of 22 years. The participants' reaction times were measured with a visual response test involving a computer program. They found that BMI had not a significant effect on reaction time in both men and women but they also found that women table Tennis players had significantly faster reaction times than men. They also found a positive correlation between BMI and reaction time in male Tennis players.

Lopez-Taylor et al., (2020) focused on professional soccer players and examined the relationship between BMI and reaction time. The results showed a moderate negative correlation between BMI and reaction time, indicating that players with higher BMI tended to have slower reaction times. The study included a sample of 80 professional soccer players and used reaction time tests related to specific soccer situations.

Jones and Jackson (2019) explored the impact of BMI on reaction time in elite sprinters, focusing on athletes competing at short distances. The results demonstrated a significant inverse relationship between BMI and reaction time, showing that sprinters with lower BMI had faster reaction times. The study involved 50 elite sprinters and used reaction time tests designed to simulate sprint start scenarios.

Fitzpatrick and Vallance (2018) studied the relationship between BMI and reaction time in college athletes from different sports. The results showed a significant negative correlation between BMI and reaction time, indicating that athletes with higher BMI tended to react more slowly. The study used a sample of 150 athletes from different sports and used reaction time tests under controlled laboratory conditions.

## **Method**

### **Research design and sample:**

In this study, we focused on female university players from Lahore College for Women University (LCWU), Home Economics College, Lahore, and Kinnaird College for Women University, Lahore.

### **Population and sample**

The target population consisted of all the mature available (at campus) players of various games in the said universities during the study hours. The total target population size from three women universities was N=208 (*Source: University Sports Management Offices*). A sample of size 136 players was selected by using Krejcie and Morgan's (1970) table based on the size of the target population (N=208).

This (pilot) study included 60 players out of 136 (total sample) players of different games, ranging in age from 16 to 28 years, representing various body types and communities (Urban & Rural). Participants with a history of any type of critical disease, recent surgeries, and medical conditions, such as neurological disorders, head injuries, and diabetes, were not included in the study.

### Procedure

The research protocol of this study received approval from the ethics and research committee of the University of Lahore, Pakistan. The participants were provided with a detailed explanation of the study's nature and objectives. To measure simple reaction time, the ruler drop method was employed, while BMI was assessed through the weight and height of the participants.

### Measurement

The ruler drop test is a simple and commonly used method to measure reaction time. This involves dropping a ruler from a height of about 30 centimeters (12 inches) and measuring the time it takes the participant to grab the ruler with their hands. The ruler drop test is a quick and easy way to measure simple reaction times and can be used in a variety of settings, such as schools, clinics, and research.

The measurement of simple reaction time was conducted using the ruler drop method, a validated clinical metric (Shejwal, 2020; ÁngelLatorre-Roman, 2018). For observation of the reaction time of the player's ruler drop test (Zhou et al., 2019) was applied as: - Forearm and hand of the player were placed on a flat surface with fingers extended and thumb up. Technical Assistant hold the ruler vertically, with the zero mark at the top and the numbers facing down, between the player's thumb and index finger. Without warning, the ruler was released by the Assistant, and the player tried to catch the ruler as quickly as possible using his thumb and index finger. The Technical Assistant noted the measurement in cm on the ruler where the player's fingers caught it. The test was repeated three times, and the average score was calculated. Based on the average value of the ruler drop the reaction time (in sec) of the players was computed by the following equation (Eq. 1).

$$\text{Reaction Time (t)} = \text{Sqrt}(2d/g) \dots \dots \dots \text{Eq. 1}$$

Where d = reading from the ruler in meters and  $g=9.8 \text{ m/s}^2$ .

### Assessment of BMI

Assessment of Body Mass Index (BMI) is commonly employed as a measure to assess body composition, particularly excess adiposity and higher body weight (Ángel Latorre-Roman, 2018; Nene et al., 2011). The participant's height was measured using a measuring tape, with the measurement recorded to the nearest centimeter. Weight was measured using standard portable weighing equipment, with the participant barefoot and wearing light clothing, and the measurement was recorded to the nearest kilogram. The BMI was calculated using the given formula (Eq. 2).

$$\text{BMI} = \text{Weight (kg)}/\text{Height (m}^2) \dots \dots \dots \text{Eq. 2}$$

### Statistical Analysis

Descriptive statistics were utilized to present the demographic characteristics of the participants. To examine the relationship between reaction time (reaction time) and Body Mass Index (BMI), Karl Pearson's correlation analysis was conducted to examine the effect of BMI on reaction time. The rationale for conducting a correlation analysis between reaction time and Body Mass Index (BMI) lies in understanding the interplay between physical health and cognitive performance. Physical health metrics, such as BMI, are known to influence cognitive functions; thus, exploring their relationship can provide insights into how weight-related health issues might impact reaction times. This analysis can help in the early detection of health problems, inform the design of targeted interventions, and contribute to holistic healthcare approaches.

Independent samples t-test was applied to examine the locality effects on BMI and reaction time. The statistical package SPSS ver. 21.0 was employed for the analysis. A significance level of  $p<0.05$  was established to determine statistical significance. Applying an independent samples t-test for locality effects on BMI and reaction time determines significant differences between groups, revealing how urban versus rural living impacts these variables. This informs public health interventions, resource allocation, and policies addressing health and cognitive disparities.



## Results

**Table 1**

*Descriptive Statistics of the 60 Participants.*

Items	Categories	n	Mean	SD
<b>Urban</b>	Age (year)	34	21.09	2.59
	Height (m)	34	1.59	0.06
	Weight (kg)	34	53.71	6.41
	BMI	34	21.03	1.77
	Reaction time (sec)	34	0.153	0.031
<b>Rural</b>	Age (year)	26	19.62	1.50
	Height (m)	26	1.59	0.09
	Weight (kg)	26	49.50	6.50
	BMI	26	19.64	2.84
	Reaction time (sec)	26	0.164	0.026
<b>Total</b>	Age (year)	60	20.45	2.29
	Height (m)	60	1.59	0.07
	Weight (kg)	60	51.88	6.73
	BMI	60	20.43	2.37
	Reaction time (sec)	60	0.158	0.029
<b>BMI Index</b>				
<b>Reaction time (Sec)</b>	Under Weight	13	0.17	0.029
	Normal	37	0.16	0.031
	Over Weight	10	0.14	0.016

The study included a sample of 60 female players, with an average age of 20.45 and a standard deviation (SD) of 2.29 years including 34 Urban players (Age: 21.09±2.59) and 26 Rural players (Age: 19.62±1.50). From Table 1 the average Body Mass Index (BMI) of the total sample was 20.43±2.37, and the average reaction time was 0.158±0.029 sec. It was interesting that the reaction time of overweight (24.5 – 29.9) players were better as compared to the players who lay in underweight and normal categories.

**Table 2**

*Data Normality Tests.*

Variables	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	p	Statistic	df	p
Reaction time	0.10	60	0.20	0.96	60	0.07

The Kolmogorov-Smirnov and Shapiro-Wilk normality tests are statistical methods employed to assess whether a dataset adheres to a normal distribution. The statistical outcomes of these tests are presented in Table 2. The results displayed in Table 2 indicate that the distribution of the dependent variable, reaction time (reaction time), followed a normal distribution.

Consequently, Karl Pearson's Correlation Coefficients were computed to explore the direction, and magnitude of the relationship between BMIs and reaction time among female players in the university setting.

Trend Analysis BMI Vs Reaction Time

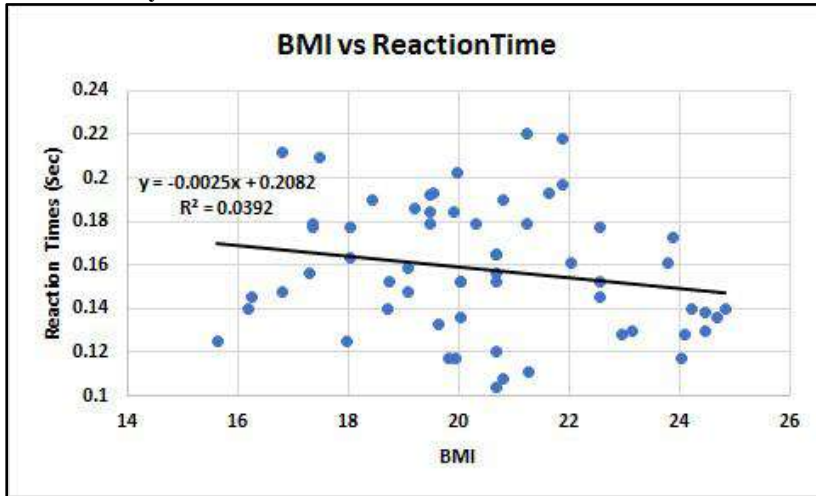


Figure 1: Scatter plot between BMI & reaction time (n=60).

Trend analysis comparing BMI with reaction time reveals intriguing insights into the intersection of physical health and cognitive function. Figure 1 suggests a relationship between higher BMI and slower reaction times, indicating a potential link between body weight and cognitive processing speed. As BMI increases, individuals may experience a gradual decline in reaction time, possibly due to factors such as decreased neuronal efficiency, impaired blood flow to the brain, or increased inflammation associated with obesity.

**Table 3**

*Karl Pearson's Correlation Coefficients between BMI & reaction time.*

Locality	Variables	reaction time
Urban (n <sub>1</sub> =34)	BMI	-0.19 (p=0.28)
Rural (n <sub>2</sub> =26)	BMI	-0.14 (p=0.50)
<b>Total (n=60)</b>	<b>BMI</b>	<b>-0.20 (p=0.13)</b>

Karl Pearson's Coefficients of Correlation analysis depicted a non-significant and negative correlation of reaction time with BMI ( $r = -0.20$ ,  $p > 0.05$ ) which was a very poor association between BMI and reaction time as shown in Table 3 and Figure 1. The same Figure also showed a trend (linear regression) line with  $R^2 = 0.039$  which was an indication that only 3.9% of the variability in reaction time could be explained by BMI. Therefore, it is concluded that BMI has a non-significant effect on the reaction times of the athletes.

**Table 4**

*Independent Samples (t-statistics) Test to Compare BMI & reaction time of Urban & Rural Community Players.*

Variables	Levene's Test for Equality of Variances		t-test for Equality of Means		
	f	p	t	df	p
BMI	12.56	0.001	2.33	58	0.023
reaction time	0.55	0.462	-1.42	58	0.162

To examine the impact of urban and rural communities on the BMI and reaction time of university female players, an independent sample t-test was applied and the results are listed in Table 4. This statistical analysis enabled us to compare of means between two distinct groups, urban and rural. Here, the objective was to assess how urban and rural community settings influence the BMI and reaction time of female players enrolled in universities.

The results (in Table 4) showed that locality had a significant ( $p < 0.05$ ) effect on the BMI of university players but it had a non-significant effect on reaction time of female university players. Therefore, it was concluded that female university players from rural areas had healthy BMI.

### Discussion

The studies reviewed collectively show a negative correlation between BMI and reaction time in athletes across different sports. Athletes with higher BMIs tend to react more slowly than those with lower BMIs. However, it should be noted that individual variations, sport-specific needs, and training interventions may influence this relationship.

The present study investigated the potential correlation between reaction time and BMI within a group of 60 female university athletes spanning ages 16 to 28 years. The results unveiled a negative correlation between BMI and reaction time, although lacking statistical significance. A significant observation emerged: university athletes hailing from rural locations exhibited markedly healthier BMIs in comparison to their urban counterparts, a distinction that attained statistical significance ( $p < 0.05$ ). Contrarily, the overarching BMI showcased a negligible impact on the athletes' reaction times, failing to reach statistical significance. This aligns with the findings of Lopez-Taylor et al., (2020), whose study centered on soccer players and similarly explored the nexus between BMI and reaction time. Their inquiry also unearthed a discernible negative correlation between BMI and reaction time, indicating that players with elevated BMI tended to manifest slower reaction times.

Zhang et al., (2021) investigated the impact of body mass index (BMI) on reaction time in 30 elite table tennis players of both sexes. Using visual response testing, researchers examined the potential correlation between BMI and reaction time. Their results showed a lack of significant association between BMI and reaction time in both men and women. However, a notable gender gap emerged: women generally had faster reaction times. In men, those with a higher BMI tended to respond more slowly. This contradicts the results of the present study, which showed a non-significant relationship between BMI and reaction time.

Jones and Jackson (2019) explored a significant inverse relationship between BMI and reaction time, showing that sprinters with lower BMI had faster reaction times. The study involved 50 elite sprinters and used reaction time tests designed to simulate sprint start scenarios. Similarly, the current study also showed an inverse relationship between BMI and reaction times of the athlete but insignificant.

The current study also quite validated the results as Fitzpatrick and Vallance (2018) studied the relationship between BMI and reaction time in college athletes from different sports. The study used a sample of 150 athletes from different sports and used reaction time tests under controlled laboratory conditions. They found a significant negative correlation between BMI and reaction time, indicating that athletes with higher BMI tended to react more slowly.

Smith et al., (2023) found that among collegiate basketball players, higher BMI was significantly correlated with slower reaction times, suggesting that excess body mass might hinder quick cognitive responses critical for athletic performance (Smith et al., 2023). Similarly, a 2024 investigation by Johnson and colleagues reported a negative association between BMI and reaction time in professional swimmers, attributing the slower responses to increased adiposity affecting overall physical agility and neural processing speed (Johnson et al., 2024). Similarly, the current study shows negative correlation between BMI and reaction times of the athletes.

Conversely, a study by Lee et al., (2024) on elite gymnasts showed no significant correlation between BMI and reaction time, implying that the high level of physical fitness and muscle mass in this group might offset the potential negative impacts of BMI on cognitive speed. This finding aligns with research by Martinez et al., (2023), who discovered that regular high-intensity training could mitigate the effects of higher BMI on reaction time, emphasizing the importance of overall fitness levels in interpreting these relationships (Martinez et al., 2023). The research also found negative impact of BMI on reaction times but insignificant.

Gender and handedness were found to influence people's reactions, indicating the need to consider these factors when measuring simple reaction time (Brown et al., 2017). However, BMI was found to have no

impact on simple reaction time measurements in both genders. Moreover, the current study revealed no significant correlation between BMI and reaction time among female university players.

Athletes with a higher BMI may benefit from targeted training and strength programs designed to improve muscle mass and overall body composition. These improvements are likely to result in faster reaction times, as suggested by studies such as conducted by Lloyd et al., (2015) and Marques et al., (2013). Many studies consistently show that athletes with increased muscle mass and decreased body fat percentage generally have faster reaction times, as evidenced by (Horslen et al., 2021; Neumayer et al., 2016). Interestingly, the results of the current study support this view, revealing that athletes classified as overweight have superior reaction times.

### Conclusion

In summary, the study found no significant link between reaction time and body mass index (BMI). However, the locality had a significant impact on BMI, and rural players demonstrated healthier BMIs compared to urban players. Female athletes should prioritize maintaining healthy BMIs through regular exercise and a balanced diet. By focusing on healthy BMIs and targeted training, female athletes can aim for optimal performance. The study on the correlation between reaction times and BMI in urban and rural localities contributes by revealing how environmental factors and lifestyle differences between these areas affect physical and cognitive health, guiding targeted public health strategies and interventions.

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## **Structural Violence, Gender, and Post 9-11 Terrorism in Pakistan: Examining the Psychological Impact on the Parents of Army Public School attacks in Pakistan**

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This study seeks to explore the gender – specific impact of post-9/11 terrorism acts in Pakistan, with a particular focus on the parents of the children killed in the terrorist attacks on Army Public School in Peshawar, in 2014. The paper dwells deep into exploring how the parents have been impacted and examines the many ways by which the victims have devised coping strategies in response to traumatic events. This study uses Galtung’s structural violence theory as a theoretical framework to examine the psychological impact on the parents, with structural violence in this context referring to post-9/11 terrorism acts in Pakistan. This study adopted a sequential exploratory design. By using a stratified random sampling technique, a total of 216 participants were selected, comprising 133 Direct Victims and 83 Indirect Victims. Data collection involved a mixed method approach - both quantitative and qualitative analyses. Primary data was collected through structured interviews and a standardized questionnaire called Lieber’s scale of Post-Traumatic Stress Disorder (PTSD) to measure the level of post-traumatic stress. Subsequent processing and tabulation followed by statistical examination to assess the psychological impact of post-9/11 terrorism in Peshawar. Finding indicates that the symptoms of PTSD were still evident among all participants even after nine years of terrorist attack. Participants who were directly exposed to trauma displayed more symptoms of psychological distress as compared to those who were indirectly exposed. The results also indicate a surprising and rather significant development in gender focused research with male parents exhibiting significantly high level of PTSD in comparison to women victims. Observations from the primary data showing men demonstrating higher level of PTSD, brings interesting propositions to gender research, where explorations around the social and psychological aspects of masculinity, and the multifaceted roles played by men around gender empowerment may prompt intriguing inquiries into gender research. Furthermore, it is recommended that future research must focus on factors that should not only identify the optimal timing for PTSD treatment, but also explore factors that can bring natural recovery. Moreover, the research also facilitates the policy recommendation for development work as well as those agencies including, the government, local and international aid organizations working in the areas affected by violence.

**Keywords:** Post-9/11 terrorism, structural violence, gender, post traumatic stress disorder (PTSD).

On the 16<sup>th</sup> of December, 2014, armed militants attacked the 'Army Public School' (APS) in Peshawar<sup>1</sup>, tragically killing 135 students, along with teachers and the principal (Sultana, 2015). Heartbreaking scenes depicted children covered in blood, mothers fainting, and parents desperately holding their deceased or injured

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<sup>1</sup> In particular Peshawar, the capital city of Khyber Pakhtunkhwa (KPK), was specifically targeted due to its proximity to the epicenter of terrorism. The KPK region in Pakistan, including former FATA, has been entrenched in violence and turmoil for a significant portion of the past three decades, particularly drawing global attention post-9/11 due to its militancy, instability, and unrest (Shah, 2018, pp. 27).

children, seeking medical help in the midst of the chaos. This devastating incident brought the country to a halt, and this news quickly circulated globally, leading to worldwide condemnation. The APS school attack was the most devastating among a series of attacks by the militants aiming to destroy both the formal and informal institutions across the Khyber Pakhtunkhwa region, with educational institutes being a primary focus (Khan et al., 2018). Approximately 1,000 schools, predominantly girls' schools, were destroyed by the militants (All Voices, 2013). Following the attacks, parents understandably experienced heightened anxiety and fear when sending their children to school, and survivors displayed hesitancy in returning to educational institutions and participating in social interactions (Mansoor, 2015). This event instilled widespread fear among students and parents, leading to a decline in social engagement and exposing the general population in the region to psychological repercussions such as post-traumatic stress disorder (Galea et al., 2005). Understanding these psychological consequences is critical to avoid the negative consequences of such terrible events.

This study takes the Army Public School (hereafter APS) Peshawar incident as a case study to explore the psychological repercussions of post 9/11 terrorism acts and to assess the levels of Post Trauma Stress Disorder (PTSD) among the victims. This area of research inquiry remains underexplored, as the available research on terrorism and violence within the region has predominately focused on a macro level understanding of the conflict; often a geo-political analysis or reporting damage assessment of the war; these studies however overlook the psychological repercussions on the victims of terror or those exposed to terrorism (Khan, 2018). Therefore, within the academic scholarship, in addition to examining the direct impact of a war, exploring the psychological impact on victims has great importance from the perspective of exploring the indirect effects of terrorism, and individual well-being and human rights. Thus, this study aims to assess the psychological impact of terrorist attacks, particularly the traumas experienced by victims, distinguishing between repairable and irreparable losses at the individual level.

### **Theoretical Argument**

This study employs Galtung's (1969) Structural Violence Theory to examine the impact of post-9/11 terrorism, specifically focusing on the psychological effects on the victims of the APS school attack in Peshawar. Terrorism, as defined by scholars such as Clutterbuck (1986) and Charles (2002), entails the calculated use or threat of violence to instill fear and manipulate governments or societies, expressed either directly or indirectly. While early academic scholarship on conflict primarily investigated direct violence, recent attention has shifted to indirect violence. Galtung's (1969) Structural Violence Theory highlights three forms of violence: (a) Direct violence, and the other two are indirect manifestations of violence; these are (b) Cultural violence, and (c) Structural violence. Further discussions on this subject have delved into the various expressions of indirect violence, which are believed to have profound social, psychological, political, economic, and cultural impacts on society (Christie et al., 2001). This study perceives terrorism not solely as physical harm but also as involving informal violence, particularly damaging the psychological well-being of the victims.

Galtung (1969) posits that violence is ingrained within social structures (Nasim, 2023) and institutions. In the context of this research, social structures and institutions refer to the entities promoting terrorism or wars, a notion supported by academic scholars (Galtung, 1969; Neff, 2008). The absence of peace or the presence of violence is often precipitated by either an agreement to settle disputes through violence or a breakdown of social contracts (Neff, 2008). The presence of such contracts indicates the existence of structures and institutions, which can be formal (such as media, judiciary, law enforcement agencies) or informal (including cultural norms, beliefs, and informal actors), all contributing to either peace promotion or violence perpetuation (North, 1990). Specifically, within the framework of this paper, understanding terrorism from Galtung's (1969) perspective involves examining these informal structures where violence is embedded.

This study advances the theory of 'Structural Violence' by providing novel insights, particularly in the context of the APS tragedy, by examining how structural violence impacts individuals' psychological well-being. It is pioneering in its incorporation of psychological well-being as influenced by terrorism, thus contributing to the understanding of informal violence. Additionally, drawing from Herman's (1992) work on trauma victims, the research distinguishes between two categories of trauma: 'Type I' (resulting from a single incident) and 'Type II' or complex traumas (stemming from repeated childhood traumas) (Marzillier, 2012). This study specifically focuses on the transient stressful reaction to a Type I incident, namely the APS tragedy.

The traumatic events of such magnitude – or as Shaw (2003) describes it - the 'war related stressor', understandably has a profound effect on the mental health of humans, particularly its impact on children and youth has been a subject of scholarly debates for many years – with attention being paid to examining the psychiatric

disorders (Shaw, 2003). Among the psychological conditions that children may develop are anxiety disorder, depression, and substance use disorders (*ibid.*). Observations about children responses to war related stress have been examined for many years. The academic literature shows varying levels of responses, including both mild, and severe. With regards to mild reactions, Bodman (1941) had earlier found that only 4% of school-age children, those who were exposed to the London bombing at the time, exhibited psychological distress. Likewise, Freud and Burlingham (1943) made a notable, though unsettling, observation that children could distinguish between different types of attacks, such as bombs and shelling, and comprehend the dangers they posed, accepting them as part of their reality. Particularly, children living near volatile regions were more accustomed to such violence (Rolfe & Lewin, 1982), leading to a more adaptive, routine life and less psychological distress. The resilience in children was thought to have been facilitated by family support, shared ideology, and religious beliefs, as such, it could well be said that external factors play a significant role in shaping children's responses to traumatic events. This also demonstrates how children can adapt to their environment and normalize extreme situations. More so, the children reactions appear to be influenced by factors such as the proximity to the traumatic event and the duration of the stress experienced. Severity of the problem increases if people are directly exposed with closest proximity to the traumatic incident (Bodman, 1941; Saigh, 1991b; Nader et al., 1993; Hadi & Llabre, 1998), and can have long term effects (Yule, 2000; Macksoud & Aber, 1996).

Recent studies indicate that children who have been exposed to traumatic events also develop Post Traumatic Stress Disorder symptoms (Yule and Smith, 2015). Terrorist attack is an extreme form of violence and can equally disturb those who directly confront or indirectly witness it from the distance. While the capabilities of children to normalize in extreme situations is enhanced by support from family and society, terrorism however, carries the potential to disrupt such societal functioning, and as such weaken the very base of adaptability mechanisms available to children . In other words, terrorism can erode the sense of communal cohesion (or national security altogether), and rupture social values; in addition to the many other ethnic, and religious divisions it can cause in societies. Under these circumstances general population not only distance themselves from the population at risk but may get engaged in hate crimes if the risk of terrorism is seemingly random. For example, after terrorist attack on APS parents were reluctant to send their children to schools for many months. Also, since, religious-political actors were behind the scene therefore parents exhibited strong hatred towards extremists, their sympathizers, and donors that were operating within the country and were actively collecting funds.

Given the APS tragedy received worldwide attention; the response from the government in Pakistan has been prompt against the militants involved in the attacks. The attacks also spurred a number of non-governmental organizations to provide assistance to those affected. Despite the extensive global and local responses, surprisingly, there has been no subsequent academic literature investigating the impact of the APS tragedy on the affected children and parents. This study fills this significant gap, and intends to examine how the survivors have been coping nearly a decade after the terrorist attacks.

This study also investigates how both fathers and mothers of the children have been managing the trauma. Generally, existing literature indicates that women predominantly suffer more from PTSD when compared to men following a traumatic event (Christiansen & Elklit, 2008; Zlotnik, C. et. al, 2001). Other studies have made similar observations, but when examined across different age ranges, they reveal differences in the lifespan distribution of the disorder (Ditlevsen and Elklit, 2010). The highest prevalence of PTSD was observed in men in their early 40s, whereas women were observed to be more vulnerable in their early 50s. For both male and female, the lowest prevalence for was early 70s. Women in general, suffered more, and had an overall twice higher prevalence of PTSD than men (*ibid.*). Other studies indicate that PTSD symptoms do not differ between genders (Gay et. al., 2020).

## 1. Objectives

- To assess the level of PTSD among trauma victims of APS.

## 2. Hypothesis

1. The level of PTSD will be higher for those victims, who have been directly exposed to a high-intensity traumatic event as compared to indirectly exposed victims.
2. Women have high prevalence of PTSD after being exposed to a traumatic incident.



## Method

In this study, we employed mixed methods, adopting a sequential exploratory design, incorporating both quantitative and qualitative approaches to assess the psychological effects on the victims of the APS school attack in Peshawar. This study follows a deductive approach, where the hypotheses mentioned above are tested through assessment, leading to either confirmation or rejection (Snieder & Lerner, 2009). Research hypotheses are addressed through the analysis of both primary and secondary data. Data collection tools included structured interviews from those who consented for the study, using PTSD and demographic questionnaires, supplemented by secondary data gathered from books, newspapers, journals, and electronic sources. Ethical approval was obtained before carrying out the actual research and recruiting the participants. Survivor students and parents of the deceased were invited to participate. The required data was collected over a period of two months and subjected to statistical analysis using SPSS software.

Accessing women was a particular concern due to cultural barriers and the severity of the trauma they were experiencing. Parents could have likely felt frustrated by recurring memories through their participation in interviews, potentially increasing their levels of PTSD. Addressing gender sensitivities required a comprehensive approach that involved a consideration of our personal backgrounds and engagement with broader gender issues. One effective way of navigating such sensitivities is aided by the researcher's own gender. In our study, gender sensitivities did not pose issues during our fieldwork, as the lead researcher, being a woman herself and sharing the same culture and language, facilitated access to women. Therefore issues of gender, cultural differences, or potential power dynamics did not arise. Access was also facilitated through personal contacts, which then led to other respondents through snowballing technique. Respondents were offered the option of interview settings, often conducted in their homes. In pashtun culture, men and women observe *pardah* or seclusion as a sign of modesty and privacy, with socializing occurring separately, i.e., females meeting females in their homes. Therefore interviews were conducted separately for men and women. Respondents were debriefed on the objectives, and consent was obtained from them. For those who wished to remain anonymous, we ensured their anonymity by advising them to use pseudonyms if necessary. We respected the decision of those (only two respondents) who wished to withdraw from the interview process. This was crucial as women victims often felt more comfortable sharing their perspectives and experiences with us, in particular when we debriefed them about the research motives, the researcher's background in advocacy and women empowerment, gained through work with NGOs and INGOs in the pashtun region, that equipped her to understand and empathize with the sensitivities of the respondents, thereby ensuring their voices were heard in appropriate forums.

### Procedure

We have used a stratified random sampling technique, for data collection. Additionally, a PTSD interview scale was developed (see Annex-2, 3), based on DSM-5 criteria, to collect data by summarizing anecdotes into PTSD scales. In order to gauge the level of symptoms of PTSD, revised version of 'Impact of Event Scale' (IES-R) developed by Weiss and Marmar (1997) was used. Furthermore, a demographic questionnaire (see Annex-1) was included to gather individual biographic information, such as name, age, gender, education, location, marital status, working status, household income, education level, ethnicity of the respondents, disability, and religion. This demographic data was utilized to exclude any factors that could affect Herman's (1992) trauma level Type-1 from trauma level type-2.

The sample size was determined based on the number of casualties in the APS Peshawar incident, totaling 144 students and teachers. The parents of these victims, who directly lost their children in the incident, were approached as direct victims. Additionally, an equal number of indirect victims—students and their parents from the same school who did not directly witness the incident but were traumatized indirectly—were approached for comparison. Respondents were contacted personally, and after obtaining their consent, individual consultations were scheduled to conduct PTSD tests. The required data was collected over a period of two months and subjected to statistical analysis using SPSS software.

The procedure is further explained in detail below:

### Sample Criteria

As previously mentioned, the sample for this study aligns with Herman's identification of Type 1 trauma victims. Direct victims are characterized by irreparable loss, including parents and siblings of the deceased students and teachers. Indirect victims, experiencing repairable loss through indirect exposure to trauma, include students and parents of students at APS Peshawar.

The calculation of sample size was based on the Yamane Formula (1967), for determining sample size, given by  $n = \frac{N}{1 + N(e^2)}$  where **n** represents the sample size, **N** denotes the population size, and **e** signifies the margin of error (MoE), set at 5%.

**Sample Size**

The study sample is divided into two categories: Direct Victims and Indirect Victims of the APS incident in Peshawar. Direct Victims include students from Class 8th to 10th and their parents, while Indirect Victims comprise students from Class 8th to 12th. Students from Class 6th and 7th are excluded due to age considerations. The remaining indirect victim students, spanning from Class 8th to 12th, are chosen for the study, with 36 students selected from each class, totaling 180. Adding this to the initial sample size of 288, the total population size is 468. Employing the Yamane Formula, with a known population size of 468 and a margin of error (e) of 0.05, the sample size is calculated to be 216. Proportional allocation is then applied, with 288 Direct Victims and 180 Indirect Victims. The formula allocates 133 participants to the Direct Victims group and 83 to the Indirect Victims group, ensuring a total sample size of 216. Students are considered as the direct victims because they confronted the incident in proximity and survived while parents of the deceased are considered as the indirect victims. Sample represented both gender. Age of the students ranges from 10 to 18 years. Overall, the sum of known population sample sizes equals the total sample size, ensuring representation of both Direct and Indirect victims.

**Inclusion Criteria**

For this study, the inclusion criteria for samples encompass direct victims experiencing irreparable loss and indirect victims encountering repairable loss.

**Exclusion criteria**

As per Herman’s Type-1 trauma category, this study excludes factors such as religious minorities, disabled individuals, and children, focusing solely on trauma resulting from the repercussions of post-9/11 and its psychological effects on its victims.

For data analysis, we utilized SPSS version 18. We calculated the frequencies of demographic variables, as well as mean scores and standard deviations (SD). To compare the two groups, we employed a t-test.

**Results**

**Table 1**

*Age Distribution of Participants among Direct & Indirect Victims*

**Victims Age-Cross tabulation**

Age		Direct Victims	Indirect	Total
20-30	Count	47	48	95
	% of Total	21.8%	22.2%	44%
30-40	Count	1	11	12
	% of Total	0.5%	5.1%	5.6%
40-50	Count	44	19	63
	% of Total	20.4%	8.8%	29.2%
over 50	Count	41	5	46
	% of Total	19%	2.3%	21.3%
Total	Count	133	83	216
	% of Total	61.6%	38.4%	100%

$X^2 (3,216) 36.838, p < 0.01$

The results reveal that 61.6% of the total sample were direct victims, while 38.4% fell into the category of indirect victims. Notably, a majority of both direct and indirect victims were aged between 20 and 30 years,

constituting 21.8% and 22.2%, respectively, thereby age gap between direct and indirect victims showing a statistical significance at the alpha level of .01 ( $\chi^2(3, 216) = 36.838, p < .01$ ).

Figure 1

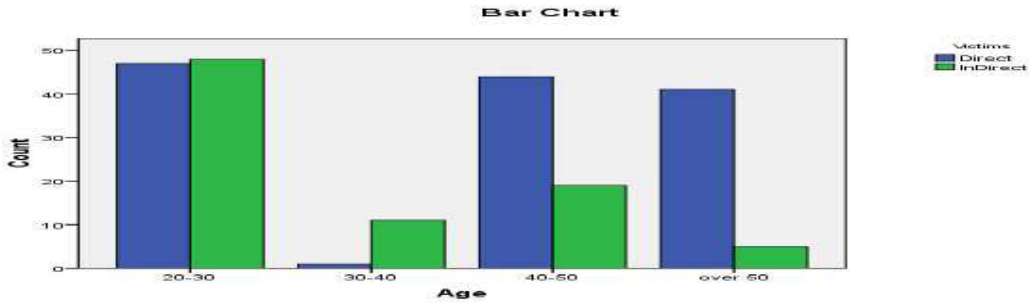


Table 2: Gender Distribution among Direct & Indirect Victims

Gender		Victims		
		Direct	Indirect	Total
<b>Male</b>	Count	70	58	128
	Percentage of Overall count	32.4%	26.9%	59.3%
<b>Female</b>	Count	63	25	88
	Percentage of Overall count	29.2%	11.6%	40.7%
<b>Total</b>	Count	133	83	216
	Percentage of Overall count	61.6%	38.4%	100.0%

$\chi^2(1, 216) 6.297, p < .05$

The findings show that 61.6% of the total sample were direct victims, while 38.4% fell into the category of indirect victims. Notably, a majority of both direct and indirect victims were gender male, constituting 32.4% and 26.9%, respectively, thereby the gender difference between direct and indirect victims showing a statistical significance at the alpha level of .05 ( $\chi^2(1,216) = 6.297, p < .01$ ).

Figure 2

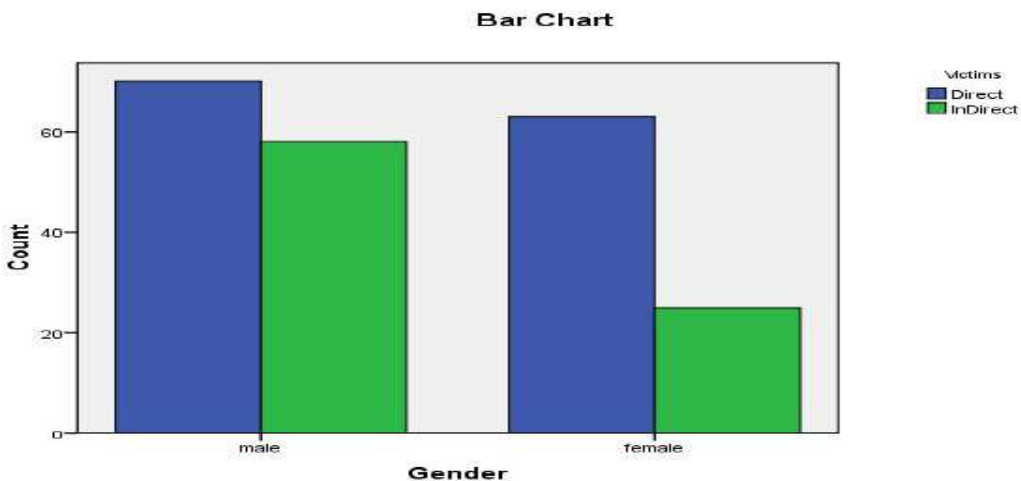
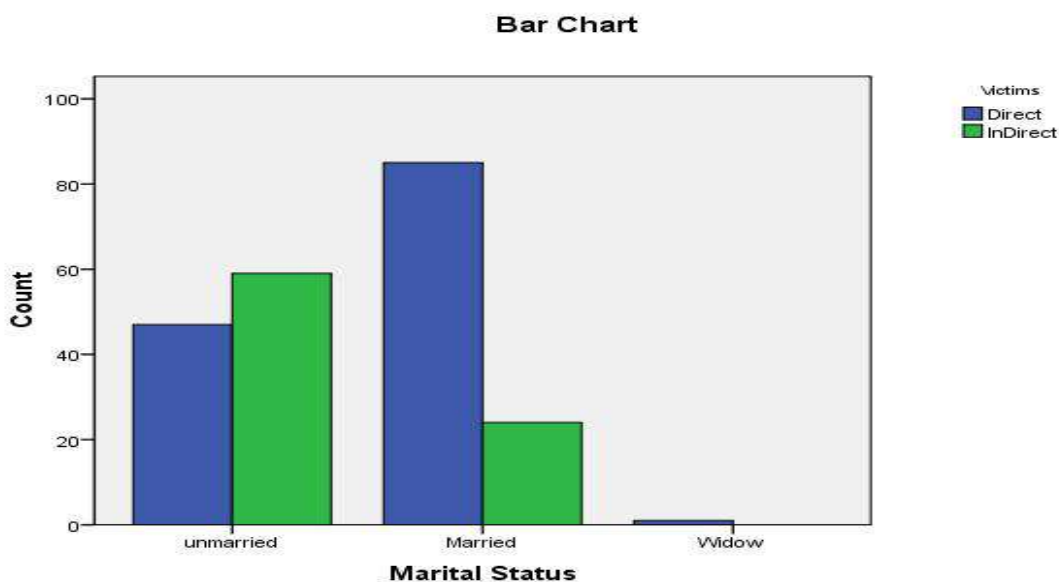


Table 3: Marital Status of respondents by Direct & Indirect Victims

Marital Status		Victims		
		Direct	Indirect	Total
<b>Unmarried</b>	Count	47	59	106
	% Of Total	21.8%	27.3%	49.1%
<b>Married</b>	Count	85	24	109
	% Of Total	39.4%	11.1%	50.5%
<b>Widow</b>	Count	1	0	1
	% Of Total	.5%	.0%	.5%
<b>Total</b>	Count	133	83	216
	% Of Total	61.6%	38.4%	100.0%

The results reveal that a majority of both direct and indirect victims were married, as the victims were parents, with percentages of 39.4% and 27.3%, respectively. This discrepancy in marital status between direct and indirect victims showed a statistical significance at the alpha level of .01 ( $\chi^2(2, 216) = 26.333, p < .01$ ), thereby the findings indicating the significance of taking into account the marital status, in the context of this study – the parents, as a factor in understanding the impact of traumatic incidents, such as those studied on individuals and their families.

Figure 3



Within this study we have investigated the impact of education on coping strategies among victims of such tragedies. In this regard, we examined data related to an individual’s background in education, as can be seen in the table below:

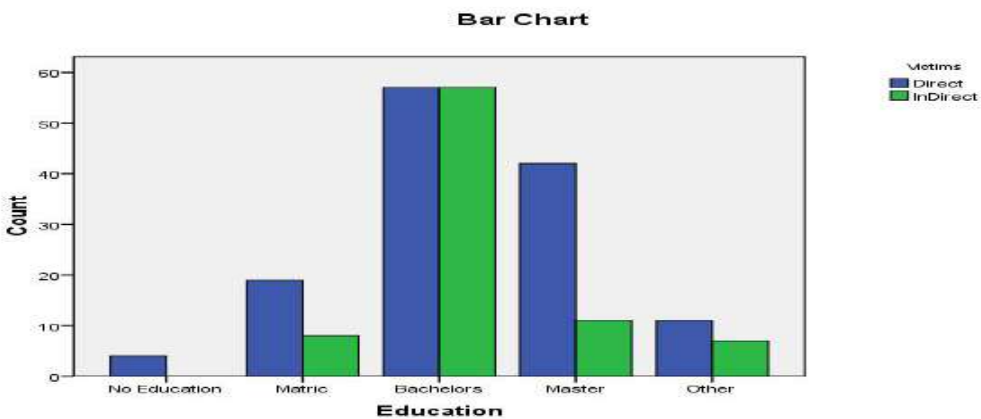
Table 4: Educational Background among Direct & Indirect Victims

Education		Victims		Total
		Direct	Indirect	
No Education	Count	4	0	4
	Percentage of Overall count	1.9%	.0%	1.9%
Matric	Count	19	8	27
	Percentage of Overall count	8.8%	3.7%	12.5%
Bachelors	Count	57	57	114
	Percentage of Overall count	26.4%	26.4%	52.8%
Master	Count	42	11	53
	Percentage of Overall count	19.4%	5.1%	24.5%
Other	Count	11	7	18
	Percentage of Overall count	5.1%	3.2%	8.3%
Total	Count	133	83	216
	Percentage of Overall count	61.6%	38.4%	100.0%

$\chi^2(4, 216) 16.830, p < .01$

The results reveal that a considerable portion of both direct and indirect victims had attained bachelor's degrees, each comprising 26.4% of the respective groups. Educational achievement between direct and indirect victims was found to be statistically significant at the alpha level of .01 ( $\chi^2(4, 216) = 16.830, p < .01$ ). These findings highlight the importance of considering educational background in understanding the repercussions of traumatic events like the one under study on individuals, and how individuals from diverse social backgrounds cope with structural violence.

Figure 4



Likewise, we explored whether individuals' income levels have an impact on their coping strategies or their ability to deal with structural violence, we took employment data as tabulated below:

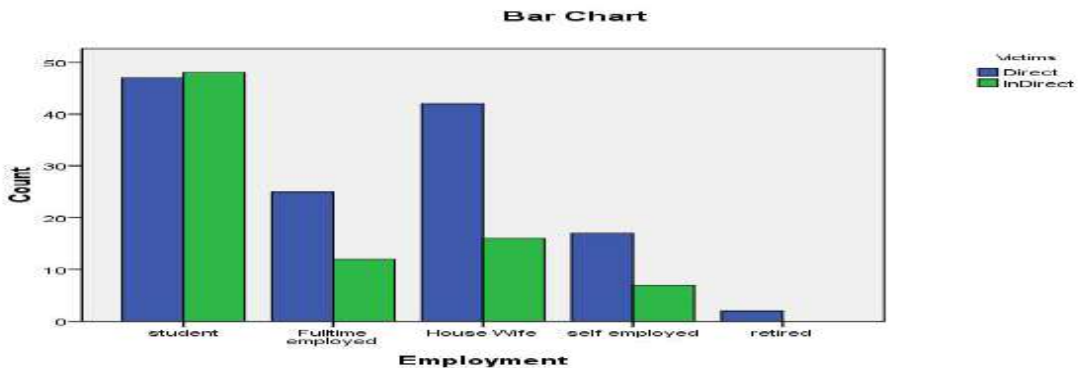
**Table 5: Employment Status among Direct & Indirect victims**

Employment		Victims		Total
		Direct	Indirect	
Student	Count	47	48	95
	Percentage of Overall count	21.8%	22.2%	44.0%
Fulltime Employed	Count	25	12	37
	Percentage of Overall count	11.6%	5.6%	17.1%
Housewife	Count	42	16	58
	Percentage of Overall count	19.4%	7.4%	26.9%
Self-employed	Count	17	7	24
	Percentage of Overall count	7.9%	3.2%	11.1%
Retired	Count	2	0	2
	Percentage of Overall count	.9%	.0%	.9%
Total	Count	133	83	216
	Percentage of Overall count	61.6%	38.4%	100.0%

$\chi^2 (4, 216) 11.439, p < .05$

Findings from the data indicate that a majority of both direct and indirect victims were students, constituting 21.8% and 22.2% of the respective groups. The disparity in employment status between direct and indirect victims was observed to be statistically significant at the alpha level of .05 ( $\chi^2(4, 216) = 11.439, p < .05$ ). Exploring such background information on victims is important in understanding the multiple socioeconomic factors that can influence an individual’s experiences of traumatic events. Such an information also potentially helps to reveal the ability of victims to cope with trauma.

Figure 5



**Analysis of PTSD (Post-Traumatic Stress Disorder)**

**Table 6**  
*Aggregate Group Metrics*

	Victims	N	Mean	SD	Std. Error Mean	<i>t</i>
Total PTSD	Direct	133	24.9023	3.60316	.31243	t (24, 216) 19.553, p < .01
	Indirect	83	13.3012	4.59516	.50438	

The descriptive data depicted in Table 6 highlight a considerable disparity in post-traumatic stress disorder (PTSD) symptoms between direct and indirect victims. Directly affected individuals exhibited significantly high scores across all PTSD components, as can be seen by a substantial difference with  $t(24,216) = 19.553, p < .01$ . In specific, direct victims displayed a mean score of 24.9, with a standard deviation of 3.60, suggesting a pronounced severity of PTSD symptoms within this group. Conversely, indirect victims presented lower levels of PTSD, with a mean score of 13.3012 and a standard deviation of 4.59516, underscoring the lesser psychological impact experienced by this subgroup. This analysis underscores the profound psychological toll of direct exposure to trauma, necessitating targeted interventions to address the heightened psychological distress observed among direct victims compared to their indirectly affected counterparts.

From a theoretical standpoint, these findings align with the stressor-strain model, which posits that exposure to traumatic events generates stressors that precipitate adverse psychological outcomes, such as PTSD symptoms. The more direct the exposure to stressors and the experience of trauma, the more evident PTSD is in victims, and vice versa. This interpretation highlights the distinct challenges faced by direct and indirect victims, acknowledging the significance of the differential impact of victim exposure to a traumatic event. Subsequently, it informs us about the ways interventions may be tailored to address the specific needs of different victim groups.

We tried to explore the severity of PTSD symptoms within the groups further with various metrics, as tabulated in Table 7 below:

**Table 7**  
PTSD Independent sample statistics: Group Statistics (Annex – 3)

Questions	Victims	N	Mean	Std. Deviation	Std. Error Mean	sig
Repeated, disturbing memories, thoughts, or images of a stressful experience from the past?	Direct	133	4.2556	.59866	.05191	t(24, 216) 21.829, p < .01
	Indirect	83	2.2169	.76586	.08406	
Feeling very upset when something reminded you of a stressful experience from the past?	Direct	133	4.1353	.77637	.06732	t(24, 216) 17.813, p < .01
	Indirect	83	2.2169	.76586	.08406	
Avoid activities or situations because they remind you of a stressful experience from the past?	Direct	133	4.1880	.64138	.05561	t(24, 216) 19.555, p < .01
	Indirect	83	2.2169	.76586	.08406	
Feeling distant or cut off from other people?	Direct	133	3.8872	.84972	.07368	t(24, 216) 14.943, p < .01
	Indirect	83	2.2169	.76586	.08406	
Feeling irritable or having angry outbursts?	Direct	133	4.2632	.74767	.06483	t(24, 216) 14.943, p < .01
	Indirect	83	2.2169	.76586	.08406	
Having difficulty concentrating?	Direct	133	4.1729	.83040	.07200	t(24, 216) 17.672, p < .01
	Indirect	83	2.2169	.76586	.08406	

In terms of the occurrence of recurrent and distressing memories and thoughts related to the traumatic event, direct victims demonstrated higher levels of post-traumatic stress disorder (PTSD) compared to indirect victims. In specific, direct victims had a mean score of 4.2556, with a standard deviation of 0.59866, whereas indirect victims recorded a mean score of 2.2169, with a standard deviation of 0.76586. Disparities were found to be statistically significant at the alpha level of .01 ( $t(24, 216) = 21.829, p < .01$ ), highlighting a high prevalence of

PTSD symptoms among direct victims. In an analytical sense, these findings align with the cognitive model of PTSD, which tells us that the prevalence of PTSD symptoms is caused by repeated and distressing memories and thoughts of a traumatic event. Interpreting the varied nature of exposures to trauma becomes important as it provides us with a better understanding of the prevalence of PTSD symptoms.

Likewise, in terms of experiencing distress when reminded of the traumatic event, direct victims exhibited greater levels of post-traumatic stress disorder (PTSD) in contrast to indirect victims. Direct victims experienced intense emotional distress and recorded a mean score of 4.1353, with a standard deviation of 0.77637, while indirect victims encountered fewer direct triggers, resulting in a lesser emotional impact having registered a mean score of 2.2169, with a standard deviation of 0.76586. This discrepancy was statistically significant at the alpha level of .01 ( $t(24, 216) = 17.813.829, p < .01$ ), further corroborating the assertion of heightened PTSD prevalence among direct victims. Analytically, these findings resonate with the emotional processing theory of PTSD, which posits that individuals who directly experience trauma are more likely to develop heightened emotional reactivity to trauma reminders.

Furthermore, concerning the avoidance of activities or situations that evoke memories of the traumatic event, direct victims displayed heightened levels of post-traumatic stress disorder (PTSD) in comparison to indirect victims. Direct victims recorded a mean score of 4.1880, with a standard deviation of 0.64138 highlighting the direction victims actively avoid reminders or situations reminiscent of the trauma to manage distress, while indirect victims obtained a mean score of 2.2169, with a standard deviation of 0.76586, thereby suggesting indirect victims may not exhibit the same degree of avoidance behavior. This contrast was statistically significant at the alpha level of .01 ( $t(24, 216) = 19.555, p < .01$ ), further affirming the presence of increased PTSD symptoms among direct victims. From an analytical standpoint, these findings resonate with the cognitive-behavioral model of PTSD, which suggests that individuals who directly experience trauma are more inclined to engage in avoidance behaviors as a coping mechanism.

Moreover, in terms of experiencing feelings of detachment or isolation from others, direct victims exhibited elevated levels of post-traumatic stress disorder (PTSD) compared to indirect victims. This is clearly reflected in the data, which recorded a mean score of 3.8872 and a standard deviation of 0.84972. At one level, the prevalence of PTSD is associated with this social detachment, but more importantly, the victims find themselves emotionally distant from others. On the other hand, regarding the indirect victims, the data shows a mean score of 2.2169 and a standard deviation of 0.76586, revealing that even though indirect victims were exposed to trauma, they may not experience the same degree of social isolation. From a theoretical perspective, these findings closely relate to the social cognitive model of PTSD, which informs us that direct victims may struggle with feelings of alienation from others due to exposure to such traumatic experiences.

Furthermore, concerning the experiences of direct victims exhibiting irritability, or episodes of angry outbursts, the data analysis recorded a mean score of 4.2632 and a standard deviation of 0.74767, revealing high levels of post-traumatic stress disorder (PTSD) for this category. This result synchronizes well with the arousal model of PTSD, concerning the victims' exposures to traumatic experiences and levels of irritability and angry outbursts. What this also signifies is that direct victims may struggle with regulating their emotions and, in a way, may be more prone to experiencing irritability and angry outbursts when exposed to stressors. The data for indirect victims, with a mean score of 2.2169 and a standard deviation of 0.76586, shows that indirect victims may not experience the same degree of irritability and emotional outbursts. This distinction was statistically significant at the alpha level of .01 ( $t(24, 216) = 14.943, p < .01$ ).

Clearly, the direct victims are the most affected, having also experienced disruptions in cognitive functioning and difficulties with their concentration levels, mostly triggered by repetitive thoughts and PTSD. This is evident in the data for direct victims, recording a mean score of 4.1729 and a standard deviation of 0.83040. Analytically, these findings are consistent with assumptions in the cognitive-behavioral model of PTSD. On the other hand, indirect victims obtained a mean score of 2.2169, with a standard deviation of 0.76586. This distinction was statistically significant at the alpha level of .01 ( $t(24, 216) = 17.672, p < .01$ ).

In summary, the data consistently demonstrates a higher level of PTSD among direct victims, highlighting the intense burden of trauma experienced by this group. Analysis of the data revealed that direct victims experiencing the traumatic event firsthand are more likely to be exposed to triggers that evoke stressors, thus



leading to a higher frequency and intensity of PTSD, and vice versa. Interpreting the varied nature of exposures to trauma becomes important as it provides us with a better understanding of the prevalence of PTSD symptoms.

In the next section, we will explore the pervasive impact of trauma based on gender.

**Table 8**

*Summary Figures of PTSD with Gender Contrast (Appendix – 3)*

Questions	Gender	Mean	Std. Deviation	N
Repeated, disturbing memories, thoughts, or images of a stressful experience from the past?	Male	3.25	1.32	128
	Female	3.7955	0.89	88
	Total	3.4722	1.19657	216
Feeling very upset when something reminded you of a stressful experience from the past?	Male	3.1797	1.30676	128
	Female	3.7159	.98201	88
	Total	3.3981	1.21188	216
Avoid activities or situations because they remind you of a stressful experience from the past?	Male	3.2031	1.28810	128
	Female	3.7614	.92220	88
	Total	3.4306	1.18313	216
Feeling distant or cut off from other people?	Male	3.0078	1.22633	128
	Female	3.5909	.94244	88
	Total	3.2454	1.15335	216
Feeling irritable or having angry outbursts?	Male	3.2578	1.35882	128
	Female	3.7955	.99607	88
	Total	3.4769	1.24990	216
Feeling distant or cut off from other people?	Male	3.2266	1.37018	128
	Female	3.7045	.98447	88
	Total	3.4213	1.24762	216
Total PTSD Score	Male	19.1250	7.61577	128
	Female	22.3636	5.26359	88
	Total	20.4444	6.92932	216

The data presented in Table 8 provides a rather surprising and unexpected insight into the gender dynamics of PTSD symptoms between male and female respondents. Contrary to conventional expectations, there is evidence of a pronounced mental impact on the male respondents, as reflected in the higher scores observed in all metrics given in the table. Further reflections from the data demonstrate that males have been more affected both emotionally and psychologically by the tragic event compared to females. Observations such as these challenge traditional stereotypes related to gender responses to traumatic events. One possible explanation is that males may be more prone to outward displays of emotional stress, leading to the internalization of emotions and resulting in emotional suppression.

Explaining these results in the context of structural violence theory, gender disparities may be understood as reflections of wider systemic inequities and power imbalances within society. In societies, particularly developing countries, where citizens have limited access to resources (North, 1990), males and females generally experience distinct challenges and vulnerabilities, including those associated with gender roles and access to resources. Clearly, there is an influence of gender norms and societal expectations on how individuals cope with trauma. This data, therefore, reflects a microcosm of the broader differential vulnerabilities among males and females prevalent within society. Moreover, disparities in access to healthcare, social support, and economic opportunities may exacerbate the impact of trauma, contributing to higher levels of PTSD. Addressing structural violence requires comprehensive interventions aimed at dismantling discriminatory social and political systems and promoting gender equity across all levels of society. By acknowledging and addressing the underlying structural factors that perpetuate gender disparities in trauma outcomes, policymakers and practitioners can work towards creating more equitable and inclusive systems of support for all survivors of traumatic incidents.

**Table 9***Expectations of Assistance by the two categories of cohorts*

Categories	Gender	Mean	Std. Deviation	N
Governmental, political, economic, and social groups/organizations (political parties, women's groups, village committees, trade union, cooperate-associations, volunteer groups, etc.)	Male	3.3828	1.14411	128
	Female	3.3977	1.22746	88
	Total	3.3889	1.17599	216
Cultural, recreational and leisure groups/organizations (religious, country fellows, alumni, sport, music, dances, crafts, games, etc.)	Male	3.4375	1.17554	128
	Female	3.4091	1.23769	88
	Total	3.4259	1.19848	216

The data presented in Table No. 9 suggests that male respondents who were directly affected by the situation tended to have lower expectations of receiving assistance from various governmental, political, economic, and social entities, such as political parties, women's groups, and trade unions. Specifically, their mean score for expecting help upon request was 2.8143, with a standard deviation of 0.93705, indicating a considerable deviation from the norm. In contrast, female respondents in the same group exhibited a slightly higher mean score of 3.1, with a standard deviation of 1.20632. Among those indirectly affected by the situation, male respondents demonstrated a somewhat higher mean score of 4.0690, albeit still indicating a lower reliance on external assistance, while females in this category scored marginally higher, with a mean of 4.12. The disparities in mean scores between male and female respondents within both the direct and indirect victim groups underscore a noteworthy trend of reduced social capital among male participants in seeking assistance from these societal structures.

Further analysis of the data provides additional insights into the overall patterns of behavior among the respondents, revealing the extent of assistance sought. This is reflected in the total mean score of 3.3828 for male victims across both direct and indirect victim categories, and a standard deviation of 1.14411. Conversely for females, a marginally higher mean scores of 3.3977 was observed, and a standard deviation of 1.22746, indicating that external support systems have been available to both genders, albeit the latter having a relatively greater reliance on those systems. Analyzing from Galtung's structural violence framework, the lower mean scores among males may suggest systemic deprivation of access to essential support systems, reflecting the structural violence inherent in persist within developing countries, reflecting broader gender-based societal norms and power imbalances.

In light of the above observations, a consistent pattern is also reflected in the assistance seeking behavior of respondents from cultural, recreational, and leisure organizations i.e., gender-based differences are noted in social capital allocation. More so, there are apparent differences between the two groups amongst both the direct and indirect categories; in specific, males (direct victims) reported diminished support with a lower mean score of 2.8 and SD=0.94, conversely females recorded a slightly higher mean score of 3.1 and SD of 1.2. On the other hand, the male group in indirect category however suggests a reliance on external assistance, reporting a slightly higher mean score than females.

Expanding upon these findings within the framework of social capital theory, it elucidates the complex dynamics shaping individuals' interactions within their social environment. In developing countries, these interactions are influenced by cultivating interpersonal relationships and utilizing social and political networks, ultimately fostering the development of social capital to access resources. At one level, any gender disparities observed in individuals' assistance-seeking behavior highlight inequities in accessing opportunities within

governmental, social, political, cultural, recreational, and leisure support structures. When analyzed through the lens of Galtung's structural violence theory, these disparities showcase the systemic inequities entrenched within the social environment. However, the specific opportunities available, the impact of traumatic events on gender-specific opportunities, and strategies to access these opportunities are context-specific, necessitating concerted efforts to dismantle such structural barriers.

### Discussion

This study aimed to explore the impact of structural violence, specifically post-9/11 terrorism acts, on the parents of children killed in the attacks on APS School in Peshawar. By using mixed method approaches i.e., statistical analysis and qualitative tools, this study compared the traumatic experiences of direct and indirect victims, where most findings indicate that direct victims suffered a higher level of Post Traumatic Stress Disorder (PTSD). Additionally, and unexpectedly the male victims showed a high prevalence of PTSD. Consequently, the data analysis confirmed this research hypothesis, suggesting that survivors of structural violence, such as terrorist attacks, are susceptible to serious psychological issues like PTSD. The following sections discuss these findings, along with the gender specific impact of this trauma.

#### Psychological Repercussions

An intriguing and concerning observation from this research is that despite the terrorist attack on APS Peshawar occurring in December 2014, the psychological repercussions persisted even after many years, indicating that the intensity of structural violence is correlated with the duration and sustainability of its effects. Our findings align with previous research by García-Vera, and Sanz (2017) which informs us that approximately 18-40% of direct victims develop PTSD symptoms after a terrorist attack. Similarly, the percentage of indirect victims with PTSD symptoms is lower, as observed in our study. Additional research by García-Vera, and Sanz, (2017) suggests that PTSD symptoms in direct victims tend to decrease after one year, while remaining constant in indirect victims. This contrasts with our results, where PTSD symptoms persist in both direct and indirect victims even after a decade. One possible explanation for the prolonged PTSD is that previous studies on PTSD in direct or indirect victims have focused on one-time events, for instance 9/11 attacks (Neria Y, Olfson M, Gameroff MJ et al., 2008), London bombing (Greenberg, 2010) or Madrid attacks (Juan et al., 2006). However, in the case of the APS attack, the victims had already been experiencing terrorism for a decade and continued to face violence even after the event. Thus, the persistence of PTSD is linked to violence entrenched within the social environment, and as such strengthens debates around Galtung's structural violence theory.

Several contributing factors were identified for this prolonged psychological distress: (a) the repetition of memorial events related to the APS attacks, along with government and media publicity, prolonged the recovery process for victims; (b) the lack of immediate provision of psychological interventions, such as trauma therapy, after the incident, further exacerbated mental illness among survivors; (c) a pervasive sense of resentment among victims towards the government due to perceived lack of justice, with a significant majority expressing anger and frustration over unmet expectations from the government.

The results regarding PTSD were thought-provoking, with each component of the tests suggesting avenues for further research, particularly in gender studies, especially regarding the cathartic impact on PTSD among men and women at various levels. The detailed findings of the PTSD components are discussed below.

#### PTSD Components

##### **Repeated, disturbing memories, thoughts, or images of a stressful experience from the past.**

Direct victims exhibited significantly higher levels of PTSD compared to indirect victims. Mothers who lost their children in the terrorist attack often experienced recurrent flashbacks of the traumatic event, which significantly disrupted their daily lives even after many years. These findings highlight a previously unrecognized aspect of PTSD, indicating that its effects can persist for an extended period.

##### **Feeling very upset when something reminded you of a stressful experience from the past.**

Analysis of the data indicates that any reminder of the stressful experience remained deeply distressing for the victims. Media coverage and memorial events often triggered negative emotions for the victims. While parents appreciated the public support, respondents in general felt very upset when reminded of the stressful incident. For many respondents, it felt like experiencing the incident anew each time it was recalled.

**Avoid activities or situations because they remind you of a stressful experience from the past.**

According to the respondents' responses, victims tended to avoid activities or situations that would trigger a grief response in them, with direct victims being more easily triggered than indirect victims. Consequently, many parents refrain from accepting invitations to government or public events commemorating the APS Peshawar incident to avoid experiencing flashbacks. This component also revealed that parents actively avoid media coverage during December, the month in which the incident occurred, to mitigate stress.

**Feeling distant or cut off from other people.**

During the fieldwork, it was common to observe victims becoming distant and reducing their contact with others. Many direct victims actively avoided public gatherings, preferring solitude to situations where negative emotions could be triggered. It was discovered that victims refrained from attending joyous events with family or in social circles and frequently made excuses, citing the potential exacerbation of grief and feelings of inadequacy and misfortune. Some victims expressed during interviews that they felt irritated and lacked motivation to participate in social gatherings.

**Feeling irritable or having angry outbursts.**

Feeling irritable or experiencing angry outbursts was also common among both categories of victims, although direct victims tended to experience more frequent outbursts. They expressed frustration over the incident and struggled to come to terms with their loss. Additionally, they felt that justice was not being served, as they demanded further investigations and trials against the culprits. These factors heightened their irritability and led to frequent angry outbursts.

**Having difficulty concentrating**

The findings indicated that difficulty concentrating was significantly more prevalent among direct victims of the APS Peshawar attack. Some young victims who directly experienced trauma struggled to concentrate on their academic activities or tasks, leading some to discontinue their education. Many victims also exhibited memory-related problems, with some parents of deceased students experiencing memory loss as a result of prolonged trauma.

**Gender-Wise Comparison of PTSD**

This study explored the various ways parents managed trauma. The gender-focused results present intriguing findings, particularly notable is the discovery that male respondents who directly experienced trauma exhibited more PTSD symptoms than female respondents. This is in contradiction to existing research showcasing women in general suffer more from PTSD (Christiansen & Elklit, 2008; Zlotnik, et al., 2006), with Ditlevsen and Elklit (2010) going to extent and asserting that women have more than twice the prevalence of PTSD compared to men. Further, examining gender differences in the context of their life histories, existing research indicates that PTSD prevalence varies with age, with men most likely to exhibit the highest levels of symptoms in their early 40s. This aligns with our findings, as most male parents in our sample were in this age range.

More so, these findings contrast with conventional expectations, especially in patriarchal societies, where one might anticipate females to experience higher levels of PTSD. Our data indicating higher PTSD rates among men is attributed to the dynamics of patriarchal society. In such societies, masculinity is encouraged, discouraging male individuals from being vulnerable and expressing grief, leading to the suppression of negative emotions. Such a practice is harmful to men and affected them psychologically, compared to females who were found to have easily expressed their emotions, hence releasing the stress.

These interesting findings highlight a need for a renewed focus on the complex interplay between gender norms and the coping mechanisms of individuals in response to traumatic events. Additionally, this research emphasizes the necessity of gender-sensitive approaches and how the impact of structural violence is generally perceived in gender studies.

**Concentration level**

In this research, we have used demographic variables such as: age, gender, education, income, and marital status of the victims. An interesting result was observed: older women direct victims (> 50) demonstrated a stable concentration level compared to the young female victims (mothers of the APS martyrs). This contrasts earlier

studies indicating that women have the highest prevalence of PTSD occurring in their early 50s (Ditlevsen & Elklit, 2010). Further inquiry into the results uncovered that accumulated experiences in coping with stressors influenced lifestyle choices. In this respect, medical research already informs us about a person's ability to sustain attention seems to get better over time (Fortenbaugh et al., 2015). The findings gave a thought-provoking gender comparison, challenging the stereotype about men being inherently strong with a stable mental health.

### **Post-Violence Social Change**

Social change in post-conflict societies is often viewed as the result of Western-inspired 'institutional re-arrangements' that shift traditional local cultures towards more modern ones (Castles, 2010). In this transformed environment, political and economic rights are redefined, enabling marginalized groups, including women, to gain more opportunities. Through this perspective, citizen rights and opportunities are shaped from a top-down 'structural' approach (Putnam, 1995; Fukuyama, 1999). This approach is problematic in conflict-affected societies, where changes are also driven by unforeseen events such as terrorist attacks, which indirectly manifest violence and have unintended consequences. Rather a 'bottom up' approach. One significant consequence is the accumulation of social capital by marginalized groups (Shah, 2018; Toyon, 2022). This research observed a consistent pattern in this context.

The most significant social change observed is the enhanced social capital of women through their increased interaction with other women via networks, civil society, and media channels. Such heightened interaction manifested itself in different forms, including women participation in protests, press conferences, and attending government events related to victims of the APS Peshawar tragedy. This had led women handle trauma better than their male counterparts. Most of the women, predominately housewives, were thus exposed to a different social environment - their pre-incident interaction was restricted primarily to family and friends' circles, whereas the post-incident engagements rendered these women more socially active, reflected in their public speeches and by facing media cameras during their interviews. The primary data results underscore such social transformation as an unintended outcome of structural violence.

### **Contributions of this Research**

This paper contributes to theoretical debates surrounding structural violence theory and enhances micro-level analysis by examining the gender perspective of structural violence. The findings align with Galtung's theory of structural violence, emphasizing indirect forms of violence. While Galtung's concepts operate at a macro level, this study delves into micro-level structures, revealing demographic variations in the intensity of structural violence's psychological impact. Further research is warranted to explore these micro-level impacts across different societal segments.

The empirical contribution to the theory of structural violence, based on statistical analysis of PTSD among victims at the micro-level, is elaborated below:

- Male victims exhibit a higher level of PTSD compared to female victims.
- Unintended consequences of structural violence are observed, benefiting women by fostering increased social connectivity through triggered social change among female victims.

### **Conclusion**

The War on Terror had significant repercussions for the people of Pakistan, particularly in Khyber Pakhtunkhwa. While scholarly attention predominantly focused on the war's impact from geopolitical or governance perspectives, there was a notable gap in empirically exploring the psychological effects on trauma victims of terrorist attacks, especially in Peshawar district, KPK. This research extends the theoretical concepts of Galtung's (1969) Structural Violence Theory, which elucidates violence's manifestation through indirect means, predominantly via structures and institutions, significantly impacting individuals' overall well-being. The study investigates the psychological repercussions of post-9/11 terrorism in Pakistan, focusing on the APS Peshawar terrorist incident as a case study to evaluate Post-Traumatic Stress Disorder (PTSD) levels among victims. Hypothesizing higher PTSD levels among directly exposed victims compared to indirectly exposed ones, the study developed an interview scale based on DSM-5 criteria alongside demographic questionnaires for assessment. The findings support our hypothesis, revealing higher PTSD levels among direct victims, notably with men exhibiting higher PTSD rates than women. These results carry implications for policy frameworks and future research endeavors, emphasizing that seeking social and professional support is helpful after trauma, lack of them being the

most consistent predictor of negative outcome. It is seen that men are often reluctant to expose their vulnerable self and prefer to suppress their negative emotions. Such a practice is harmful to men. Keeping these finding in view, this research emphasizes the necessity of gender-sensitive approaches in psychological interventions in future.

This study addressed this gap by assessing PTSD levels in trauma victims and developing scales that may aid other PTSD sufferers.

### Future Directions in the Study

Further exploration into the micro-level manifestation and representation of structural violence, particularly in conflict contexts, is essential due to its profound social, psychological, economic, and political ramifications. More research is needed to ascertain whether the discrepancies in social capital between genders arise from institutional biases, differences in individual capability to access limited resources, cultural norms, or other social factors in order to develop effective policy interventions. These implications underscore the urgency for additional research and call for policymakers' attention toward policy formulation and reforms. Future studies should leverage the findings of this research and investigate various avenues for addressing psychological repercussions. It is recommended to explore the relationship of pediatric PTSD and their specific developmental stages of physical and mental development as limited research is available in this area. Additionally, renewed focus on gender research is imperative, particularly concerning perceptions of men's mental health and their role in gender empowerment efforts.

### Limitations

- Among the limitations encountered in this research, one significant issue was the lack of security.
- The global COVID-19 pandemic also presented a barrier, resulting in time loss during lockdown periods.
- Research on structural violence theory primarily focuses on macro-level concepts, indicating a need for more micro-level understanding. Consequently, additional studies within Pakistan would enhance our comprehension of the subject.
- There is a paucity of research on structural violence and its gender-related repercussions in Pakistan, hindering the establishment of a foundational understanding of gender impacts.
- The age range of participants in this study predominantly fell between 20 and 65 years, raising questions about the applicability of results to populations under 20 and over 65 due to their lack of representation.

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### **Annex-1: Demographic Questionnaire:**

#### **Age**

- Below 20
- 20-30
- 30-40
- 40-50
- Over 50

#### **Gender**

- Female
- Male
- Other

#### **Location**

- Peshawar District
- Outside Peshawar District

#### **Religion:**

- Muslim
- Christian
- Sikh
- Hindu
- Others

#### **Marital Status**

- Unmarried
- Married
- Single
- Divorced
- Widow

#### **Education**

- No Education
- Matric
- Bachelors



- Masters
- Other

### Employment

- Student
- Unemployed
- Full time employed
- Part Time employed
- Self Employed
- Retired
- Unable to work

### House Hold Income

- Below PKR 20,000/Month (poverty line indicator)
- Above PKR 20,000/Month (no poverty line indicator)

### Annex-2: Assessment Test PTSD (Post-Traumatic Stress Disorder)

*This interactive PTSD Test is based upon the DSM-5 criteria for PTSD and has been structured in a manner to allow for a short and simple self-assessment for large population sampling.*

Complete the following to get an assessment that you are showing signs of post-traumatic stress disorder. All answers supplied are kept strictly confidential.

- **Repeated, disturbing memories, thoughts, or images of a stressful experience from the past?**

Never  
Rarely  
Sometimes  
Often  
Very Often

- **Feeling very upset when something reminded you of a stressful experience from the past?**

Never  
Rarely  
Sometimes  
Often  
Very Often

- **Avoid activities or situations because they remind you of a stressful experience from the past?**

Never  
Rarely  
Sometimes  
Often  
Very Often

- **Feeling distant or cut off from other people?**

Never  
Rarely  
Sometimes  
Often  
Very Often

- **Feeling irritable or having angry outbursts?**

Never  
Rarely  
Sometimes  
Often

Very Often

- **Having difficulty concentrating?**

Never

Rarely

Sometimes

Often

Very Often

*The test is based on DSM-5 and structured by Dr. Arnold Lieber, MD, and the tests are intended to help patients identify if they might benefit from further treatment.*

**Annex-3:**

**Assessment Test PTSD (Post-Traumatic Stress Disorder)**

Questions	Never 0	Rarely 1	Sometimes 2	Often 3	Very Often 4	Score
Repeated, disturbing memories, thoughts, or images of a stressful experience from the past?						
Feeling very upset when something reminded you of a stressful experience from the past?						
Avoid activities or situations because they remind you of a stressful experience from the past?						
Feeling distant or cut off from other people?						
Feeling irritable or having angry outbursts?						
Having difficulty concentrating?						
<b>Total Score</b>						

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