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Edited by Nadeem Ul Haque & Faheem Jehangir Khan

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PART I

EDUCATION & TECHNOLOGY

Research Papers

FACTORS ASSOCIATED WITH SCHOOL DROPOUT IN PAKISTAN: AN ASSESSMENT USING SURVIVAL ANALYSIS

Alvina Sabah Idrees and Saima Sarwar

ABSTRACT

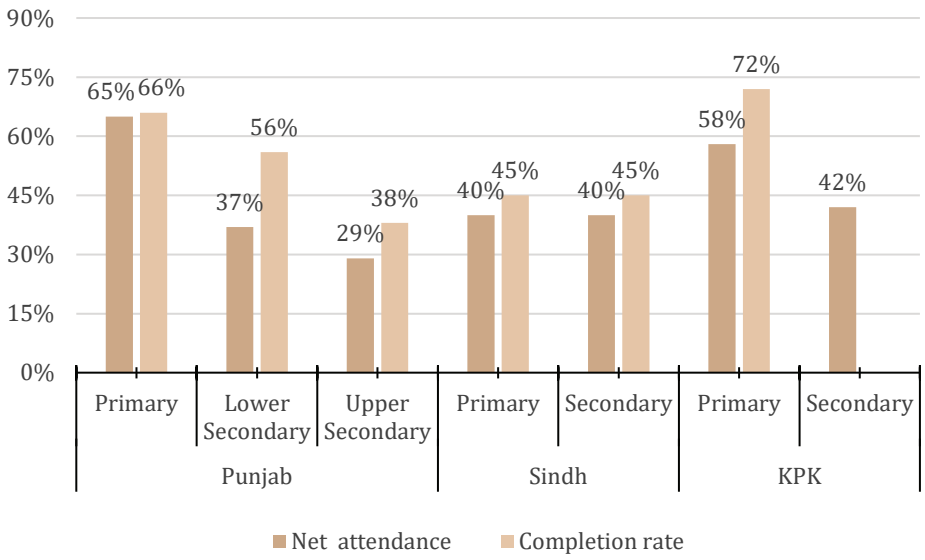
A substantially low school completion rate is a major impediment in attaining Sustainable Development Goal 4 (SDG 4) of inclusive and equitable education for all. Therefore, education policy must introduce targeted instruments for improvement in terms of school completion rate and successful transition to a higher level of education. The study covered Punjab and Sindh and focused on examining the factors associated with school dropouts in Pakistan. The first part of the study is based on micro-level analysis by employing the Cox proportional hazard model to predict the risk of dropping out of school. The study developed a framework of analysis by focusing on two aspects, i.e., the conducive environment at the household level representing the demand-side factors and the enabling environment at the community level reflecting the supply-side factors. The demand-side factors included economic barriers, societal barriers, and personal disabilities. The supply-side factors included schooling attributes, early childhood readiness and beyond-primary readiness. The association of these factors with the risk of early dropout from school was examined after controlling for regional differences, gender, and poverty. The second part of this study undertook a comparative descriptive analysis across different divisions of Punjab and Sindh. The study indicates that the contributing factors for early-stage school dropout were child labour and poverty. The relative parity risks were also found to be greater in those regions that have a higher incidence of poverty. The cognitive and functional difficulties were also found to be causing hindrances in a successful transition to a higher level of schooling. The teaching quality was captured by including input and output measures. The input measures included regularity in homework, teacher's feedback, presence of a school governing body and active PTA/SMC, and the output indicator was measured as district-level learning scores. All these factors were found to have a significant association in reducing school dropout. The role of early childhood readiness (ECE) was also examined, which had a significant impact in reducing school dropouts except in the case of Punjab the hazard ratio for the current year's ECE was higher due to large dropouts at the Katchi/pre-school level. The study also observed that better school infrastructure, school governing bodies, parent-teacher associations, improved school learning, education performance, readiness toward higher-level schooling as well as higher-level school availability considerably reduce the risk of school dropouts. The study recommends that education policy must be structured according to regional and local contexts keeping in view the needs and requirements of that region and locale.

1. INTRODUCTION

The underlying principle of Sustainable Development Goal 4 (SDG4) is universal and equitable access to education with an active role of the state in service provision and regulatory standards. SDG 4 targets free publicly funded education up to grade 12 and an effective learning environment for skill development and increased literacy. However, the school dropout ratio tends to persist in Pakistan, which is a major hindrance to the full realisation of SDG 4. After the 18th Amendment, provinces have been granted legislative and financial autonomy in many social sectors including health and education. According to Article 25A, the State is obligated to provide free and compulsory education to all (children between the ages of 5 and 16 years). The Article states: *"The State shall provide free and compulsory education to all children of the age of five to sixteen years in such a manner as may be determined by law."*

The school-level education is fully devolved to the provinces but still, the performance is not satisfactory to meet the SDG 4 targets. The percentage of out-of-school children has remained stagnant during the last decade and there has not been much improvement in student retention at primary and secondary levels. Many studies use school enrolment as a core indicator to analyse education performance in terms of education access. However, the school dropout rate is an important issue in our education system which needs to be tackled by overcoming the causal factors associated with it. The education performance as net attendance and completion rate is provided in Figure 1.

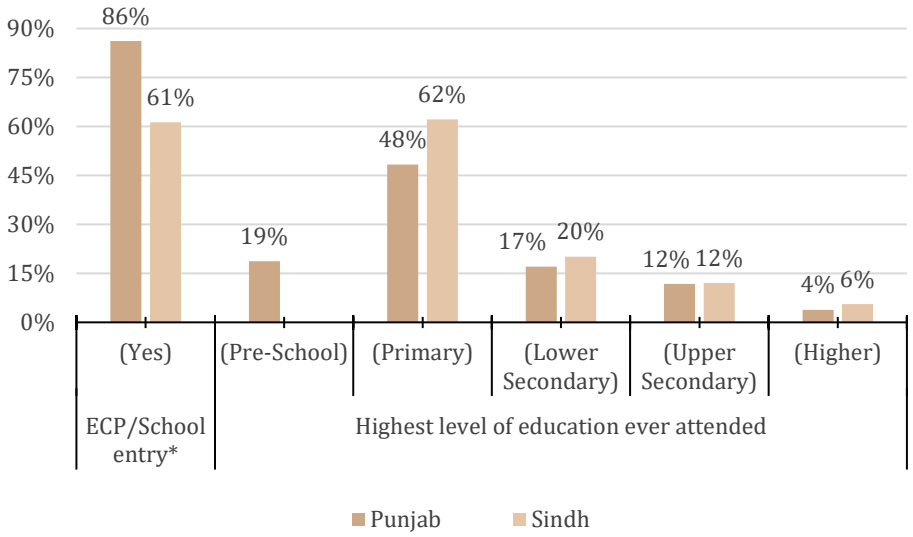
Figure 1: Net Attendance and Completion Rate of School Education



Notes: Data for Balochistan was not available at the time of analysis. The completion rate at the secondary level for Sindh is not available.
Sources: Authors' computations based on Government of the Punjab (2018), Government of Sindh (2020) and Government of Khyber Pakhtunkhwa. (2021).

Figure 2 shows a comparison of Punjab and Sindh in terms of entry to early childhood programmes and the highest level of schooling by attendance at different education levels. Attendance in early childhood programmes is highest in Punjab, whereas school attendance in primary, lower secondary, and higher levels is comparatively better in Sindh.

Figure 2: School Entry and Attendance by Education Level



*Note: ECP means Early Childhood Programme; *refers to the children who have ever attended ECP/pre-school or ever enrolled in a school.*
Sources: Source: Authors' computations based on Government of the Punjab (2018) and Government of Sindh (2020).

Pakistan, like many other developing countries, has a high rate of out-of-school children. Although a major part of it refers to children who never attended school, it also includes a considerable proportion of children who fail to complete a certain minimum credential and leave the education. This category of out-of-school children refers to school dropouts and is the main variable of the present study. Since keeping the children in school is as important as getting them to the school in the first place, student retention in school is necessary to achieve SDG 4 for achieving universal education. The bill on the "Right to Free and Compulsory Education" was also been passed by the National Assembly in 2012.

The National Education Policy 2017 was introduced after the 18th Amendment and one of its main targets is to reduce the school dropout rate. In the light of the state's obligation of free education provision under Article 25A as mentioned above, the access to education is less of a problem in comparison to the inability of student retention. Many factors may contribute to the low school survival rate in Pakistan such as teacher absenteeism and lack of commitment, harsh treatment, lack of facilities, lack of parental involvement, child's abilities, and child's involvement in paid and unpaid work. Therefore, there is a need to identify such factors and their likely impact on increasing the risk of a child dropping out of school.

The bottom line of this research is that despite granting autonomy to provinces in running school education (after the 18th Amendment) and the state's obligation to free basic education, the track record has not been very impressive. School participation is an important aspect of education outcome, but what is more important is to examine the factors contextual to school retention, especially towards higher levels of education. The persistence of school dropouts acts as a hurdle in achieving SDG 4's objective of universal education for all. Therefore, there is a need to fine-tune the education policy by ascertaining legal and administrative actions towards student retention in schools. For this purpose, there is a need to determine the risk factors that must be contained through strict policy actions and awareness. Since getting a high enrolment is a necessary but not sufficient condition to improve education outcomes, improvement needs to be made in terms of completion and successful transition to a higher level of education.

This report comprised three main research questions, namely:

i. What are the individual, collective and social factors that are a cause of concern for early dropout from schools at the household level?

ii. Do education performance, readiness and schooling attributes matter in determining school dropouts?

iii. What differences are observed across Punjab and Sindh?

The answers to these questions are explored by calculating hazard ratios using MICS6 data on children between the ages of 5 to 17 years. Furthermore, the narrative is developed by undertaking situational analysis using data from the Public and Private School Census and Alif Ailaan Scores.

2. LITERATURE REVIEW

Plank et al. (2008) applied the Cox hazard model to the US National Longitudinal Survey of Youth (NLSY) and found that parents' education, urban residence, and math knowledge increased the chance of school dropout, whereas career and technical courses had a U-shaped relationship with age. Valdivieso (2015) and Boualaphet & Goto (2020) employed non-parametric and semi-parametric survival analyses on Peru's Household and Child Survey, and Lao People's Democratic Republic Expenditure and Cluster Survey, respectively. Along with the household's socioeconomic status and the child's traits (ethnicity, vocabulary, stunting, life satisfaction), they found that gender, the mother's education, and perceived returns from schooling played a significant role in determining school dropout. Mikkonen et al. (2018) applied Poisson regression and found that mental disorder was a major contributory factor in school dropouts followed by physical injuries. No et al. (2016) examined that single parents and late schooling had a significant impact on school dropout, whereas child labour, economic status, and parents' aspiration showed insignificant effects. Cox regression survival analysis was applied to rural public school data collected from the Kampong Cham province of Cambodia.

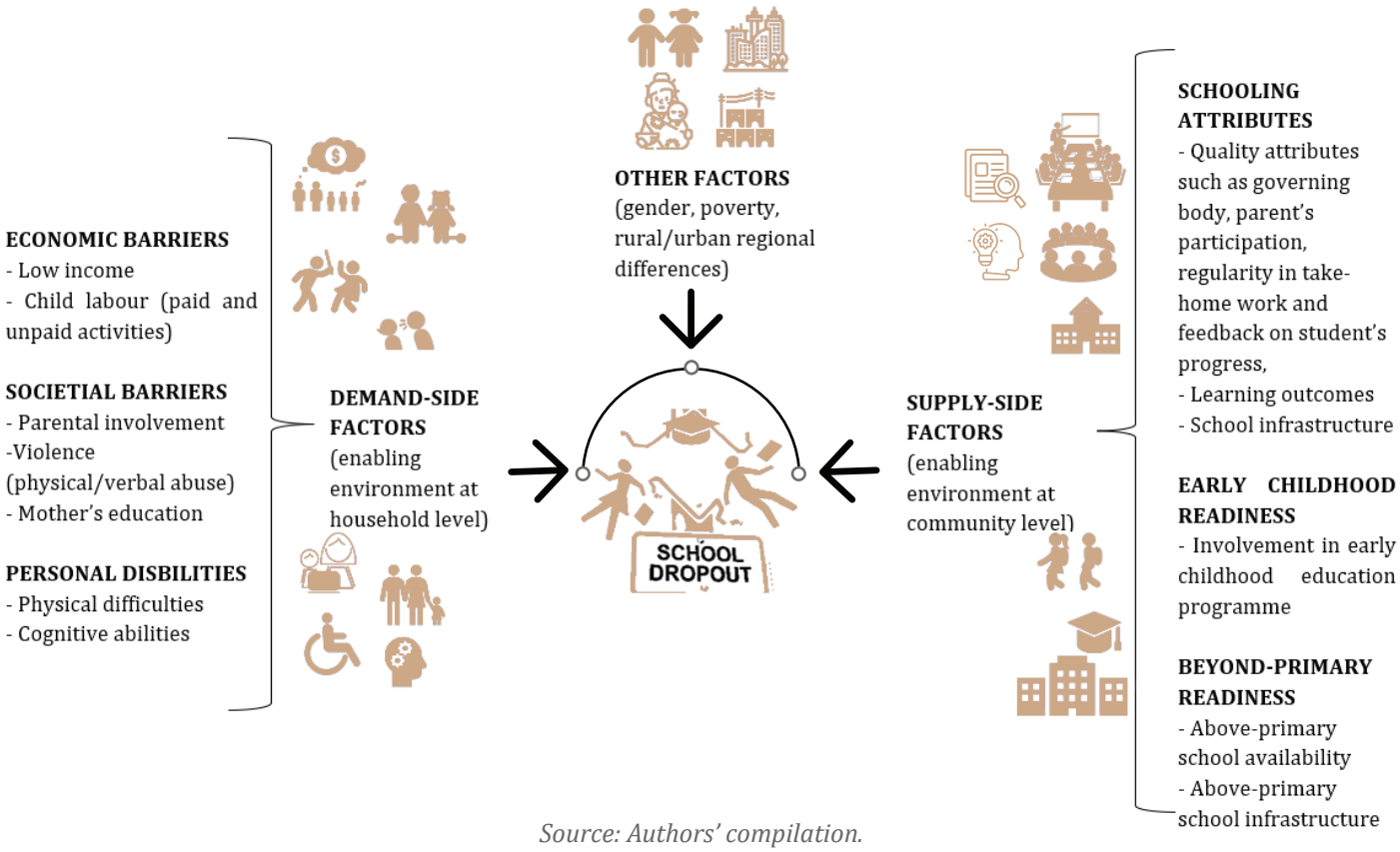
Using multinomial logistic regression on India's National Family Health Survey (Gouda & Sekher, 2014) and Nepal's Multiple Indicator Cluster Survey (Sekine & Hodgkin, 2017), the studies found that family size, parent's education and work status, the standard of living, mass media exposure, and child marriage had a significant role in school dropout. By applying a linear regression on Gender and Adolescence Global Evidence Survey of Ethiopia (Woldehanna et al., 2021), the Pakistan Social and Living Standards Measurement Survey (Satti & Jamil, 2021), and longitudinal data of rural Honduras (Murphy-Graham et al., 2021), it was concluded that reduced child work, absence of violence, decision-making power, parents' education, reduced travel distance, and improved economic conditions had a positive impact on education attainment. On the other hand, poverty, low academic achievement, and lack of appropriate opportunities associated with higher education were the main causes of school dropouts.

The qualitative analysis by Mughal & Aldridge (2017), Shah et al. (2019) and Mughal (2020) observed that poverty, child labour, parent illiteracy, large family size, distance, school and teaching quality, and poor academic performance were the major determinants of school dropouts. Farah & Upadhyay (2017) and Pezzulo et al. (2022) applied the logistic regression model to the demographic health surveys of Bangladesh and Tanzania, respectively. The analysis found that household size and income, gender, poverty, travel costs, and parents' education were significant determinants of school dropout. On the other hand, a positive relationship between teachers and peers reduced the risk of school dropout as found by Choe (2021). The study used the Multicultural Adolescents Panel Data by the National Youth Policy Institute of South Korea. Marlow & Rehman (2021) undertook a quantitative synthesis of 33 studies and concluded that parental support and higher expectations reduced while harsh treatment and conflict increased the likelihood of student absenteeism and dropout.

3. FRAMEWORK

The theoretical framework of our analysis is based on the factors segregated into the demand and supply side factors, and control variables. The analysis is based on household data (Government of the Punjab, 2018; Government of Sindh, 2020) and data extracted from the school census (Alif Ailaan, 2017). The demand side factors are further categorised into economic barriers, societal barriers, and personal disabilities. These are the impediments faced at the household level which may hinder continuing schooling. On the other hand, supply-side factors include schooling attributes that reflect the quality of education as experienced by current students as well as the readiness of the education system in terms of early education and beyond primary readiness, both in terms of availability and capacity. The control variables include gender differences, the incidence of poverty in different regions, and rural-urban differences. The framework is illustrated in Figure 3.

Figure 3: Schematic Representation of the Framework on Factors Associated with School Dropout



Source: Authors' compilation.

4. METHODOLOGY

The current study utilised the Round 6 database of the Multiple Indicators Cluster Survey (MICS). The cohort used for analysis is children between the ages of 5 to 17 years who have ever attended school.[1] The dependent variable is the duration it takes to drop out of the highest level of grade ever attended, i.e., a student has attended the school but did not complete a particular grade. The levels of education are divided into preschool, primary, secondary, and higher levels. The analysis is done for Punjab and Sindh.[2] In addition, the study further

[1] The school-going age, as defined under Article 25A, is 5 to 16 years.

[2] KPK and Balochistan are not included in the current study due to data limitations. At the time of analysis, the latest data for Balochistan was not available as the latest round available was round 4. The data on KPK for MICS6 does not include the cohort aged 5 to 17 years, which is used for analysis in the current paper.

contributes to the analysis by adding comparative descriptive analysis across different divisions of Punjab and Sindh. The analysis is supported by data from various secondary data sources such as Alif Ailaan Reports, Punjab School Census, Punjab Economic Profile, and Sindh Education Statistics.

The out-of-school children consist of two categories:

1. Who never entered school (category 1)

2. Who dropped out of school (category 2)

This study focuses on category 2 of the "out-of-school" children, i.e., the school dropouts. The existing literature using econometric approaches to examine school dropouts has used multinomial logistic regression, logit model, beta regression, linear OLS regression, Poisson regression model, two-level random intercept logistic regression model along with qualitative approach using systematic meta-analysis, and structured questionnaires to determine perceptions on school dropouts (Gouda & Sekher, 2014; Farah & Upadhyay, 2017; Sekine & Hodgkin, 2017; Mughal & Aldridge, 2017; Mikkonen et al., , 2018; Shah et al., 2019; Mughal, 2020; Satti & Jamil, 2021; Woldehanna et al., 2021; Murphy-Graham et al., 2021; Marlow & Rehman, 2021; Pezzulo et al. 2022).

Since the response variable is binary, i.e., a child completes or does not complete the grade (categorised as yes or no), linear regression cannot be applied and logistic regression is more appropriate. However, a major drawback of logistic regression is that it does not handle the censored data, i.e., the children who do not drop out of school at time t in comparison to those who dropped out at time t. Those who do not drop out are defined as censored. Tobit regression is a linear regression that handles the censored data but uses the assumption of normal distribution. On the other hand, the survival analysis, such as the Cox proportional hazard model does not require the underlying assumption of normal distribution. Since the response variable in the current scenario is binary, rarely a binary variable is normally distributed. Another drawback of Tobit regression is that it does not handle cases when there is a different time length of event to occur, which is school dropout in the current case. Using the Tobit regression model, without treating the different lengths of time, all cases are mistakenly treated as the same, i.e., ignoring the differences among individuals who drop out at different levels/grades of schooling. Therefore, such estimates might be misleading as it might not be useful to interpret how dropping out of school at a later time is different from dropping out of school dropout at an earlier time. Thus, there is a loss of precision due to a huge loss of information.

Therefore, the estimation technique used in the current study is survival analysis. The survival analysis estimates the probability of an event, i.e., school dropout, by considering many different times that event occurs. Thus, the prediction of the response variable (school dropout) under survival analysis includes the time to exposed risk (school dropout) along with other explanatory variables. This provides a better analysis of examining the risk factors and the extent to which these factors influence the event to occur, i.e., school dropout. The survival analysis retains the information on both categories, i.e., who dropped out from school and who completed a grade (censored).

The existing literature that has utilised the survival analysis on school dropouts includes Plank et al. (2008), Valdivieso (2015), No et al. (2016), and Boualaphet & Goto (2020). A benefit of survival analysis is that it enables us to capture the dynamic nature of an event or incident. The incident in the current case is non-completion of the grade in which a student was enrolled. The occurrence of an event is identified by two or more explanatory variables and the model predicts the risk of the event occurring (i.e., school dropout or incomplete grade) or its non-occurrence (i.e., a child does not drop out of school and completes the grade). The survival analysis helps to locate the risk factors (or stimulants) that significantly determine (or lessen) the dropout rate at different levels of schooling. There are three main aspects of survival analysis:

i. The response variable is the time for an event to occur, i.e., a student drops out of school.

ii. The censored subjects, i.e., children who did not drop out of school till the highest level of grade completion. This is called a right-censored observation.

iii. Predictor variables that will affect the occurrence of an event.

There are two functional components of survival analysis. First is the survival function, which represents the survival probability, i.e., the school dropout, has not occurred at time 't', and second is the hazard function, which provides the possibility that dropout will occur at time 't'. Two main approaches to survival analysis are widely used in literature. The non-parametric approach (Kaplan-Meier survival analysis) is a univariate analysis, which provides descriptive statistics of survival data. This method represents the probability of an event in terms of survival curves. The survival probability is calculated as St = (1- di(t)/ni(t)), where di is the number of school dropouts by the time 't' and ni is the number of individuals who completed the grade (did not drop out) and not the censored subjects. The second approach is the Cox Proportional Hazard Model, which is a semi-parametric approach. This method includes more than one predictor variable and estimates the probability of an event. The general representation of the survival function is given as-:

$$\lambda_{i(t)} = \lambda_{0(t)}\ e^{xi(t)\beta)} \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

In Equation (1), $\lambda_{i(t)}$ is the corresponding hazard of dropout to individual 'i' for the time interval 't', $\lambda_{0(t)}$ is the baseline hazard for the time interval 't', and $e^{xi(t)\beta}$ is the relative risk of dropout for an individual with predictor x_i in time 't' compared to the baseline hazard/risk. The outcome variable is called the hazard ratio / parity risk of dropping out of school. It is calculated by dividing the regression coefficient of any category by the coefficient of the reference category. The representation of the hazard function is given as follows:

$$\frac{\lambda_{i(t)}}{\lambda_{j(t)}} = \frac{\lambda_{0(t)}\, e^{xi(t)\beta}}{\lambda_{0(t)}\, e^{xj(t)\beta}} = \frac{e^{xi(t)\beta}}{e^{xj(t)\beta}} \ldots\ldots\ldots\ldots\ldots (2)$$

The legal and constitutional provision binds the state to provide free education to all between the ages of 5 to 16 years.[3] The core objective of National Education Policy 2017[4] is to set up some minimum standards for quality improvement in education and access to education for all. The major efforts to be made towards universal education are student retention by overcoming school dropouts and avoiding repetition. Despite the supply-side efforts by the government, the out-of-school children (consisting of two categories, i.e., the ones who never entered school and others who dropped out of school) are major impediments to reaching the goal of education for all. The study on school dropouts is predominantly a demand-side analysis by considering a child's personal traits, social skills, and household characteristics. On the other hand, the supply-side factors majorly affect school entry. However, some of the supply-side factors that may affect school dropouts (or school retention) are early childhood education and schooling attributes. Both these factors are also included in the policy objectives of National Education Policy 2017. All these factors (the relevant supply- and demand-side factors) are evaluated to determine their significant impact towards school dropouts. The analysis will provide some answers for a policy-oriented approach to meet the SDG 4 target of universal education. Table 1 provides the variable selection and description.

[3] Article 25A binds the right to education and Article 38(d) binds education as a basic necessity of life along with medical care. The bill on the "Right to Free and Compulsory Education" was also passed by the National Assembly in 2012.

[4] After the 18th Amendment, the school education policy and planning became a provincial jurisdiction. However, the federating units continue to look up to the centre in terms of following the National Education Policy 2017 and implementation of the Single National Curriculum.

Table 1: Identification and Description of Variables

Variable	**MICS Indicators and Measurement**
Response Variable	
Time to event	A new variable is generated to take account of the time factor which is a necessary element in survival analysis, i.e., how many years it takes a student to drop out of school. The MICS dataset identifies five levels of schooling, which are preschool (*Katchi*), primary, lower secondary /middle, upper secondary, and higher. These education levels are expanded over 12 years where 0 is considered as a reference for pre-school/*Katchi*. The primary level consists of 5 years, lower secondary/middle is 3 years, upper secondary is 2 years, and higher is 2 years. Hence, for survival analysis, a time factor variable is generated by converting the education grades at each school level into a continuous time factor from 1 to 12 years. For example, a student who is enrolled in *Katchi* and does not complete level 1 of primary then he is considered to drop out in the first year of schooling.
Predictor Variables	
Income barriers	1. This indicator is measured by the Combined Wealth Index Score. The MICS dataset contains a composite indicator of wealth based on weighted scores of different items to reflect a household's wealth characteristics such as ownership of consumer goods, water and sanitation and household dwelling. 2. Besides using the overall wealth index score, the study also utilises the different wealth quintiles as described in the MICS data. These wealth quintiles rank the household in five parts from lowest to highest, such as poorest (lowest quintile), second, middle, fourth, and richest (highest quintile). This ranking assumes long-term ownership of assets and is not based on current income/expenditure levels.
Child labour	This dimension includes paid and non-paid activities as measured in MICS data. These are as follows: 1) The indicator of paid work is measured as being engaged in any activity for income. 2) The indicator of unpaid work is measured as being involved in family business for providing a helping hand. 3) There is a possibility that the child may not be involved in labour work but engaged in household activities. The MICS data has seven indicators of household chores, i.e., shopping, cooking, dishwashing/cleaning, washing clothes/ironing, caring for children, caring for the old/sick, or any other household tasks. A cumulative measure is taken based on child involvement in one or more household activities to measure the overall engagement in household chores.
Violence	The presence of violence is captured under the category of child discipline as explained below: 1) A composite indicator is generated to capture verbal abuse such as shouting/screaming/yelling at the child, or name-calling such as dumb, lazy or any other abusive language. 2) A composite indicator is generated to capture physical abuse such as hit/slapped/spanked on the bottom with the bare hand, hit/slapped on the face or hit/slapped on the arm, hand, or leg.

Child functioning	A composite indicator is formulated to measure physical difficulties, i.e., whether a child faces some difficulty, a lot of difficulty, or complete difficulty in the following aspects: 1) Difficulty in self-care, such as dressing or feeding. 2) Difficulty in learning things in comparison to other children of the same age. 3) Difficulty in remembering things in comparison to other children of the same age. 4) Difficulty in concentrating on activities that he/she gets involved in.
Cognitive abilities	This variable captures the foundational learning skills of a child such as: 1) The child's ability to read is categorised as correct reading, incorrect reading, and inability to read. 2) The child's comprehension skill is the cognitive attribute of understanding, which is measured by generating a single response variable by adding the correct responses to a set of five comprehension questions. A higher value indicates improved cognitive skills. 3) Another indicator of cognitive skills is the numeric skills. A single response variable is generated by adding the correct responses to a set of five questions.
Parental Involvement	This variable reflects parental involvement specifically in a child's education such as: 1) Parents visit the school to attend some school events, such as sports/celebrations. 2) Parents visit the school to discuss the child's progress with the teacher.
Mother's education	The five levels of mother's education are: uneducated/or pre-primary, primary, middle, secondary and higher.
Schooling attributes	The indicator considers the presence or absence of the following attributes of schooling: 1) Presence of a school governing body (such as PTA/SMC, or school council) in which parents can participate. 2) Regular participation of parents in school meetings. 3) School assigns regular homework to the students. 4) School shares regular reports on student's progress.
Readiness	The indicator measures the involvement of a child in attending the early childhood programme such as *Katchi* or preschool in the current year or the previous year.
Region	Two separate indicators are used as explained below: 1) The first indicator separates the area among divisions, i.e., nine divisions of Punjab (Rawalpindi, Lahore, Bahawalpur, Sargodha, Faisalabad, Sahiwal, Multan, D.G Khan and Gujranwala) and six divisions of Sindh (Sukkur, Karachi, Shaheed Benazirabad, Larkana, Mirpurkhas, Hyderabad). 2) The second indicator is used as a control variable to capture rural/urban differences in school dropout.
Gender	Gender is taken as a control variable to consider the male-female differences in school dropouts. The MICS6 data for Punjab has a male and female ratios of 51.9% and 48.1%, respectively (GOP (Government of Punjab, 2018). For Sindh, the ratios of males and females are 52.8% and 47.2%, respectively (Government of Sindh, 2020).

Sources: Government of the Punjab (2018), Government of Sindh (2020) and Government of Khyber Pakhtunkhwa. (2021).

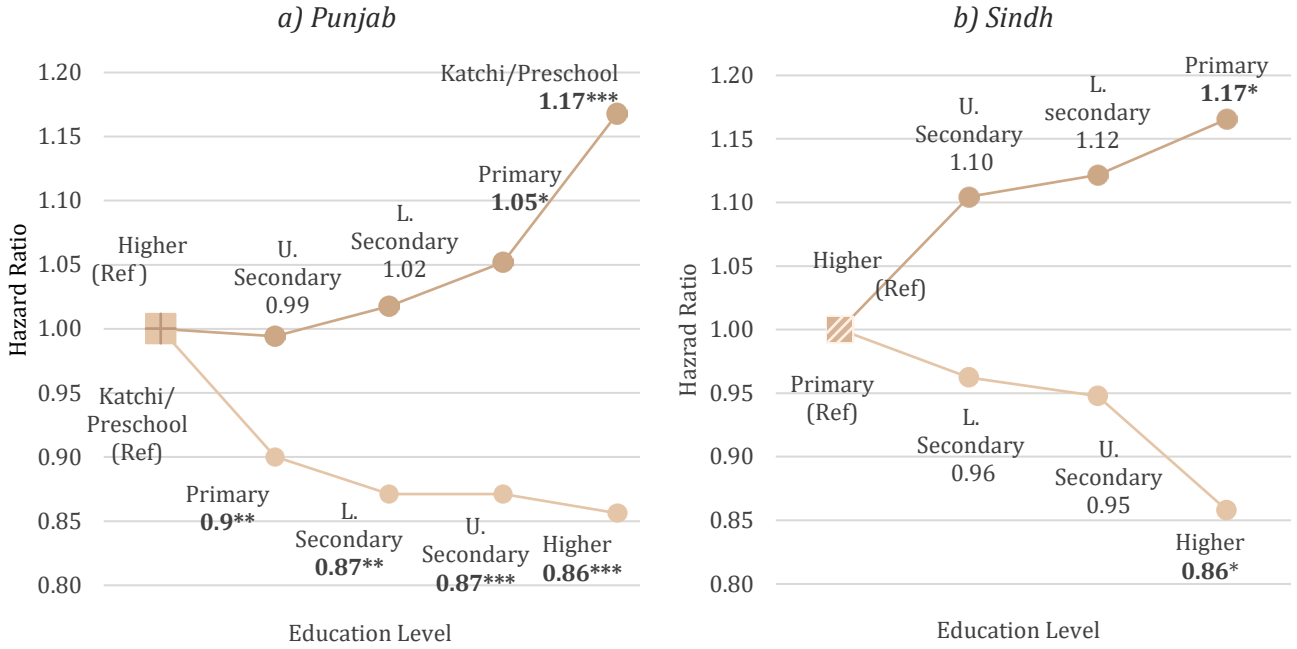
5. FINDINGS AND DISCUSSIONS

Household-Level Analysis of School Dropout

This section provides estimated results of the Cox Proportional Hazard model, using the MICS6 household data for children between the ages of 5 to 17 years. The hazard ratios were calculated by modelling income barriers, child labour, parenting, child's attributes, schooling attributes, and readiness along with some covariates that were used as control variables.

Figure 4 depicts the relative risk of student dropout at each level of education compared to the baseline risk.[5]

Figure 4: Hazard Ratio (Relative Parity Risk) of School Dropouts by Education Level



*Note: Ref = Reference Category; U = Upper; L = Lower; ***, **, and * indicate the hazard ratios at 1%, 5%, and 10% significance level.*
Sources: Authors' computations based on Government of the Punjab (2018) and Government of Sindh (2020).

Figure 4 shows that the survival probability of student retention increased with the education level with each additional year of schooling as compared to the school entry at the preschool level (commonly known as Katchi). In other words, the hazard ratio decreased even though the proportion of children fell as the level of education increased. Thus, those students who got promoted to the next grade had a greater chance of completing that grade with each successive higher grade. On the other hand, the possibility of student retention was lower at lower education levels. The hazard ratio depicts that children tended to drop out of school more at preschool/*Katchi*, primary, and lower secondary levels as compared to upper secondary and high schools. This is one of the main reasons that Pakistan faces a greater challenge in skill development. The probability of dropout is highest at the preschool level followed by primary education which results in educational wastage as the successful transition to secondary and higher level tends to get low.

Table 2 shows that economic barriers play a significant role in school dropouts. The economic dimensions are

[5] Reference category takes the value of 1

categorised into household wealth status and child's involvement in paid or unpaid labour[6]. Area, gender, and child's involvement in household chores[7] are taken as control variables. Children belonging to less privileged households were at a greater risk of early dropout from school as depicted by a greater hazard ratio for the poorest and second lowest quintiles as compared to the richest. Thus, household income was the main determinant of child retention in school. For poorer and less privileged households, children were considered a source of income at present rather than an asset for earning higher future income through education. The higher opportunity cost resulted in an earlier dropout from school.

The results show that child labour, in the form of any paid work activity or involvement in a family business without pay vis-à-vis the child's involvement in household chores significantly increased the parity risk of school dropouts. This implies that schooling hours are substituted with work due to the opportunity cost of forgone income and family labour. On the other hand, child work activity in any form conditioned on time significantly decreased the hazard ratio, i.e., school survival increased at higher levels of school grades despite the child's involvement in work. This shows that children who were involved in paid/unpaid work were at higher risk of dropping out of school at an early stage of schooling in comparison to higher levels of schooling. On the other hand, those who successfully transitioned to higher grades were less likely to leave school despite being associated with child labour.

Table 2: An Analysis of Economic Dimensions in Determining School Dropout

MODEL 1: Income Barrier				
Indicator	**Hazard Ratio**			
	Punjab		**Sindh**	
Area (Urban) [a]	1.034**		1.042	
Gender (Female)	1.024		0.995	
Wealth Quintile				
Poorest	1.77***		1.357***	
Second	1.34***		1.262***	
Middle	1.19***		1.021	
Fourth	1.10**		0.987	
Richest (Reference)	1		1	
MODEL 2: Child Labour				
Indicator	Hazard ratio		Hazard Ratio Conditioned On Time	
	Punjab	Sindh	Punjab	Sindh
Combined Wealth Score	0.861***	0.938***		
Area (Urban) [a]	1.026	1.079**		
Gender (Female)	1.217***	1.135***		
Work activity in a family business (unpaid)	1.470***	1.575***	0.903***	0.891***
Work activity with paid income	1.467***	1.157	0.884***	0.922***
Involvement in household chores	1.625***	1.503***	0.912***	0.922***

*Notes: ***and ** indicate the hazard ratios at 1% and 5% significance level, respectively a: Reference category = rural.*
Source: Authors' calculations.

[6] The unpaid labour reflects child's involvement in family business that includes activities such as producing/selling articles and handicrafts or involvement in family agriculture or farm activities.

[7] These include tasks such as shopping, washing/ironing, cleaning, cooking, caring for sick, old, or minor.

According to the Punjab Child Labour Survey (2019-20), 80 per cent of children between 5-9 years who attended school were working as child labour in hazardous work (Government of Punjab, 2022). The percentage fell to 58 per cent for children between 10-14 years. The prevalence of child labour was 54 per cent for children in the 15-17 age bracket who were previously attending school but dropped out of school. On the other hand, the school attendance rate was higher among children not involved in labour, which was 87.9 per cent, 88 per cent, and 72.2 per cent for age groups of 5-9 years, 10-14 years, and 15-17 years, respectively. Similarly, the survey indicates that in the poorest quintile, 72.1 per cent of children who attended school were not working. However, school attendance declined to 47.5 per cent for those involved in child labour. Among the richest quintile, 95.8 per cent of children who attended school were not in child labour, whereas school attendance was higher despite being involved in child labour. Similarly, in Sindh 10 per cent of children between the age of 5-17 years were involved in child labour (Government of Sindh, 2020). In addition, children from rural areas belonging to poor households were more prone to child labour and unpaid family labour was a significant contributor to school dropouts as compared to paid labour in Sindh.

These statistics support the findings of this study in terms of the higher propensity of school dropout at an earlier stage due to involvement in child labour and impoverishment. Strong legislation is required to discourage child labour. The consequences of higher dropout rates at lower education tiers are poverty and the rise of the informal economy as a large proportion of the population are unable to acquire even the most basic skills. Thus, these households get trapped in the vicious circle of poverty.

Table 3 reports the role of parental involvement in child development and child's cognitive abilities towards school dropouts. Harsh treatment at home in terms of verbal and physical abuse was a contributing factor in increasing the parity risk of school dropout. Parents' regular visits to school had a significant and higher hazard ratio but comparatively less than their non-participation. The hazard ratios for Sindh were higher in comparison to Punjab. Mother's education also played an important role in school retention in Punjab but was insignificant in the case of Sindh. In the presence of these factors, the impact of early childhood education becomes largely insignificant.

Table 3: An Analysis of Parenting and Child's Abilities in Determining the School Dropout

MODEL 1: PARENTAL INVOLVEMENT IN CHILD DEVELOPMENT		
Indicator	Hazard ratio	
	PUNJAB	SINDH
Verbal Abuse	1.254***	1.308***
Physical Abuse	1.137***	1.112***
Parent Visit to School [a] (Yes)	1.169***	1.378***
Parent Visit to School [a] (No)	1.370***	1.531***
Mother's Education [b]	0.885***	0.994
Attended Early Childhood Education	0.918	1.058
MODEL 2: PHYSICAL AND COGNITIVE ABILITIES		
Indicator	Hazard Ratio	
	PUNJAB	SINDH
Physical Difficulty in Child Functioning	1.04**	1.043
Cognitive Skills (Reading)		
Correct Reading	1	1
Incorrect reading	1.342	1.549
Inability to read	1.549**	1.756
Cognitive Skills (Comprehension-Yes)	0.861***	0.949

Cognitive Skills (Comprehension-No)	1.054	1.117
Cognitive Skills (Numeric-Yes)	0.903*	-
Cognitive Skills (Numeric-No)	0.939	-

*Notes: ***, **and * indicate the hazard ratios at 1%, 5% and 10% significance level, respectively. a. Parents' visit to school measures their participation/non-participation in school celebrations/sports events and meetings to discuss the child's progress with the teachers. b. Reference Category: Uneducated. Source: Authors' calculations.*

Out of the total sample size in Punjab, 16 per cent of children experienced functional difficulties, 8 per cent could not read or could not read properly, 24 per cent showed at least some level of comprehension skills, 8 per cent failed to demonstrate any comprehension skills at all, and 39 per cent had some basic numeric skills. Children with functional difficulties and an inability to acquire reading skills had greater chances of dropping out of school at an earlier stage. On the other hand, an improvement in cognitive skills led to a successive transition to higher grades. Thus, there is a need to focus on redesigning the curriculum at earlier levels of schooling by making it student-centric to build cognitive skills. The active involvement of parents is also required in terms of providing an enabling environment at home and their active participation in school consultative meetings. In the case of Sindh, the role of a child's physical and cognitive difficulties showed insignificant results. The possible reason could be poor performance in learning scores (see Appendix, Figure 18).

Table 4 analyses the supply side dimensions of school dropout, which are categorised into schooling attributes and readiness. Area and mother's education were taken as control variables. The results show that the absence of a school governing body and parents' non-participation in school events and meetings significantly increased the chances of school dropouts. On the other hand, regular feedback on the child's progress report tended to lower the hazard ratio. In the case of Sindh, contrasting results are observed, i.e., the presence of a school governing body failed to reduce dropouts despite major efforts by the School Education and Literacy Department of Sindh. It is observed that such intervention has caused more deprivation, which shows the inability of such policy action to get fruitful results in Sindh. However, parental involvement in terms of regular school visits significantly reduced the risk of dropping out of school. The hazard ratio for urban areas was lower as compared to rural areas. This is contrary to the results provided in Table 2 which indicates that by considering the wealth quintile, the hazard ratio of school dropout was higher in urban areas due to the high cost of living.

Table 4: An Analysis of Supply-Side Dimensions for Determining the School Dropout

MODEL 1: SCHOOLING ATTRIBUTES				
Indicator	Hazard Ratio			
	YES (School Attribute Present)		NO (School Attribute Absent)	
	PUNJAB	SINDH	PUNJAB	SINDH
Presence of School Governing Body [a]	0.944***	1.254***	1.059**	0.681***
Received progress report	0.960**	0.918	1.044**	1.082
Parents' Regular Visit to School [b]	0.993	0.912**	1.038**	1.088
Received regular homework	0.990	0.754***	1.013	1.324***
Area [c] (Urban)	0.917***	0.655***	0.915***	0.582***
MODEL 2: READINESS AS EARLY CHILDHOOD EDUCATION [d]				
Indicator	Hazard Ratio			
	PUNJAB		SINDH	
ECE current year	2.579***		0.575***	

ECE previous year	0.830***	0.706***
Mother's education [e]		
Higher	1	1
Secondary	1.008	1.016
Middle	1.041	1.102
Primary	1.065**	1.277***
Uneducated/Pre-primary	1.148***	1.434***
Area [c] (Urban)	0.874***	0.688***

*Note: *** and ** indicate the hazard ratios at 1% and 5% significance levels. ECE = Early Childhood Education. a: A governing body may include any SMC/PTA or school council in which parents could participate and/or have attended the meeting. b. It includes parent's participation in school celebrations/sports events and discussing the child's progress with the teachers. c. The reference category is rural. d. The promotion of early childhood education is one of the objectives of National Education Policy 2017 as an instrument of readiness for formal education. e. Mother's education is taken as a control variable to reflect the child's readiness at home. Source: Authors' calculations.*

The role of readiness in the form of early childhood education (ECE) was determined by including the mother's education as a control variable in the model. In the case of Punjab, the successful completion of the ECE in the previous year had a significant impact on reducing school dropouts, whereas a higher value of the hazard ratio for the current year's ECE indicates higher cases of early dropouts at *Katchi*/preschool. Early childhood education, current and past, significantly contributed to reducing school dropouts in Sindh, which shows that readiness tools in terms of early childhood programmes are proving successful in reducing the chances of early dropout from school. As for the mother's education level, the school dropout risk rose for children whose mothers were uneducated or had a primary level of education. The results are more pronounced for Sindh as compared to Punjab.

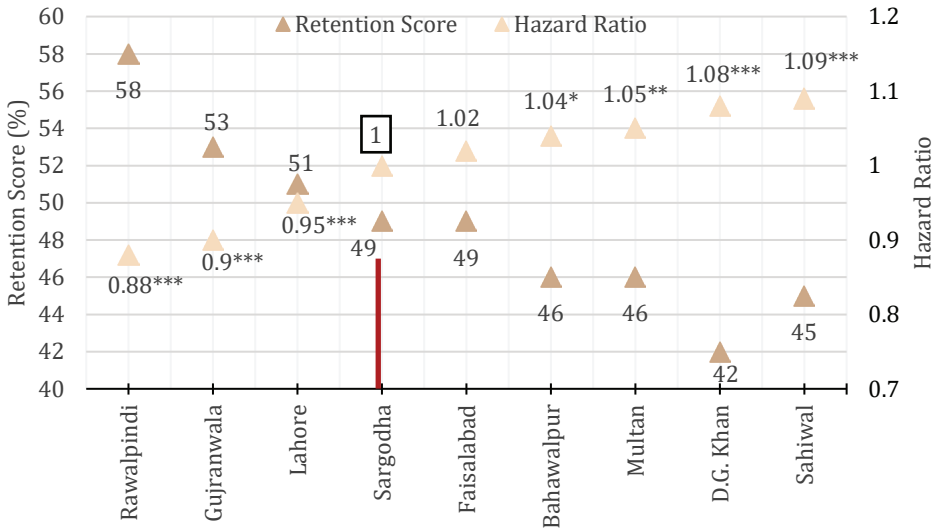
Divisional Level Analysis of School Dropout in Punjab

This section provides a comparative analysis across nine divisions of Punjab. Figure 5 illustrates that our estimates of hazard ratios calculated from the MICS6 household data are similar to the Alif Ailaan retention scores, which are estimated using enrolment data from the National Education Management Information System (NEMIS). The retention score is a sub-component of the education index that measures student retention from primary to middle and from middle to higher levels of schooling. Sargodha[8] is chosen as a reference category to calculate the hazard ratio. It is selected based on the highest proportion in terms of school attendance, i.e., primary (18%), lower and upper secondary (23%) and higher education (19%) as well as the highest percentage of grade completion (21%) among all the nine divisions of Punjab.

Out of the total sample size, the division-wise distribution of respondents is as follows: Gujranwala 6 per cent; Sahiwal 9 per cent; D.G. Khan 9 per cent; Sargodha 10 per cent; Faisalabad 12 per cent; Multan 12 per cent; Rawalpindi 12 per cent; Bahawalpur 13 per cent; and Lahore 17 per cent. The hazard ratio for the Faisalabad division was insignificant. The regions with higher retention scores also showed a decreasing hazard ratio and vice versa. It can be observed in the case of Rawalpindi, Gujranwala, and Lahore divisions that the risk of early school dropout was lower, i.e., a higher survival rate in these regions also had higher retention scores compared to the rest of the divisions. Similarly, the hazard ratios were higher for Bahawalpur, Multan, D.G. Khan, and Sahiwal, which corresponds to the lower percentage of retention scores. Thus, there is a need to find reasons/barriers that play a determinate role in reducing or causing school dropouts.

[8] The hazard ratio for reference category takes the value of 1.

Figure 5: Comparison of the Hazard Ratio for School Dropouts and School Retention Scores among Nine Divisions of Punjab

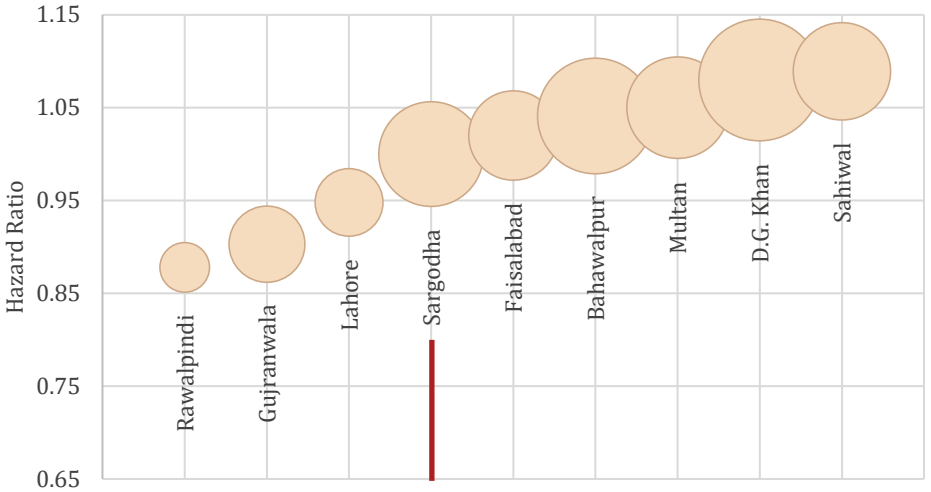


*Notes: The hazard ratio for urban areas is 0.870***. Sargodha is used as a reference category (1). ***, **, * indicate the hazard ratios at 1%, 5%, and 10% significance level.*
Sources: Authors' computations based on Alif Ailaan (2017), Government of the Punjab (2018) and Government of Sindh (2020).

The comparison of the hazard ratio with the divisional poverty profiles and households' combined wealth scores is provided in Figure 6. The wealth index had a significant impact on increasing the school survival rate (also represented earlier in Table 2). The size of the circle in Figure 6a depicts the incidence of poverty. Rawalpindi, Gujranwala, and Lahore are low-poverty divisions as compared to the rest of Punjab and the parity risk of school dropouts was also lower in these regions. The results clearly show that the incidence of poverty was higher in areas that have a hazard ratio greater than one. Bahawalpur and D.G. Khan divisions have the highest poverty incidence, and poverty eradication policies can considerably reduce school dropouts as revealed by the relatively smaller wealth hazard ratio for these two regions, i.e., 0.778 and 0.773 (Figure 6b).

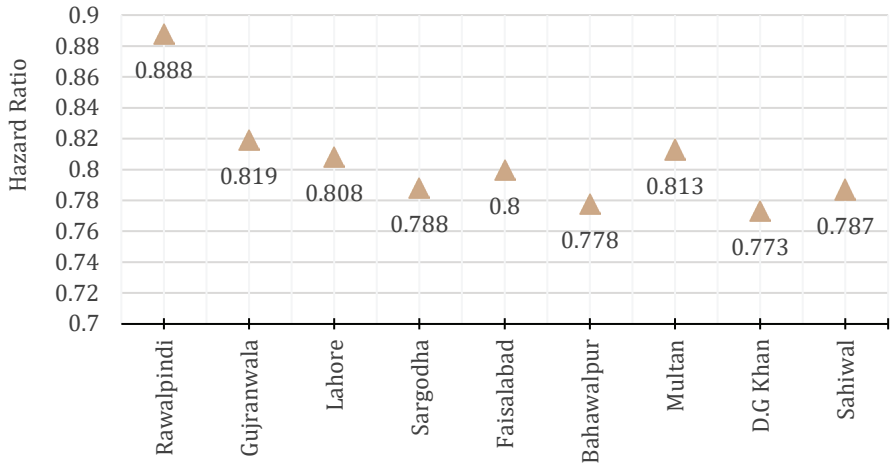
Figure 6: Relative Parity Risks in Terms of Income Barriers

a) Incidence of Poverty



Note: The incidence of poverty measures the proportion of people experiencing multiple deprivations.
Source: Authors' computations based on PERI (2017).

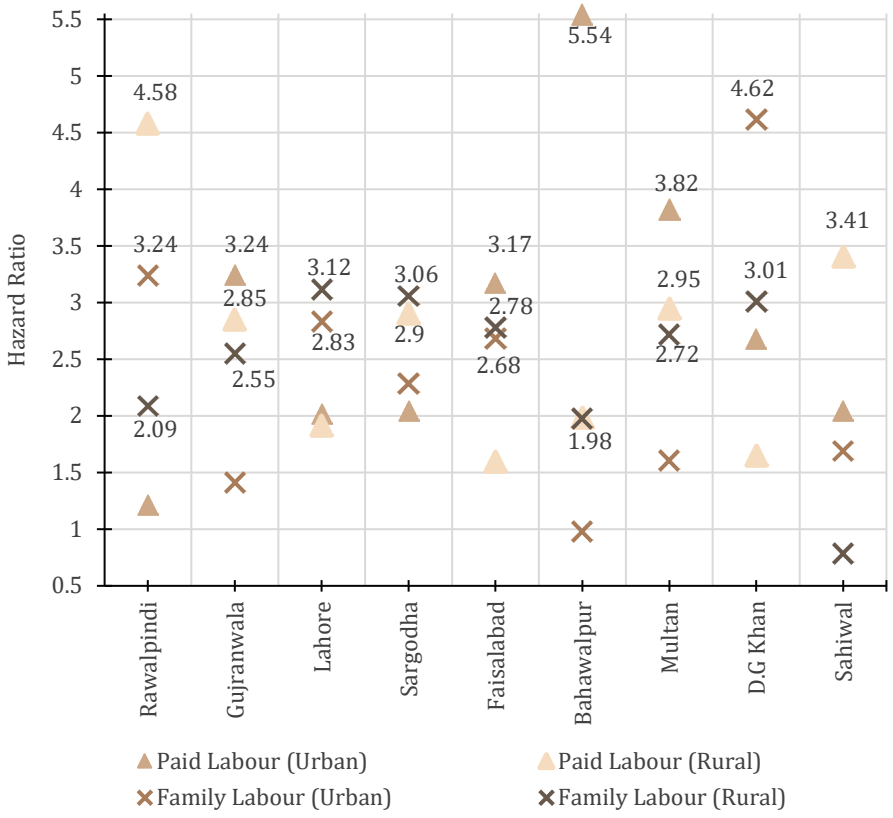
b) Hazard Ratio by Wealth Score



Note: The hazard ratios are statistically significant at the 5% level.
Source: Authors' calculations.

In continuation of Table 2, the analysis of child labour with school dropouts is further elaborated in Figure 7 by undertaking a rural-urban comparison for nine divisions of Punjab. Only those values are quoted in the given figure that are statistically significant. The parity risk of school dropout resulting from paid labour in urban areas was highest in Bahawalpur followed by Multan, whereas rural unpaid family labour in D. G. Khan was a significant contributor to dropping out of school. On the other hand, paid labour in rural areas of Rawalpindi and Sahiwal had the highest hazard ratio associated with the discontinuation of school education at earlier grades. In urban regions of Rawalpindi, Lahore, Sargodha, D.G. Khan, and Sahiwal, paid child labour had no significant association with school dropouts in addition to rural regions of Lahore, Faisalabad, and D.G. Khan.

Figure 7: Rural-Urban Comparison of Hazard Ratios for Paid Child Labour and Unpaid Family Labour

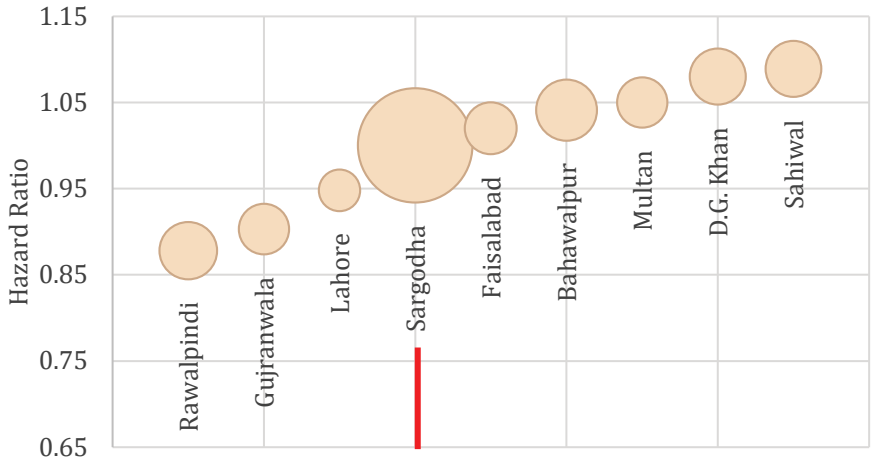


Note: The values significant at the 5% level are labelled.
Source: Government of the Punjab (2018).

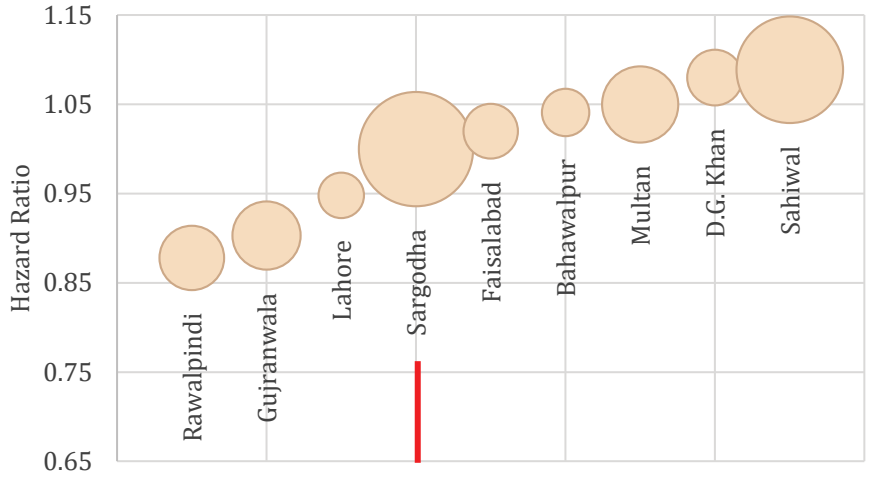
Figures 8, 9 and 10 illustrate the supply-side factors that might be associated with school dropout across nine divisions of Punjab. The size of the bubbles in Figure 8 represents the ratio of public and private schools to the population under the age of 16 years. Sargodha[9] had the highest public-private-school ratio but there were no substantial differences in the public-school ratios among the remaining eight divisions. On the other hand, Multan and Sahiwal had comparatively higher private-school ratios despite having a greater risk of school dropouts. The school survival rate was higher in Lahore but lower in Multan and considerably less in D.G. Khan. However, the private-school ratio did not vary much among these three divisions.

Figure 8: Supple-Side Factors in Terms of School Availability

a) Public school-to-population (under-16) ratio



b) Private School-to-Population (Under-16) Ratio



Sources: Authors' computations based on GOP (2017) and Government of the Punjab (2019).

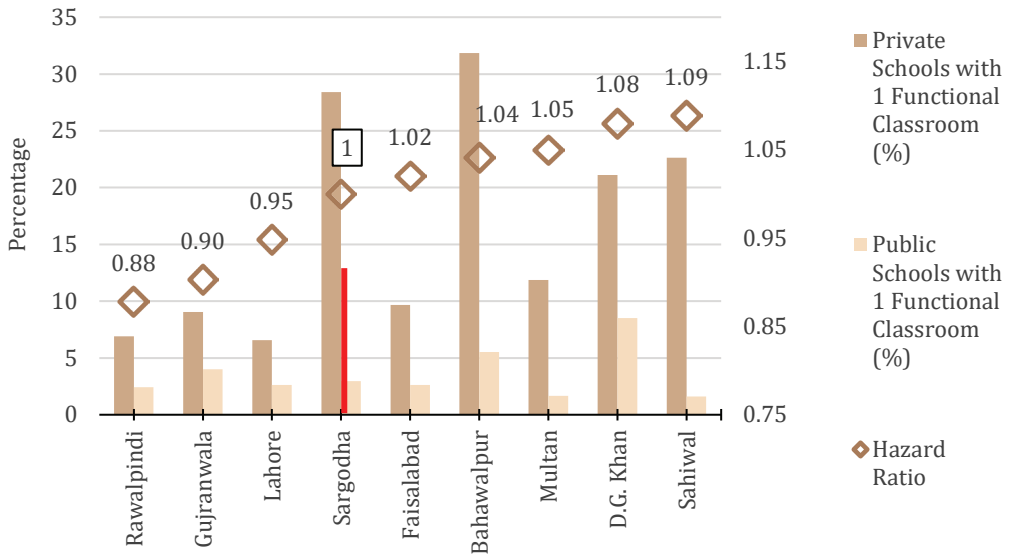
Figure 8 does not show any sizeable differences in terms of school availability except some disparity is seen in the cases of Multan and Sahiwal with higher numbers of private schools despite having a greater hazard ratio of school dropout. To explore the school dropout factors, other than the school availability in terms of numbers, it is

[9] Sargodha is taken as the reference category, based on the highest percentage of school attendance and grade completion, for calculating the hazard ratio for each division.

necessary to consider the quality of service provision of school education. The quality depends upon school infrastructure, schooling attributes, school learning, and readiness for higher-level schooling as well as availability. These factors are explored to make a comparison with the hazard ratio of school dropouts.

Figure 9 shows that there were no large differences in terms number of public schools with one functional classroom except in Bahawalpur and D.G. Khan. On the other hand, the divisional areas that had significant and higher risks of school dropouts (Bahawalpur, Multan, D.G. Khan, and Sahiwal) had more one-classroom private schools in comparison to areas with smaller parity risks (Rawalpindi, Gujranwala, and Lahore). Therefore, the quality of physical infrastructure is an important factor for school retention and successful transition to higher grades.

Figure 9: Supply-Side Factor as the Quality of Physical Infrastructure



Note: The percentages are calculated in proportion to the total number of schools in each division.
Source: Authors' computations based on Government of the Punjab (2019).

Figure 10: Supply-Side Factors as School Attributes (as % Total in Each Division)

	Governing Body	Report Card	PTA/SMC Meeting	Hazard Ratio
Rawalpindi	31.3%	51.3%	80.5%	0.88***
Gujranwala	27.5%	69.1%	75.6%	0.9***
Lahore	32.7%	67.7%	83.5%	0.95***
Sargodha	11.9%	44.7%	58.6%	1
Faisalabad	11.7%	57.2%	69.6%	1.02
Bahawalpur	6.4%	44.5%	57.7%	1.04*
Multan	10.5%	51.3%	59.1%	1.05**
D.G. Khan	5.7%	28.6%	55.4%	1.08***
Sahiwal	9.7%	54.4%	57.6%	1.09***

*Notes: ***, ** and * indicate the hazard ratios at 1%, 5%, and 10% significance levels.*
Source: Authors' computations based on Government of the Punjab (2018).

Figure 10 provides a comparison of schooling attributes in terms of governance, feedback, and parental involvement for nine divisions of Punjab. These factors reflect the quality of school education other than the physical infrastructure. It can be seen that schools in those regions that had a lower risk of school dropout (Rawalpindi, Gujranwala, and Lahore), also had a greater prevalence of school governing body, regularity in students' performance, and parental involvement with school management committee/ parent-teacher association. Thus, Figures 8 and 9 imply that an improvement in school quality can significantly reduce the student dropout ratios.

Figure 11 provides a comparison of education scores and beyond-primary school readiness. Education score is a comprehensive measure of education outcome, which is sub-categorised into i) learning score,[10] ii) retention score,[11] and iii) gender parity score.[12] The beyond-primary school readiness is composed of two components, i.e., a) above-primary to primary-schools ratio[13] and b) school infrastructure score.[14] The infrastructure score is an input measure that shows the availability of basic facilities such as electricity, drinking water, toilet, boundary wall, and satisfactory building condition. The data shows that the learning score was highest for D. G. Khan, but this division cannot address the higher incidence of student dropouts due to a lack of beyond-primary readiness. This is observed in terms of poor school infrastructure and fewer middle and high schools to cater for the successful transition from primary to higher level of schooling. Furthermore, the inadequate number of above-primary schools is a greater impediment than the poor infrastructure for school retention. For the Multan division, school infrastructure as an indicator of readiness performed better followed by the availability of beyond-primary schooling.

Nevertheless, the school dropout might be the result of low gender parity scores due to greater dropout of female students and comparatively lower learning scores. The education performance indicators were average in the case of Faisalabad but the above-primary-to-primary school ratio was the highest. Rawalpindi had the highest scores for all indicators except the learning score which was one of the lowest. Similarly, Gujranwala and Lahore also performed better on education scores, gender parity in school education, and above the primary-to-primary-schools ratio. However, the learning scores and school infrastructure were not as good. The comparative analysis across divisions reveals that there cannot be the same policy across Punjab. Instead, there is a need to fine-tune the policy for region-specific factors to address the issue of school dropout.

[10] The learning score is used as a proxy to reflect the quality of school education. It measures the percentage score in Urdu and English for classes 3 and 8. Alif Ailaan has compiled the ranking using the test score data from the ITA (2017).

[11] Alif Ailaan has estimated the scores using enrolment data from the GOP (2018). It measures the enrolment in middle and higher levels as a percentage of primary level enrolment.

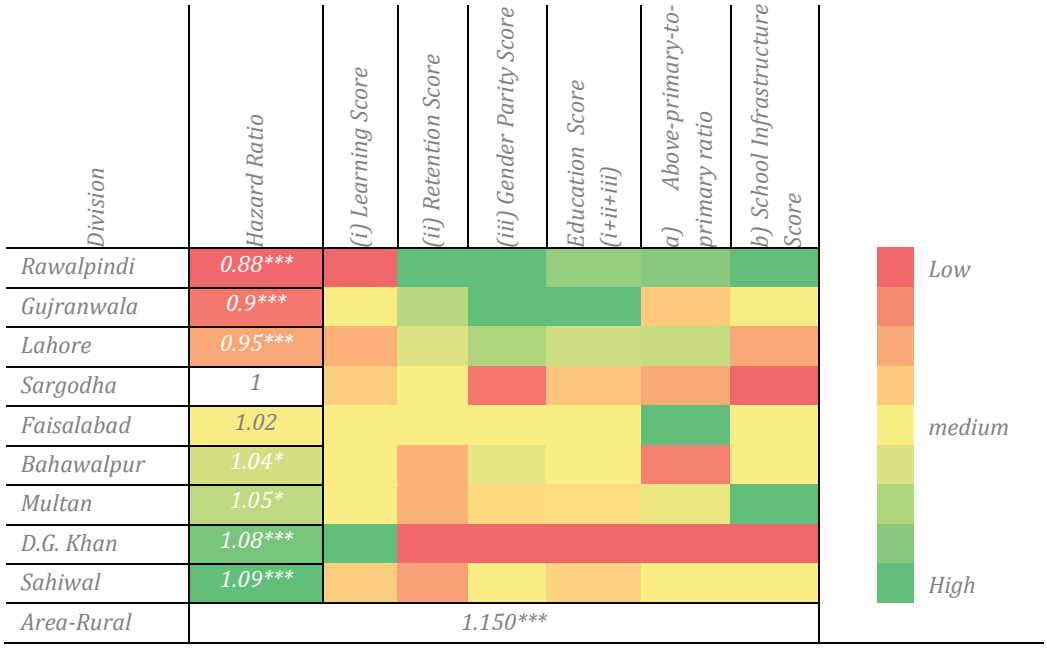
[12] Alif Ailaan has estimated the scores using data on the proportion of enrolment and retention between girls and boys from the GOP (2018).

[13] The above primary includes two groups, i.e., middle and high schools. Alif Ailaan has compiled the data from the GOP (2018).

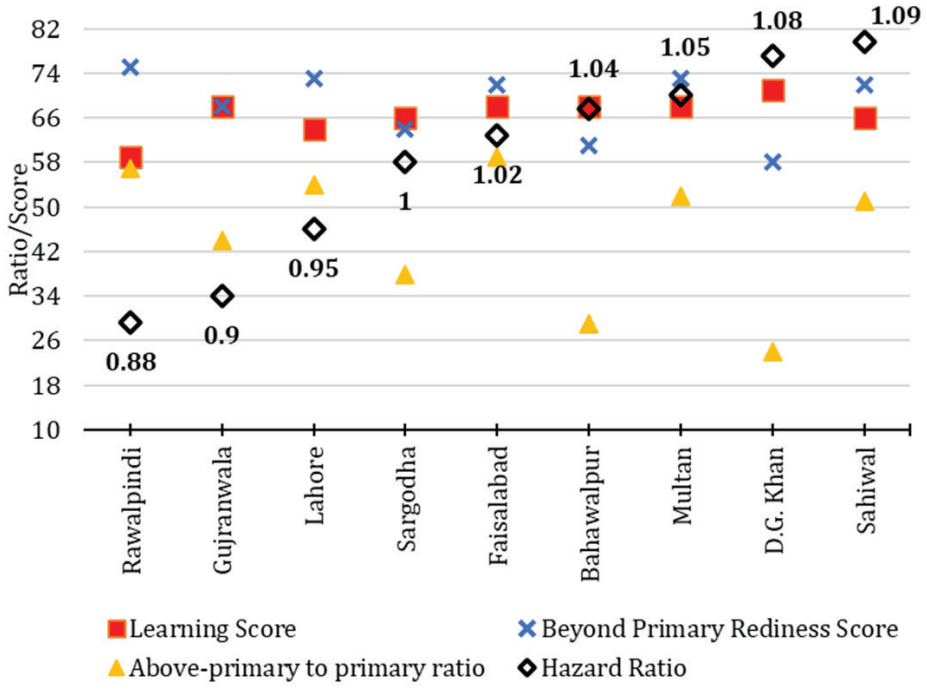
[14] This measures the provision of basic facilities in government middle schools. Alif Ailaan has compiled the data from the GOP (2018).

Figure 11: Supply-Side in Terms of Educational Outcomes and Beyond Primary Readiness

(a)



(b)

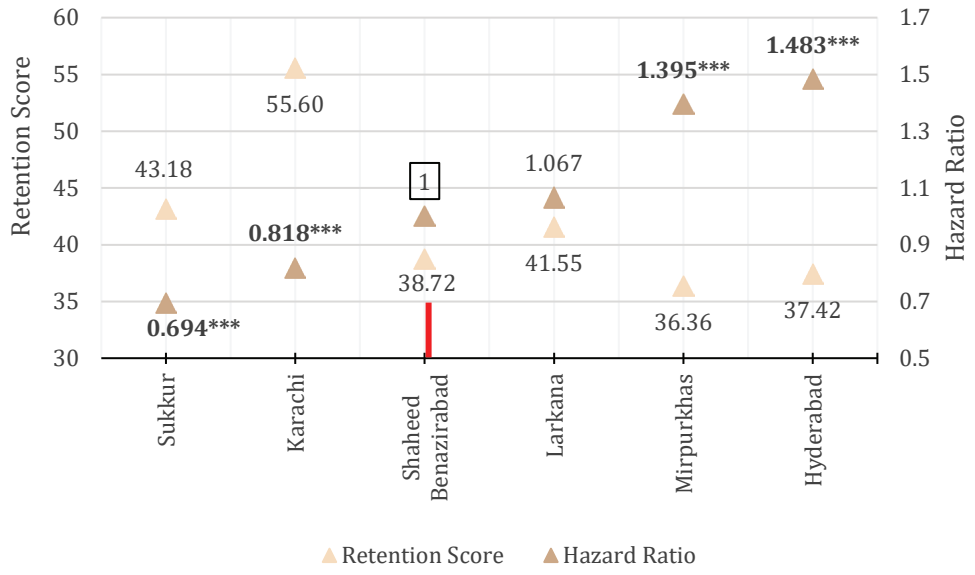


*Note: ***, **, and * indicate hazard ratios at 1%, 5%, and 10% significance level, respectively.*
Sources: Authors' computations based on Alif Ailaan (2017), Government of the Punjab (2018) and Government of Sindh (2020).

Divisional Level Analysis of School Dropout in Sindh

This section provides a comparative analysis across six divisions of Sindh. Shaheed Benazirabad[15] is chosen as a reference category to calculate the hazard ratio. Among the six divisions of Sindh, Shaheed Benazirabad had the lowest level of education attainment in middle, secondary and higher levels. Figure 12 shows that higher hazard ratios for Mirpurkhas and Hyderabad are consistent with lower retention scores as reported by Alif Ailaan Education Rankings. Similarly, Sukkur and Karachi reported higher retention scores and the corresponding significantly lower risks of school dropouts. The parity risk is insignificant for the Larkana division. The divisional distribution of respondents was Shaheed Benazirabad 10 per cent, Hyderabad 27 per cent, Larkana 17 per cent, Karachi 27 per cent, Mirpurkhas 9 per cent, and Sukkur 10 per cent.

Figure 12: Comparison of the Hazard Ratio for School Dropouts and School Retention Scores among Six Divisions of Sindh



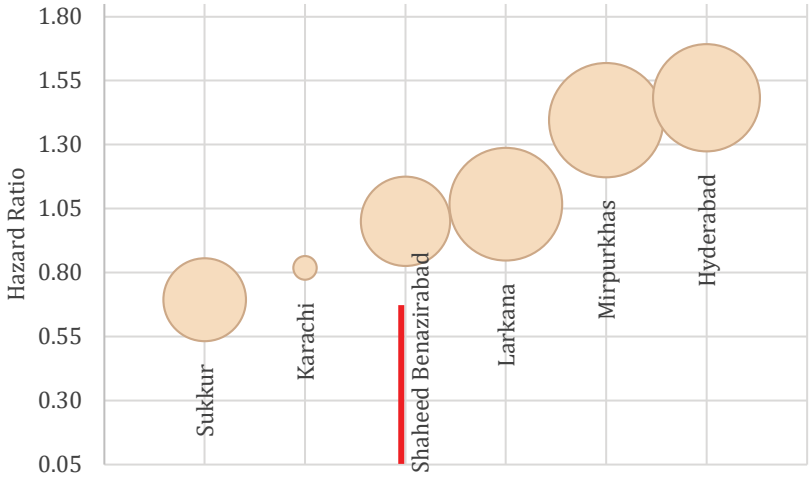
*Notes: The hazard ratio for urban areas is 0.565***. Note: Sargodha is used as a reference category (1). *** indicates the hazard ratios at a 1% significance level. Sources: Authors' computations based on Alif Ailaan (2017), Government of the Punjab (2018) and Government of Sindh (2020).*

Figure 13 provides a glimpse of school dropout risk associated with divisional poverty profiles and households' combined wealth scores. The size of the circle (part a) represents the multidimensional poverty index. Larkana, Mirpurkhas, and Hyderabad divisions experienced an early school dropout and had higher poverty incidence. On the other hand, the less impoverished regions, such as Karachi and Sukkur, showed better performance in terms of lower risk of school dropouts. The wealth hazard ratio with school dropouts was also small and statistically significant (part b).

[15] The hazard ratio for the reference category takes the value of 1.

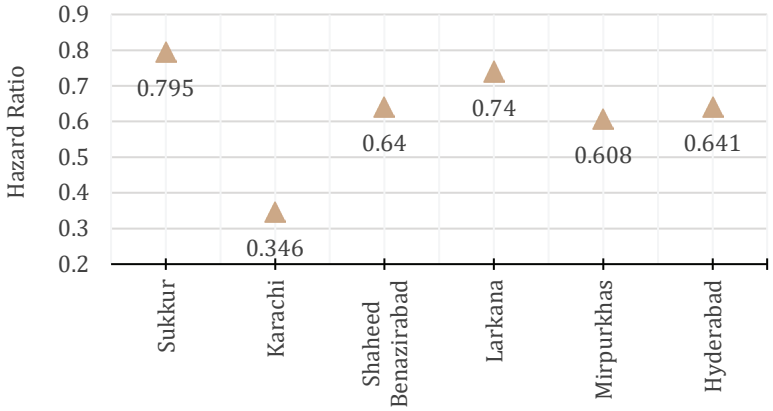
Figure 13: Relative Parity Risks in Terms of Income Barriers

a) Incidence of Poverty



Note: The incidence of poverty measures the proportion of people experiencing multiple deprivations.
Source: Authors' computations based on Government of Sindh. (n.d.).

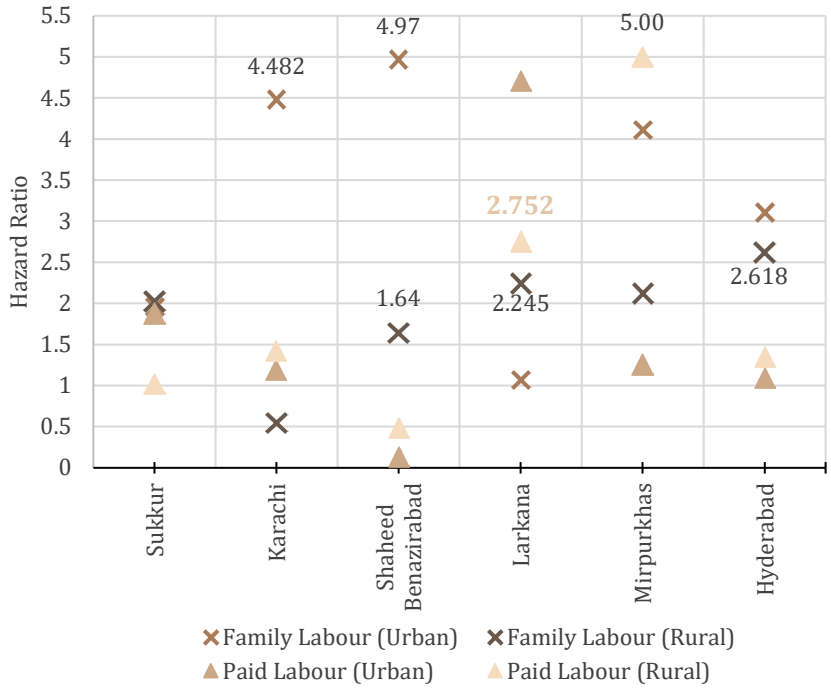
b) Hazard Ratio by Wealth Score



Note: The hazard ratios are statistically significant at the 5% level of significance.
Source: Authors' computations based on Government of Sindh (2020).

The rural-urban comparison of school dropout hazard ratios in association with child labour, across six divisions of Sindh, is provided in Figure 14. The involvement of children as unpaid family labour in rural areas of Larkana and Hyderabad divisions was a significant contributor to early dropout from school, whereas this relationship was substantially stronger in urban areas of Karachi. In the case of Shaheed Benazirabad, the risk of school dropout was much higher in urban than rural areas. Child labour in the form of paid activities was significant only in rural areas of Larkana and Mirpurkhas with a much higher impact in the latter. Child labour in Sukkur was largely insignificant and this region also had the lowest risk of school dropout. The analysis shows that paid labour in urban areas had no significant role in Sindh but it was a significant contributing factor in Punjab.

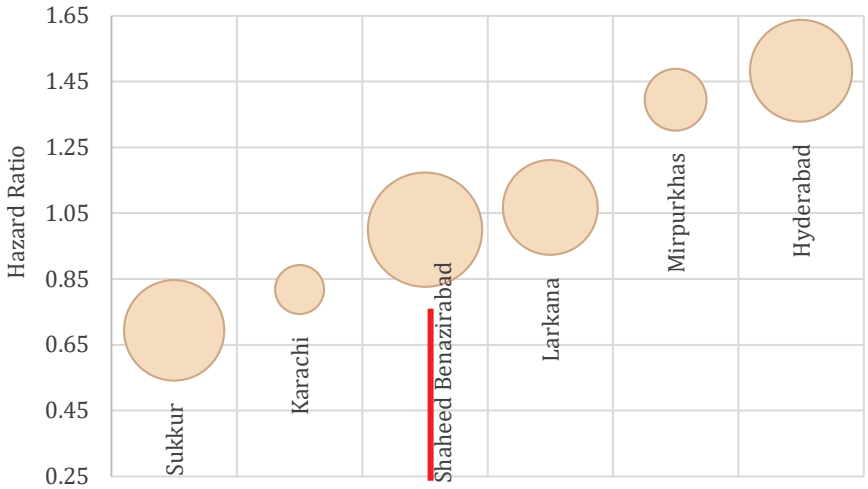
Figure 14: Rural-Urban Comparison of Hazard Ratios for Paid Child Labour and Unpaid Family Labour



Note: The values that are labelled are statistically significant at the 5% level of significance.
Source: Authors' computations based on Government of the Sindh (2020).

Figure 15: Supple-Side Factor in Terms of School Availability

Public schools-to-population (under-16) ratio

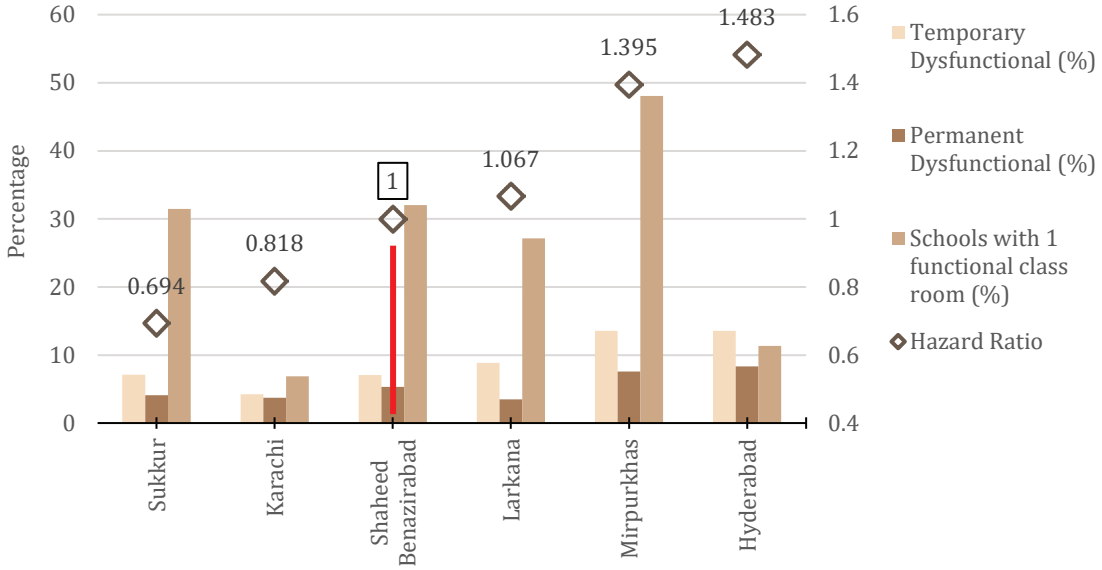


Source: Author's compilation using data from Population Census 2017, Pakistan Bureau of Statistics, and Sindh Education Statistics 2019, School Education & Literacy Department, the Government of Sindh.

Figure 15 provides a comparison of school availability with school dropout risks. The hazard ratio for Karachi is low regardless of the smallest public school-to-population ratio. Conversely, the public school availability in Hyderabad and Larkana was comparable to that of Sukkur but had greater risks of school dropout, whereas Sukkur had the lowest hazard ratio. The reason for such variations is based on differences in the quality of

schooling infrastructure, schooling attributes, gender parity, and beyond-primary readiness as highlighted in Figures 16, 17 and 18.

Figure 16: Supply-Side Factor as the Quality of Physical Infrastructure



Note: The percentages are calculated in proportion to the total number of schools in each division.
Sources: Authors' compilation using data from Profiling for Government Schools 2019, School Education & Literacy Department, the Government of Sindh.

Figure 17: Supply-Side Factors as School Attributes (As % Total in Each Division)

	Governing Body	Report Card	PTA/SMC Meeting	Hazard Ratio
Sukkur	20.30%	38.90%	73.70%	0.694***
Karachi	28.40%	78.30%	80.40%	0.818***
Shaheed Benazirabad	16.00%	32.90%	68.80%	1
Larkana	18.60%	26.50%	75.40%	1.067
Mirpurkhas	35.70%	40.70%	83.90%	1.395***
Hyderabad	20.30%	38.90%	75.50%	1.483***

*Note: *** indicates that the hazard ratios are significant at a 1% level.*
Source: Authors' computations based on Government of the Sindh (2020).

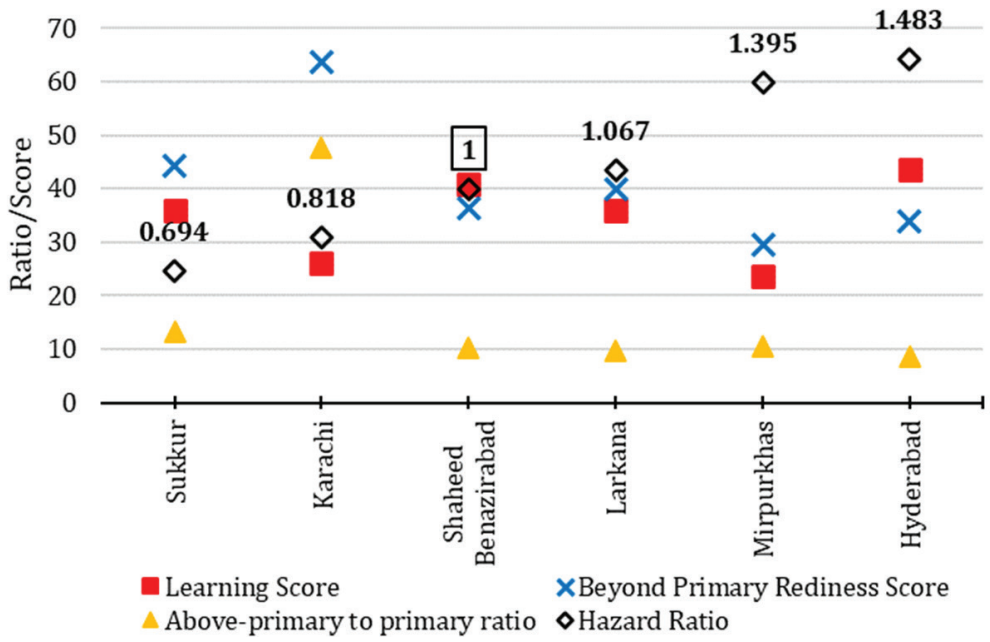
Figure 18: Supply-Side in Terms of Educational Outcomes and Beyond Primary Readiness

(a)

Division	Hazard Ratio	(i) Learning Score	(ii) Retention Score	(iii) Gender Parity Score	Education Score (i+ii+iii)	a) Above-primary-to-primary ratio	b) School Infrastructure Score
Sukkur	0.694***						
Karachi	0.818***						
Shaheed Benazirabad	1						
Larkana	1.067						
Mirpurkhas	1.395***						
Hyderabad	1.483***						
Area-Rural	1.525***						

Low
Medium
High

(b)



*Note: *** indicates that the hazard ratios are significant at a 1% level.*
Sources: Authors' computations based on Alif Ailaan (2017) and Government of Sindh (2020).

Figure 17 does not show considerable variations in schooling attributes that could be associated with school dropouts. Some indicators were better in areas that had higher risks of school dropouts which supports our previous findings (Table 4), i.e., an improvement in schooling attributes, such as governance and feedback, has not reaped benefits in the case of Sindh.

Though the public school ratio was relatively smaller in Karachi, the number of permanent/temporary dysfunctional schools and schools with one functional classroom was also small. The improved quality of school infrastructure contributed towards reducing the chance of school dropouts. Mirpurkhas had a higher risk of school dropout where not only the school availability was low, but the proportion of dysfunctional schools and schools with only one functional classroom was also high. Hyderabad division has a higher public-school ratio along with comparatively better school infrastructure but still this region corresponds to the highest school dropout risk. The possible reasons could be poor performance in educational outcomes, gender parity and beyond-primary readiness as shown in Figure 18. Interestingly, Hyderabad had the highest learning score but such performance proved to be inadequate for school retention in higher grades, which is mainly due to inadequacy in school availability of primary schools and poor infrastructure of the existing schools. Similarly, Mirpurkhas underperformed in all the categories and also had a higher hazard ratio of school dropout. Sukkur and Karachi divisions did not have better learning outcomes but retention scores were higher corresponding to lower hazard ratios. In addition, the gender parity scores and beyond-primary readiness in terms of school availability and infrastructure were better in Sukkur and Karachi as compared to the rest of the regions.

6. CONCLUSIONS

The present study examined the risk factors associated with school dropout in Punjab and Sindh by employing survival analysis. This methodology estimates the hazard ratio, often called the parity risk, of dropping out of school by considering the time to event. According to the results, a higher risk of dropout at an earlier level of schooling resulted in educational wastage as a successful transition to secondary and higher levels was low. The contributing factors to early-stage dropout were child labour and poverty, which is comparable to the findings of the Punjab Child Labour Survey (Government of Punjab, 2022).[16] The overall results show that the chances of school dropout were higher in rural areas but tended to get higher in urban areas when poverty and child labour were taken into account. The relative parity risks were also found to be greater in those regions that had a higher incidence of poverty.

The enabling environment at home and school also turned out to be important along with the active involvement of parents in schooling. Similarly, cognitive and functional difficulties were also found to be causing hindrances in the successful transition to a higher level of schooling. Teaching quality was also used by including the input and output measures. The input measure used was the regularity in homework, teacher's feedback on student performance, the presence of the school governing body, and active PTA/SMC. The output indicator was measured as district-level learning scores. All these factors were found to have a significant association in reducing school dropout. The role of early childhood readiness (ECE) was also examined. Successful completion of the ECE in the previous year had a significant impact on reducing school dropouts. In the case of Punjab, the hazard ratio for the current year's ECE indicated higher cases of early dropouts at the Katchi/Pre-school level. The study also explored the association of school dropouts with the quality of education. It was observed that the presence of better school infrastructure, school governing bodies, parent-teacher associations, improved school learning, education performance, readiness for higher-level schooling, and higher-level school availability

[16] In Punjab 80% of the children between 5–9 years involved in child labour attended school, but later dropped out of school since 54% of the children between 15–17 years involved in child labour were school dropouts.

considerably reduced the risk of school dropouts. However, the comparative analysis across different regions revealed that need-based education policy must be designed, specifically to the requirements of each region.

7. POLICY RECOMMENDATIONS

Based on our analysis, some key issues to be addressed are given below:

i. A strong legal system must be enacted to deter child labour.

ii. Poverty is also one of the reasons for school dropouts. Hence, an in-cash payment scheme for education attainment, specifically in impoverished regions, could play an important role in improving school retention. Scholarship rewards could incentivise students to the successful transition to a higher level of schooling. The 'Education Voucher Scheme'[17] through public-private partnership needs to be expanded for affordable access to education.

iii. Parental involvement and the school governance system must be strengthened. In addition, parental involvement must also include a conducive household environment for child development. The PTAs can play an important role in awareness in this regard.

iv. The schools must focus on improving the educational outcomes in terms of learning, development of cognitive abilities, and regular feedback mechanisms. The general principle of access to 'education' must be prioritised towards 'quality education'. Such a course of action must start from the primary and pre-school (Katchi) levels for a successful transition to higher levels since the school dropout risk is highest at these two levels of education. This can ultimately also bring fruitful results in early childhood programmes.

v. Beyond-primary school readiness needs to be improved, both in terms of school availability and school infrastructure, by considering the differences and resource deficiencies across regions.

vi. Above all, each province needs to structure and fine-tune the education policies according to regional and local contexts that cater to their specific needs by involving the local bodies instead of a single policy action at the provincial level. Since the National Education Policy 2017 continues to guide the federating units due to the absence of comprehensive policy drafts of their own, such a policy becomes somewhat shallow in the regional context.

[17] The voucher scheme is currently in introduced in 36 districts of Punjab with high concentration in Lahore and Rawalpindi. These two regions also depict lower hazard ratios for school dropouts.

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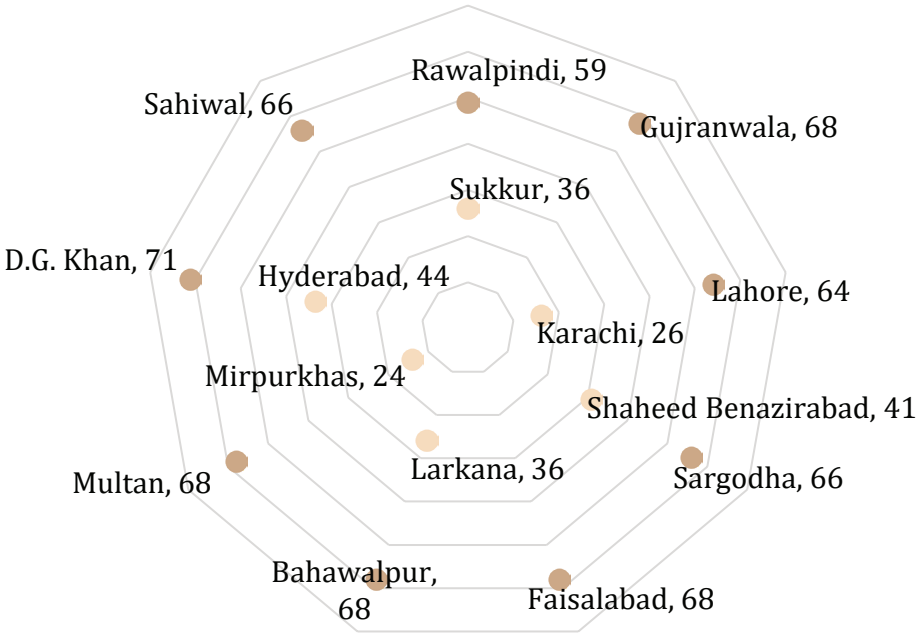
APPENDIX

Figure 19: Education Performance (Learning Score) In Different Regions of Punjab and Sindh



Source: Authors' computations based on Alif Ailaan (2017).

AN IGNORED SOLUTION TO K-12 EDUCATION PROBLEMS IN PAKISTAN: FRAMEWORK FOR MAINSTREAMING CAREER EDUCATION

Ghazanfar Iqbal and Zahid Hussain Dool

ABSTRACT

Different viewpoints discuss educational problems and solutions for K-12 grades in Pakistan but the root causes of the reported problems are not researched in detail. Thus, educational policies and practices have not been informed by research. Career education (CE) – an integrated approach – is one of such gaps which, interestingly, is also a solution to the various repeatedly reported problems including students' disengagement in learning, poor academic achievement and school dropout. The same problems are reported differently across contexts, schooling systems, and genders. A literature review conducted for this research, reports these issues as the gap between 'education' and the 'world of work' and it also indicates CE as a solution to aforementioned educational problems. Additionally, CE bridges this gap and helps students see the link between 'school/classroom activities' and the 'world of work'. However, a systematic literature review of national research articles conducted for this research, indicates that career-related education has not been discussed as an integrated approach so far in Pakistan. Educational policies and career-related research in Pakistan focus on career guidance and counselling (CGC), which is not an integrated approach, and the CGC is advocated for grade 9 to 12 students. Interestingly, the review shows that researchers discuss the improvement in the CGC by making it an integrated approach which already exists in global literature, known as CE. As a result, this study provides the CEFP for K-12 education in Pakistan, which has been developed based on the reviewed global and local literature, and it has also been critically reviewed by career education experts. In last, we recommend the inclusion of all educational stakeholders, i.e., social science researchers, policy makers, curriculum and textbook developers, teacher educators, teachers, parents, students and other community members, for better implementation of the CEFP as suggested and for more promising outcomes.

1. INTRODUCTION

School is one of the important social institutions where young children learn key components of knowledge, skills and attitudes, and develop their identities for spending the rest of their lives (Lodhi, 2013). Specifically, schooling (education) has a long-term influence on the career development of individuals either through direct or indirect intervention. Although the career development process is mostly natural, occurring due to the principle of survival, deliberate efforts taken at schools can make the process more fruitful and also influence other aspects of education. Hence, as suggested in global literature, it requires conscious efforts to intervene in the career development process in schools, known as career education (CE). Additionally, various other problems in the education system of Pakistan need to be reviewed with the lens of CE. In this regard, this chapter includes a critical review of CE and its significance regarding THE scope of this research.

Educational Problems in Pakistan with Career Education Lens

A myriad of problems exists in the Pakistani education system including disparities in access and proximity to the school (Lodhi, 2013), quality and educational outcomes across context, gender, and income along with low student-achievement, ghost schools/teachers, inadequate teacher preparedness, student absenteeism, school dropout, and so on (Aziz et al., 2014; ASER-Pakistan, 2019; Riaz et al., 2021).

Many research studies report problems in K-12 education and majority of which date back to the 1959 report by the National Commission on Education. Since then, the problems and their solutions have been discussed from various approaches, but attention to the 'very origins' is missing in the literature. A few of those problems, which are interconnected, include poor quality of teaching, students' disengagement in schools, low student achievement, and school dropout. Moreover, these problems affect students' overall future development.

Poor quality of teaching, due to the absence of interactive teaching methods and inadequate and/or irrelevant teachers (Najmonnisa & Saad, 2016), causes students to lack basic knowledge, skills, and attitudes learnt at K-12 level. The K-12 students do not attain the required scientific, arithmetic, language-related and other basic knowledge and skills. This issue is caused by imbalanced government and public behaviour towards private and public school systems, hence the quality of teaching varies across school systems, i.e., underpaid, ill-trained, and unqualified teachers are reported mostly in low-fee private and/or government schools situated in rural Pakistan (Kanwal et al., 2020). Hence, if observed closely, class-based disparity via different curricular and co-curricular activities endorsed by different schooling systems depicts the discouraging picture where students enrolled in elite private schools and government schools of metropolitan cities attain knowledge and skills better than their counterparts. Thus, poor physical and weak psychological environments hinder the development of the required knowledge, skills and attitude in K-12 students of Pakistan in general and in students from lower-income and poor-income families in particular.

Owing to poor quality of teaching and disparity in the education system, basic academic skills are weak in students. ASER-Pakistan (2019) reports that, in urban Pakistan, 30 per cent of grade 5 children could not read a grade 2 level story in regional languages, 34 per cent were unable to do two-digit division, and 33 per cent could not read English sentences. The same ratios for rural Pakistan are more shocking: 41 per cent, 45 per cent, and 43 per cent of grade 5 children were unable to read a class 2 level story, read sentences in English, and do a two-digit division, respectively. Moreover, the situation has worsened after the COVID-19 pandemic (ASER-Pakistan, 2021). In Pakistan, the population of rural areas is relatively poorer and its lifestyle depends upon income from daily wages and small businesses. ASER-Pakistan (2019) highlighted that children in rural areas are at more disadvantage. Moreover, poor academic skills result in students' disengagement in learning (SDL) which leads to school dropout.

The SDL can be described as a long process which begins in early adolescence and gets worse gradually when the

student moves from one grade to another. A longitudinal analysis of 13,000 secondary students showed that the majority (60%) of them displayed visible characteristics of SDL in their middle grades (Balfanz et al., 2007). Goodwin et al. (2012) asserted that students with poor financial backgrounds and low achievement have low optimism and encouragement, so they are more likely to drop out of high school. Another study indicated that students showing visible disengagement in elementary and middle grades (1-8) are more at risk of dropping out in secondary grades (Hammond et al., 2007). Research shows that student tardiness, poor attendance, failing major courses, i.e., math, science, English, etc., or poor final grades are characteristics of the SDL, which are also reported as early predictors that could ultimately lead to failure/school dropout in secondary school/college. It suggests that students' involvement in studies at the elementary level can be considered both as the origin and viable litmus test for their academic achievement and dropout in future. As discussed earlier, the aforementioned characteristics have also been reported in schools in Pakistan. However, in Pakistan, products are studied more than processes. Therefore, different characteristics of SDL and issues like school dropout are researched as separate elements.

However, attempts to study these problems in depth and at the grassroots level can hardly be seen. If such an attempt was made, it was hardly sustained until the problem was solved or, at least, the problem was studied at a satisfactory level. Thus, the already long list of gaps in educational policies and practices of Pakistan is gradually increasing most of which, unfortunately, have already been acknowledged and/or accordingly improved in other countries for decades. The research studies and reports highlight CE – an integrated approach – as a common solution to a majority of the aforementioned problems, which is completely missing in the educational policies and practices of Pakistan. Here, the key issue is that career-related guidance in Pakistan is considered a discrete process, which is not a suitable solution. Comparatively, mainstreaming career-related guidance in education is the evidence-based solution, named CE.

Significance of Career Education

CE is defined as "school-based efforts to prepare students for career-related developmental tasks, including career choices" (Akos et al., 2011, p. 2). It includes all curricular and co-curricular activities at classroom and/or school levels. In the very beginning, nearly five decades ago, CE was proposed at the K-12 level for improving student achievement, filling the gap between schooling and the job market, and imparting skills and work attitude in students who do not continue education after high school, encouraging women to join the world of work, imparting skills which are dire need of the then current era and so on (Hoyt, 1975). The seminal work on CE by Hoyt (1975) led to the first statement on CE that was an official response to huge dissatisfaction with the American education system by a great number of teachers, parents, students, and other community members. The dissatisfaction was based on 11 main points which are also repeatedly highlighted in the education system of Pakistan. A few criticisms articulated that students leaving schools were mostly "deficient in the basic academic skills" and the inability of education to "meet the needs of minority or economically disadvantaged" people. Similarly, all of the 11 major criticisms reported by Hoyt (1975, pp. 5-6, emphasis in original) are also clearly visible in the education system of Pakistan. However, timely empirical research in the USA led to CE as a solution. However, in Pakistan, such criticisms have not been studied in depth, let alone finding an association between these problems and other factors which might lead to solutions such as CE.

The first official statement on these criticisms, by the US Office of Education, highlighted the relationship between education and individuals' lifestyles. Thus, a response to the cited criticisms needed a common element in both education and people's lifestyles. For that, the concept of "work" seemed as one such element that was logically related to the needs of all individuals in education and it was also related to societal and individual goals. The concept of 'work' then led to the concept of CE, which emphasised "the goal of education as preparation for work" without demeaning or distracting other important goals of education. Also in Pakistan, the majority of students could not see meaningful relationships between what learning takes place in school and what they have to do after completing a certain level of education; which is true for both those who continue their education and the ones who drop out.

Moreover, in the last two decades, CE has been longitudinally studied to see its relationship with particular factors. The results show that it has a positive impact on students' engagement in learning (Balfanz et al., 2007), school valuing (Orthner et al., 2013), and the rate of school dropout (Sparks et al., 2010). An experimental study involved a nine-week career intervention program for middle-grade students, aimed at linking academic learning with the world of work (Legum & Hoare, 2004). Teachers, interviewed after the intervention, reported that the intervention group students showed positive changes in terms of self-esteem, classroom participation, motivation towards academics, and more willingness to attempt schoolwork. The findings of the study also reported positive gains in academic achievement for the intervention group.

The CareerStart programme was initiated by Orthner et al. (2010) which targeted middle-grade students. The programme aimed to encourage educational reform by promoting collaboration between educationists and interested businesses. Simple lessons were provided to teachers to integrate career readiness into classroom activities, and the success of the programme was acknowledged by all collaborating people. The CareerStart programme was acknowledged for encouraging student engagement in classroom activities since students can see the connection between classroom learning and the world of work in their local communities (Orthner et al., 2010). The programme advocated that students must be provided with opportunities to develop a solid connection between academic learning and their career aspirations. The CareerStart programme also aimed to "promote the relevance of presented material" in middle grades to enhance students' interest and engagement in the content of four core courses, namely, mathematics, science, language arts, and social studies (Orthner et al., 2012, p. 2). Research participants, i.e., teachers and students, were tracked from 6th to 8th grades and beyond. One of the conclusions was that it is "better for students when more of their teachers provide career-related examples in their classes" (Orthner et al., 2012, p.3).

Orthner et al. (2013) measured the impact of the CareerStart programme and career-relevant instructions (CRI) on the psychosocial engagement of students using two standardised scales, i.e., school engagement and school valuing. The longitudinal cohort of 3,649 students was the sample for this study. The findings of this study showed that students in the treatment schools were "41% more likely to report above average levels of school valuing," suggesting a significant positive effect of CE (p. 34). The authors contended that the CareerStart programme was important for students' psychosocial engagement in middle schools. An additional analysis of this study found that regardless of treatment or control group, all the students who reported receiving CRIs also reported higher levels of school engagement and school valuing. The programme highlighted the importance of the CE in the teaching-learning process at the elementary level, which implies that policymakers to make career-related guidance concatenated part of the teaching-learning process from early grades.

However, in Pakistan, these issues are merely 'reported' followed by 'suggesting possible solutions', whereas the same problems were tackled starting in the mid-80s in North America, Northern Europe, Australia, and New Zealand and before the start of the 21st Century in some of the Asian countries. It shows a serious gap in the policy and research in Pakistan. So, it is a significant gap that CE has not been highlighted as a solution by policy analysts and educational researchers in Pakistan. Therefore, this study advocates for mainstreaming CE which is a dire need of the time.

Problem Statement: Career-Related Policy and Research Gap at K-12 Education in Pakistan

Since the majority of problems can be solved through career-related learning, a major part of this project was dedicated to reviewing research studies with career-related lens. Policies do not formally focus on career-related learning in K-8 grades. Career counselling (CC), which is a discrete process, is advocated in the National Education Policy 2009 (GOP, 2009) and also in sector plans of Gilgit Baltistan, which has been subject to critique. Policy papers report poor provision of the CC, or its absence, on practical grounds (GOS, 2014). GOS (2014), while considering the lack of the CC, mentions that secondary and higher secondary graduates "do not have relevant market and life skills." Although advocated much for 9-12th grades, career counselling and guidance are not

discussed as an integral part of the teaching-learning process. However, the current discourse strongly supports an integrated approach, which is called CE.

In line with policy, research studies under the umbrella of the CC in Pakistan also show that the focus has been less on K-8 grades while highlighting the gaps of either absence of CC or providing it in an unfitting way (Bilal & Malik, 2014; Zaman et al., 2014; Yaqoob et al., 2017; Nasir et al., 2017). Almost all studies conducted under the umbrella of K-12 level in Pakistan explore either perspectives or current practices, if available, of the CC. Bilal & Malik (2014) reported that 20 out of 25 undergraduate students mentioned that they did not receive the CC at the school level (grades 1-10). Moreover, 5 participants said that they "were guided for the subject selection" only (p. 6). At the college level, 78 per cent of the participants were not guided in selecting a career path. A smaller number of career-related research studies is itself significant evidence showing the lack of focus on this very important aspect of education.

The above discussion shows that an integrated approach towards career development known as CE seems to be missing from policy and research. Moreover, policy and research mostly present career-related guidance at secondary stages even though international research confirms the benefits of CE at the elementary level. One of the local studies by Khan (2018) recommended that CE is necessary at the elementary level. This makes the case to look deeper into the literature to further understand the application of CE in the schooling process for career development and develop a framework that may support implementing CE in Pakistan. Hence, this study is based on the following objectives:

- To conduct a systematic analysis for reviewing career-related research studies in Pakistan.
- To develop the contextually relevant framework of career education for K-12 Education in Pakistan.

2. LITERATURE REVIEW

Problems in the Education System of Pakistan

Pakistan's education sector faces many problems and challenges. Currently, one of the major problems is school dropout, particularly among girls in rural areas. UNICEF has estimated that around 22.8 million children are out of school in Pakistan. According to the Pakistan Education Statistics Report 2019-20, the dropout rate for primary schools is 18.7 per cent, 25.5 per cent for middle schools, and 22.4 per cent for high schools.

Another issue is the provision of quality of education especially in the public sector, with many students performing poorly in national exams and lacking basic literacy and numeracy skills. The ASER Pakistan reported that in rural Pakistan only 55 per cent of grade 5 students could perform grade 2 level competencies, and only 51 per cent could do two-digit division. Likewise, 74 per cent of grade 8 students could read a story in Sindhi or Urdu and 63 per cent could solve two-digit division problems (ASER-Pakistan, 2021). Such results indicate disengagement and lack of interest in learning, which can lead to poor academic performance and dropout. Learners often do not see any link between their schooling and future life (Hassan et al., 2020). Additionally, some highlighted barriers may lead to disengagement, lower interest, and indecisiveness, i.e., financial and lack of proper CGC (Asghar & Ajmal, 2022).

Other challenges in the education system of Pakistan include lack of resources, inadequate teacher training, outdated teaching methods, improper career orientation, and unequal access to education. Moreover, rural and remote areas have limited access to quality education. Similarly, there are gender disparities as girls face social, cultural, and economic barriers to education (ASER-Pakistan, 2019 and 2021). Overall, addressing these

challenges and improving the quality of education in Pakistan is crucial for the country's future development and prosperity.

Educational Problems Affecting K-12 Students' Career Development

Class-based disparities in education can have a significant impact on the future/career development of students. These disparities arise due to the difference in the quality of education and development of students who belong to different socio-economic backgrounds. Research suggests that students from elite backgrounds can have access to better educational resources such as trained teachers, better facilities, counsellors, and advanced curricula, which help them in more informed career decisions (Kanwal et al., 2020; Kayani et al., 2017). As a result, they are better prepared in schools and can lead to better career opportunities in future. On the other hand, students from lower socioeconomic backgrounds may not have access to the same quality of education. Therefore, they may struggle for better career opportunities or to compete for high-paying jobs.

Different studies (see, for example, Kanwal et al., 2020 and Kayani et al., 2017) show that class-based disparities can impact career development through the development of skills and knowledge required by high-paying jobs. This means that students from more privileged backgrounds may have access to more advanced coursework and extracurricular activities that help them develop skills such as critical thinking, problem-solving, and leadership. On the other hand, students belonging to lower socioeconomic backgrounds limited access to quality education that manifests in different forms such as family pressure to earn, poor quality of education, and lack of resources. In a nutshell, class-based disparities can impact students' career development both in terms of skills and knowledge to succeed in the job market and also access to more opportunities. Yousaf & Akhter (2018) highlighted information skill development as essential aspects of students' career development. For students' career development, information skills are the ability to identify and solve problems in the workplace. It has been demonstrated that students who are better equipped with problem-solving skills in schooling can handle challenges and their chances of success in their careers increase.

Another problem that negatively affects the future development of students is parental dissatisfaction. According to Hussain & Hameed (2014), there is a growing concern among parents about school preparation for future life. This stems from the parents' feelings that schools are not doing enough to prepare students for life beyond the classroom. There are multiple reasons highlighted in research (Ali & Abid, 2021). One of the reasons for parental dissatisfaction is the lack of emphasis on practical skills in schools. Parents often complain that schools focus too much on academic knowledge and not enough on practical skills, and schools should be doing more to teach them, which are essential for success in the workforce. Another reason is schooling focuses on standardised tests and students require individual support. This lack of attention may leave students unprepared for the future. The consequences of parental dissatisfaction with school preparation for future life can be significant. Students who feel unprepared for the future may struggle to find meaningful employment and may have difficulty advancing in their chosen careers. Additionally, students who feel unsupported by their schools may be more likely to drop out of school, leading to a lack of education and training that can further harm their career prospects.

Regarding learning mathematics, research has shown that various factors can affect a student's ability to learn mathematics, including syllabus, attitudes, the medium of instruction, curriculum, pedagogy, background knowledge, regional background (i.e., urban vs. rural), and gender (Shoaib & Saeed, 2016; Ali, 2011). There is also a debate on the role of region in affecting the learning of mathematics. Students in rural areas may lack access to quality teaching and learning resources and come from lower socioeconomic backgrounds, which can limit their understanding of mathematical concepts. On the other hand, an urban setup has an elite system of education giving access to quality education. This is further entrenched in the medium of instruction, in which, in some cases, students might be required to learn mathematics in a language that they are not proficient in, which can lead to a lack of understanding and confusion. This is especially applicable to the Pakistani context where there are disparities where the elite system follows English. Gender disparities are also prevalent generally in

education and particularly in mathematics education (Shoaib & Saeed, 2016; Tatlah et al., 2017). Research has shown that girls are more likely to have negative attitudes towards mathematics and have lower achievement scores compared to boys.

In addition, negative and weak guidance and counselling practices can have significant negative impacts on students' academic, social, and emotional development. Research has highlighted several ways in which poor guidance and counselling practices can affect students (Ali & Zulfiqar, 2018; Ullah et al., 2020). Students who received poor-quality guidance and counselling were more likely to struggle academically, have lower GPAs, and report higher levels of academic stress. Negative guidance and counselling practices can lead to poor decision-making and career choices. Students who received weak guidance and counselling were more likely to make poor decisions about their education and career paths, which can limit their future prospects. Furthermore, negative guidance and counselling practices can perpetuate social inequalities. Students from disadvantaged backgrounds are more likely to receive inadequate support and guidance from counsellors, which can further widen the achievement gap between different groups of students.

Integrating Career-Related Learning in Curriculum: Need of the Hour

In the globalised world, the education system needs to be updated to meet the demands of 21st-century skills, where almost all skills also come under the umbrella of CE. Studies suggest that integrating technology into career-related curriculum is essential for the Pakistani education system. Technology integration can foremost improve the quality of education. Integrating technology into a career-related curriculum can better prepare students for the demands of the modern workforce (Ali et al., 2019; Alam & Ullah, 2021). As technology plays an increasingly important role in many industries, students who are proficient in using technology will be better equipped to succeed in their future careers. This requires a thoughtful and inclusive approach towards integration due to the cultural and economic conditions of the country.

Sports and co-curricular activities also play a vital role in the cognitive, emotional, and social development of students. These activities provide an opportunity for students to learn and develop life skills that are essential for their future careers. In the Pakistani education system, the focus on academics is often high, while co-curricular activities are not given the same importance. However, there is a growing realisation that sports and co-curricular activities can help develop students' careers. Several studies (Hussain et al., 2017; Ahmed et al., 2019; Maqsood et al., 2021) have shown that co-curricular activities need to be emphasised, which is also the critique with a career lens. This is because co-curricular activities are found to be important determinants of building soft skills/non-cognitive skills. These skills, like perseverance and grit, are correlated with future career success. Research also demonstrates that these skills are essential and can be used in more disadvantaged schools. Participating in sports and co-curricular activities also helps in developing emotional skills. Students learn to manage their emotions, develop resilience, and build self-confidence. These skills are essential for students to succeed in their careers and personal lives. In terms of social development, co-curricular activities provide an opportunity for students to interact with their peers and build social skills. Students learn to work in teams, communicate effectively, and develop leadership skills. These skills are highly valued by employers and can make a significant difference in the students' career prospects.

Another key area that needs the attention of policymakers is the primary level of education (Ghazi, et al., 2014). A high-quality primary education system can provide equal opportunities for all children to achieve their potential, regardless of their social status. This can help reduce inequality in society and promote social mobility. The primary level is crucial because it is the foundation of students. Particular focus on mathematics and science needs to be given at an early stage so that a strong foundation can be built. Otherwise, it may become challenging for students to excel in these fields later.

Career Education: An Integrated Approach

Career education has been defined differently in various educational settings. Akos et al. (2011) defined CE as the collective efforts of schools encompassing all activities to make students capable of their career choices. The current study is also based on the above definition in which schools play a holistic role in student career choice. Research suggests that career education interventions focus on knowledge, skills and experiences that develop the right attitude to make informed decisions about future development (Lindstrom et al., 2020; Li et al., 2021). Career education is an integrated approach which has positive effects on students' academics, personality, and overall future development (Draaisma et al., 2018; Lindstrom et al., 2020; Li et al., 2021).

Significance of Career Education

School-wide CE plan focuses on school learning objectives to enhance students' academic excellence. Thus, CE has significance for the K-12 level students. It helps to retain students' engagement, lowers the school dropout ratio, and supports transitional experiences (Plasman, 2018). Engagement with learning and school is important for students for the completion of schooling years (Wang & Fredricks, 2014). Research has shown that lower-level engagement can lead to school dropout (Archambault et al., 2009). Research suggests that engagement is a malleable trait as individuals' behaviour can be modified for willingness through actions or intervention (Appleton et al. 2008). This enhances the need for a potential role of career education to increase students' engagement. School-wide Career education plans simultaneously focus on school learning objects involving school to enhance students' engagement. Career education as a tool has the potential to overcome personal, professional, and educational problems by providing students with knowledge, skills and the right attitude that help individuals make informed decisions (Lindstrom et al., 2020; Li et al., 2021). CE provides a set of skills and guidelines and connects learning with future work to expand and open opportunities to break the poverty cycle and promote social mobility and cohesion (National Careers Institute, 2022). CE ensure success for individuals by equipping them with necessary soft skills and employability skills regardless of their socioeconomic status. El-Hassan & Ghalayini, (2020) highlight that currently, career education focuses on career competencies, i.e., self-efficacy that help in the face of uncertainty. These skills can bridge the gaps between individuals and overcome the disparities in society.

Moreover, CE enhances the engagement of students with learning and school (Wang & Fredricks, 2014). Engagement is a malleable trait as individuals' behaviour can be modified for willingness through actions or intervention (Appleton et al. 2008). This enhances the need for the potential role of CE to increase students' learning engagement and overcome their fears.

Career Guidance, Counselling, or Education? A Case of Pakistan

The situation is not different in Pakistan. Like other developing countries, research in Pakistan also shows that there is very little focus on career-related learning in middle schools, and it is absent in primary schools. The National Education Policy 2009 of Pakistan advocates for CGC, but it has also been criticised for either not providing CGC its poor provision (GOP, 2009). Sindh Education Sector Plan 2014-18 (GOS, 2014), while considering the lack of CGC, mentions that secondary and higher secondary graduates "do not have relevant market and life skills" (p.139). It is therefore the provision of CGC at secondary and higher secondary levels has been advocated in the educational policies (GOP, 2009; GOS, 2014). As mentioned above, CGC is not provided as part of the teaching-learning process and the current discourse strongly supports an integrated approach, which is called CE. However, the educational policies of Pakistan do not discuss career awareness as part of the teaching-learning process, which is considered a shortcoming of the educational policies. Moreover, in the education system of Pakistan, the first ramification of students, in terms of further education, occurs when they enrol in grade 9. However, the National Education Policy 2009 does not mention CGC for students before they make their final choice for grade 9 (GOP, 2009). Conversely, GOS (2014) mentions that career counselling should

be provided to students before they enrol in grade 9, but it has not been stressed the way CGC has been stressed for students of grades 9 to 12.

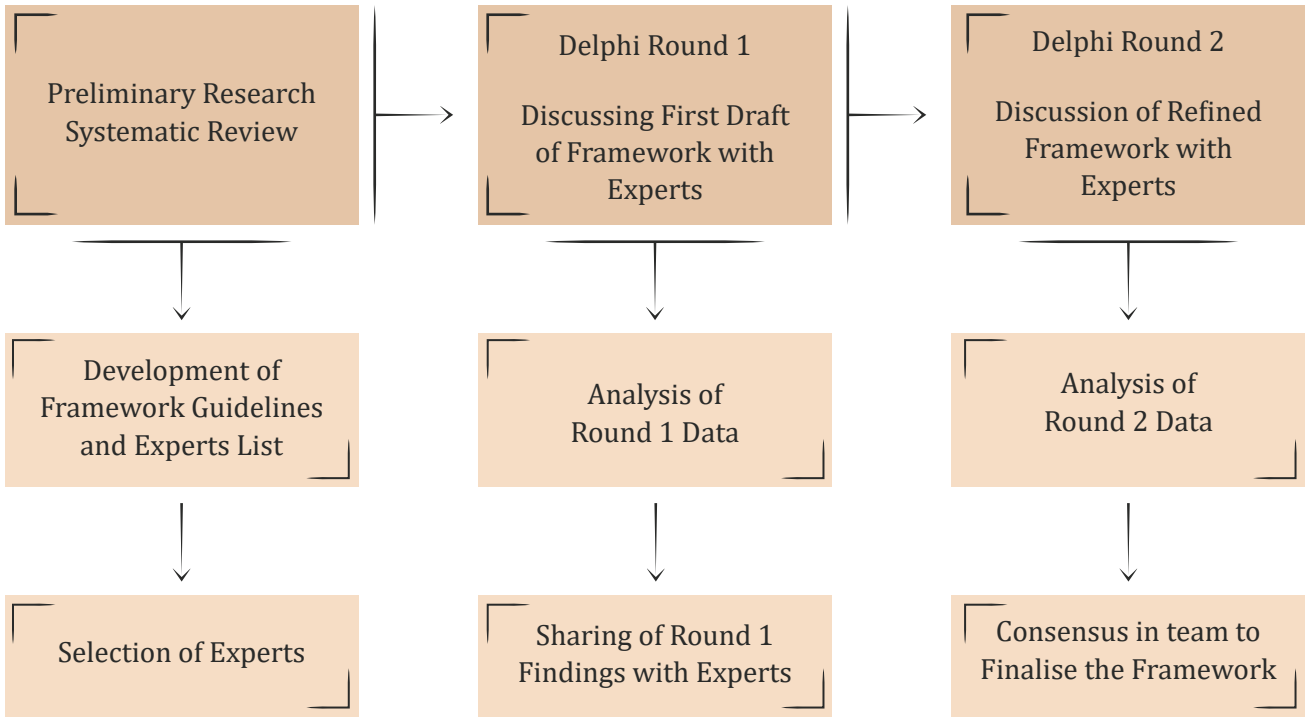
Conclusion

Research and policies of education in Pakistan show that CGC is not provided as a part of the teaching-learning process. Overall, the literature indicates a clear difference between CE and CGC. The difference is that although CGC is an inclusive approach, it is mostly advocated only for the students of grades 9 to 12 grade. Moreover, the existing CGC facilities are mostly given to students of private schools, while the same facilities are almost non-existent for government schools. Therefore, a crucial need, which the current discourse on career development strongly supports, is CE, which is an integrated approach. Hence, this research aimed at developing a CE framework that would serve as a building block for bringing CE to Pakistan.

3. METHODOLOGY

A robust three-phase approach was used to meet the research objectives of this research project. First, a systematic review was conducted to understand the research trends in line with CE and guidelines were prepared to develop a CE framework. The systematic review played the role of a springboard for achieving the major objective of framework development. Initially, a draft framework was prepared based on findings from the systematic review. Later, it was validated through a two-phase Delphi technique in which field experts were consulted who were familiar with the concept of CE. Figure 1 summarises the process and details of each phase.

Figure 1: Summary of Research Process



Systematic Review

The systematic review approach was adopted as a preliminary research method to build the base for devising a robust framework for CE. This approach was used to translate research findings regarding gaps in the career education process into practical solutions to the existing educational problems in Pakistan (Hammersley, 2020). In the same vein, the major objective of this research was to develop a framework of CE as a solution for developing a link between school and learners' professional lives.

Search Strategy

Well-known databases, such as Elsevier, EBSCOhost, Emerald, SpringerLink, Sage, Tylor & Francis, and JSTOR, were explored to search the peer-reviewed articles for this systematic review. Besides, for national-level research, other resources, such as the HEC research portal, were also examined to collect relevant literature. While searching, the keywords used for the initial stage were career education, career development, career guidance, career counselling, and career awareness. A few of the research terms were added during the search process such as career orientation, career management, and career approach.

Selection of Articles

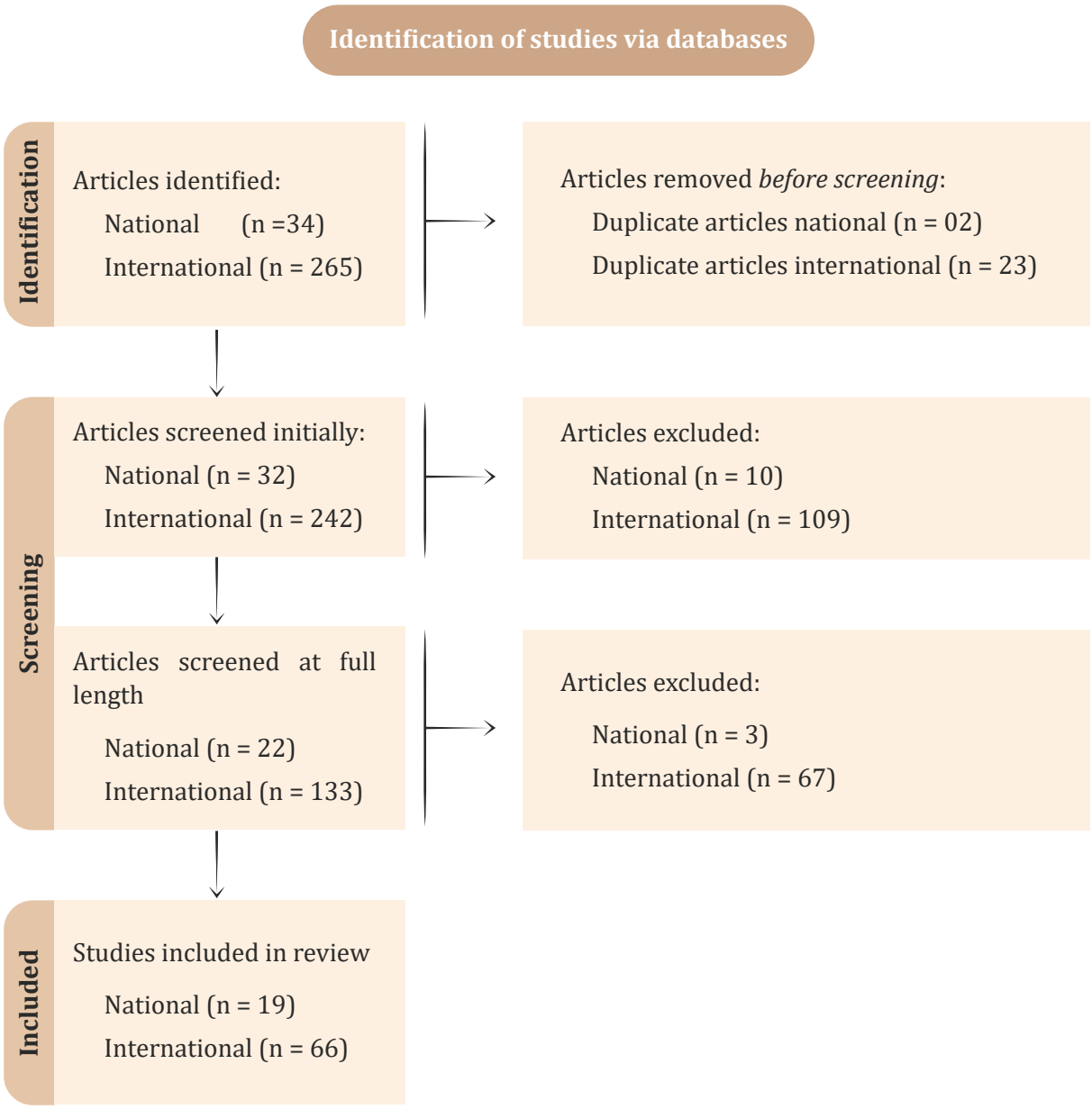
In a search result, around 265 articles were found in the international category and 34 articles in the national category. The pre-decided selection criteria (see Table 1) were used to select the article for systematic review. The rigorous process of selection of the articles was followed to maintain quality. Initially, duplication of articles was checked to avoid confusion. Secondly, articles were initially screened using the inclusion criteria. Lastly, articles were thoroughly read to match the objectives of this research. As a result, (Figure 2 presents the summary of the process), many articles were excluded and the final number was 66 in the international category and 19 in the national category.

Table 1: Article Search Criteria

<table>
<tr><th rowspan="2"></th><th colspan="2">National (Local)</th><th colspan="2">International</th></tr>
<tr><th>Inclusion</th><th>Exclusion</th><th>Inclusion</th><th>Exclusion</th></tr>
<tr><td>Population</td><td>K-12 level in formal schools. (primary, elementary, secondary, and higher secondary schools)</td><td rowspan="4">ECCE
1. Higher Education,
2. Non-formal
3. Religious Schools
4. Research Studies Published before 2012</td><td>K-12 level in formal schools</td><td rowspan="4">1. ECCE
2. Higher Education
3. Non-formal
4. Religious Schools
5. Publications before 2016</td></tr>
<tr><td>Setting</td><td>K-12 Schools across Pakistan</td><td>K-12 schools across the globe</td></tr>
<tr><td>Study Design</td><td>• Quantitative, qualitative and mixed methods studies
• Peer-reviewed research articles</td><td>• Quantitative, qualitative and mixed methods studies
• Peer-reviewed articles</td></tr>
<tr><td>Research Outcomes</td><td>Career-related guidance/awareness/counselling/education for K-12 students in Pakistan</td><td>Career Education provided to K-12 students to solve educational problems i.e., student disengagement in learning, school dropout and so on</td></tr>
</table>

The research articles provided a base for the development of a CE framework and other frameworks were also reviewed while developing the first draft of the framework. The development of the CE framework is discussed in the next section.

Figure 2: Systematic Research Process



Development of Career Education Framework for Pakistan

The first draft of the context-relevant Career Education Framework for Pakistan (CEFP) was developed using the findings of systematic analysis from national and international literature and reviewing the existing frameworks. A four-component-based model of CE was conceptualised for the K-12 level of education. The four components discussed CE for the students of K-5 grades, middle grades, secondary grades and higher secondary grades, respectively. Each component was further divided into two distinct but interconnected parts, i.e., knowledge and skills. This first draft of the proposal was presented in Delphi Round 1 for feedback. The second draft included

'attitude' based on feedback. Details of the two Delphi rounds are presented in the next sub-themes and the final version of the framework is presented in Section 4.

Delphi Technique

This technique follows a 'series' or 'rounds' with the experts to establish group communication for developing a career education framework by consensus (Dijk, 1990; Powell, 2002). During the rounds, experts provide constructive feedback that can help to build a compact framework as per contextual needs (Pill, 1971). In other words, constructive feedback from experts helps in formulating new ideas during the development of the framework as the Delphi technique has been reported as significant in educational settings (Green, 2014). In a nutshell, the Delphi technique was best suitable approach to chain the experts together for finalising the contextually relevant framework for CE in Pakistan. In this way, the first draft went through the rounds mentioned below to be finalised.

Round 1

The first draft of the framework was presented and discussed with the experts in the career education field at this level. The experts were well-informed regarding the key concept of career education. Thus, they were asked for their critical analysis and expert opinions. The experts' critical input highlighted various dimensions to improve the CE framework considering the gaps in the current education system, strengths and weaknesses of curriculum goals in Pakistan, students' age, gender, and other context-relevant factors. Initially, it was planned to conduct the first round of the Delphi technique through email to reach out to the wider community of experts from various parts of the country. However, the response rate on email was very low, which compelled us to convert our strategy from online to face-to-face modality. As a result, we negotiated with a reputable social science institute in Pakistan to get constructive feedback. The institute generously supported us by connecting with career education experts, providing space, time, and other logistic support. Hence, comprehensive feedback was provided by career education experts (n=25) that helped to refine the framework. The provided feedback was incorporated, and the framework was revised for the second round.

Round 2

In this stage, the refined framework was presented to the experts to seek their guidance. The major change in the revised framework was the addition of a distinct part, i.e., attitude, to each component. Initially, each component had two distinct parts, namely, knowledge and skills, while attitude, as the third significant component, was suggested during the first Delphi round. Apart from this major change, some minor changes were made in a few statements of the framework. This iteration helped us to finalise the CE framework. The experts' feedback was incorporated after the consultative meeting to develop the final version of the CE framework.

Process of Delphi Rounds (Establishing Validity)

To make the framework development more reliable and authentic work, we invited people who had a basic understanding of career education as an integrated approach and who had worked on reviewing any of the education policies, curriculum, and other programmes in Pakistan with the lens of CE. A few of the experts had already done some research work with the lens of CE. The experts also had experience in providing K-12 students with regular career counselling and conducting occasional seminars for career counselling of K-12 students.

Consulting Experts

For understanding the process of experts' selection for Delphi rounds, the distinct position of career education must be understood. CE is an integrated approach but most of the research work conducted in Pakistan has been

completed trough a segregated approach, i.e., career guidance and counselling, making it very difficult to locate experts for this research. Fortunately, the only prestigious social science institute that is offering a master's degree in career education helped in this process. With their help, we had more than 25 experts for Delphi Round 1 and more than 10 experts in Round 2, excluding our team.

Ethical Considerations

All possible ethical considerations and professionalism were strictly followed in Delphi rounds. The communication was very professional. The experts were not approached in their individual space, but rather only in their professional space. Since this method of research could have been new to some of them, the objectives of the research and expectations from experts were communicated to them, and all their queries were clarified before the Delphi rounds. Moreover, each of them was asked to not mention the names of any organization of the individuals during written or verbal feedback. Verbal feedback was voice-recorded after obtaining the individual's consent. A few did not allow voice recording, so they were allowed to participate without voice recording.

Moreover, since their verbal and written feedback was only for the development of the framework, our team is sure that this data has only been used for improving the framework. This data has neither been used as separate findings nor will it be used on any other platform.

Conclusion

A well-thought-out research approach was used to finalise the context-relevant framework using systematic review and Delphi rounds. Initially, the literature was thoroughly explored to conceptualise the framework and later framework was presented in front of experts to seek their expert opinions. Resultantly, the first framework of Career Education in the Pakistani context was developed.

4. FINDINGS AND DISCUSSION

The findings are divided into two sections: a systematic review and development of the Career Education framework. The systematic review is further divided into two parts, which are global and national literature. In global literature, there are three major themes, namely, career education solutions to educational issues; issues in integrating career education in schools; and successful integration of career education. The national literature is based on 4 themes, i.e., (i) career guidance and counselling and its role; (ii) grade-level advocacy of career guidance and counselling; and (iv) the absence of career guidance and counselling in curriculum, factors influencing career choices, and the need to include career education.

Global Literature

Global studies (n=66) were reviewed systematically to address the first objective of this research which was to review the existing literature on CE. The following section presents the findings from the review which are divided into different themes and sub-themes.

Theme 1: Career Education as Solution to Educational Issues

The literature highlights the ways through which CE can play its part in solving the myriads of educational problems globally and locally. Specifically, CE has the potential to resolve the key issues of the local context, i.e.,

school drop-out, gender issues, and poor student academic achievement. The details are discussed below.

Solution to Student Academic Development, School Dropout and On-time Completion

Empirical studies on CE explicitly demonstrate it as a solution to many problems that the education system of Pakistan is going through. CE integrated into the teaching and learning process, creates a strong foundation for the career development of students by acquiring knowledge about their characteristics, interests, and skills (ACTE & Career Cruising, 2018). Several studies indicate that CE if integrated properly into the curriculum, can have a positive impact on the students' learning outcomes, their engagement in learning, preparation for future careers and their self-efficacy (Perry et al., 2018). The integrated nature of CE engages students in career-oriented tasks to enrich their life experiences of their desired careers. However, the provision of CE needs to be consistent to remain on the school-to-career pathways. In this regard, Gottfried & Plasman (2018) and Perry et al. (2018) demonstrated that students who took CE-related courses at the secondary level had a lower chance of dropping out of school. Moreover, in particular to female students from rural areas, longitudinal findings revealed a higher on-time completion rate, positive behaviour, and high perceived value of education (Xing & Gordon, 2021). Additionally, studies on CE also support the assumption that students who are provided with CE are likely to receive higher degrees, higher income, healthy life behaviours, and lifetime satisfaction (Perry et al., 2018; Morita et al., 2018). It is possible when students perceive their schooling as purposeful or career-oriented (Lindstrom et al., 2020). Also, they experience things that they can connect with their interests and abilities. The inclusion of CE benefits children by providing opportunities to explore different careers. This phenomenon increases children's engagement towards education and later success in future careers (Clarke & MacLeod, 2018).

Furthermore, student dropout has been a nagging issue in the education system of Pakistan for many years, which affects the transition from early schooling to higher grades. The transition becomes challenging due to increasing academic burden, changing student-teacher and peer-to-peer interactions, and sometimes leading towards dropping out of school. However, this transition can be productive and prove as an opportunity for growth and self-discovery by including CE from early schooling. Scholarly perspectives on CE endorse the provision of CE from the primary level because children are unintentionally or unconsciously learning about careers. They are developing an understanding of careers inside the schools as well as outside the school from their parents, family members, environment, and friends. Therefore, it is easy to convert this unintentional learning to intentional learning through CE. In doing so, the children develop good judgment, critical thinking skills, and think before acting (Mordal et al., 2020). When students are given information and prepared for their careers, it has a positive effect on meeting their career aspirations (Blotnicky et al., 2018; Kang et al., 2021) especially in science careers (Kang & Keinonen, 2018; Kang et al., 2021; Reiss & Mujtaba, 2017) and increase their self-efficacy (Turner et al., 2022).

Moreover, the presence of ‘trusted adults’ is reported to have a positive effect on the development of career aspirations. Thus, the development of CEFP emphasises the support of ‘supporting people’ (parents, teachers, friends), and 9-12th grade students are expected to reflect on supporting people’s input in their career aspirations. Moreover, studies also report the daily/weekly provision of career-related activities in elementary grades. Thus, the CEFP framework developed in this study suggests that career-related tasks should be given on a daily/weekly basis for all K-12 students for more promising results.

The Solution to Gender Inequality in Developing and Developed Countries

The integration of CE in schools is regarded as an equity function, where most disadvantaged students benefit from career awareness and support in formal settings (Lindstrom et al., 2020). Gender issues have been persistent in the developing and developed economies. Some professions, like teaching, are regarded as suitable for girls, while other sectors, like IT, science-related jobs, and engineering, have huge disparities in terms of gender. These gender disparities are influenced by societal and political factors, economic structures, insufficient

parental support, and improper schooling (Han et al., 2018; Ünlü & Dökme, 2020; Vainionpää et al., 2020). A study conducted on Finnish high school girls (Vainionpää et al., 2020) stated that the lack of knowledge and interest among girls led to their exclusion in opting for careers related to the IT sector. However, family support was seen as a significant element in shaping the career choices of girls. The support towards males and females may also vary in schools. For example, females were supported more than their male counterparts in the engineering field (Kutnick et al., 2020). In developing countries, education was moderately associated with proactive career orientations (Kostal & Wiernik, 2017). In these countries where employment opportunities are scarce, education can be a resource that offers individuals control over their career-related perceptions.

Studies also show that career choices across genders in STEM fields are shaped at the primary level in positive ways (Ünlü & Dökme, 2020) and can be very helpful in mitigating gender inequality. It is important to consider that students' interest in STEM differs according to gender, context, socioeconomic background, and school level. Male students at the secondary level show more interest in STEM careers than females (Christensen & Knezek, 2017). On the other hand, in Turkey, female students have more interest in science in middle schools and high-level achievers are more likely to be interested in science, mathematics, and STEM than low-level achievers (Ünlü & Dökme, 2020). Additionally, knowledge about STEM education and careers has a positive impact on students' self-efficacy regardless of the intention for a STEM career, which may change in higher secondary grades, e.g., 9th and 11th (Blotnicky et al., 2018).

Development of Transferable Skills

In preparing students for future careers, scholars argue that the development of transferable skills such as communication, confidence, decision-making abilities, and critical thinking skills are important because these skills are used for many roles and responsibilities. The view asserts that in the era of advancement, the job market will require multi-tasking abilities. Maree (2020), in the domain of career development, refers to it as 'pervasive indecisiveness', which includes anxiety, lack of self-efficacy, insecurity, and so on, which impede career success. Evidence from South Africa shows that career-related interventions that enhance elements like self-assessment and reflectivity can boost career adaptability (Maree, 2020). Moreover, career-related interventions lead to greater self-efficacy when engaging in career exploration (Babarović et al., 2020; Turner et al., 2022); self-improvement and self-exploration (Zhang & Chen, 2020); develop critical thinking skills, good judgment and motivation to learn about different professions (Mordal et al., 2020).

These findings suggest that career-related interventions must include such analytical and reflective skills. Therefore, in light of these findings, the CEFP has been developed with the lens of career-related interventions. Also, this may have implications for other factors, such as gender. For instance, research revealed that girls with low self-efficacy could form the belief that they cannot succeed in mathematics and science, hence lowering their chances of participating in STEM careers. Thus, the CEFP includes a visible factor for reducing such traditional and gendered disparities. The transferable skills are associated with developmental transitions (Savickas, 2019), and if students' career identity and self-efficacy are enhanced early, it will influence their personal lives and equip them for career challenges and transitions. Since transferable skills can be directly or indirectly nurtured across subjects, these need to be introduced in the early stages of individuals' lives. Also in the CEFP, we suggest that CE should be introduced in the core curriculum i.e., general subjects for K-12 grade students. Additionally, some of the items presume the learning of core curriculum, and career-related tasks in the CEFP are based on learned concepts. For example, developing a CV/resume (career-related task) presumes students' writing skills learned in (English and regional) languages. However, the teacher's role is integral to identifying students' transferable skills such as problem-solving, interpersonal skills, and decision-making abilities in curricular and co-curricular activities. There is a broader consensus that developing the right interest among students has a positive lifetime impact (Mupinga & Caniglia, 2019).

Theme 2: Issues in Integrating Career Education in Schools

The provision of CE should not be viewed in a way where employability is considered a 'product'; rather, it is a process of learning which emphasises the role of educators to ensure reflective activity in the schools. However, as pointed out by Daubney (2021), the focus on the acquisition of knowledge has blurred the relationship between education and the transition to work. Even if transferable skills are being developed in schools, the students are unaware of it or their applicability. While academic achievement is important, the integration of CE would provide meaning to students' academic achievement (Xie et al., 2019). There are several other issues, as discussed thematically, that emerged from the literature in integrating CE.

Students Lack Career Preparedness in Schools

The issue of students being unprepared for future careers is persistent both globally and nationally. Several research studies indicate that students lack knowledge and career readiness. Also, students are unaware of the knowledge and skills required for their preferred jobs or the demands of particular jobs (Mupinga & Canigilia, 2019; Ridge et al., 2020). Students' of lack knowledge about career readiness indicates the disconnection between school-based courses and the choice of the desired career pathways in higher education and future careers (Mupinga & Canigilia, 2019; Kutnick et al., 2020). This is based on hindrances faced by students in the transition from one level of schooling to another. As a result, students who are not satisfied with academics in which they are not interested may result in dropping out, causing stress, and demotivation. Lindstrom et al. (2020) identified in a study conducted on underserved youth in the USA that college and career preparedness are associated within the context of school, community, and family if enabled properly, will provide uniqueness in college and career readiness.

Gender Inequality, Class System and Job Market

Gender inequalities have been frequently identified both as a solution and a problem in the literature. Regarding gender, the occupations have a disproportionate representation of females. For example, the study by Vainionpää et al., (2020) showed that more girls are needed in the IT sector, while boys attending secondary schools had more interest in STEM-associated careers than girls (Christensen & Knezek, 2017). The study also showed that a lack of knowledge and interest in careers created exclusion. Another meta-analysis by Kostal & Wiernik (2017) reported that in countries where gender inequality is high, males exhibit a higher level of new career orientations. Rather than individuals' own choices, these exclusions are shaped by the powerful economic, political, and social structures restricting information and free choice. Girls belonging to low social backgrounds have limited ability to access the material required for pursuing their desired careers. Kutnick et al. (2020) also showed that the ecosystem in schools does not promote engineering aspirations. The aspirations are guided indirectly outside the school.

Theme 3: Successful Integration of Career Education

Successful integration of CE requires an 'integrated approach' rather than teaching it in isolation from the subjects or introducing it as a separate subject (Røise, 2022) to create a connection between different school contexts and the world of work (Plant, 2020). Since children learn about careers at home and from society, CE needs to be introduced in the early years of schooling to make sense of their interests. In the early stages of schooling, children usually hold idealistic views about their careers which can be gradually shifted to realism when career-related activities are targeted (Blotnicky et al., 2018; Maree, 2020). According to Turner et al. (2022), the CE integration needs to be clear, specific, and aligned with the personal career goals which eventually drive exploration.

With integrative approaches, we do not want to limit it to the integration of career-related activities and experiences in academics. Rather, the approach can be broadly viewed from two distinct dimensions as suggested

by Maree (2020). First, in the temporary phase, career decision abilities are developed, or students need guidance and counselling interventions. Indecisiveness in this dimension may result in anxiety, insecurity, and inadequate self-efficacy. Second, the developmental transition is referred to as 'natural transition' where students are in the phase of choosing a subject or transitioning from lower-level of schooling to higher. The developmental stage requires information about subject choices, schools, etc., and needs to be assessed by counsellors. This results in improving their career identity to equip them to deal with challenges and transitions. This means that the 'integrative approach' or 'whole school approach' is the culmination of subjects that hold a framework of skills that are clear and consistent across all curricula, surface from different subjects, and connect and complement different subjects (Daubney, 2021).

Role of Parents and Family

Students learning about careers in not limited to school only. Directly or indirectly, students acquire career awareness from their environment, family, and parents (Welde et al., 2016). The parental role plays an important role in shaping and promoting or hindering career development. Clarke & MacLeod (2018) noted that parents have positive leverage on students' perceptions of careers and education. Several studies demonstrate that students get inspiration from their fathers, family members, cousins, or peers and tend to follow their footsteps which impacts their self-esteem, learning outcomes, and career success (Kier & Blanchard, 2021; Ridge et al., 2020), even more so for females in STEM-related fields (Kier & Blanchard, 2021). Welde et al. (2016) suggested that such career education strategies should be involved where parents, friends, and family are involved. Schooling, therefore, needs to reconsider the role of parents, friends, and family in providing emotional and social support to their children to be successful. Therefore, the CEFP emphasises 'supporting' people (family and friends) in helping children identify and pursue their career aspirations.

National Literature

Career-related research studies were thoroughly reviewed keeping in view the study objectives, methodologies, findings, and discussion/recommendations to attain an overall picture of how career guidance and/or counselling (CGC) is viewed in Pakistan. The studies highlight the importance of the CGC, report students' career choices, and indicate how various stakeholders and sources shape students' career choices. However, most of the studies (n=19) report the absence of the CGC in Pakistan. For the present study, findings have been discussed through the lens of a context-relevant framework for CE. It must be noted that career-related terms have not been defined universally in the literature, and the related terms with a bit different meanings have also been used interchangeably. These terms include career counselling, career guidance, career development, career planning, career building and so on. However, for a better analysis and clarification of the findings, we also use the two mostly quoted terms "career guidance and counselling (CGC)" while discussing the findings.

Table 2: Summary of National Literature

Grade Levels		**Publishing Year**		**Category**	
College	N=09	2020–2022	N=11	Government	N=10
Secondary	N=09	2017–2019	N=05	Private + Government	N=05
College + Secondary	N=01	<2017	N=03	Undefined	N=04
K-8	N=00	Total (19 Articles)			

Career Guidance and Counseling and its Role: The way it is described

The research studies do not include a clear description of the CGC and particularly its role, which raises the question 'Who is the right person to guide students in their future development?' the CGC is merely described as a process whereby students are guided about their future development. Yaqoob et al. (2017) define it as a process that involves making decisions related to one's career based on personal interests and exploration of different career choices. The CGC is also seen as a process that offers insight, guidance, and support to students in managing different issues related to their careers and lifestyles (Ali & Shafiq, 2019). Additionally, it is important to highlight that most studies consider CGC as an educational programme, and helping in deciding options for further studies has been highlighted as the core job of the CGC (Khurshid et al., 2021; Ali & Shafiq, 2019; Zahra & Malik, 2018). In addition, studies highlight all the important individuals, i.e., teachers and parents, who play a significant role in students' career choices, especially in subject selection. Therefore, efforts must be put into 1) defining the process of the CGC and, especially, 2) describing the individuals who need to provide the CGC.

Moreover, considering teachers at the centre of schooling, their role extends to providing the CGC to students by assisting them in selecting school subjects, career preferences, aptitudes, and interests (Zeb et al., 2021; Ali & Shafiq, 2019). This guidance to students also necessitates monitoring their academic progress, acquainting them with the prescribed curriculum, identifying special learners, catering to their educational needs, and assisting them in getting information about further education (Khan et al., 2012). The review suggests that teachers are expected to be at the forefront while providing students with the CGC. This supports CE, which exclusively depends on teachers since it is integrated into the curriculum.

Grade-Level Advocated for CGC

None of the research studies have explored the provision of the CGC at the K-8 grade level (see Table 2). Though the importance of the CGC either in all school grades (Yaqoob et al., 2017) or in early high school grades (Zahra & Malik, 2018) is mentioned, most of the studies discuss the CGC services more for secondary and college level students from various dimensions (Ali & Shafiq, 2019; Zeb et al., 2020 a and b). Zahra & Malik (2018), in their literature review, criticised the fact that the CGC is discussed in the literature for only grade 9-12 students and maintained that the career's base is laid down in the early years of high school:

"This is the time when students with clear self-concept have a better idea about their future career goals and which academic subjects they want to choose. Especially when students are about to choose subjects at the start of the ninth class, then it is important about [sic] their own self-concept or not and whether there is any relationship to know [sic] their career decision making [sic] skills and whether they are clear between self-concept and career maturity" (p. 7).

Comparatively, Khan et al. (2012), in their findings, reported the presence of CGC services for 8th-grade students in a private schooling system, which has been highlighted as important since students need to make academic choices for entering into secondary grades. Generally, all the research papers reviewed aimed at studying the CGC for secondary- and college-level students (Ali & Shafiq, 2019; Zeb et al., 2020 a and b; Zahra & Malik, 2018; Khurshid et al., 2021) where adolescence is highlighted as the stage where mostly individuals are involved in making career choices (Yaqoob et al., 2017). It has been pointed out that 9-12 grade levels are crucial for providing the CGC (Zeb et al., 2021; Khan et al., 2012) and, unfortunately, only at this stage students are considered as 'interested to explore various opportunities for their future'. However, career-related theories and global research also put great importance on K-8 levels. This indicates the need to bring about a change in CGC services to include K-8 students, which is easily possible through integrating CE.

Absence of CGC and Gaps in Existing CGC

In Pakistan, there is a lack of CGC facilities at the school level. It is not given due attention especially since it is almost non-existent in public sector schools (Ali & Shafiq, 2019; Zahra & Malik, 2018). On the other hand,

although the CGC is provided in the private schooling systems, it is mostly for 9-12th grade students (Khan et al., 2012). The majority of the students tend to have aspirations for careers in medicine, engineering, and other fields, which is also without proper guidance and consideration of their interests and aptitudes. Empirical studies conducted in Pakistan foremost pointed out factors related to career choices among students, including social status, societal expectations, growth opportunities, psychological factors, and lack of career guidance (Najam & Ghazal, 2022; Yaqoob et al., 2017; Zeb et al., 2020a; Ali & Shafiq, 2019; Khan, et al., 2012). Yaqoob et al. (2017) suggest that families from lower socioeconomic backgrounds and rural areas have the least access to career guidance, resulting in them pursuing non-academic programmes. Students enrolled in science disciplines seemed to have a better understanding of selecting colleges and subjects compared to students enrolled in arts and commerce subjects (Ali & Shafiq, 2019).

These studies show that new and efficient ways of identifying students' talents and guiding them towards careers matching their talents remain unexplored and unutilised. Moreover, there is a significant variation in the types of career guidance provided in different types of schools in Pakistan (Khan et al., 2012). This is also pointed out as an area that is underresearched and therefore findings need to be more cautiously interpreted.

Factors Influencing Students' Career Choices

In the South Asian region, career decision is not an individual responsibility but rather involves other stakeholders such as parents, teachers and siblings (Asghar & Ajmal, 2022). This may also lead to pressure on individuals to pursue specific traditional careers (i.e., medicine and engineering). Different factors influence adolescents in making decisions in the context of Pakistan. The availability of career counsellors, assistance to manage coursework difficulties, guidance from teachers, parents, social media, peers, and the role of heads and institutes matters and were identified as important features for adolescents in career decision-making (Ali & Shafiq, 2029; Asghar & Ajmal, 2022; Hassan et al., 2022; Yaqoob et al., 2017). Other studies also found that socioeconomic background and families significantly influence the career choices of students where students with strong socioeconomic backgrounds pursue their career aspirations while others struggle (Zeb et al., 2020a). The research also highlights the influence of gender biases on career selection, with females facing additional pressures related to marriage and family expectations (Hassan et al., 2022; Zahra & Malik, 2018). Moreover, studies generally report girls as the disadvantaged gender in terms of having greater career aspirations except for a few hopeful findings. Findings by Asghar & Ajmal (2022) reveal that "to some extent, there is a change in the way society is viewing female education and career building" (p. 962). Still, their suggestions and other studies recommend that CGC services should carefully be planned for girls and boys separately since both genders face different issues in deciding and pursuing their career choices (Shafeeq & Loona, 2017). Hence, due care has also been taken while developing the context-relevant CE framework to mitigate the traditional and gendered stereotypes and biases.

Reasons for Including Career Education

Findings and discussion in the reviewed studies recommend various strategies for the provision of effective CGC to secondary-level students including career guidance facilities in schools, the appointment of trained career guides, the collaboration between parents, teachers, and school heads, and the establishment of career guidance resource centres (Zeb et al., 2020a). Moreover, the recommendations also support mainstreaming CE, which is an integrated approach, at least indirectly, while maintaining the idea that the CGC should be part of the curriculum, provided by teachers and/or it should be part of classroom/school activities.

As seen in the study objectives/topics, CGC services have been explored through teachers' perspectives (Khan & Hussain, 2020; Shakil et al., 2021; Khan & Reba, 2018) such as teachers' role in providing the CGC (Zeb et al., 2021; Zeb et al., 2020 a and b; Khan et al., 2012). Studies conducted through students' perspectives were also based on the view that teachers helped students in making career and, at least, curricular choices, which was also

questioned by students during data collection (Ali & Shafiq, 2019). Additionally, findings of Khan & Reba (2018, p. 159) through a survey of 140 secondary school teachers indicated that "teachers can be given guidance and counseling responsibilities" (with 88% agreement) and teachers can work as 'master trainers' and provide "training to other teachers regarding guidance and counseling" (with 96% agreement). Also, Zeb et al. (2021) propose teachers' capacity-building training in the CGC for students. Similar views in other studies point out that teachers are generally expected to play a crucial role in guiding students towards their careers by serving as 'role models' so teachers update their knowledge about emerging professions and their continuous guidance is emphasised (Khan et al., 2012; Zeb et al., 2021). Since the key individuals for providing CE are also teachers, the findings strongly support the concept of a context-relevant framework for CE in Pakistan.

Moreover, for 9-12th grade students, studies also propose the incorporation of career guidance as a 'compulsory subject' (Khurshid et al., 2021), the integration of career-related topics in mainstream subjects, career-related online short-courses, online platforms to provide career-related guidelines, sports/games programmes with career guidance in sports, co-curricular activities with lens of career guidance, connecting leisure activities with career guidance, and other ways in which to include career guidance in core curriculum or co-curricular activities (Zeb et al., 2021; Shakil et al., 2021). Most of the guidance is advocated generally for further education, jobs and business ideas. Furthermore, policymakers must make it mandatory for schools to start implementing career counselling initiatives and make co-curricular activities essential to accurately assess students' talents and interests (Khan et al., 2012; Zeb et al., 2020a and 2020b; Zeb et al., 2021). While considering the CGC as a planned programme, it has also been suggested that the CGC must be provided regularly (Khan & Reba, 2018), and career-related print and electronic material should be available in schools (Zeb et al., 2020a). Such recommendations lead to a notion that a careers-embedded curriculum is already proposed, therefore, the context-relevant CE framework developed for K-12 grades in Pakistan would serve as a very timely support and solution.

Career Education Framework for Pakistan (CEFP)

Introduction to the CEFP

Career education, as defined in this study, is "school-based efforts to prepare students for career-related developmental tasks, including career choices" (Akos et al., 2011; p. 2). It includes all curricular and co-curricular activities at classroom and/or school levels. It is suggested for implementing this framework that teachers and the mainstream teaching-learning process assume the key role. Moreover, since the least qualification suggested to be completed by all individuals is intermediate, this framework is aimed at K-12 students. Additionally, as the findings suggest that K-8 students have completely been ignored under the umbrella of career guidance in Pakistan, special attention has also been paid to the K-8 level.

The CEFP is segmented into 4 categories vertically for providing CE to K-5, K-8, K-9 and K-11 level students. Horizontally, it is divided into 3 sections, which are knowledge, skills, and attitudes for providing career-related information under each of the 4 categories (See Appendix I for a detailed framework). Moreover, for a better understanding of the expected outcomes, the functional definitions and descriptions of knowledge, skills, and attitudes are provided.

A. Knowledge: Career-related information discussed and provided through curriculum, textbooks, teachers, and other sources in classroom or school activities. (i.e., sources of earning, types of jobs/businesses, job/business information, the importance of jobs/businesses, career-related identity, academic choices, career choices, information sources for academic & career choices, the impact of individual characteristics on career choices, the impact of other factors on career choices, gender stereotypes while entering into further education or future jobs/businesses).

B Skills: Developing a set of skills, followed either separately or a combination of 2-3 skills, that help decide career choices.

- Analytical and Reflective Skills: for assessing different career-related information and understanding its strengths and weaknesses to match them with personal characteristics.
- Information Seeking and Handling Skills: for collecting information regarding entry into further education and future jobs.
- Creative and Imaginative Skills: for thinking about careers which are considered non-traditional professions with context/gender lens.
- Entrepreneurial Skills: for thinking innovation in existing businesses/jobs and thinking about creating new jobs/businesses.
- Collaboration Skills: for collecting information, checking the authenticity of the information and supporting people's help in developing a better view of career choices.
- Planning and Development Skills: for completing tasks that help in career-related planning for further studies or future jobs i.e., tentative plans and development of resumes/CVs.

C. Attitudes: A learned tendency or readiness to evaluate and react to career-related information and skills to adopt the values and beliefs that help individuals pursue their career choices and encourage others to pursue theirs without putting forward any traditional biases or stereotypes.

- Affective: feelings and emotions associated with careers i.e., achievement, failure, and resilience.
- Behaviour: attitudinal actions such as celebrating achievement and doing tasks punctually.
- Cognitive: individual conceptions about different feelings and behaviours.

D. Key Terms Used in the CEFP:

a. Skills-Set: a variety of skills that help in decision-making and performance

b. Personal Characteristics: for example, honesty, dependability, responsibility, integrity, and loyalty.

c. Career Development: Holistic process; the individual assesses himself/herself for career selection.

d. Career Planning: once a career is chosen, the individual takes up activities/actions to pursue the career.

Assumptions for Implementing the CEFP

Global literature advocates to include all stakeholders, i.e., teachers, school heads, parents, community members, and other potential members as well as potential platforms of society for providing CE. In Pakistan, since the education system mostly depends on textbooks and teachers' input into the classroom, this context-relevant CEFP is developed keeping textbooks and the classroom teaching-learning process at the very core. It is expected that most of the items in CEFP can be incorporated into the curriculum and integrated into textbooks, which will ultimately enrich teachers' discussions in classrooms.

Moreover, certain basic knowledge and skills are already a part of different subjects, therefore, they are not highlighted separately. For instance, communication skills play a vital role in individuals' success in future careers and these skills are core components of K-12 textbooks for languages (English and regional). Hence, such competencies have not been added separately, rather we have presumed these competencies while making some

items of CEFP based on such skills.

It must be mentioned that due attention has been paid to other important ways of providing K-12 students with CE. A good number of items expect co-curricular activities, additional readings, parents' input and other potential members of society to help K-12 grade students recognise and confidently pursue their career choices.

The CEFP, the first-ever framework for integrating career education, would at least serve as a building block in the history of career education in Pakistan. The CEFP has been developed mostly through inputs from career experts (i.e., researchers and university teachers, most of whose research is based on career guidance and counselling. It is important to note that career guidance and counselling is a different concept than career education). These experts were familiar with curricula, education policies, K-12 students' psychological and physical needs, K-12 level private school system, government school system, and other important factors. However, it must be clarified that inputs from curriculum experts, policy-makers, teacher-trainers, experienced teachers from different schooling systems, and other key people from the core educational organisations were supposed to be different, therefore they all were requested to review the CEFP through their perspectives to make the framework more context-relevant and easy to apply for all schools in Pakistan.

The CEFP is for all students enrolled in any school in Pakistan. Grade-wise transition, especially the transition from primary school to middle grades, is equally difficult for all students. The CEFP suggests making transitional experiences to the next grades successful for 5th, 8th and 10th-grade students, and transition to further studies, jobs and/or businesses for 12th-grade students. Such expectations in the CEFP are for K-12 students from all types of schooling systems. Moreover, since government school students make majority of Pakistani youngsters and the reviewed literature indicates that students in government schools are mostly disadvantaged in terms of career-related education, therefore, the CEFP has been developed considering these students at the centre. It must also be mentioned that CEFP is not restricted to government schools; rather, the same CEFP can be utilised by private schools with some changes, if required.

5. CONCLUSION AND RECOMMENDATIONS

In this research, our dual focus was on reviewing the literature to conceptualise the potential of the CE approach in addressing educational challenges and devising a comprehensive framework for its implementation in mainstream education. Global and national literature unequivocally underscore CE as a promising solution to a range of educational issues faced by the K-12 level of education in Pakistan. CE's potential to mitigate problems such as academic underachievement, disengagement in learning, school dropout, poor transitional experiences, gender disparities, and career decision-making positions it as a panacea for these challenges. This underscores the imperative for all stakeholders to adopt a CE perspective when formulating national education goals, policies, and practices.

The research culminated in the formulation of Pakistan's first Career Education Framework (CEFP). This framework draws on an in-depth understanding of literature, expert insights, and contextual needs. By carefully addressing the issues highlighted in the literature, the CEFP serves as a targeted instrument for tackling these concerns. The validation of the CEFP through Delphi rounds further ensures its contextual relevance and efficacy as a solution to Pakistan's educational dilemmas.

In summary, our research supports CE as the optimal strategy to address educational challenges while fostering human capital development. The CEFP, serving as a tangible translation of research into practice, has the potential to reshape the educational landscape. Moving forward, it is imperative to consider the practical implications of implementing the CEFP and to explore avenues for its seamless integration within the education system.

Recommendations

There are several pertinent recommendations based on the study's findings, which hold significant implications for the enhancement of the CEFP integration within Pakistan's educational landscape:

1. Educational Policy and Stakeholder Engagement: Educational policymakers are strongly encouraged to engage in a comprehensive review of existing educational policies through the lens of the CEFP. This revision process should encompass all relevant stakeholders, including curriculum developers, textbook authors, teachers, educators, researchers, parents, and students. This concerted effort will facilitate the alignment of educational objectives with CEFP principles, ensuring a cohesive and progressive educational framework.

2. Curricular Integration: The curricula for K-12 grade levels in various subjects necessitate rigorous review to harmonise with CEFP tenets. The incorporation of CEFP principles will bridge the gap between classroom learning and students' career aspirations, enriching educational experiences and fostering a holistic development approach.

3. Textbook Alignment: A pivotal step involves critically examining all K-12 level textbooks within the purview of the CEFP. This evaluative process will enable the seamless infusion of CEFP principles into textbook content, propelling students towards introspective career exploration and informed decision-making.

4. Research Endeavors: Social science researchers are advised to explore the realms of CE further, particularly emphasising its integrated approach and inherent significance. Dissemination of key insights regarding CEFP's transformative potential will catalyse informed discourse and facilitate its effective implementation.

5. Localised Contextualisation: Future research endeavours, spanning diverse regions of Pakistan, should earnestly evaluate the CEFP for its contextual strengths and limitations. Researchers are encouraged to scrutinise the framework within their unique local contexts, suggesting contextual adaptations and improvements as needed.

6. Curriculum Analysis: Future research initiatives must extend their purview to encompass a meticulous analysis of educational policies, curricula, and subject-specific textbooks, all viewed through the comprehensive lens of the CEFP. This holistic evaluation will illuminate existing alignment, guide seamless integration, and propose supplementary content embedding CEFP principles.

7. Teacher Preparation and Professional Development: Teachers and educators hold a critical role in propagating CEFP principles to K-12 educators. It is recommended that teacher training programmes be revisited and revamped to encompass CEFP learning components, empowering teachers to facilitate meaningful career-oriented education.

8. Educator Degree Programs Enhancement: The revision of policies and curricula for B.Ed. and BS Education programmes across varying durations (1.5, 2.5 & 4 years) should be meticulously undertaken with a dedicated CEFP focus. This adaptation will equip future educators with the necessary tools and insights to effectively integrate CEFP principles into their instructional practices. In particular, a dedicated course named ‘Career Education’ must be designed and included in the curricula of B.Ed and BS Education.

By heeding these recommendations, Pakistan's educational landscape can harness the transformative potential of the CEFP, promoting enriched student experiences, informed career decisions, and a dynamic educational ecosystem that resonates with the evolving needs of the 21st century.

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APPENDIX: CAREER EDUCATION FRAMEWORK FOR PAKISTAN (CEFP)

Levels	Components and Aims for Career Education Framework for Pakistan		
	Knowledge	**Skills**	**Attitude**
(K-5th)	• Talking about sources of earning (i.e., job, business) • Describe jobs that are present in our surroundings • Describe basic information about indoor and outdoor jobs • Describe businesses that are present in our surroundings • Describe the basic difference between jobs and businesses • Identify jobs of family members and school personnel • Identify businesses of family members or surrounding • Describe the importance of earning in individual and family life • Recognising when professions are depicted in textbooks • Recognising when professions are depicted in co-curricular events and activities • Recognising various life roles an individual may have (i.e., friend, student, family member, and community member) • Being aware that people do paid and unpaid (volunteer) jobs for financial benefits or community service • Describe the social impact of jobs and businesses • Being aware of options for further studies (i.e., different subjects lead to different choices)	• Reviewing stories to identify personal characteristics required in jobs and businesses • Connect personal characteristics with job requirements (i.e., 2-3 characteristics for 1 job) • Link personal characteristics with the requirements of a business • Obtain information regarding the jobs and businesses of their family members, relatives, neighbours and other known people. • Ask reasons from parents for opting for their jobs or businesses and share that information with classmates • Role-play professions of their choice (i.e., depicted in textbooks, observed in school or surroundings) • Imagine a job or business that may not be present in the surrounding • Compare responsibilities of 2-3 jobs (i.e., similarities and differences) • Compare 2 businesses (i.e., similarities and differences) • Engage in a group task for presenting the obtained career-related information (i.e., comparison between jobs/businesses)	• Describe their reaction to career-related information (i.e., sources of earning and their importance) • Describe why they would prefer a job over business or vice versa • Accepting that preferred career choices may change over time • Reflect strengths and weaknesses while connecting personal characteristics (i.e., responsibility, dependability, integrity, honesty, and loyalty) with their career choices • Celebrate strengths considering the link of personal characteristics with their career choices • Accept that individuals have unique interests and different career choices • Accepting the importance of jobs and businesses opted for by parents or available in their surrounding • Showing adaptability for the transition from one grade to the next grade, especially from 5th grade to 6th grade (primary to middle-level transition)

	• Describe the basics of personal characteristics (i.e., responsibility, dependability, integrity, honesty, and loyalty)		
(6-8th)	• Understanding one's career choices ▪ What career suits me? ▪ What subjects do I take for my career choice? • Describe the economic impact of jobs and businesses • Describe the importance of financial literacy • Understand the concept of goal-setting and decision-making with reference to career choices • Portray different societal roles (i.e., student, sibling, friend) and responsibilities within each role • Discover how earning through a job or business contributes to individual and family life • Understand the impact of leisure activities on career choices • Enlist various options for further studies relevant to their career choices • Identify the educational/technical institutes offering programs related to career choices • Understand different groups of studies (i.e., Biology, Computer) at secondary and higher secondary level • Find out the entry requirements (i.e., qualification and skills) of various careers • Explore the advantages and	• Match personal characteristics with their career choices • Compare roles and responsibilities of 3-4 jobs (i.e., similarities and differences) • Compare roles and responsibilities required in 2 businesses (i.e., similarities and differences) • Analyzing strengths and weaknesses of their career choices • Asking parents', teachers' and friends' opinions on their career choices • Connecting leisure activities with job and business-related roles and responsibilities • Connecting various societal roles with their career choices • Reflecting on school activities to connect them with their career choices • Reflecting on non-traditional careers and their strengths and weaknesses • Review the prospectus or visit the website of a college or university to seek information about further studies (i.e., study groups for SSC, HSSC and after-college major fields) • Conduct an annual project in core subjects (i.e., Languages, Sciences, Social etc.) about a career or an	• Accept that values and beliefs influence self-concept • Accepting the influence of beliefs and attitudes on career choices • Think about career choices that suit you without paying attention to gender stereotypes • Accept weaknesses while connecting personal characteristics with their career choices • Reflect on dependence on people in your surroundings and see how they work together • Showing readiness for life changes that may occur due to unexpected events • Reflect on how behaviours affect different situations in school, workplaces and family events • Adopting observed behaviours (i.e., active listening) in school and family settings that help in improving personality characteristics • Acknowledge personal characteristics that are needed to pursue and sustain career choices • Acknowledge and appreciate the strengths and weaknesses among jobs and businesses • Celebrate strengths of learning habits and study skills that help in pursuing career choices

	sadvantages of further studies for their career choices • Understand how academic performance affects the selection of further studies • Understand the ways to explore educational and occupational information • Understand the ways to use educational and occupational information • Understand how career development is an ongoing process including a series of choices • Identify non-traditional careers • Investigate the advantages and challenges of entering a nontraditional career • Identify key industries and organisations in different cities and jobs in those industries/organisations • Identify context-relevant careers within a "Career Cluster" • Discuss learning from events/tours planned for further studies or future jobs (i.e., study tour to a university) • Understand the influence of self-interests on career choices • Describe the importance of personal characteristics in pursuing further studies, jobs or businesses of their choice	dustry sector • Connect learning habits and study skills with career choices • Analyzing whether characters in stories made decisions in a good way • Comparing factual information for future careers with the way it is portrayed in fictional stories • Reflect biases, stereotypes and other discriminatory actions/behaviours which may limit opportunities for further studies, jobs and businesses for girls and boys • Reflect on career choices after identifying those through informal career inventories • Planning for further studies and future careers should be discussed with teachers, parents and counsellors to see the strengths • Developing short-term action plans for pursuing a field for further education of their choice • Developing short-term action plans for pursuing their career choices (i.e., job or business)	• Showing adaptability to grade-wise transition, especially after completing 8th grade • Acknowledge different expectations and accept the changes during the grade-wise transition • Acknowledge your stereotypes and other discriminatory actions/behaviours may limit opportunities for further studies, jobs and businesses for you and others • Adopt behaviours that are helpful in eliminating career-related stereotypes and biases
(9-10th)	• Identify the range of resources to gather information about careers • Identify individuals in family and surroundings	• Explore the current and future job market considering their career choices • Inquiry-based group tasks	• Accept the weaknesses in learning habits and study skills for improving ways to pursue career choices • Acknowledge how

	ıo can provide information regarding jobs and businesses • Understand how career inventory contributes to making career decisions • Understand different groups of further studies (i.e., arts, commerce, engineering, medical) at higher secondary level • Understand how information on educational programs can be used when making decisions related to further education • Understand how choices of further education, job and business change from time to time due to various factors (i.e., the impact of technological advancements, and changes due to the pandemic) • Find out the qualification levels and skills necessary to sustain or improve the job or business • Understand the nature of jobs (i.e., full-time vs. part-time, public vs. private, permanent vs. contractual) • Identify fields for further studies having 2 or more options for future careers • Understand the nature of business (i.e., full-time vs. part-time, small-scale vs. large-scale, partnership, self-employment) • Understand the impact of jobs and business on people (i.e., enhanced self-esteem, financial independence) • Understand how individual beliefs and attitudes shape career choices	locate trend information on trends for further studies, jobs and businesses • Inquiry-based group task to suggest ways for overcoming gender biases in the entry to further education and future jobs and businesses • Make ambitious choices for further studies that take into account personal characteristics, financing options and other important factors. • Make ambitious choices for seeking jobs and initiating business that takes into account personal characteristics, financing options and other important factors • Determine the strengths and weaknesses of options for further studies (i.e., part-time degree vs. full-time degree) • Determine the strengths and weaknesses of different jobs and businesses (i.e., part-time vs. full-time, partnership, self-employment) • various work alternatives (i.e., being a full-time/part-time employee or self-employment options such as contracting, consulting or entrepreneurship) • Annually review and update their planning for further studies, future jobs and business ideas with the help of parents, teachers and counsellors	·chnological change has impacted work in your neighbourhood or community • Acknowledge the inclination towards further studies, jobs or business • Adopt strategies for dealing with life changes that may occur due to unexpected events • Acknowledge the influence of career-related decisions on all areas of life (i.e., further studies, family life, leisure activities) • Adopt a flexible approach for changing career choices with an increase in career-related information and newly developed skills • Evaluate behaviors that contribute to developing self-concept • Evaluate the influence of self-concept on career choices • Adopt behaviours that help in conducting successful collaborative tasks • Assess how your personal characteristics are reflected in your study habits and career choices • Consider the role of supporting people (i.e., teachers, parents, friends) in maintaining self-concept and pursuing career choices • Evaluate steps for adaptable transition to post-secondary study and job options (i.e., regular degree, regular degree

	• Explore the impact of earning on social and economic problems in the country • Understand how organisations and industries operate (i.e., making money, paying taxes, utilising profit and managing loss) • Understand the relationship among family, job/business and leisure decisions • Explore the advantages of following your personal interests, even if they are most often considered nontraditional to your gender • Discover the changing roles of men and women in work and family settings (i.e., men at home, women in high administrative functions) • Identify the role of supporting people (i.e., teachers, parents, friends) in making career choices • Understand the importance of lifelong learning in career development • Explore the services or initiatives that support people's transitions • Find out platforms for scholarships or financial assistance regarding further education. • Identify gender stereotypes in the context of entry into further education, business and jobs. • Understand the advantages and challenges of adopting non-traditional choices for further education, business and jobs.	• Estimate the costs for pursuing their career choices (i.e., fee costs for further studies and one-time or ongoing investments for running a business). • Develop strategies for covering the costs for further studies of their choice (i.e., living, degree fee and other costs) • Develop strategies for covering the costs of running a business of their choice (i.e., initial investment and other costs) • Develop a plan in a group to show the way to pursue a non-traditional career • Develop a plan individually to show the way to pursue a field for further studies having 2 or more options for future careers	ith a part-time job, private degree with a full-time job) • Evaluate societal expectations and adopt the changes required in post-secondary transitions • Evaluate strategies and behaviours to eliminate stereotypes and biases that limit post-secondary transitions • Accepting the possibility of adopting non-traditional career options

	• Identify how change affects the perception of and access to traditional and nontraditional careers • Linking personal characteristics with choices of further education, jobs and business initiatives		
(11-12th)	• Understand how choices of further education, job and business change from time to time due to trends (i.e., social, technological, occupational) • Understand that individuals grow and develop throughout their lives with reference to their careers • Understand that available opportunities for further education, job and business may have an influence on career goals • Understanding the business needed in a particular area or region • Understand that various factors have influenced the changing career patterns for women and men • Enlisting effective communication skills (learnt in languages) required for running a business and successful interviews for further studies/jobs (i.e., attentive listening and clarity in responding) • Understand how lifelong learning enhances people's ability to achieve career goals • Understand the employment requirements and conditions	• Inquiry-based group tasks to locate information on trends for further studies, jobs and businesses linked with their career choices • Analyze the resources of career-related information for authenticity • Analyzing the communication skills (learnt in languages) for successful transition to further studies and future jobs/businesses • Evaluate the quality and economic value of post-secondary programs for further studies of their choice • Connect personal characteristics, entrepreneurial skills and career choices • Develop strategies for negotiating with family members and employers to achieve life and work balance • Create career scenarios based on your personal motivations and aspirations • Search the available resources that support individuals in pursuing their future careers (i.e., such as community-based organisations, financial	• Appreciate the transitions available as post-college study and job options (i.e., regular degree, regular degree with a part-time job, private degree with a full-time job) • Accept the critique on individual expectations generated as post-college transitions • Assess the expected post-secondary transitions to determine whether or not it is necessary to adopt them • Evaluate self-concept after eliminating stereotypes and biases • Evaluate the possibilities of success after adopting non-traditional career options • Accept the possibilities of shifting among post-secondary options (i.e., changing degree program or job, shifting from job to study or vice versa) • Appreciate the role of supporting people (i.e., teachers, parents, friends) who helped in maintaining self-concept and pursuing career choices • Evaluate the role of supporting people who

	• Understand the importance of balancing working time and leisure activities • Understanding that occupational skills and knowledge can be acquired through leisure activities • Understand the influence of personal characteristics on career decisions • Enlist post-college opportunities for further education and jobs • Enlist resources that support further education and training for future careers • Understand the importance of developing strategies to help overcome barriers to education and training • Explore lifelong learning resources available related to their career choices (i.e., computer-assisted self-directed training, short courses) • Understand the importance of assessing the authenticity of career information • Understanding the job application process (i.e., application forms, resumes, job interviewing, cover letters) • Understand the impact of gender biases and stereotypes on career choices • Understand the nature of career transitions and their impact on career development • Investigate the choices and challenges of major transitions (i.e., becoming a parent/spouse/retiree,	stitutions, small business administration services) • Develop strategies to eliminate stereotyping that hinders entry into further studies, future job/business • Prepare application documents for further studies and jobs (i.e., cover letter, curriculum vitae, resume, proposals, reference letters) • Develop a business plan for personal interest considering available resources • Develop a plan for further studies of their choice considering available resources • Determine your personal criteria for making decisions about further studies, jobs and businesses	elped most in pursuing career choices • Evaluate individual abilities for adapting and responding the changes in career choices • Assess the strengths of personal criteria for finalising career choices • Evaluate how career choices influence individual and family life • Adopt behaviours for negotiating with family members and employers to achieve life and work balance

	sing a job, injury, illness) • Explore effective strategies to use during transitional periods • Importance of IT skills for business and employability • Understanding the importance of doing a job/business from the Islamic perspective		

TECHNOLOGY ADOPTION IN ISLAMABAD POLICE[1]

Verda Salman and Ayesha Nazuk

ABSTRACT

Police reforms have been a contentious issue in Pakistan, where a series of efforts to transform the image of the police have not yielded the desired results. In this regard, a new effort is underway in the Islamabad Police, with core and non-core policing tasks being separated and management information systems being implemented. The purpose of this paper was to identify the challenges that the Islamabad Police face in implementing these changes with their current skill set. Moreover, the study also analysed public feedback regarding the quality of service delivery with the help of the aforementioned systems. In-depth interviews were conducted with the members of the general public and officials, including front desk operators and senior officers. The analysis was carried out through a reflexive thematic approach. Different themes about the Management Information Systems (MIS) were identified through the reflexive thematic analysis of the infrastructure landscape, human resources, software support, and perceived differences between conventional and MIS-based systems. Our research found that the digitalisation of the police has produced positive results, including enhanced transparency, swift investigation, and improved public satisfaction. Despite its overwhelming advantages, the pace of technology adoption is slow due to multiple impediments. These impediments include non-congruence with legal systems, a lack of institutional priority, inherent cultural biases, and the threat of cyberattacks. We recommend legal reforms for incorporating digital data as evidence in courts, making digitalisation a command priority by including it as key performance indicators for officials at each tier, establishing a comprehensive nationwide digital criminal database, and shifting from the internet to an integral safe city-based intranet to enhance system availability and protection.

[1] We are grateful to the Islamabad Police and its administration for providing us with access to and insight into their systems. We would like to thank SSP Faryal Fareed in particular for her assistance and for connecting us with the Islamabad Police.

1. INTRODUCTION

Effective policing is a critical state function for maintaining law and order and providing services to citizens. Pakistan inherited a legacy policing system from the British that was primarily a colonising tool with little emphasis on service delivery. Consequently, police stations became symbols of corruption and malpractice, and the much-vilified Thana culture kept normal citizens away from police stations. There have been many attempts towards police reforms, with a major effort carried through the Police Order promulgated in 2002, which aimed to create a professional, service-oriented, and accountable force to prevent and detect crime as well as maintain public order. Despite the novelty of the reforms, this act has so far failed to achieve the desired impact. To enhance its capacity and introduce meritocracy and transparency, various technologies and software are being introduced in the police force to transform the police stations into effective service delivery stations for the citizens. These technologies and Management Information Systems (MIS) were first implemented in the Punjab Police and are now being replicated in the Islamabad Police (IP).

To rebrand its image and improve its service delivery, the IP is separating core policing from non-core police work. Police stations are supposed to spearhead hard-core policing, i.e., prevention, investigation, and detection of crime. Through automation, capacity would be enhanced, the upgrade of infrastructure and facilities, and the adoption of the latest gadgets and technologies. Non-core police work, such as citizen services, is handled by separate and dedicated facilities located outside of police stations. To facilitate the process, MIS is being incorporated into the system for better transparency and service delivery.

The online database management systems have been developed and monitored by the IT Division of IP and the Punjab Information Technology Board (PITB). These systems are used by all the stakeholders in the hierarchy, ranging from the Inspector General (IG) to the constable at each police station. This allows for better crime control and management, better investigation, effective detection of crime, better policy formulation, and better implementation. These MIS are functional in all 24 police stations in the Islamabad Capital Territory (ICT) and its components are the Criminal Record Management System (CRMS), Police Station Record Management System (PRMS), and Complaint Management System (CMS). For non-core policing activities, seven facilitation centres have been established at various locations in ICT and provide different facilities, such as tenant registration, foreigner registration, character certificates, and e-challans.

International evidence suggests that despite the obvious advantages of technology adoption, its use in police work has produced mixed results (Yalcinkaya, 2007; Hale et al., 2004). On the one hand, the introduction of e-services and MIS can play a pivotal role in enhancing organisational capacity and streamlining procedures, thereby reducing the sludge effect (Al-Dari et al., 2020; Pang et al., 2014). On the flip side, the inertia of legacy equipment and procedures, the inherent fear of change, the non-availability of trained human resources, and user acceptability emerge as the biggest challenges to the introduction of e-services and MIS (Al-Zaabi et al., 2013). If not addressed properly, these impediments can increase the sludge effect rather than decrease it. It is well-established that technological tools are likely to fail miserably without a deeper understanding of culture, society, governance, and economics. Due to the above-mentioned challenges, sometimes technology offers suboptimal results in improving organisational capacity. Despite the novelty of the aforementioned IP initiatives, a lack of user acceptance and a slow commitment to change can lead to inefficient resource utilisation (Ellahi & Manarvi, 2010).

As a result, it is necessary to identify the barriers to the implementation of MIS in police stations that use ICT as well as develop a better implementation plan. Moreover, this study focuses on the quality of public service provision. This study is primarily related to police stations in Islamabad. The main objective of the study is to identify the issues and challenges in technology adoption, faced by the Islamabad Police. The second objective, or a sub-objective, is to examine the perceptions of stakeholders (police officials[2] and the public) about the role of information management systems in enhancing the capacity of the Islamabad police.

[2] Officials include front desk operators and senior officers.

2. LITERATURE REVIEW

A typical MIS is supposed to provide technology-enabled information management solutions. However, in the public sector, an additional challenge is the presence of various concomitant factors that may impair MIS performance. For instance, it identifies problems in economies, such as poverty and crime, in addition to attempting to deliver public goods and services to solve them. It is also significantly affected by bureaucratic red tape and politics, all of which make the introduction of management systems far more difficult than they would be in the private sector (Caudle et al., 1991).

Despite its complicated nature, MIS in the public sector remains highly significant because of the numerous issues it can resolve. Some of these problems include the integration of different technologies, the integration of specific planning (such as a particular department's resource planning) with an organisation's overall planning procedure, the development of systematic procedures to identify and prioritise information requirements, and the enhancement of application development and maintenance (Caudle et al., 1991).

MIS in Public Sector Organisations

Digitisation has mixed results in public sector organisations, with initial friction from users (Hale et al., 2004; Pang et al., 2014; Yalcinkaya, 2007). However, after acceptance, organisations have seen significant enhancement in output (Dari et al., 2020). Factors determining the success of MIS include top management support, end-user involvement, input from information technology organisations, and pretesting (Al-Zaabi et al., 2013). Technology can be beneficial or harmful for different organisations, and it is crucial to secure professional help from external sources and increase user participation during the gestation period (Ellahi & Manarvi, 2010). Factors leading to MIS failure include inadequate specification of requirements, ineffective communication and leadership, insufficient resources, poor objectives, inadequate project size, ineffective management, lack of planning and control, and personality clashes (Sumner, 1999). The success rate of MIS is not impressive, with 20–30 per cent of initiatives resulting in complete failure and 30–60 per cent in partial failure. The largest projects in the public sector face the lowest success rate compared to other sectors (Goldfinch, 2007). The primary issue with introducing MIS may be unrealistic expectations, making it difficult to supervise and control. Public sector investments should be made with modest aims and proven technologies (Goldfinch, 2007).

Role of Information Technology in Police

The role of information technology in police has evolved significantly over time, with advancements in both information-based and material-based technology (Byrne & Marx, 2011). These innovations, also known as "e-policing," have significantly impacted the behaviour and attitude of police officers (Escalona, 2020). Recent innovations, such as speech recognition, social media policing, facial recognition, fingerprints, biometrics, and crime mapping have accelerated their productivity, effectiveness, and competence (Fatih & Bekir, 2015; Brown & Brudney, 2003). These technological innovations can potentially change the organisation of law enforcement authorities in both developed and developing countries (Byrne & Marx, 2011).

Technology can revolutionise the police sector by ensuring effective communication, intelligence gathering, traffic management, and administrative solutions (Byrne & Marx, 2011). It also guarantees and increases transparency, efficiency, accuracy, and accountability among routine tasks related to law enforcement, such as registration of cases, data storage, and investigating and solving crimes (Dutta, 2016; Tyagi & Dhar, 2017). Most law enforcement agencies therefore support police officers by incorporating information technology into routine tasks, due to the immensity of information they receive at every stage of the law enforcement process, including allocating resources, patrolling, preventing crime, solving crime, tracking criminals, and hot pursuits (Gottschalk, 2006; Yalcinkaya, 2007). The greater the acceptance of technology among police officers, the higher the quality

and performance of policing and law enforcement agencies (Colvin & Goh, 2005; Gottschalk & Holgersson, 2006).

Information system methodologies have evolved from unsystematic to more disciplined and structured approaches, breaking down the management and development process into rational and credible steps (Fitzgerald, 1998). This has led to increased quality and productivity as resource requirements can be forecasted and obtained upon demand. However, the organisational adoption of information system management and consistent use by the staff are two different aspects (Mohan & Ahlemann, 2013).

Some studies question the extent of technological innovations, stating that they only have a limited effect on the quality of police services. This problem may only exist because the nexus between technology and improvements in police departments is difficult to analyse (Byrne & Marx, 2011). However, certain limitations and complications prevail in the process of technological developments and innovations, such as the reluctance of police officers to use updated technology, inadequate training programmes, and unsatisfactory infrastructure facilities at police stations (Escalona, 2020; Rossler, 2019; Dutta, 2016). Information technology is advancing with momentum through advanced analytics, computerised records storage, and visual and audio technology, but it may be difficult to adapt to in some parts of the world where income is low, internet connections are inefficient, and online illiteracy or inaccessibility exists (Escalona, 2020).

Public's Perceptions of MIS Used by Police

One of the key features necessary to realise the effectiveness of MIS is customer usage (Joshi, 2005). E-policing primarily aims to encourage greater public participation in crime prevention within their communities, which has significant advantages in service delivery, including joint identification of problems, increased interactions between law enforcement authorities and the general public, and increased trust of citizens in the police (Escalona, 2020).

Injustices, inequalities, and hidden bias, however, are some of the adverse outcomes related to artificial intelligence that harm the relationship between the police and the general public (Harris & Burke, 2021). Studying the perceptions of citizens about the use of body-worn cameras in Washington, D.C., Wright & Headley (2021) showed that while it may improve the behaviour and attitude of officers and increase the validity of constables, it is unlikely to promote community trust. Behavioural dynamics that may shape public perceptions about information technology are particularly important. The resistance or acceptance of consumers to technology depends on factors such as conflicts and politics among users, the quality of the process of implementation, user participation, ease of use, the usefulness of an information system, and personal evaluation of the impact of technology on user equity (Joshi, 2005). Zambia, for example, has struggled with inefficiency in its transition to e-policing for improved case analysis because primary stakeholders, including the general public, find it difficult to contact authorities through mobile technology even though most of them have access to mobile phones and/or mobile terminals (Escalona, 2020).

Police Reforms: International Best Practices

The role of law enforcement agencies has evolved with the introduction of technologies and information systems to enhance performance (Fox, 2019). However, the legal foundation and scope of technological competencies in police are often ambiguous, and funding, expertise, and experience are limited, for example, in the Netherlands (Custers & Vergouw, 2015). Innovations in policing have been successful in other developed countries, such as the mobile technology acceptance model (M-TAM) in the United Kingdom and the use of MIS in Australia (Chan, 2001).

Developing countries, such as Bangladesh, face challenges in implementing information and e-governance due to limited formal sources of information flow and access, low literacy rates, and negative organisational values

(Mollah et al., 2012; Kashem, 2017). However, e-governance remains significant in reducing corruption and strengthening the connection between citizens and government (Hossain, 2022; Sarker et al., 2019). Technological advancements in Ethiopia and Fiji highlight the link between e-governance and corruption, while the Malaysian public sector uses technology to improve governance quality and customer satisfaction (Pathak et al., 2007). E-governance in East and Southeast Asia, however, is extremely different as it highlights the strengths and limitations of countries instead of their ability to make policy changes (Holliday, 2002). In India, the shift towards transparency and accountability in police operations has increased the workload of constables, but it has also helped them earn the public's trust by improving the efficiency and effectiveness of law and order maintenance (Kumar, 2012). Technology in policing not only improves crime detection, control, and impartial judgments but also enhances the police force's qualifications, status, and organisational legitimacy (Sachdeva & Kumaraguru, 2015). Online social networks have been adopted by the Indian police to engage with the public through formal and polite communication, addressing complaints and providing greater police accountability, leading to higher trust in constables (Sachdeva & Kumaraguru, 2015).

Research Gap

There is a paucity of literature on Pakistan on the potential of MIS and its perceptions from different stakeholders. Several studies based in Pakistan evaluate the police only with respect to corruption, legitimacy, gender issues, procedural informality during the coronavirus, and deficiency of decent governance practices. Despite the importance of technology in mitigating corruption and improving governance in policing, the scope of these studies does not include its impact on the police in Pakistan (Ahmad, 2020; Imam, 2011; Jackson et al., 2014; Tankebe & Asif, 2016; Waseem, 2021).

There is limited literature that studies the cost-benefit analysis of online management systems in Pakistan's police sector. This research thus aimed to fill a gap in the literature by analysing police attitudes and behaviour towards the implementation of online management systems and their impact on crime detection, prevention, and investigation. In addition to that, this study also analysed the public's perceptions of the MIS adopted by IP.

3. GENESIS OF POLICE DEVELOPMENT AND REFORMS IN PAKISTAN

Before investigating the impact of technology on the IP, it is imperative to understand the basic workings of the IP and the various reforms undertaken in the past. This section outlines the evolution of the IP from before the independence to the present. Subsequently, the basic police organisation and working at the police station level have been discussed in detail. In the end, key takeaways from this section have been enlisted to set the stage for subsequent chapters.

Historical Background

Islamabad Police has its origins in the Pakistan Police, which, in turn, has its roots in the British Indian Colonial Police system (Khosa, 2012). The history of the development of Pakistan Police and its reforms can be summarised according to various eras. The Mughal era saw policing through "Kotwals," local zamindars or landlords, who were responsible for maintaining law and order. The British initially followed the Mughal System but abolished it after the British Raj. The Police Act was passed in 1861 and the Police Force was organised along military lines. Sir Charles Napier introduced the modern police force concept, emulating the Irish Constabulary, which was later implemented in the Indian Subcontinent. During the military rule, the police continued to operate under the 1861 Act through civil servants, with no major reforms.

After the dismemberment of Pakistan, Zulfikar Ali Bhutto took over West Pakistan, establishing the Federal

Investigating Agency (FIA) and Federal Security Force (FSF). However, the politicisation of the police force began, with the formation of the FSF to terrorise the local population and prosecute dissidents. The Zia Years (1977-1988) saw the rise of sectarian strife and the patronage of militants, leading to the disbandment of the FSF and the termination of all DSPs hired through malpractice. British expert J. Giles argued for better career advancement and advancement opportunities in the police rank structure, but these recommendations were not incorporated due to internal and international turmoil. Political interference in the police force reached its zenith during the Democracy Experiment (1988-1999), with honest officers being removed from their jobs and placed on special duty for refusing to obey illegal political orders. The establishment of depoliticised, honest, and professional Motorway Police was a significant achievement of the era. During the Musharraf Years (1999-2008), the Police Order of 2002 was introduced, abolishing the colonial 1861 Act and introducing a new system that improved professionalism, integrity, and accountability. This led to the abolition of the Thana culture and the introduction of various bodies to create a more people-friendly police force.

The Present Era

The return of democracy has led to further impediments to police reform in Pakistan. The Sindh and Balochistan governments have repealed the Police Order of 2002 and reinstated the 1861 Police Act, while the KP Government has introduced its version of the Police Act of 2017, based on the 2002 Police Order. Punjab has retained the 2002 Police Order, with some amendments. The Police Reform Committee (PRC) was constituted on orders of the Supreme Court of Pakistan, which has given recommendations for the restructuring of the police. To address urban policing issues, the PRC recommended a police organisation in 10 major urban areas with an Additional IG or DIG in charge, with various wings under its command. The emphasis is on creating a force dedicated to a specialised task, with new wings created in administration, traffic, operations, law and order, investigation, security, communication relations, and IT.

Police Station Reforms

The police station is the basic unit of the police organisation and also its public interface. In policing through the 1861 Act, police stations were constituted for rural settings in which the SHO was the kingpin controlling all the affairs within the police station (Shigri, 2018). This setting had serious issues in urban areas where it failed to meet the expectations of a well-informed and educated population in densely populated areas. The initial attempts to resolve the issue by increasing the number of police stations have not produced the desired results. To address the issue, the Police Reforms Committee (PRC) recommended in its report the formation of a police division with various specialised wings, supplemented by technological apps to facilitate police work. Each police division would be formed through the amalgamation of 2–3 old police stations under the command of a Superintendent of Police (SP) to look after a population of 250,000–500,000 people. With these reforms, the 88 police stations in Lahore were reduced to 25 police divisions. The urban police station was divided into various sections such as administration, operations, investigation, law and order, and community relations, each under the command of an ASP or a DSP.

Record-Keeping Mechanism of Islamabad Police

Islamabad Police comprises 24 police stations looking after the complete Areas of Responsibility (AOR) of the federal capital. As previously stated, the police have so far resisted the implementation of the Police Order of 2002 and are still operating under the 1861 Act (Shigri, 2018). The force is commanded by the IG Police and is undergoing a major structural change as per the recommendations of the PRC. Previously, the complete database was stored on registers and 26 registers were maintained in each police station (Mahar, n.d.). With the restructuring, a massive digitisation campaign is also being pursued, in which the database is saved on various MIS software.

Key Lessons

The analysis given above gives a few important takeaways, which are summarised in the following paragraphs.

Hallmarks of the 1861 Police Act. Since independence, the Pakistan Police has been run through a 170-year-old police act which was promulgated as a colonial tool to suppress dissent and deny local participation. The hallmarks of policing through the 1861 Act are:

a) Anachronistic legal and institutional framework.

b) Arbitrary and whimsical management of police.

c) Politicised and controlled investigations.

d) Corruption and use of third degree.

e) Ineffectual accountability mechanism.

f) Severe under-resourcing.

g) Poor professionalism

h) Adversarial police-public relationship.

Over Indulgence of Politicians in Police. The police have invariably been utilised as a tool of oppression by politicians against their opponents. Even though this overindulgence in policing by politicians is more pronounced during democratic years, military dictators have also used the police as a tool for coercing politicians for their benefit.

Ineffective Use of Technology. Despite repeated studies and expert recommendations, the police have not effectively utilised technology in their routine affairs. On the contrary, criminals have effectively utilised this facility and have thus far outsmarted the police.

Police Order 2002. The Police Order of 2002 provides a comprehensive solution to all our policing problems. It is an inclusive law that can transform force from a colonial tool into a force functioning as an instrument of the rule of law, fulfilling the fundamental and democratic rights of the people. It ensures the depoliticisation of the police force through the security of tenure for key appointments and by providing financial and administrative autonomy to the IG of police.

Impediments to Police Reforms. All efforts of police reforms have failed because of a lack of political will and bureaucratic inertia. The present ruling elite (both political and bureaucratic) is the biggest impediment to police reforms as the police reforms would transform the police from a people-threatening force to a people-friendly force which would impede their vested interests.

Scope of Research. A police station is the basic structural unit and the public face of police dealing with the population. Therefore, while touching upon the top hierarchy, this study confined itself mostly to police stations as reforming a police station would transform its image among the population.

Digitisation of Record - Police Stations. In Islamabad police, a massive digitisation campaign is in progress, wherein a complete database related to the routine functioning of police stations is being digitised through multiple management software.

Police Accountability. The police have an external accountability mechanism through courts or the federal ombudsman and also an intrinsic internal accountability mechanism. The major complaints against the police include failure to register cases, harassment, abuse of power, defective investigation, misapplication of law, and failure to submit evidence-based challans. It is necessary to determine the role of technology in the internal accountability mechanism.

Role of Technology in Investigation. Technologies and digital data (for instance, Call Detail Records (CDR) and location data) can help us in prosecuting a criminal. However, the court of law (through Qanoon-e-Shahadat) does not accept MIS-based case evidence. The actual versus perceived efficacy of this software in facilitating routine police operations and investigation/prosecution of criminal cases must be assessed.

4. METHODOLOGY

The primary objective of this study is to examine the perspectives of stakeholders on management information systems. The stakeholders include police officials and the general public. The perspective of the Islamabad police was incorporated through the lens of their experiences with the MIS. The general public's perspective was incorporated through the lens of their experiences with the filing of First Information Reports (FIR) and case follow-up.

The study used qualitative research methods. Qualitative methods are appropriate for the study because the research philosophy of the study is based on “social Constructivism” (SC). According to the SC, there is no fixed or single truth; rather there are multiple versions of truth, and that reality is socially defined. Therefore, there are no set hypotheses in this philosophy (unlike positivism).

Research Philosophy

The purpose of a normal scientific investigation is to explain a phenomenon in a way that is consistent with current scientific understanding. Here is where the majority of the effort is focused, as this is where the power of a scientific investigation rests. Research philosophy, as defined by Creswell (1998), is a combination of scientific intelligence and a human philosophical outlook that is utilised to describe complicated natural or social processes through the application of simplifying assumptions.

According to Thornhill et al. (1996) research philosophy, the development of new knowledge is the overarching goal. In this context, the term "worldview" refers to a set of beliefs that enables the researcher to take action based on one's perceptions about the nature of knowledge and the corresponding realities of the world. In other words, the research paradigm is a set of beliefs that enables the researcher to take action (Creswell, 1998).

Because it is impossible to explain the truth with one hundred per cent accuracy, the associated paradigm adapts to reality with the assistance of some rationally justifiable assumptions about the underlying knowledge by employing judgment about the paths of consideration and the typical debates in the field that are being studied (Creswell, 1998). As a consequence of adopting this strategy, a researcher employs a research philosophy, the assumptions of which and the required research procedures which are optimised to explain a certain reality (Thornhill et al., 1996).

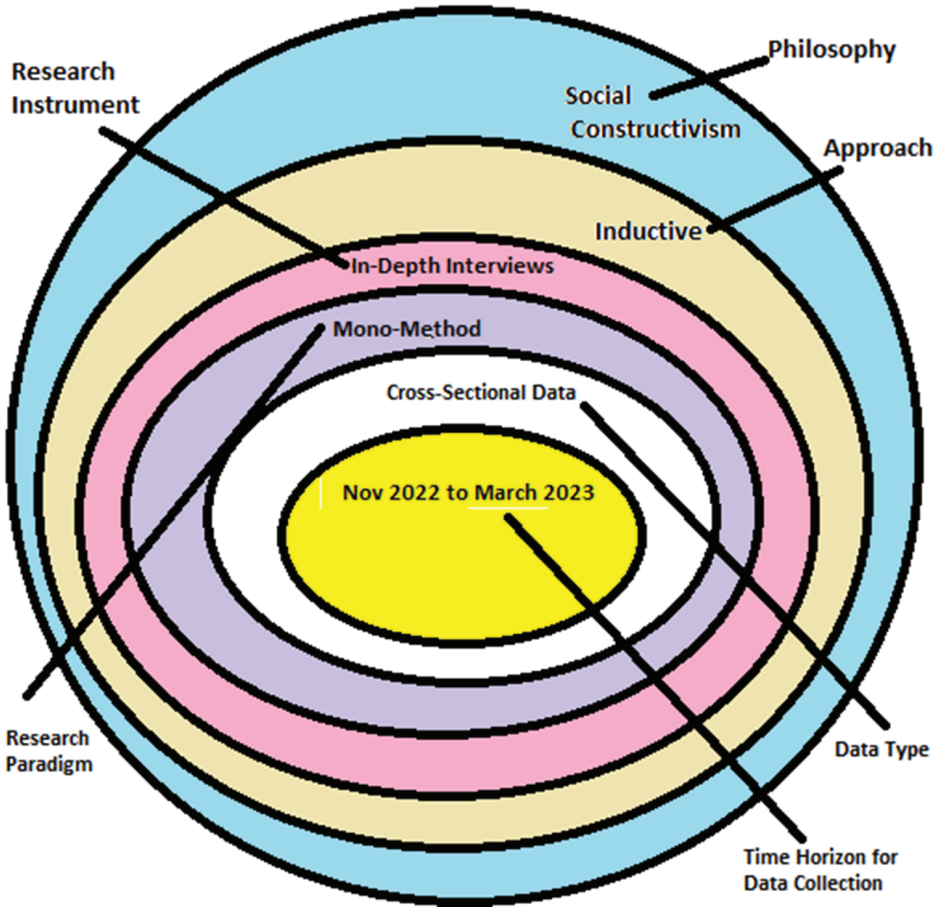
Edmund Husserl (1859–1938) provided the philosophical foundation for the interpretive paradigm, often known as anti-positivist or constructivist (Lisboa, 2018). This school of thought holds that social life can be examined qualitatively through a variety of methods, including different methods, such as case studies, direct observation, and interviews (Neuman, 2014). This school of thought considers social reality to be subjective and socially

produced, with researchers and participants engaging to interpret a phenomenon from an individual's perspective (Creswell, 1998; Guba & Lincoln, 1994). Under the interpretive paradigm, the study aimed to answer one main question (about the experiences of the stakeholders about the MIS used by the Islamabad Police). An interview guide was developed in the light of relevant literature, initial field visits, and expert opinion. As a typical modus operandi of this approach (Qureshi et al., 2022), new questions were added that served as gateways to the subsequent phase of the analytic process.

An inductive approach was followed for the current study. The findings from the sampled police officials were used as a guiding path for making generalisations about the entire Islamabad Police. Qualified generalisations can be drawn from the in-depth interviews (IDIs) with the general public. There are diverse, uncontrollable correlates of public opinion (for instance, the type of crime encompassed by a particular FIR) about a complaint's lifecycle (ranging from registration to its resolution). By this, we mean that we can do a basic exploratory analysis of the IDIs with the general public.

Given that the study employed only one method of data collection, namely IDIs, it falls under the purview of the mono-method data collection style. Data is cross-sectional, i.e., a particular respondent (either a police official or a member of the general public) was interviewed within a fixed time horizon between November 2022 and March 2023. A diagrammatic representation of the research philosophy is illustrated with the help of research onion, given in Figure 1.

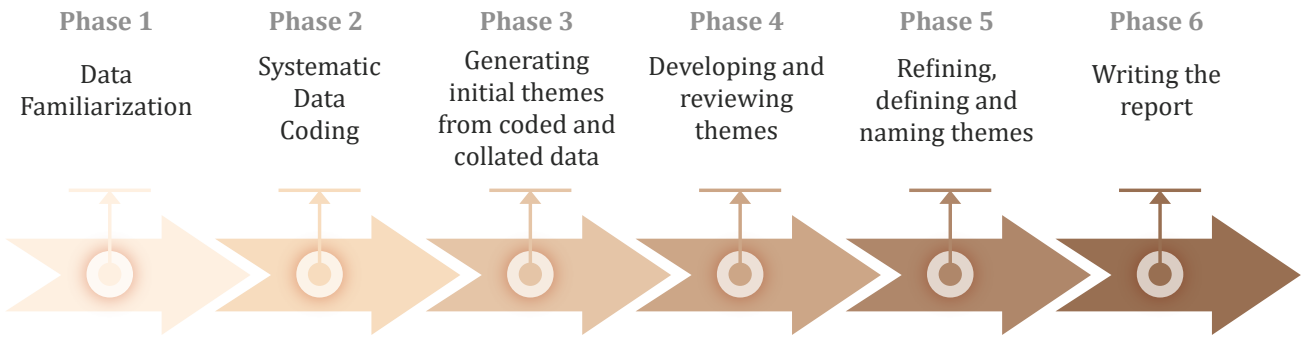
Figure 1: Research Onion for the Current Study



Source: Authors' compilations.

Researchers in the ambit of qualitative study designs have proposed four main criteria for the aforementioned purpose, namely, credibility, transferability, dependability, and confirmability. To ensure trustworthiness and rigour, all of these criteria were incorporated in light of the guidelines in Guba & Lincoln (1994). An accessible and theoretically malleable method for analysing qualitative data, reflexive thematic analysis allows researchers to quickly and easily isolate and examine overarching patterns and themes within a collection of data (Braun and Clarke, 2012). A diagrammatic illustration is given in Figure 2.

Figure 2: Phases of Reflexive Thematic Analysis



Source: Braun & Clarke (2019).

Initial Field Visits —Pilot Testing

Initial field surveys were conducted to derive an idea about the working of these systems and identify the focal persons who deal with the information systems.

Working of Information Management Systems. We conducted initial field visits. One of the aims was to understand the basic workings of the MIS. During these field visits, we developed an understanding of the overall process for dealing with the MIS. This includes the following:

a) The complainant's initial interaction with the police occurs through either of the three modes: (i) An emergency call at the Islamabad Police Helpline 15, (ii) online complaint registration through MIS, and (iii) an in-person visit to the police station for complaint-filing.

b) Initiation of the FIR.

c) The investigation procedure and two-pronged record-keeping: manual record-keeping, and digital record-keeping through Police Station Record Management Systems (PRMS).

Identification of the Target Population. In general, the MIS is used by all the officials in the hierarchy of Islamabad Police, such as the inspector general (IG), deputy inspector general (DIG), superintendent of police (SP), station house officers (SHOs), station clerks, and constables. However, the primary users of the MIS are the front desk operators (FDOs). Generally, two to three FDOs (including male and female) are appointed at each police station, but in some instances, the number of FDOs is higher.

Sampling Design

The choice of an appropriate sampling method is necessary to draw reliable generalisations from any study.

Following research protocols were followed:

a) Formal permission to conduct the interviews and field visits was taken from the IG Islamabad Police.

b) Ethical approval for the study was obtained from the Ethics Committee, School of Social Sciences and Humanities, National University of Sciences and Technology (NUST).

c) Informed-consent was obtained from all the respondents.

d) Respondents were informed that their data would only be used for research purposes; no micro-level details shall be shared unless anonymised.

Sampling Design for Police Officials. We used purposive sampling with the following inclusion criteria:

a) Active user of the MIS (using it for at least the last one year).

b) Willing to participate in the study.

We planned to conduct 20 to 30 IDIs with FDOs. Since the saturation point was achieved before 30 IDIs, we stopped at 21. The number of officers and non-officers was based on proportional allocation. Thus, 33 per cent of the IDIs were with officers and 67 per cent with lower-ranking officials.

Sampling Design for Public. There was no sampling frame available that enumerates the details about the compliant filers with the Islamabad Police. In such a scenario, snowball sampling is appropriate in such scenarios because respondents provide leads about the next participant. The identification of eligible participants was decided based on the following inclusion criteria:

a) At least 18 years of age.

b) Have filed an FIR with Islamabad Police during the last 18 months.

c) Willing to participate in the study.

A total of 11 respondents were interviewed for this study.

Research Instruments

The key informants of the current study were police officials and complainants who had filed a complaint with the Islamabad Police during the last 18 months. For both types of key informants, the corresponding IDIs were used, and field notes and memos were maintained. The interviews were carried out over six months from November 2022 to March 2023. The interviews of police officials were conducted at various police stations in Islamabad. Each Interview lasted for 30-45 minutes, with the average duration of an interview being 35 minutes. Depending on the participants' availability and preferred method, public interviews were performed both in person and over the phone. Each public interview was completed in 10-20 minutes, with a 15-minute average time.

Transcription of Interviews

Key informants were allowed to express themselves in either of the two languages, i.e., English or Urdu, which they were comfortable with. Predominantly, the key informants of this study were well-versed in Urdu (vernacular Urdu was used by most of the key informants). To circumvent subjectivity, interviews were transcribed by professional transcribers, and validation was ensured by the authors of the current study.

Data Analysis

The authors processed the transcripts in collective meetings, where, after validation of the transcripts, initial codes were assigned to different statements. Codes were continuously merged and modified after which the team agreed on a standardised coding structure. During the process of coding, disagreements were discussed and settled by mutual agreement. The authors collectively decided how and when to incorporate new themes and refinements into the coding structure. There were thematic memoranda and field notes maintained to describe, summarise, and analyse the content of each theme.

5. FINDINGS AND DISCUSSION

To ensure the representativeness of the sample, a diverse set of FDOs were sampled. Diversity in terms of duty station and total experience was ensured. Furthermore, the mean age and mean IT-related experience were 30 and 3.88 years, respectively. The gender distribution was determined using the fact that there is only one female police station in the Islamabad Police. Consequently, roughly 14 per cent were females, while the remaining were males. Similarly, a total of ten officers were included of which one-third were female. The mean age and experience of officers were 39.6 and 14.6 years, respectively. Details are given in Table 1 and Table 2.

Table 1: Demographic Profile of FDOs

Respondent	Gender	Age	Education	Experience (Years)	IT-Related Experience (Years)
FDO 1	Female	37	MSc	18	13
FDO 2	Female	38	BA	18	2.5
FDO 3	Female	26	BCom	7	7
FDO 4	Male	30	MA	8	5
FDO 5	Male	36	FA	15	3
FDO 6	Male	32	BA	7	3
FDO 7	Male	29	FSc	7	1
FDO 8	Male	38	FA	16	4
FDO 9	Male	32	BBA Hons.	8	2.5
FDO 10	Male	28	BSc	7	3
FDO 11	Male	33	BA	10	3
FDO 12	Male	27	BA	3	3
FDO 13	Male	24	ICS	5	2
FDO 14	Male	32	Matric	9	4
FDO 15	Male	24	BSc	3	3
FDO 16	Male	36	BA	15	5
FDO 17	Male	28	BA	7	3
FDO 18	Male	32	BA	8	5
FDO 19	Male	36	BA	18	5
FDO 20	Male	24	ICS	3	1.5
FDO 21	Male	25	MPhil	3	3

Source: Authors' computations.

We inquired about issues and challenges faced by police officials in the adoption of the MIS. The issues pointed out by the participants fall into four major themes, namely, infrastructure landscape, human resources, software support, and conventional vis-à-vis MIS-based systems. Each of these themes is discussed in the ensuing paragraphs.

Table 2: Demographic Profile of Officers

Respondent	Gender	Age	Education	Experience (Years)
Officer 1	Male	39	MPhil	18
Officer 2	Female	42	Bachelor's	24
Officer 3	Male	50	LLB	22
Officer 4	Male	43	Bachelor's	16
Officer 5	Female	31	MPhil	06
Officer 6	Female	38	MPhil	12
Officer 7	Male	42	MPhil	15
Officer 8	Male	45	MPhil	17
Officer 9	Male	32	Bachelor's	06
Officer 10	Male	34	Master's	10

Source: Authors' computations.

Infrastructure Landscape

In this theme, issues of the availability of necessary physical and digital infrastructure were grouped. The major challenges faced by police officials were related to internet connectivity, the work environment, and digital infrastructure.

(a) Internet Connectivity. The system is primarily operated on the internet, for which bandwidth is requested from multiple internet service providers, which has its issues. FDOs regularly complained about signal deterioration and connectivity issues as one key informant said: "The biggest problem we have is regarding the internet" (FDO 4). Due to security reasons, mobile service disruption on important events and holidays (Moharram, etc.) is a norm in Islamabad. In the absence of internet connectivity, the operations of FDOs are usually disrupted and service is unavailable at these critical points. "Fridays are very sensitive and the internet is normally not available around the Jumma time. Internet signals are also jammed on days when there are protests or threats of terrorist attacks" (FDO 1). Due to bureaucratic snags, there is a delay in bill payment, which also disrupts system operations. "I think we were getting internet from Telenor or Ufone last year. Their bills were not paid in time by the department, so the companies used to disconnect the facility at times" (FDO 17). In some cases, FDOs ended up using personal internet to connect to the internet. "We have been given an internet connection from the department. One VPN per police station is given to us. In case of any problem, we connect our private internet from our mobile phones sometime" (FDO 16).

The technical branch apprised that an intranet based on fibre optics laid for the Safe-City project in Islamabad can also be used for connectivity in 20 out of 24 Police stations, but it has not been utilised. There was a lack of awareness about this facility among FDOs and some FDOs even suggested the availability of a separate intranet despite its availability. "Our police department should have its separate internet facility. The benefit of having our own connection would be that we wouldn't have to wait long for technical support staff in case of any problem" (FDO 12). The FDOs who were knowledgeable about intranet facilities shifted to intranet in case of the non-availability of the Internet. Consequently, they face issues connecting to the intranet and complain about its

slow speed. "A Safe-City link was given to us earlier, but it was very slow. It takes a minute to proceed after each click. Apart from this, we also have an internet connection. *Muhharars* also keep a private device for connectivity" (FDO 6). Due to a lack of technical knowledge, some FDOs asked for separate computers for the internet and intranet, which would waste resources. "We are given an intranet from these people. We have only one computer system in the police station, and it needs to be connected to the internet as well. So we should be given separate computers for both the internet and intranet" (FDO 13).

The problem of internet availability was also asked of technical team officers, and they acknowledged that there were unavoidable inherent issues and bureaucratic snags in the availability of the internet. In their opinion, intranet facilities were available but FDOs relied on the internet only because it allowed concurrent internet surfing and social media usage. Moreover, changing the system from intranet to intranet requires some technical expertise, but FDOs are unable to connect to the database as they fail to use the correct network settings. "The Safe-City intranet is accessible 24/7. In case of any issue, we need to resolve the issue in 3 hours. If Safe-City cameras installed in the SHO's room are working, it means there are no issues on our end. The problem is that FDOs prefer to work on the internet so that they can check emails and use other applications. When the internet is down for some reason, they revert to the intranet but fail to connect to it" (Officer 7).

(b) Work Environment. In most cases, there is no separate room available for FDOs and they have to share work space with other staff, causing issues with their work output. FDOs wanted a separate workspace since working in a chaotic police station was one of their major concerns. "My desk is in the Muharrar's office where wireless phones are also placed. There is so much chaos; I need a little peace and quiet to focus on work; otherwise, I am likely to make typos and errors in FIRs" (FDO 20). Extended duty hours were a major concern for FDOs. They regularly complained about the extended work hours and employment outside their mandated tasks. "I am on duty for all seven days of the week. My duty starts at eight and I work till midnight, sometimes beyond midnight as well" (FDO 17). FDOs complained that overworking also affected their work output. "We FDOs cannot work for twelve plus hours daily. Our work demands presence of mind, and there is no room for mistakes." (FDO 20)

(c) Digital Infrastructure. The majority of FDOs complained about antiquated systems that caused sluggish data entry. "Our front desk's computer system is an old model. The software on this system has not been updated" (FDO 15). Some FDOs insisted on the most recent Core i7 computers. "When multiple applications are running at the same time, the computer hangs. Core i7 processors are fairly widespread these days, and we must be provided with the most up-to-date machines" (FDO 12). Some FDOs admitted that they could work on old systems, such as P4, however, the minimum need was Core 2 Duo. "The software is designed to run on Pentium 4 systems. However, I believe a Core 2 Duo processor would suffice for data entry" (FDO 13). None of the officers commented on system hardware, indicating that the current computer systems were adequate for operations.

Being the capital city with steady power arrangements available at most police stations, this issue was not highlighted by most FDOs. "Our police station is a model police station. We have solar panels as well as a UPS for backup" (FDO 6). However, a few FDOs in remote areas did mention issues in this respect. "The duration of load shedding is longer in our police station as it falls in a rural zone. Power outages can occasionally last for two days" (FDO 15).

Presently, the forensic lab facility is available only in the Punjab Police Department, which is the only forensic lab in Pakistan. The samples from Islamabad Police are also sent to Punjab Police for forensics, which delays the investigations. Some of the officers demanded a separate forensic lab for the Islamabad Police. "Punjab Forensic Science Agency receives samples for forensic examination. The amount of sample bulk there has accumulated to the point that it takes four to five months to receive the forensic report for basic procedures" (Officer 1). The problem was not highlighted by FDOs as it is out of their purview.

Human Resources

Police authorities expressed their concerns about MIS training, the backlog, and the availability of technical experts, which are described below:

(a) Training. In human resources, we asked FDOs and officers about issues with training on the system. Before introducing the system, FDOs were selected based on their previous computer proficiency, which helped in its better integration. "I was unexpectedly named FDO. They questioned if I had any knowledge of computers. I was placed here since I was already dealing with computers. Following that, I received some brief training on software" (FDO 4). FDOs were quite proficient in data entry as the initial batches were given training sessions and subsequent batches were trained on the job. "The system has been given to us by Punjab Police, and a lot of training was given to us initially" (FDO 1). The senior management was also informed that requisite training is imparted to FDOs before their employment as FDOs. "When management systems were implemented, we were trained on how to supervise and monitor FDOs" (Officer 2). Subsequently, the already-trained individuals were asked to train newcomers through on-the-job training. "It is difficult for us to hold training sessions regularly, so we ask the previously trained personnel to mentor the newcomers" (Officer 6).

Some of the FDOs highlighted that the system is built in Urdu due to which they faced issues with operating computers as they were educated in English. "The police language is Urdu, but we have learned everything in our formal schooling in English" (FDO 1). The officers acknowledged this issue and informed us that they trained FDOs on the system before their employment at police stations. "The language of computers is different, so the boys were trained before their assignments. They received initial training, were introduced to computers and management systems, and were then transferred to police stations as front desk operators" (Officer 1).

(b) Backlog. A change in the job description due to the change in the reporting officer was a major concern for most FDOs. Initially, the FDOs were placed under the IT department, which administered their leave and duties. However, they were later transferred under *Moharrars*. This has created issues as the FDOs have to perform routine policing duties other than their job description to compensate for a manpower deficiency. "I spend two days at the computer and the third day standing on a check post. When we were in the IT department, they would inquire about our whereabouts if we were not at our desks. Station clerks are now in charge of us. They have fewer *Nafri* (workers) at their disposal, so we are frequently sent to perform special duties" (FDO 11). Some FDOs stated that *Moharrars* have resentment against them because FDOs operate in a comfortable, air-conditioned environment while the remaining police force is deployed on the field. "Their issue is that I am in an air-conditioned room while others are not. I'm sitting there to serve the public. I am held liable for pending computer work, even though the majority of my duty hours are spent on non-IT-related tasks" (FDO 19).

FDOs also complained that *Moharrars* overburdened them with unnecessary reports and returns, which affected their primary responsibilities. "Readers of senior officers ask us to produce lists of specific occurrences, such as motorbike theft incidents in the last three months, even though they have access to these records. They do it for two reasons: to avoid their own responsibilities and to demonstrate their power and presence to us" (FDO 18). The overall result of this change in job description and extra work load is a substantial backlog. "During the last protest, I was called on 12-hour special duties and was not doing computer work at all. There is now a massive backlog" (FDO 3). In addition, FDOs complained that new, fresh work also keeps piling up, further compounding the backlog issue. "Pending work for a month is a headache. We are unable to complete it along with the routine work" (FDO 4).

Officers also admitted that *Moharrars* purposely overburden FDOs. "FDOs in Islamabad are at the mercy of the SHOs. They can place them wherever they see fit. The IT wing is not permitted to intervene" (Officer 6). The officers stated that there were administrative issues in managing FDOs from the IT Department, therefore, they were placed under the command of police stations. "There were many administrative issues like leave and human resource management that were difficult to manage from the IT Department centrally. Therefore, FDOs were

transferred under respective police stations"(Officer 6).

(c) Availability of Adequate Staff. Under this subtheme, the research team asked FDOs and officers about staff shortage, gender composition, and the skill level of available staff. All FDOs complained about the shortage of staff. "The shortage of manpower is one of the biggest hurdles. We, at the front desk, have to take applications and deal with missing cards and document reports. We are the first ones to interact with the public. We even escort people to investigating officers" (FDO 17). Usually, there are only 2 FDOs at each police station, and FDOs informed us that 4-5 FDOs are required at each Police station. “Ideally, there should be six posts, and three of them must be designated skilled staff. If FDOs are required at other assignments, there must be a sufficient number of people to keep the system functioning" (FDO 4). "Three 8-hour shifts should be scheduled. Three people should be appointed at the front desk and three for office work" (FDO 10).

One of the FDO members lamented that seniors were not responsive to their issues and failed to highlight them at the right forums. "Our officers receive sudden orders to send police officials to certain places or duties. Our officers should report to their seniors that their strength (numbers) is not sufficient. But they don’t report that. When we try to complain to top officers, they try everything they can to avoid this contact" (FDO 19). FDOs also highlighted that they have a higher workload during office hours, which is reduced in later hours. "The morning shift is very hectic; most of the complainants visit the police station in the morning. The station clerk and the SHO also inquire about updates on previous cases, so more FDOs should be assigned the morning shift". (FDO 3)

In all police stations, there is sufficient female staff availability. "A female constable is deployed at all 25 police stations. In 5 or 6 of them, two females of an ASI rank are posted to facilitate the public" (Officer 2). FDOs were queried about the suggested gender composition of FDOs at police stations. “Ideally, four male and two female FDOs should be appointed in each police station" (FDO 9). FDOs believe that the need for female FDOs is greater in metropolitan regions and lower in rural areas, where women rarely visit police stations due to cultural biases. "In rural areas, females hardly visit police stations for complaints. So, there is less requirement for a female FDO in rural zone PS" (FDO 11).

In the Punjab Police, FDOs are dedicated civilians, while in the ICT Police, regular police officers are employed as FDOs. "The Islamabad Police has not generated a separate cadre of the IT staff; no one is recruited under this category. We have handpicked officials from different police stations who we believe have some capacity to learn the IT" (FDO 1). Both the officers and FDOs were asked about their input on this issue, which resulted in a mixed response from both of them. Some FDOs favoured being in uniform as they were more familiar with the police investigative process. "Everyone must know how to work on computers. We should know how to work in the field, while the investigating team should know how to handle our work" (FDO 5). Other FDOs favoured being in plain clothes as they would be operating in one domain only and would not be asked for duties other than those listed in the job description. "FDOs from civil backgrounds won’t be asked to do special duties on roads or leave their desks to escort accused to courts for hearings. If FDOs are supposed to be cops, they should at least not be in uniform" (FDO 19). Some officers favoured FDOs from the police force in uniform. "FDOs should be from the police force; they will be aware of the laws and procedures of investigation, unlike those with a non-police background" (Officer 6). On the contrary, few officers supported a separate IT stream. "We need designated IT staff and skilled personnel. There can be separate setups for the IT wing in police stations” (Officer 1).

FDOs and officers were asked about their skill level and ability to handle and operate the system. Although computer skills are an essential work prerequisite, some FDOs admitted that virtually few of them had the skills. "FDOs should understand the fundamentals of computers. They are stuck on software and cannot generate reports if they do not know how to work on MS Excel and MS Word" (FDO 4). In a tech-savvy environment, individuals other than FDOs should also have basic computer skills, which are absent. "There are many personnel in police stations who have great expertise in investigation but are unable to understand computers" (FDO 17). Officers also recognised the same fact. "Constables employed in the 80s were barely middle or high school graduates. Over time, they have reached the positions of investigating officers or station clerks. Their

understanding of modern systems is minimal" (Officer 1). However, one officer accepted that there was a lack of interest in officers, and their drive is essential for system integration. "Educated officers will adapt to technological advancements if they are interested in it" (Officer 2).

Another issue that FDOS was concerned about was the frequent postings and transfers of employees. "I've had three postings over the last four years" (FDO 6). These frequent postings result in the induction of fresh staff who are not adequately trained and take a lot of time to grasp the system requirements. "After working for 3 years as an FDO, I am well versed with the CMS and other required software. Now I am posted out to another department. The person replacing me will require three years to understand what I have learned" (FDO 10). Officers also supported the FDOs' point of view. "FDOs are hindered in two ways: they are frequently posted to different places, and once a trained person is posted out, there is no one to guide the replacing staff". (Officer 6)

Software Support

Police officials emphasised difficulties connected to cyber security, backup repositories, ICT support, and the compatibility of digital records with the legal system under this theme.

(a) Cyber Security. Malware and cyberattacks were discussed with responders. There was a general dearth of information regarding this topic among FDOs. "I don't think even the officers are aware of malware attacks" (FDO 20). They had received no training or information regarding this critical issue, and no clear procedures for dealing with malware or a cyberattack were provided. "We're just operators; we only know about the data we're feeding in and have no idea what's going on at the back end." The MIS was installed by the IT department, and they are concerned about its security" (FDO 5). There was a clear sense of leniency among FDOs because the system had not been hacked before. "The MIS has not been hacked so far, but it can be. I am not sure about security measures" (FDO 16). The same ambivalence was also shown by officers who expressed no urgency in dealing with this issue. "Officials in the police station don't understand that using private devices and the internet can cause a big breach in the system. The intranet is a safe option that has been provided to police stations"(Officer 5). The ambivalence towards this important aspect persists despite clear threat warnings in the past. "In 2021, I got a report from an intelligence agency that some of our data was leaked on the dark web. We checked, but it was not ours" (Officer 6).

The technical team stated that due to internet operations, cyber issues are being neglected to maintain normal operations. According to the technical team, there are standard security checks in place, such as firewalls, SSL, and authentication; additional checks may cause the system to slow down. "We maintain security parameters such as the VPN, next-generation firewall, WAF, and so on following the SOPs. Even the most technologically advanced organisations in the world cannot guarantee complete data security. It will take a toll on processing performance and slow down routine business if we want to exceed the threshold degree of security for publicly released software. So, we maintain a manageable level of security that does not hamper our everyday work" (Officer 8). The technical team recommended using the available intranet for operating the system to enhance its security and efficiency.

(b) Congruence with Legal System. The technology was designed to eliminate paper from police records and digitise the entire record, particularly FIRs. However, because our judicial system cannot accept digital records, both manual and digital FIRs were reintroduced. "When the MIS was implemented, manual FIRs were no longer permitted. FIR registration is now entirely online. The previous IG wished to eliminate paper from the system, but after a while, we resumed manual record-keeping" (FDO 3). Furthermore, due to a lack of system availability, each police station maintains duplicate records (manual and digital). This redundant record-keeping is inefficient and overburdens FDOs. "There should be a single system, either entirely manual or entirely online. When both systems are operational at the same time, our workload is doubled" (FDO 4). The problem of system downtime necessitates the preservation of manual records. "In police stations, a daily diary (*Roznamcha*) is written online. If the online system fails to function properly, we must manually backdate data" (FDO 6). The refusal to accept

digital recordings as legal evidence in courts necessitates duplicate record-keeping in police stations, which is a major hindrance to digitisation. "How can police work become paperless when digital investigation reports (*zimni*) are not accepted in courts?" (FDO 17). The court has issued orders requiring manual record-keeping. "We began writing the daily diary online, but the High Court ordered that we also keep a manual *roznamcha*" (FDO 1). The officers also emphasised the same point. "Digitalised data has no legal backing. There is no such law that allows digital case files in courts" (Officer No. 1). They believed that digitalisation could only thrive if it were compatible with the legal system. "In the entire police system, the introduced technologies should be supplemented with relevant legislation; otherwise, technologies would increase rather than reduce work." (Officer 5)

FDOs complained about this duplicative record-keeping, which has increased rather than decreased the workload. "The introduction of MIS has increased our work instead of decreasing it" (FDO 10). In the case of officers, they were aware of duplicative record keeping, and some even supported it. "We are maintaining dual records. Hard copies of all the FIRs are also kept" (Officer 1). Due to the lack of reliability of the system, few officers even supported maintaining duplicate records. "I support these parallel systems. We can cope in unexpected settings if there is a power outage and a record is needed in an emergency or the Interior Ministry urgently demands some information" (Officer 5).

The research has been hindered further by the constant switching between manual and computerised technologies. "FIR is now registered on the portal. When 50 or 100 FIRs are recorded, we collect the printouts and compile them into a book. Investigation reports are meticulously produced by hand. Their summary of 2-3 lines is included in the digital case file" (FDO 8). FDOs and officers were also asked about the timescale for full digitalisation, which elicited mixed responses. The majority of them believed that comprehensive digitalisation was not possible soon. "Using less paper is possible, but we cannot go paperless" (FDO 4). "It will take at least three to four years to digitise all previous records" (FDO 9). "In Pakistan, paperless and fully automated systems cannot function. Look at NADRA, for instance; their technical teams comprise thousands of individuals, yet you get printouts in each service centre" (Officer 7).

(c) ICT Support. As the system was taken from the Punjab Police, there were many issues in the gestation period. “Initially, the portal was very slow. It used to take 10–15 minutes to open and run a system; now it’s fast" (FDO 1). However, with the requisite training, support, and guidance from the top hierarchy, the issues were gradually resolved, and the system is currently functioning smoothly. "We faced many difficulties in the launch period. The IT staff used to help us out. The IG at that time was very supportive; he took a personal interest in resolving our issues" (FDO 7). FDOs highlighted a lack of the ICT police’s capacity to handle issues, and PITB was contacted for the resolution of system bugs. “The IT department at the Islamabad Police lacks the expertise to deal with bigger issues related to systems. In that case, technical staff from the PITB are called for rescue" (FDO 10). "Our IT department is hopeless; there are very few competent people; the rest have no greater IT abilities than we have" (FDO 14).

Officers accepted capacity issues from the ICT Technical Department. "My understanding of the system was very limited in the nascent period. I didn’t know how to resolve the issues" (Officer 2). They blamed the nonavailability of the technical staff for this issue. "The current IT team is insufficient to keep the system running. There are 20–25 police stations. Moreover, the MIS is used at other sites as well. We cannot accommodate troubleshooting at all times" (Officer 6). Due to the nonavailability of IT support from the integral IT department, the PITB is frequently approached to resolve IT matters. "The IT management in the IP is done by the PITB. All the software is borrowed from them. Even the URLs of our system are run through the PITB" (FDO 21). “We are dependent on the management of the PITB. If an issue arises at their sites, we don’t have the access to resolve it at our end; frankly speaking, we don’t have the capacity either" (FDO 6).

There was a lacklustre response to suggestions for improvements by FDOs; they were quite content with the system's functioning. "Right now, I don’t believe any feature of the MIS needs to be improved. If required, it will

automatically change with time" (FDO 8). One FDO highlighted that presently the issue is the implementation of the existing system; improvements can be made later. "The problem is not any missing feature in the MIS; rather the implementation of the ones that are already in place" (FDO 7). The FDOs stated that several prerequisites are essential for complaint registration but are not endorsed by the complainant online, resulting in its subsequent registration. In the case of missing documents, an affidavit is submitted to the police station. “Online complaints are usually incomplete; the public has less information about the requirements. Online complaints in such cases should be formulated in such a way that the portal should not take the complainant to the next step unless requirements are fulfilled" (FDO 13). The officers thought that MIS could be better utilised if it facilitated the investigation process. "The data entered in the MIS should be used to help us in the investigation. If we scan fingerprints and enter them on the CRMS, we should be able to retrieve all information related to these fingerprints" (Officer 9).

Some FDOs mentioned that the system was slow and frequently disconnected, impeding data uploading and system operations. "The link goes down regularly but returns after 15-20 minutes; this occurs roughly 3-4 hours each day. Technical issues typically arise as a result of excessive system traffic. Last year, approximately 1,300 FIRs were lodged in one police station, and Islamabad has 25 of them" (FDO 15).

A specific suggestion regarding delayed editing (after 24 hours) of information was asked, which garnered a mixed response. Some FDOs were in favour of the suggestion, while others did not support it as it could be misused. "The editing option should be there for a few hours. I once entered the wrong offence in the FIR, which I didn’t realise. Later, I was informed to correct it, but I didn’t have any option to edit the data" (FDO 17). FDOs indicated that in case of any mistake, the IT wing has to be contacted to enable the editing option. Few FDOs recommended a time-barred editing facility with a minimum of 24 hours. “The FIR should be editable for at least 24 hours. If an FIR is registered at night, the officer should get a chance to look at it in the morning and rectify any mistakes" (FDO 20).

Initially, the system was linked to the Punjab database, which aided in greater system utilisation, but the service has recently been discontinued. “The data used to be synced with the Punjab Police Portal but that provision is no longer available" (FDO 15). FDOs and police agreed that the criminal database should be made available online for improved investigation. “A person's CNIC is entered into the system and any FIRs or crimes done against that individual are discovered. This option is accessible for cases filed in Islamabad, but it should be expanded to cover the entire country" (FDO 6). "There are inter-provincial gangs that commit crimes in different provinces. Without access to national-level data, police remain uninformed about the extent of their crimes." (Officer 5)

(d) Backup Repository. FDOs mentioned difficulties with the availability of data backup facilities, which causes them to keep manual and hard copy systems as backups. "There is no backup for data at police stations. I'm not sure if the PITB keeps backups at their end" (FDO 21). They were more geared towards manual systems due to a general lack of confidence in the system and its efficacy. "I'm concerned that if the computer's operating system becomes corrupted or the system crashes, we'll be left empty-handed; after all, it's a machine" (Officer 2).

FDOs believed that as the system was personality-based and the new administration might focus more on manual systems, they should keep a duplicate record as well to cater to their requirements. "The recovery of data doesn’t come under the purview and expertise of police stations" (FDO 9). The officer cadre was asked about this apprehension of FDOs, and they were generally ambivalent about the apprehensions of FDOs. "Backup is maintained; I am not sure about the policy, though. The manual records also serve as a backup of our data" (Officer 5). The technical team clarified that backup data was available with the PITB; thus, most of the apprehensions were unwarranted. "Backup servers are kept in the IT wing, which makes duplicate records on devices. Backup is maintained at the PITB as well" (Officer 6). Still, the apprehensions of some FDOs remain. "There was an issue on the main server, and all of our data was lost. A part of the data could not be retrieved" (FDO 1).

Conventional vis-à-vis the MIS System

(a) Efficient Processing of Data. FDOs and officers endorsed that the investigation process had substantially improved due to the MIS system. They cited Hotel Eye as an example, which permitted severe inspections on all hotel check-ins using CNIC numbers. This application allowed the tracking of suspicious CNICs. "Hotel eye application is also linked with CNICs; hotels and guesthouses enter the CNICs of their guests in the system and an alert is generated if any suspect or criminal checks in" (Officer 10). FDOs and officers gave examples of the ease of processing information through digitisation, which helped expedite investigations.

"Criminal records were maintained on big registers earlier. It used to take a lot of time to verify the records of proclaimed offenders. Now these records are one click away" (FDO 5). "Investigation is speeding up" (FDO 15).

"A CRO number is assigned once the profile of any criminal is uploaded on the CRMS. This CRO number is valid forever. If another FIR is registered against this person, there is no need for reentering the data; only the FIR is updated" (Officer 9).

“During the investigation, we first check if the suspect is a registered offender or if there are any people who have been involved in such types of crimes in that particular area. Digitalised records are very helpful in this regard" (Officer 10).

FDOs noted that the MIS system allows ease in tracking and reviewing complaints launched on the portal. "We have drafted a crime diary. Now we add the figure, do a little editing, and take a printout" (Officer 2). The system has built-in timelines; it raises notifications for delayed investigations. The system has improved efficiency and accountability through digitisation. FDOs also acknowledged that MIS allowed swift registration of FIRs. "It used to take 1-2 days to file an FIR, now we register 3–4 FIRs per day" (FDO 3). Moreover, the online system has allowed ease in the registration of crimes, and linking criminal records with CNICs has helped identify criminals. "We used to have a cup of tea in one hand and a pen in the other while writing the FIR manually. Now that both hands are on the keyboard, we are fully attentive with eyes fixed on the computer screen" (FDO 5).

(b) Improvement in the Police System. FDOs and officers stated that the MIS system had improved accountability; seniors may check on the performance of their subordinates. "Proceedings are supposed to take three days. If they are not, we are inquired about the unfinished business. The IG's office may also take notice" (FDO 16). The placement of cameras in police stations has compelled officers to change their approach towards locals; it has created a welcoming environment, particularly for women. “There are multiple cameras installed in the police station. Now, we cannot misbehave with the public” (FDO 7). “Some females told me that they feel very safe and comfortable at the front desk and their fear of the police station’s environment is gone” (FDO 16). Although sufficient improvement has been witnessed, "There is always a margin for improvement in public dealing" (Officer 5). Transparency has also improved after the introduction of technology, but corruption has not been eliminated. "Transparency cannot be achieved until all records are completely digitised" (FDO 4). "Any changes made in FIR can be easily detected in both old and new systems" (FDO 6). "The investigating officer can still follow corrupt practices if he desires" (FDO 19). "Unfair means and corrupt practices have been definitely controlled as the MIS allows us to keep a check and balance and monitor the police stations" (Officer 5). "Transparency has improved, but it really depends upon the officer and the team" (Officer 10).

The research team explored the impact of digitisation on improving conviction rates. There was a mixed response to this question, in which some of the respondents reported better conviction rates while others reported no change or decline. "I have no idea about the conviction rate" (FDO 21). "The conviction rate is improving, in my opinion" (FDO 9). "The conviction rate is the same or has probably declined. The reason is that although technologies have been adopted, they are not effectively used at the base level. Criminal records are there, but less than 5 per cent of cases were solved with them last year" (Office 10). This claim was not substantiated by any credible data.

There is a general realisation amongst FDOs and officers regarding the merits of digitisation. "MISs are aptly designed. I enjoy working on them." (FDO 16) "Modernisation of police systems is the need of the time, especially when criminals are outsmarting police in technology" (Officer 1). Despite its advantages, they reported a lack of interest from all tiers in the digitisation process. "Lack of interest is there. Some people don't want to opt for new systems even at the in-charge level. Few of them can forcefully opt, others may not" (Officer 6). In another officer's opinion, "The drive for digitisation should be top-to-bottom as the "top-down approach works better in the police" (Officer 8). FDOs highlighted that progress on digitisation is linked to the priorities and interests of senior officers. "There was pressure on senior officers, so they used to keep a check and balance. They created a form on which it was reported how much work we were required to do in the month and how much was pending" (FDO 14).

(c) Public Satisfaction. There was a mixed response about customer satisfaction from FDOs. Mostly, the FDOs felt that the CMS had resulted in better customer satisfaction. "Locals are happy; their petty issues like loss of CNIC or passport are resolved in time without making any personal visit to the police station" (FDO4). "Complainants show their appreciation for the police's digital system" (FDO 8). As per FDOs, educated people can effectively use this facility; they are happy with this facility as they can launch FIRs for their petty issues easily. "Two types of people file complaints online. The first type is liars and the second type is educated and sophisticated people who rely on technology. Honest people come in person to file a complaint, while liars accuse innocent people who are out of sight" (FDO 4). Some FDOs also complained about frivolous complaints. They opined that online complaints are useless. "In the CMS, we normally receive the complaints, not the application, which is required for the registration of an FIR. We have to approach the complainant repeatedly to ask them to visit the police station for the case to proceed" (FDO 7). "The 15 helpline is sufficient for complaints; online complaints should not be allowed as it creates pendency for no reason" (FDO 8). Officers claimed better user satisfaction with FIR filing/registration. "Filing an FIR used to take a lot of time; we had to tell the complainant to wait for a copy of the FIR or to come back the next day for it. Now the moment FDO types the FIR, we take a printout and hand it over" (Officer 1). However, some FDOs explained technical issues that result in multiple visits by customers. "People need to pay multiple visits to the police station to get their FIR registered in case of power failure or internet disconnection" (FDO 18). Frivolous complaints were a major concern for FDOs. For example, "A lady made a complaint online that her tailor didn't stitch her clothes on time" (FDO 3).

Findings of Public Interviews

To gauge the public's perception and their experiences with Islamabad Police, IDIs of 11 complainants were conducted. Diversity in terms of the severity of the incident and mode of the first interaction with police was observed. The demographic profile of the respondents is presented in Table 3.

Table 3: Demographic Profile of Participants (Public)

Participant	Gender	Age	Education	Incident	Mode of Initial Complaint	Status of Complaint
Participant1	Male	22	Bachelor's	Loss of wallet	Visit to the police station	Unresolved
Participant 2	Male	20	Bachelor's	Attempt to murder	Visit to the police station	In progress
Participant 3	Male	39	Middle	Fight	Visit to the police station	Resolved
Participant 4	Male	21	Bachelor's	Loss of wallet	Visit to the police station	Resolved
Participant 5	Male	45	Master's	Theft at home	Visit to the police station	Unresolved

Participant 6	Male	47	Bachelor's	Car theft	Call on police helpline	Unresolved
Participant 7	Male	45	Doctorate	Car theft	Call on police helpline	Resolved
Participant 8	Female	38	Doctorate	Harassment	Online	Unresolved
Participant 9	Female	25	Bachelor's	Land grabbing	Online	In Progress
Participant 10	Female	27	Bachelor's	Loss of mobile	Online	Resolved
Participant 11	Male	30	Bachelor's	Land grabbing	Online	Resolved

Source: Authors' computations.

Occurrence of Crime

Most of the respondents did not know the online complaint system and relied mostly on personal visits to the police station. "I left the car for 5-7 minutes. When I came back and didn't find my car in its parked space, I immediately called the police helpline "(Respondent 6). "I reported the robbery the next day" (Respondent 5). "I immediately informed the security guards of the society and called the police after an armed robbery at my home" (Respondent 7). "I kept looking for my wallet for some time and searched all possible places. I asked many people and inquired from shopkeepers as well. Then I went to the police station to file a lost report" (Respondent 1). Only one respondent reported a crime through the CMS. "When I realised that my mother's mobile was missing, I immediately logged into the online portal to file my complaint" (Respondent 10).

Communication with Police

One of the respondents, who had registered an online complaint, was happy with the performance of the police. He was surprised to note that FIRs can be registered online. "My father didn't believe that our complaint was actually filed through the portal, so he went to the police station himself. He was informed that our complaint had been registered already and gave him the tracking ID" (Respondent 10).

In most cases, respondents confirmed a quick initial response by the police. "The police mobile van immediately arrived at the venue within 3–4 minutes. A sub-inspector from the nearby thana also arrived. I received calls from the IG office 2-3 times. They inquired whether the police reached in time after the complaint" (Respondent 6). They also acknowledged the quick registration of FIRs through FDOs. "I went straight to SHO's office as I was unaware of what to do. I was asked to see the FDO. He filed an FIR, which hardly took 5 minutes. He was very kind and treated me with respect" (Respondent 1). "The FDO asked me to write an application. They took my contact number and told me that they would inform me of updates, if any" (Respondent 5). "The whole procedure took around 2 hours" (Respondent 2). "They asked me to write an application. The next day, I contacted them and inquired whether my FIR had been registered or not. They sent me a copy on WhatsApp. I didn't need to go to the police station myself" (Respondent 7). "I emailed the police for a follow-up, and they used to respond to my email. I then requested that they give me updates on my phone; updates were then sent via phone" (Respondent 10).

Some people also explained their visits to the police station after filing a report. "After filing an online complaint, we had to go to the police station for an FIR and other formalities" (Respondent 9). Some respondents reported unfair dealing and delayed initial dealing. "I waited for quite a long time. No one was attending to me properly. I then went to see the SHO and started talking to him in Pushto. He then called someone to attend to me on priority"

(Respondent 4). Although most respondents informed us about the prompt initial response, there were issues with the follow-up after the initial registration of complaints. "I had to call the police for the follow-up on my case" (Respondent 6). "I never received any call for a follow-up nor had I called them. I didn't have any hope of recovery" (Respondent 1). Almost 50 per cent of the respondents reported that their issue was resolved after contacting the police, but there were some issues with the final disposal of complaints. "I received a call from an intelligence agency in Lahore that my car had been found. My car was located within three days. After coming back to Islamabad, it was parked in the police station for a week" (Respondent 7).

Takeaways of Public from their Experiences

In this section, we discuss the overall experience of the public in dealing with the police, transparency and awareness about online complaints, and suggestions for improvement in the system. The experience of dealing with police elicited varied responses, with a few people complaining about the lack of interest shown by the police, especially in investigations. "I don't think they even tried to investigate. My car was lifted from a main road in proximity to a police station; Safe City cameras were installed there, but the police didn't take the case seriously. They just used to ask if I had received any calls for ransom" (Respondent 6).

"Not a pleasant experience. I was more pleased to have dacoits in my home than to interact with the police" (Respondent 7).

In some cases, even after the case's resolution, people had issues with the police. "When my car was recovered from Lahore, I received a call from the SHO saying that the police didn't have the resources to bring the car back. It would take a few days, and nobody could guarantee the condition of the car. I rented a car and booked a hotel room for them for three days. This police trip cost me 100,000 bucks." (Respondent 7) "The conviction rate of police is definitely improving. The actual problem starts after recovery" (Respondent 7). Some people had a good experience with the police. "I had a pleasant experience with the police; they treat you quite well" (Respondent 11). According to most respondents, the system of FIR filing has been expedited with digitisation, but the police investigation process is still outdated. "The filing of FIR is very smooth and swift now, but I didn't feel any change in investigation methods or speed" (Respondent 3). "My jewellery and mobile were snatched at gunpoint. The questions of the police made me more uncomfortable afterwards" (Respondent 8).

The transparency is a bit improved as the fear of security cameras monitoring the police forces them to take precautions while asking for bribes. Nevertheless, the culture of bribery persists. "Police officials take bribes outside the police station now because of security cameras installed at police stations" (Respondent 3). Most of the respondents did not know the online complaint system, but the people who used it were supportive of its utility. "I knew about the online complaint mechanism through a friend. My family had some interactions with the police through the 15 helpline, and all experiences were terrible. This online experience is better" (Respondent 10). "I didn't have any idea about the online complaint system. Even if I did, my natural response after car theft would have been to call the police helpline rather than browse my mobile and write an online complaint" (Respondent 6). People did face issues with the initial sign-up process and the registration of complaints. "I had an idea about online complaints. I browsed the Islamabad Police website and signed up. I didn't get any clue on the website about how and where to write a complaint. I came to know afterwards that online complaints are registered on the Safe City website. How on earth was I supposed to know that?" (Respondent 8). "The online complaint tab on the Islamabad police website should automatically take you to the Safe City website" (Respondent 8). Some even suggested video tutorials for a better understanding of online complaints. "The CMS should be made user-friendly. Video tutorials on online complaint filing should be given on the website to engage the public from different age cohorts and socioeconomic backgrounds" (Respondent 11).

Discussion

In the infrastructural landscape theme, we noticed that many FDOs claimed that the system was usually not available. Disruptions, as highlighted in the existing literature (see, for example, Dutta, 2016), are quite common and hamper the routine functioning of the system. The input from system administrators revealed that despite the availability of a functional Safe City intranet at 20 Police stations, the FDOs are mostly using the internet for data entry, possibly for their own ease. The internet facility has its inherent issues of data availability, security, and bill payment, which get delayed by bureaucratic snags coupled with a struggling economy (Escalona, 2020). In the absence of the internet, FDOs are unable to shift to the intranet due to technical issues, which results in the non-availability of the system causing disruptions in work. Functional intranet, where available, can be used as the prime means for data entry, while efforts should be made to bring the remaining PS off the intranet as it will increase system availability and decrease reliance on the internet.

Regarding the work environment, it was observed that there is a shortage of staff, which should be managed by new hires. However, staff shortage can be reduced by decreasing the moonlighting by FDOs. Moreover, it was felt that the complete system has been developed by the Punjab Police, and there is no specific requirement for highly skilled staff for its operation. As stressed by Al-Zaabi et al. (2013), system operations require skilled technicians who should be adequately trained through special training or on-the-job training. The requirement of a dedicated space for data entry at each PS is a genuine requirement that should be addressed by police authorities. Overall, it was felt that the system is quite user-friendly and can easily be operated with minimal training. FDOs complained that they were frequently utilised on patrol duties, which hampered their routine functioning. The administrative issues dictate that the FDOs remain under the control of their respective police stations. Nevertheless, a mechanism should be devised to keep their employment outside of IT-related tasks to a minimum.

One of the major impediments to the implementation of digitisation is the non-acceptance of digital records as evidence in court proceedings. The prosecution of criminals through the courts is one of the prime policing functions. Currently, digitisation is not supporting the prosecution process as our legacy legal system does not permit digital records in courts. This forces duplicative record keeping in manual mode along with digital record keeping, which is quite cumbersome and hampers the digitisation process. This also results in an increased workload for the police (Kumar, 2012). Our legacy legislation has to be revised to allow the digital record to be used as evidence in courts.

It was also observed that there is an indifference in the ICT regarding the digitisation process from top to bottom. There are bound to be teething problems associated with technology adoption and the same is being witnessed in the ICT as well. To enable smooth integration, however, the driving power must come from the top down, particularly from the officer cadre (Sumner, 1999). Unfortunately, there was a mixed reaction to technology adoption. All of the police officers interviewed for this study demonstrated a general lack of interest in technology adoption. Officers were aware of the relevance of this initiative, and they all acknowledged its utility, but on-the-ground activity has been lacking. One of the main reasons could be the challenges of routine policing in the peculiar environment of Islamabad, which are overwhelming and put this important issue on the back burner. The importance of top management was also acknowledged by FDOs, who admitted that the process of digitisation and technology adoption is dependent upon the incumbent IG's priorities and is expedited exponentially with the personal interests of the IG.

Personal interest was quite visible in top management, which trickled down to FDOs. All of the FDOs included in the study highlighted personal issues and grievances. Despite using this system for a considerable time, they were unable to give any input for system improvement. FDOs were focused more on their duty schedules and policing duties. It is understandable that effective human resource management and development are essential for technology adoption and need to be improved. However, FDOs, being prime system users, should have the capacity to identify the issues within the system and highlight them for improvement. However, indifferent

responses from FDOs showed their lack of motivation and drive towards technology adoption. Having said that, this lack of user acceptability regarding technology adoption is prevalent (Al-Zaabi et al., 2013). Being the prime drivers of this digitisation process, there is a need to overhaul the FDO stream and give them the right incentives to perform.

The data security issue was highlighted as the major impediment to technology adoption, therefore, input from the technical team was sought on this aspect. Moreover, in the current environment, data accessibility and security are essential for technology adoption, hence, people's perceptions about this aspect were also covered. However, a complete lack of interest and awareness in the police ranks regarding system and data security was observed. Data entry through the internet should be discouraged and phased out sequentially. Instead, a standalone system would be more secure and less susceptible to cyber-attacks from hostile elements.

Digitisation is in progress and its impact on the overall conviction rate is not visible at this stage, and there has been no significant change in conviction rate so far after digitisation. Technology adoption is not merely the introduction of a few software and digital gadgets; rather, it demands an overall change in culture and force outlook (Ellahi & Manarvi, 2010), which was not visible in the Islamabad Police.

Currently, the system is being operated only by FDOs in silos, and the police, as a whole, have not accepted the technology. The officers and other police staff sparingly used the system, and the complete load of digitisation is being borne by FDOs, which results in FDOs being overburdened with work and a shortage of manpower. The main purpose of digitisation is to reduce manpower by adopting technology. On the contrary, the systems introduced in the Islamabad Police have resulted in an increase in manpower with additional manpower demands. There is always an inherent friction to change, and the same is visible in the Islamabad Police. This issue cannot be resolved until there is a cultural shift and the entire police force, from top to bottom, starts using the system. Eradication of duplicative record-keeping is essential for this purpose, but it cannot be achieved without legal reforms and a push from the top. The police force is still using manual hard copies for routine correspondence, which needs to be shifted to the intranet. This single step would force everyone to use the MIS and reduce reliance on manual systems. The usage of the MIS by all users would reduce the load on FDOs and allow better integration of the system. Another important step can be the automatic logging and updating of register no. 2 roznamcha by all members of the police station, which would curb its misuse and inculcate transparency.

The present study found a major gap in the general public's awareness of the digital complaint entry system. Most of the complainants interviewed were either ignorant about the digital complaint registration process or hesitant to use it. The negligence of the general public regarding technology is due to several factors, including digital illiteracy, user-friendliness, and system efficiency, among others (Joshi, 2005).

In its drive for digitisation, the Islamabad Police has deployed three software packages, each with a specific purpose. The actual versus perceived utility of these software packages is summarised in Table 4.

Table 4: Comparison of Management Information Systems

Software	Purpose	Actual Utility	Issues
CMS	Used for online compliant registration	The system has created significant ease in initial complaint registration by the populace	• Several frivolous complaints launched • Good for petty crimes but has less utility for serious crimes

CRMS	Used for criminal record management	Helpful in the identification of criminals and investigations	• Data entry facility availability at Safe City and Kacheri • Data entry option not available at PSs • Limited database
PRMS	Police station record management system (replica of 25 registers)	• Ease of access to investigation data • Better transparency	Duplication of effort (manual and computerised data entry)

Source: Authors' computations.

Table 5 shows an accountability matrix in which the improvement in accountability at each tier has been accessed, and issues that are hampering these accountability processes have also been highlighted.

Table 5: Accountability Matrix

Tier	Manifestation	Issues
Upward	Better visibility of PS performance at SP/CCPO/IG Office	Inertia to use of the system by higher office staff; lack of IT acumen
Downward	Public facilitation: ease of complaint / FIR registration	Power/ technical issues result in multiple visits
Internal	Inter-police station data transferability	Duplication of effort Lack of IT acumen

Source: Authors' computations.

6. CONCLUSION

Technology adoption and digitisation are game changers that, if utilised effectively, can potentially revolutionise policing in Pakistan. However, there is a need to overcome inherent inertia and embrace the cultural shift to reap its full benefits. This study aimed to find the impact of technology adoption on the Islamabad Police and impediments to its adoption through the lens of its users.

It was found that there has been a significant improvement in police functioning because of digitisation as there is increased transparency, improved monitoring, and ease of record keeping. The investigative process and crime mitigation have been facilitated due to the ease of accessing data. However, the same can be enhanced by further building on the database and incorporating other provinces as well. Noncongruence with the legal system is one of the major impediments to the digitisation process and needs correction through legal reforms. Despite its potential benefits, digitisation is not a priority for the top management, which has resulted in its lacklustre adoption. FDOs are the prime drivers of the system, and their effective human resource management can further facilitate the digitisation process. Data security and its uninterrupted availability are another concern that can be addressed through more reliance on an OFC-based integral intranet, which should be the primary means of software access rather than the internet.

There is a lack of awareness in the general public about the MIS. Nevertheless, the individuals who have utilised it, acknowledge its efficacy, which further necessitates its expedited implementation. Although complete

digitisation of the police force to a paperless environment is not envisaged soon, a concerted effort can facilitate the evolution of the Islamabad Police into a tech-savvy digitised police force, fully geared to meet the challenges of the 21st century.

7. POLICY IMPLICATIONS

The policymakers have taken the right steps towards digitisation and automation in the IP with a financial overlay of PKR 704 million. According to the findings of the present study, digitisation has shown its utility and substantially improved the policing of ICT. However, a few teething problems remain that need to be addressed. In light of our findings, the following policy measures are recommended that would further enhance the process:

Congruence with the Legal System

The requisite laws need to be passed by Parliament to allow digital records to be admissible in court as evidence. This single step would substantially facilitate the prosecution process and subsequently reduce crime. Moreover, it would reduce the inherent friction in the police against digitisation as they would see its actual utility in prosecuting criminals.

Drive from the Top

The police is a hierarchical organisation, and any change in any such organisation has to be introduced from top to bottom. The top management in the police department needs to make digitisation a top priority and a command goal. They should start setting project goals with strict timelines that should be vigorously implemented. Separate KPIs should be set for police officers about their contribution to digitisation as an output.

Formulation of Big Data

At present, digitisation in the police is being implemented in Punjab and ICT only. The same needs to be replicated in the remaining provinces with an interlinked system to formulate a database of police records for the entire country. This would allow each province's police to access the criminal database of the remaining provinces and facilitate swift identification and apprehension of criminals.

Efficient Human Resource Management

FDOs are the prime drivers of the digitisation process, and effective human resource management would expedite its smooth implementation. A comprehensive regime for FDOs should be formulated in which they should be incentivised for good performance through promotions and other incentives. The regime should cover the balanced gender composition of FDOs as per area requirements and provide them with dedicated workspaces at each police station. Owing to the development of a user-friendly system, no issues concerning training. Nonetheless, there should be frequent refresher courses and on-the-job training.

Inculcating Cultural Shift

There is resistance against the adoption of technology and the Islamabad Police is hesitant to use this system, which is being relegated to FDOs only. Resultantly, there is a demand for dedicated manpower for digitisation, which is against the spirit of digitisation. The same cannot be mitigated without introducing a cultural shift by enforcing the use of technology by the entire police force. An important enabler in this regard would be

processing routine police correspondence digitally on existing intranet infrastructure. This step would nudge the police force towards digitisation and acceptance of technology.

Intranet Availability and Security Concerns

At present, police are using the MIS on the internet as their primary means of communication, which has serious security issues and is susceptible to denial of service and other cyberattacks. In all organisations, the internet is used as a private intranet, which entails a substantial financial overlay. In the case of Islamabad Police, a rugged intranet system is already available at 20 out of 24 police stations for safe city cameras, which can be easily used to operate the MIS as well. Therefore, the intranet facility should be extended to all police stations, and the MIS system should be operated mainly on the intranet to enhance the cyber security of the system. The internet should be a secondary means of accessing databases and should be sparingly used.

Awareness Drive for the General Public

The study has highlighted the lack of information among the general public about the CMS. Moreover, the users of the CMS system were generally satisfied with its performance and gave positive reviews, which necessitates raising awareness among the general public about its availability and providing information about its usage. To this end, there should be a concerted media campaign to inform the general public about its availability and how to use it through online video tutorials.

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PART II

EDUCATION & TECHNOLOGY

Policy Briefs

FACTORS ASSOCIATED WITH SCHOOL DROPOUT IN PAKISTAN: AN ASSESSMENT USING SURVIVAL ANALYSIS

Alvina Sabah Idrees and Saima Sarwar

INTRODUCTION

The bottom line of the research, on which this policy brief is based, is that despite granting autonomy to provinces in running school education and the state's obligation to "Right to Free and Compulsory Education," the track record has not been very impressive. The National Education Policy 2017, introduced after the 18th Amendment, has not fully achieved one of its main targets of reducing school dropouts.

School participation is an important aspect of education outcome but even more important is to examine the factors contextual to school retention especially towards higher levels of education. There is a need to identify the risk factors that may contribute to the low school survival rate in Pakistan such as teacher absenteeism and lack of commitment, harsh treatment, lack of facilities, lack of parental involvement, the child's abilities, and the child's involvement in paid and unpaid work.

The persistence of school dropouts acts as a hurdle in achieving the SDG 4 of universal education for all. Therefore, there is a need to fine-tune the education policy by ascertaining legal and administrative actions towards student retention in schools. For this purpose, there is a need to determine the risk factors that must be contained through strict policy actions and awareness. Getting a high enrolment is a necessary but not sufficient condition to improve education outcomes. An improvement needs to be made in terms of completion and successful transition to a higher level of education.

The study had three main research questions, i.e., the individual, collective, and social factors that are a cause of concern for early dropout from schools at the household level; the role of education performance, readiness, and schooling attributes in determining school dropouts; and the are observed across different divisions of Punjab and Sindh.[1]

METHODOLOGY

The study utilised the Round 6 of the Multiple Indicators Cluster Survey (MICS) by UNICEF. The cohort used for analysis was children between the ages of 5 to 17 years who had ever attended school.[2] The dependent variable was the duration it takes to drop out of the highest level of grade ever attended by a child. The levels of education were divided into preschool, primary, secondary, and higher levels. The analysis was based on household data and data extracted from the school census. The demand side factors were categorised into economic barriers, societal barriers, and personal disabilities. These are the impediments faced at the household level that may hinder continuing schooling. On the other hand, the supply-side factors included schooling attributes, which reflect the quality of education as experienced by current students as well as the readiness of the

[1] KP and Balochistan were not included in the study due to data limitations. At the time of analysis, the data for Balochistan was not available. The data for KPK for MICS6 does not include the cohort aged 5 to 17 years to be used for analysis.

[2] The school-going age, as defined under Article 25A, is 5 to 16 years.

education system in terms of early education and beyond primary readiness, both in terms of availability and capacity. The control variables included gender differences, the incidence of poverty in different regions, and rural-urban differences.

The estimation technique used was survival analysis, which estimates the probability of an event (school dropout) by considering many different times that event will occur. Thus, the prediction of the response variable (school dropout) under survival analysis, includes the time to exposed risk along with other explanatory variables. The survival analysis retains the information of both categories, i.e., first, who dropped out of school and, second, who completed a grade.

MAIN FINDINGS AND CONCLUSIONS

- The results indicate that the survival probability of student retention rises towards a higher education level with each additional year of schooling. Students tend to drop out of school more at preschool (Katchi), primary and lower secondary levels which results in educational wastage as the successful transition to secondary and higher levels tends to get low.

- Children belonging to less privileged households are at greater risk of early dropout from school with a greater hazard ratio for the poorest and second lowest quintiles as compared to the richest. For poorer households, children are considered a source of income at present rather than an asset for earning higher future income through education. The higher opportunity cost at present results in an earlier dropout from schools. In addition, it is found that children who are involved in paid/unpaid work are at higher risk of dropping out of school at an early stage of schooling in comparison to higher levels of schooling. However, those who successfully transition to higher grades are less likely to leave school despite being associated with child labour.

- Harsh treatment at home in terms of verbal and physical abuse is a contributing factor in increasing the parity risk of school dropout. Furthermore, parents' regular visit to school has a comparatively lower hazard ratio in comparison to their non-participation.

- Children with functional difficulties and an inability to acquire reading skills have greater chances of dropping out of school at an earlier stage. So, there is a need to focus on redesigning the curriculum at earlier grades by making it student-centric to build cognitive skills.

- It is found that the absence of school governing bodies and parents' non-participation in school events and meetings significantly increases the chances of school dropouts. On the other hand, regular feedback on a child's progress report tends to decline the hazard ratio. Regions that have a lesser risk of school dropout (Rawalpindi, Gujranwala, and Lahore), also have a greater prevalence of school governing bodies, regularity in students' performance as well as parental involvement with school management committees/parent-teacher associations. In the case of Sindh, contrasting results are observed, i.e., the presence of the school governing body failed to reduce dropouts despite major efforts by the School Education & Literacy Department of Sindh. It is observed that such intervention has caused more deprivation as compared to its absence which shows an inability of such policy action to deliver in the case of Sindh.

- Rawalpindi, Gujranwala, and Lahore are less poverty-afflicted divisions as compared to the rest of Punjab and the parity risk of school dropout is also lower in these regions. The parity risk of school dropout resulting from paid labour in urban areas is highest in the case of Bahawalpur followed by Multan, whereas rural unpaid family labour in D.G. Khan is a significant contributor to dropping out of school. On the other hand, paid labour in rural areas of Rawalpindi and Sahiwal has the highest hazard ratio associated with the discontinuation of school education at earlier grades. Larkana, Mirpurkhas and Hyderabad divisions experience an early school dropout and have higher poverty incidence. On the other hand, the less impoverished regions, such as Karachi Division and Sukkur, show better performance in terms of lower risk of school dropouts. The involvement of

children as unpaid family labour in rural areas of Larkana and Hyderabad divisions is a significant contributor towards early dropout from school, whereas this relationship is substantially stronger in urban areas of Karachi. In the case of Shaheed Benazirabad, the risk of dropping out of school is much higher in urban than rural areas. Child labour in the form of paid activities is significant only in rural areas of Larkana and Mirpurkhas with a much higher impact in the latter. The analysis shows that paid labour in urban has no significant role in Sindh but is a contributing factor in Punjab.

- The quality of physical infrastructure is an important factor in school retention and successful transition to higher grades. The learning score is highest in the case of D. G. Khan, but this division has been unable to address the higher incidence of student dropouts due to a lack of capabilities for beyond-primary readiness. This is observed in terms of poor school infrastructure and a smaller number of middle and high schools to cater for the successful transition from primary to higher level of schooling. Furthermore, the inadequate number of above primary schools is a greater impediment than the poor infrastructure for school retention. For the Multan division, school infrastructure as an indicator of readiness performs better followed by the availability of beyond primary schooling. Mirpurkhas has a higher risk of school dropout where the school availability is less as well as the proportion of dysfunctional schools and schools with only one functional classroom is also high. Hyderabad division has a higher public-school ratio along with comparatively better school infrastructure but still this region corresponds to the highest school dropout risk. The possible reasons could be poor performance in educational outcomes, gender parity and beyond primary readiness. Hyderabad has the highest learning score in terms of education outcome, but such performance proves to be inadequate for school retention towards higher grades, which is mainly due to inadequacy in beyond primary school availability and poor infrastructure of existing schools. Similarly, Mirpurkhas underperforms in all the categories which also has a higher hazard ratio of school dropout.

POLICY RECOMMENDATIONS

Based on the analysis, some key issues to be addressed are given below:

i) A strong legal system must be enacted to deter child labour.

ii) Poverty is also one of the reasons for school dropouts. Hence, an in-cash payment scheme for education attainment specifically in impoverished regions could play an important role in improving school retention. Scholarship rewards could incentivise students for a successful transition towards a higher level of schooling. 'Education voucher scheme'[3] through public-private partnership needs to be expanded for affordable access to education.

iii) Parental involvement and the school governance system must be strengthened. In addition, parental involvement must also include a conducive household environment for child development. The PTAs can play an important role in awareness in this regard.

iv) The schools must focus on improving the educational outcomes in terms of learning outcomes, development of cognitive abilities and regular feedback mechanisms. The general principle of access to 'education' must be prioritised towards 'quality education'. Such a course of action must start from the primary and pre-school (Katchi) levels for successful transition to higher levels since the school dropout risk is highest at these two levels of education. This can ultimately also bring fruitful results in early childhood programmes.

v) Beyond-primary school readiness needs to be improved, both in terms of school availability

[3] The voucher scheme is currently in introduced in 36 districts of Punjab with high concentration in Lahore and Rawalpindi. These two regions also depict lower hazard ratios for school dropouts.

and school infrastructure, by considering the differences and resource deficiencies between regions.

vi) Above all, each province needs to structure and fine-tune the education policies in line with regional and local contexts, catering to its specific needs by involving the local bodies instead of a single policy action at the provincial level. Since the National Education Policy 2017 continues to guide the federating units due to the absence of comprehensive provincial policy drafts, such policy becomes somewhat shallow in the regional context.

AN IGNORED SOLUTION TO K-12 EDUCATION PROBLEMS IN PAKISTAN: FRAMEWORK FOR MAINSTREAMING CAREER EDUCATION

Ghazanfar Iqbal and Zahid Hussain Dool

INTRODUCTION

Career education (CE) is defined as "school-based efforts to prepare students for career-related developmental tasks, including career choices." This definition suggests that deliberate endeavours are necessary for schools to develop a sense of career among students and help them to choose careers consciously. Hence, CE is proposed at the K-12 level to minimise the gap between schooling and the job market, instilling knowledge, skills, and the attitude required for career development and encouraging each individual to play their role in economic activities.

The situation of K-12 education in Pakistan is constantly reported as poor in terms of access, quality, learning achievement, and student drop-out. It is a regrettable fact that problems of education in Pakistan are discussed through the lens of various approaches but attention to the very origin is missing in the literature.

The global literature presents a comprehensive approach to similar education problems and confirms the role of CE as a significant solution to problems such as improved student engagement in learning, school valuing, and decreasing the rate of school dropout. On the other hand, the national literature discusses career counselling (CC) – a discrete approach - over CE – an integrated approach. Moreover, unlike CE, the CC has not been shown to resolve educational problems. The literature on CC in Pakistan shows that the focus has been less on middle and primary grades while highlighting the gaps of either the absence of CC or providing it in an unfitting way. Almost all studies conducted on the K-12 level in Pakistan explore either perspectives or current practices, if available, of CC only.

The literature shows that research on the integrated approach towards career, i.e., CE, is missing. Moreover, research mostly presents career-related guidance at secondary stages, whereas international research confirms the benefits of CE at the elementary level. One of the local research studies also recommended that CE is necessary in elementary grades. Therefore, the study on which this policy brief is based looked deeper into the literature to further understand the application of CE in the schooling process for career development and developed a framework that may support the implementation of CE in Pakistan. The objectives were:

- To conduct a systematic analysis for reviewing career-related research studies in Pakistan
- To develop a contextually relevant framework of career education for K-12 education in Pakistan

METHODOLOGY

First, a systematic review was conducted to understand the research trends in CE and guidelines were prepared to develop a CE framework. Initially, a framework draft was prepared using the findings from the systematic review. Later, it was been validated through the two-phase Delphi technique by consulting the experts. The systematic review approach was adopted as a preliminary research method to build the base for devising a robust framework for CE.

FINDINGS

Global studies indicate that integrating CE into the core curriculum builds a strong foundation for the career development of students. CE is also reported to have a positive impact on the students' learning outcomes, their engagement in learning, decreasing school dropout, students‘ preparation for future careers, and self-efficacy. Findings also reveal a higher on-time completion rate, positive behaviour, and high perceived value of education in students. The presence of ‘trusted adults’ is reported to have a positive effect on the development of career aspirations. Thus, the CEFP emphasises help taken by ‘supporting people’ (parents, teachers, friends) and also reflecting on supporting people’s input in career aspirations.

In developing countries, where employment opportunities are scarce, education can be a resource that offers individuals control over their career-related perceptions across genders. The integration of CE in schools is regarded as an equity function in such countries where most disadvantaged students benefit from career awareness and support in formal settings. The development of transferable skills, such as communication, confidence, decision-making abilities, and critical thinking skills, are also emphasised globally. Therefore, the CEFP also includes such skills. In the CEFP, such skills are suggested in the core curriculum for K-12 grade students and some of the items are developed presuming the existing learning competencies of the core curriculum, i.e., communication (writing/speaking) skills learnt in (English and regional) languages.

Career-related research studies at the national level mostly report the poor picture of career guidance and counselling (CGC), i.e., the absence of CGC. The research studies do not include a clear description of CGC and particularly its role, which raises the question ‘Who is the right person to guide students for their future development?’ Thus, efforts must be made to in define the process of the CGC and describe the individuals who need to provide CGC. Interestingly, the review suggests that teachers are expected to be at the very forefront while providing students with CGC which supports the integration of CE that exclusively depends on teachers. Unfortunately, none of the research studies have explored the provision of the CGC at K-8 grades. Though the importance of the CGC either in all school grades or in early high school grades is mentioned, most of the studies discuss the CGC services for secondary and college level students from various dimensions. Moreover, traditional and gender biases have also been reported in career aspirations, which has been reflected while developing the CEFP.

Moreover, a comprehensive Career Education Framework for Pakistan (CEFP) was also developed. The CEFP is based on three distinct but interconnected factors, viz., knowledge, skills and the attitude required for imparting career education at the K-12 level. The CEFP is vertically divided into four educational levels, i.e., primary (K-5), middle (6-8), secondary (9-10), and higher Secondary (11-12). Each factor and level has different tenets (the detailed framework is available in the research report) to be implemented and achieved for the successful integration of CE in mainstream education.

CONCLUSION

This research focused on an in-depth review of the literature to conceptualise a CE approach to solve the educational challenges in Pakistan and devise a contextual framework to implement CE in mainstream education. Global and national literature advocates CE as a promising solution to educational problems such as low academic achievement, student learning disengagement, student drop-out, and the quality of education. This further resulted in the successful creation of Pakistan’s first inaugural Career Education Framework for Pakistan (CEFP), which is based on an in-depth understanding of the literature, experts’ insights, and contextual needs. The validation of the CEFP through Delphi rounds further ensures its contextual relevance and efficacy as a solution to Pakistan's educational dilemmas.

In summary, the research conclusively supports CE as the optimal strategy to address educational challenges while fostering human capital development. The CEFP, serving as a tangible translation of research into practice, holds the promise to reshape the educational landscape. Moving forward, it is imperative to consider the practical implications of implementing the CEFP and

to explore avenues for its seamless integration within the education system. As Pakistan embraces this transformative framework, it sets a promising course toward enhancing educational outcomes and nurturing a more empowered and prepared generation.

RECOMMENDATIONS

This research has yielded several pertinent recommendations based on the study's findings, which hold significant implications for the enhancement of Career Education Framework (CEFP) integration within Pakistan's educational landscape:

1. Educational policy and stakeholder engagement: Educational policymakers are strongly encouraged to engage in a comprehensive review of existing educational policies through the lens of the CEFP. This revision process should encompass all pertinent stakeholders, including curriculum developers, textbook authors, teachers, educators, researchers, parents, and students. This concerted effort will facilitate the alignment of educational objectives with CEFP principles, ensuring a cohesive and progressive educational framework.

2. Curricular integration: The curricula for K-12 grade levels in various subjects necessitate rigorous review to harmonise with CEFP tenets. The incorporation of CEFP principles will bridge the gap between classroom learning and students' career aspirations, enriching educational experiences, and fostering a holistic development approach.

3. Textbook alignment: A pivotal step involves critically examining all K-12 level textbooks within the purview of CEFP. This evaluative process will enable the seamless infusion of CEFP principles into textbook content, propelling students towards introspective career exploration and informed decision-making.

4. Research endeavours: Social science researchers should explore CE further, particularly focusing on its integrated approach and inherent significance. The dissemination of key insights regarding CEFP's transformative potential will catalyse informed discourse and facilitate its effective implementation.

5. Localised contextualisation: Future research endeavours, spanning diverse regions of Pakistan, should evaluate the CEFP for its contextual strengths and limitations. Researchers are encouraged to scrutinise the framework within their unique local contexts, suggesting contextual adaptations and improvements as needed.

6. Curriculum analysis: Future research initiatives must extend their purview to encompass a meticulous analysis of educational policies, curricula, and subject-specific textbooks, all viewed through the comprehensive lens of CEFP. This holistic evaluation will illuminate existing alignment, guide seamless integration, and propose supplementary content embedding CEFP principles.

7. Teacher preparation and professional development: Teachers and educators hold a critical role in propagating CEFP principles to K-12 educators. It is recommended that teacher training programmes be revisited and revamped to encompass CEFP learning components, empowering teachers to facilitate meaningful career-oriented education.

8. Educator degree programmes enhancement: The revision of policies and curricula for B.Ed. and BS Education programmes across varying durations (1.5, 2.5 & 4 years) should be meticulously undertaken with a dedicated CEFP focus. This adaptation will equip future educators with the necessary tools and insights to effectively integrate CEFP principles into their instructional practices.

These recommendations can help Pakistan's educational landscape by harnessing the transformative potential of the CEFP, promoting enriched student experiences, informed career decisions, and a dynamic educational ecosystem that resonates with the evolving needs of the 21st century.

TECHNOLOGY ADOPTION IN ISLAMABAD POLICE

Verda Salman and Ayesha Nazuk

INTRODUCTION

Effective policing is a critical state function for maintaining law and order and providing services to citizens. Pakistan inherited the policing system from the British which was primarily a colonising tool with little emphasis on service delivery. After independence, police stations became symbols of corruption and malpractice, and the much-vilified Thana culture kept normal citizens away from police stations. There have been many attempts at police reforms to create a professional, service-oriented, and accountable force to prevent and detect crime as well as maintain public order. In the past few years, Pakistan has introduced technologies and software to its police force to enhance accountability and meritocracy. These technologies were first implemented in the Punjab Police and are now being replicated in the Islamabad Police (IP).

As part of its digitisation drive, IP is operating online database management systems that have been developed by the Punjab Information Technology Board (PITB). These systems are used by all the stakeholders in the hierarchy. These Management Information Systems (MIS) are functional in all 24 police stations in the Islamabad Capital Territory (ICT). The components of MIS are the Criminal Record Management System (CRMS), Police Station Record Management System (PRMS), and Complaint Management System (CMS).

Technology adoption is not merely the introduction of software and technical gadgets but encompasses a cultural change in its outlook and acceptance by its users. The same was emphasised in the PC-1 of the project, which included research by specialists in human behaviour to holistically address the expectations of the citizens. Consequently, this study was carried out to ascertain human behaviour within police organisations and among citizens regarding technology adoption by the police. Thus, the study on which this brief is based identified the issues and challenges in technology adoption faced by the Islamabad Police. Furthermore, it analysed the public's opinions about MIS.

METHODOLOGY

The primary objective of this study was to examine the perspectives of stakeholders on the MIS used by IP. The stakeholders include police officials and the general public. The perspectives of the IP were incorporated through the lens of their experiences with the MIS. The general public's perspectives were incorporated through the lens of their experiences with the filing of First Information Reports (FIRs) and case follow-up. Initial field surveys were conducted to get an idea about the working of these systems and identify the focal persons who deal with the MIS. MIS is used by all the officials in the hierarchy of IP. Its primary users are the front desk operators (FDOs). Two to three FDOs are appointed at each police station, but in some instances, the number of FDOs is higher. Interviews with 21 FDOs, 10 officers, and 11 members of the public were conducted. Members of the public were complainants who had filed a complaint with the IP in the last 18 months. Reflexive thematic analysis was used to derive key findings from the interviews.

FINDINGS

The issues pointed out by the participants fall into four major themes, namely, infrastructure landscape, human resources, software support, and conventional vis-à-vis MIS-based systems.

Infrastructure Landscape

In the infrastructure landscape, FDOs complained about extended duty hours and employment outside their mandated tasks. The non-availability of separate working spaces for FDOs was found to be another impediment. Despite the availability of a fibre-optic-based intranet, the police use the internet for connectivity, which faces frequent issues due to overdue bills and system outages. There were technical barriers as FDOs lacked the requisite technological base. Legacy computers also caused slow data entry, and there were power backup issues in a few police stations. The lack of a local forensic lab in Islamabad causes substantial delays in the prosecution of cases.

Human Resources

In human resources, some of the FDOs highlighted the issue of deficient and untrained staff. FDO also complained about being placed under station clerks and placed on routine policing duties, which creates a backlog and long work hours. Frequent postings and a lack of cooperation from seniors were the other main concerns.

Software Support

Police officials emphasised difficulties connected to cyber security, backup repositories, ICT support, and the compatibility of digital records with the legal system under this theme. There was a lack of awareness about the possibility of malware and cyberattacks. At present, the judicial system does not accept digital records as valid evidence, which puts an extra burden on FDOs owing to maintaining duplicate records, i.e., paper-based and digital.

Conventional Vis-a-Vis MIS System

FDOs and officers both endorsed the fact that the investigation process has been substantially improved because of the lesser time required for records verification. The system has allowed swift registration of FIRs and ease in tracking and reviewing complaints launched on the portal. The introduction of MIS has improved accountability and transparency. However, corruption has not been fully mitigated. Some of the respondents reported better conviction rates, while others reported no change or decline, but the same was not substantiated through the data. Another important finding was that progress on digitisation is linked to the priorities and interests of senior officers.

Findings of Public Interviews

At present, there is a lack of awareness among the general public about the online complaint system, and they still rely mostly on personal visits to police stations for complaint registration. Few respondents, who had registered an online complaint, were satisfied with its performance. Although most respondents informed us about the prompt initial response, there were issues with follow-up after the initial registration of complaints. The public acknowledged that the installation of security cameras has improved transparency. Nonetheless, the culture of bribery persists.

POLICY IMPLICATIONS

The policymakers have taken the right steps towards digitisation and automation in the IP with a financial overlay of PKR 704 million. Our research has found that digitisation has shown its utility and substantially improved the policing of ICT. However, a few teething problems remain that need to be addressed. After having gone through the research process, the following policy measures are recommended that would further enhance the process:

Congruence with the Legal System

The requisite laws need to be passed by Parliament to allow digital records to be admissible in court as evidence. This single step would substantially facilitate the prosecution process and subsequently reduce crime. Moreover, it would reduce the inherent

friction in the police against digitisation as they would see its actual utility in prosecuting criminals.

Drive from the Top

The police is a hierarchical organisation, and any change in any such organisation has to be introduced from top to bottom. The top management in the police department needs to make digitisation a top priority and a command goal. They should start setting project goals with strict timelines that should be vigorously implemented. Separate KPIs should be set for police officers concerning their contribution to digitisation as an output.

Formulation of Big Data

At present, digitisation in the police is being implemented in Punjab and ICT only. The same needs to be replicated in the remaining provinces with an interlinked system to formulate a database of police records for the entire country. This would allow each province's police to access the criminal database of the remaining provinces and facilitate swift identification and apprehension of criminals.

Efficient Human Resource Management

FDOs are the prime drivers of the digitisation process, and their effective human resource management would expedite its smooth implementation. A comprehensive regime for FDOs should be formulated in which they should be incentivised for good performance through promotions and other incentives. The regime should cover the balanced gender composition of FDOs as per area requirements and provide them with dedicated workspaces at each police station. Owing to the development of a user-friendly system, no issues regarding training the system emerged. However, the same needs to be reemphasised through frequent refreshers and on-the-job training.

Inculcating Cultural Shift

There is friction with technology, and the Islamabad Police is hesitant to use this system, which is being relegated to FDOs only. Resultantly, there is a demand for dedicated manpower for digitisation, which is against the spirit of digitisation. The same cannot be mitigated without introducing a cultural shift by enforcing the use of technology by the entire police force. An important enabler in this regard would be processing routine police correspondence digitally on existing intranet infrastructure. This step would nudge the police force towards digitisation and acceptance of technology.

Intranet Availability and Security Concerns

At present, police are using the MIS on the internet as their primary means of communication, which has serious security issues and is susceptible to denial of service and other cyberattacks. In all organisations, the internet is used as a private intranet, which entails a substantial financial overlay. In the case of Islamabad Police, a rugged intranet system is already available at 20 out of 24 police stations for safe city cameras, which can be easily used to operate the MIS as well. Therefore, the intranet facility should be extended to all police stations, and the MIS system should be operated mainly on the intranet to enhance the cyber security of the system. The Internet should be a secondary means of accessing databases and should be sparingly used.

Awareness Drive for the General Public

The research has highlighted the lack of information among the general public about CMS. Moreover, the users of the CMS system were generally satisfied with its performance and gave positive reviews, which necessitates raising awareness among the general public about its availability and providing information about its usage. Towards this end, there should be a concerted media campaign to inform the general public about its availability and how to use it through online video tutorials.

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