A COST-BENEFIT ANALYSIS OF

PARALLEL EDUCATION STREAMS IN THE PUBLIC SECTOR

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EXECUTIVE SUMMARY

The provision of effective public education is one of the most challenging tasks in the public good provision domain. Since 1947, more than twenty-three education policies and five-year plans have been presented by successive governments in Pakistan. However, our education system is still facing multifold issues such as ineffective management and supervision protocols, poor examination systems, etc.

Without any doubt, the public education provision is one of the core investments that a state can make to enhance human capital and wellbeing. But the aspect that makes public education provision tricky is the associated cost and benefits to the public of competing investment programmes in the public sector. When we look at Pakistan's public education funding from elementary to intermediate levels, we can notice that, in a broader sense, public education funding follows two streams. The first and major stream is general public schools and colleges. The second and relatively smaller stream is Cadet Colleges, PAF colleges, etc. Investing in public education is a necessary but not sufficient condition to gain desirable education outcomes. Policymakers are usually interested in how educational expenditures are targeted and what outcomes (benefits) can be realistically linked with that funding. With this idea in mind, in this research, we conducted a comparative Cost-Benefit Analysis of the aforementioned two mainstreams of education to assess the cost associated with each stream and the benefits they provide to the public. We also assessed the delivery approach of both streams for lesson learning and system strengthening. To address these questions, this study adopted a mix-method approach (both quantitative and qualitative methods).

By delivery approach (DA), we mean the process of getting things done or the chain process beginning from goal setting to implementation and effects on student learning. We have tried to assess the working mechanisms of both streams, particularly in the context of 21st-century skills. Research shows that our education system is plagued with various issues such as discontinuity in government policies, weak supervisory and monitoring mechanisms, poor examination systems, political intervention, higher dropout rates, etc. (Ahmad & Rauf, 2012; Rizvi, 2016). All these issues somehow are linked with the delivery mechanisms of public education provision.

All over the world, countries adhere to ambitious goals and reforms to enhance the quality of service delivery, including education. These ambitious goals and reforms require actionable strategies and effective transmission through a complex and multisided bureaucratic system to get delivered on the ground but this delivery process can be challenging in the presence of the potential bureaucratic inertia, as well as the complexity, coordination, discretion, and innovation required to achieve systemic change (Williams et al., 2020). Therefore, the question that “how to enhance mechanisms of bureaucratic functioning and policy delivery?” has become one of the key challenges for governments around the globe. Therefore, a general understanding of the delivery

mechanisms of both education streams is important to see the efficiency of each stream in achieving their respective goals.

Our findings show that the per-student cost to the government, from FY 2018-19 to FY 2020-21, in the Islamabad Model Colleges (IMCs) was higher by 1963.90 PKR than Cadet Colleges (CCs). Likewise, on an annual basis, a student in IMCs was getting 654.63 PKR more than a student in the CCs. Contrary to the common narrative that CCs get more funding from the government, our analysis showed that funding to the IMCs was higher than the CCs.

We undertook the Cost-Benefit Analysis (CBA) of both education streams from three different perspectives, i.e., CBA based on the cost to the government, CBA based on the cost to government and private cost, and CBA based on cost to the government, private cost, and opportunity cost.

The CBA based on the cost to the government for IMCs shows that the Benefit Cost Ratio (BCR) was equal to 3.33, which implies that per unit of PKR that had been invested by the government over 2018-21will generate 3.33 PKR for the economy. The CBA based on the government cost plus private cost reduced the BCR to 3.26, which implies that IMCs will generate net benefits equal to 3.26 in the future. Finally, the CBA based on government, private, and opportunity costs reduced the BCR to 1.40, which implies that the IMCs still produce positive net benefits considering all three types of costs.

The CBA of Cadet Colleges, considering government funds only, shows that the BCR was 7.92, which indicates that each PKR that had been invested by the government over 2018-21 is expected to produce 7.92 rupees for the economy in the long run. The CBA of the CCs considering government plus private costs shows that the BCR decreased to 2.26. Nevertheless, the investment remained profitable as the value of CBR was greater than 2 units against each unit invested.

Lastly, the CBA based on government, private, and opportunity costs shows that the BCR reduced to 1.27 of the CCs. However, the investment was still profitable as BCR was still greater than 1. Here, it is important to note that in this particular CBA we relied on private benefits instead of social benefits, which implies that the benefits reported here might be understated. From a fiscal point of view, without considering private and opportunity costs, the return on investment in the CCs was considerably higher as compared to the IMCs.

In a simple pooled regression analysis, the results indicate that in Cadet Colleges the GPA was 1.75 higher compared to the IMCs. This implies that the performance of the CCs was better in terms of producing good academic scores as compared to IMCs. In the literature, good academic performance is significantly associated with various positive life outcomes such as an increase in tertiary education prospects, health, happiness, civic involvement, higher self-concept, reduction in crime rate, etc. (Chen & Lu, 2009; Bradley & Greene, 2013; Kumari & Chamundeswari, 2013;

Regier, 2015; Tentama & Abdillah, 2019). Therefore, it could be argued that CCs contribute more to social well-being compared to IMCs.

When it comes to the delivery approach, IMCs are linked with a relatively long administrative and supervisory chain that involves multiple departments along with a large number of agents. This larger chain makes the system prone to delivery inertia and bureaucratic pathology. For instance, the inadequacy of enablers or ambiguity in roles and the ownership of responsibility makes things more complicated. On the other hand, the administrative hierarchy of CCs is relatively shorter as it starts with the board of governors and goes straight down to the principal, vice-principal levels, etc.

In terms of goal setting, both streams set their goals in alignment with the national education policy/plan. For IMC, the Federal Directorate of Education (FDE) is responsible for narrowing down national education goals to formulate strategic goals and coordinate them with Area Education offices (AEOs). The AEOs then define tactical goals for IMCs. In the case of CCs, the board of governors decides strategic goals in light of national policy. During the board meetings, they also decide on tactical goals according to the institutional mission. Finally, their execution rests with the principal and other school-level officials.

Our findings show that the delivery approach of CCs is relatively better than the delivery approach of IMCs. The CCs are prototypical examples of institutional autonomy and decentralised governance in the education sector. The ordinance passed in 1960 gives an ample amount of autonomy to CCs to work under a governing body within specified constitutional boundaries. Hence, they are more adaptive, flexible, experimental, innovative, and think out of the box. Despite getting lower funds from the government in comparison with the IMCs, CCs are accumulating higher resources by shifting the cost burden to alumni, students, and other trustees. The CCs do relatively better in terms of twenty-first-century learning/kills delivery, engage and utilise its alumni to gain tangible and intangible support in terms of mentoring, etc., possess better enablers, have better teacher training, and are more oriented toward the holistic development of students.

Despite being better on many fronts, the delivery approach of Cadet Colleges manifests some weaknesses as well. These include higher private costs, heavily-enforced control, and punishment mechanisms. Moreover, their delivery approach is relatively opaque data-wise and has a tendency to create cultural shocks for students due to weaknesses in transition mechanisms. Finally, all Cadet Colleges are working for the same goals but independently without any formal horizontal integration mechanisms and a unifying central body.

In addition, the major weaknesses in the delivery approach of IMCs include higher costs to the government, comparatively lagging in twenty-first-century learning/skills, poor teacher training mechanisms, and bureaucratic pathology affecting their smooth functioning and educational

outcomes. Lower living standards and deficiency of staff at several institutes are some of the other weaknesses of the system.

There are some positive aspects of the delivery approach of the IMCs as well. For instance, most recently the FDE has taken some admirable steps to strengthen its delivery approach, such as the transformation of its data and monitoring system via initiatives which include the Human Resource Management Information System (HRMIS). The HRMIS is relatively better in data transparency, offers minimal private cost to the public, offers better accessibility, and is socially inclusive. In addition, the FDE is currently focusing on launching new steps like STEM and blended learning initiatives. This shows their resolve to improve the delivery approach of the general stream of public education through these most warranted initiatives.

INTRODUCTION

Public education provision plays a key role in the social, cultural, political, and economic development of a nation. Steve Kagen once said, "If we get public education right, everything else will follow. But if we get it wrong, not much else will matter." However, the provision of effective public education is one of the most challenging tasks in the public good provision domain. Since 1947, more than twenty-three education policies and five-year plans have been presented by successive governments in Pakistan. However, our education system is still facing multifold issues such as ineffective management and supervision protocols, poor examination systems, outdated curriculum, directionless education, low enrollment rates, higher dropouts, political intervention, low professionalism among teachers, and insufficient finances (Rizvi, 2016). Many of these problems have also been highlighted in Pakistan's vision 2025.[1] The vision document states willingness and determination to overcome these issues. In addition, Vision 2025 has also included a "knowledge economy" in its core elements to ensure quality education, indispensable for navigating effectively in the so-called knowledge economy.

In any education system, elementary and secondary-level education provide the foundation for higher education. Therefore, countries worldwide invest a substantial amount of public funds into the elementary and secondary levels of education. In Pakistan, education provision is largely financed by the public sector, but the role of the private sector has also increased manifold over the last two decades. Today, one-fifth of all the children or one-third of all the students go to private schools in Pakistan. Private school students tend to come from urban, better-off, and more educated families than government school students and especially out-of-school children.

When we look at Pakistan's public education funding from elementary to intermediate levels, we notice that, in a broader sense, the public education system has two mainstreams. The first and major stream of education comprised general public schools and colleges. The second, and relatively smaller stream, includes Cadet Colleges, PAF colleges, etc. The educational institutes in the second stream are special schools and college systems that run under the direct supervision of the armed forces.

In a historical context, Cadet Colleges in Pakistan are rooted in the colonial legacy of military and Cadet Colleges. The Prince of Wales Royal Indian Military College (RIMC) was the first military college established in 1922 in Doon Valley, Punjab, (now the Indian state of Uttarakhand). The RIMC was absorbed into the Indian Republic's Rashtriya Indian Military College following the country's and army's partition in August 1947. In 1954, the newly established Pakistan Army established the Punjab Cadet College Hasanabdal, in Attock, Punjab. Faujdarhat Cadet College was established in 1958 in Chittagong, then East Pakistan. Currently, many Cadet Colleges are operational throughout Pakistan and have expanded into a sort of another parallel education stream. In the presence of

1. GOP (n.d.).

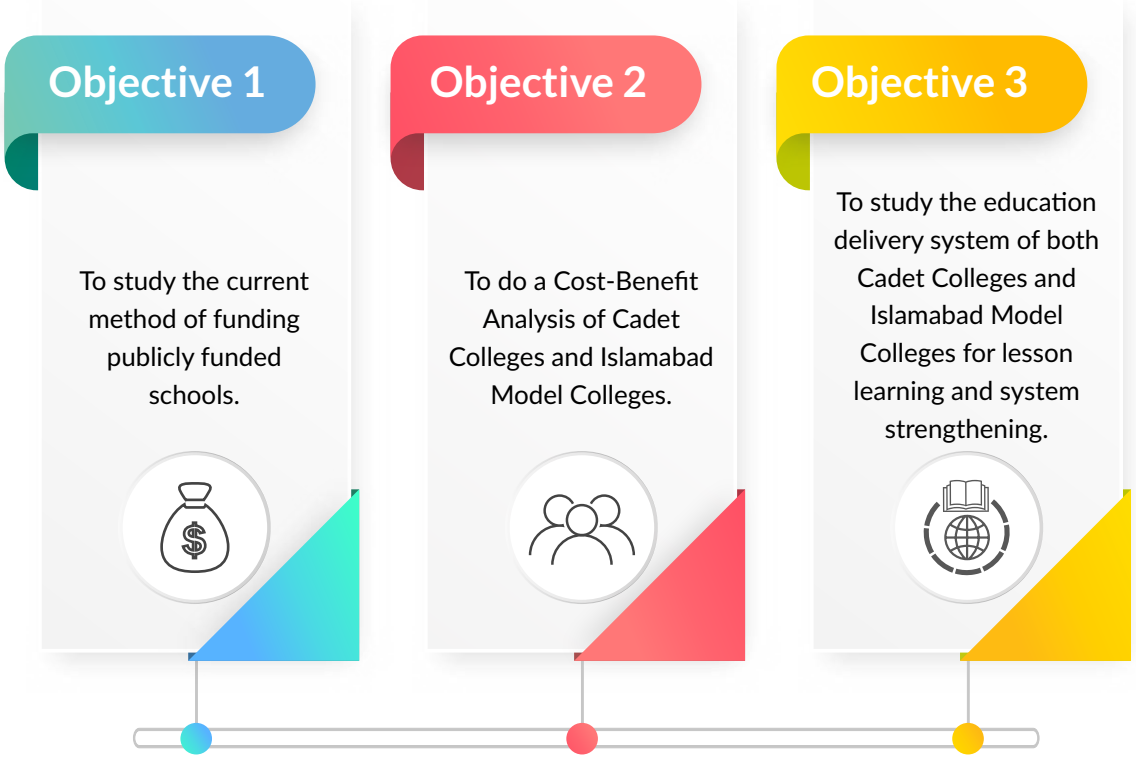
these two parallel education systems, Pakistan's public education funding flows to these two streams and the purpose of this funding is to extend the better provision of education to the public.

Without any doubt, the public education provision is one of the core investments that a state can make to develop its economy. But the aspect that makes public education provision perplexing is the associated cost and benefits to the public of competing investment programs in the public sector. Therefore, it can rightly be said that investing in public education is a necessary but not sufficient condition to gain desirable education outcomes. Policymakers are interested in how educational expenditures are targeted and what outcomes can be realistically linked with that funding. With this conception, this research assessed a comparative Cost-Benefit Analysis of the aforementioned two main streams of education to examine the cost associated with each stream and the gross benefit they provide to the public.

Besides, the study also examined the delivery approaches of both Islamabad Model Colleges and Cadet colleges. By delivery approach, we mean the process of getting things done or the process from goal setting to implementation and its effects on the students. We tried to assess the working mechanisms of both streams, particularly in the context of twenty-first-century skills. It is shown that our education system is plagued with issues such as unsustainability/discontinuety in government policies, corruption, weak supervision, monitoring mechanisms, poor examination systems, political intervention, higher dropouts rate, etc (Ahmad & Rauf, 2012; Rizvi, 2016). All these issues somehow are linked with the delivery mechanisms of the public education system. Therefore, the evaluation of the education delivery mechanisms of parallel streams in public education will help education policymakers in policy and system strengthening.

RESEARCH SCOPE

This research has the following objectives:



Public Education Budgeting and Issues in Pakistan

Finance is reckoned as a fuel to run the engine of any system. The education system of Pakistan has historically been underfunded. It has been a continuous legacy of our changing governments that the education sector funding mostly remained less than 3% over time (Ahmed & Khan, 2020), which has never been adequate for the rising educational requirements of the country in the modern age. Pakistan's education spending as a percentage of GDP is reportedly the lowest among neighbouring countries (Khan and Ahmed, 2021).

Moreover, the low provision of educational development funds in the first place and then their inefficient utilisation due to various governance-related issues are the major hurdles that restrain people from gaining optimal benefits from public money. In a situation like this, improvements in practices and processing of fund distribution, management, and application are necessary to improve the efficacy of these resources. Various other issues in budgetary mechanisms are also

required to be improved, such as targeting capacity building of budgetary faculty, guaranteeing stakeholder involvement in budgetary processes, etc. (Tabassum, Zahid & Saleem, 2016).

Education and Cost-Benefit Analysis

Educational Cost-Benefit Analysis is currently, and has been for some years, a widely accepted technique, used to assess the profitability of investment in education (Jimenez and Patrinos, 2008). The educational rate of return studies are carried out in most developed countries and many developing countries. In most cases, the results are in favour of additional investment in education, which the studies show to be profitable for both the individual and national economy (Hough, 1994). Woodhall, Hernes, & Beeby, (2004) concluded that Cost-Benefit Analysis (CBA) does not provide all answers for educational planning but the CBA helps in deciding among alternative choices for investment, which is central to planning and has a practical significance.

METHODOLOGY

To translate the afore-discussed conceptualised scheme of research into real and functional form this research decided on a systematic methodology to specify the methods and techniques that were used to derive relevant and reliable data and to analyse the data concerning our research problem. The blueprint of this research is discussed in the following sub-sections sequentially to allow the readers and examiners of the study to critically assess the overall validity and reliability of the study.

Nature of Research

This study applied mixed-method to direct the research process, which implies that this study approached the research problem both qualitatively and quantitatively. In the quantitative domain, we covered Cost-Benefit Analysis (CBA) and pooled regression analysis (PRA). CBA told us how much each stream is beneficial in terms of producing an economic return to education, and who is better in comparative terms. PRA told us about the comparative status of both streams in producing cognitive skills (test scores). In the qualitative domain, we assessed the education delivery approaches of both education streams. Here, we tried to understand how goals and priorities are set in both streams, and how they are followed by processes such as measurement and monitoring, accountability and incentivisation, problem-solving, and management routines to get things done. The evaluation of (DA) helped us to juxtapose to know how things are done in both education streams, and which stream is doing better. The findings of this evaluation will be useful for policy and system strengthening.

Figure 1: Nature of Research

Data Collection and Sampling

The data for this research is obtained from both primary and secondary sources for the CBA of both education streams, the pooled regression analysis to analyse the performance of both education streams in terms of academic scores, and studying the education delivery system of both Cadet Colleges and Islamabad Model Colleges. For secondary data, online government databases and official and online documents were used.

Data Collection for CBA

For CBA, this study used lifetime expected earnings as a benefit based on higher secondary schooling and the expenditure by the government and other sources on higher secondary schooling as the cost of education. The data on earnings was taken from Alif Ailaan and SAHE, (2016). The data on enrollment and expenditures (by the government and other sources) was acquired from the official records of each education stream.

Data Collection for Pooled Regression Analysis

In the pooled regression analysis, we used data on student scores, gender, parent occupation, parent education, province, and teacher qualification at the institute level of both education streams. The data for this section was provided by both institutions. Furthermore, we also used the data repository of the FBISE and other boards for test scores on the HSSE.

Data Collection for Evaluation of Education Delivery Systems

To evaluate the education delivery system of both education streams, we collected data via (a) semi-structured interviews through a field survey, and content analysis of official documents (such as reports, curriculum manuscripts, etc.) for extracting rich data relevant to the delivery mechanisms of both education streams. The primary data was collected through field interviews with the higher officials of the Federal Directorate of Education (FDE). We also visited the Cadet College of Hasanabdal and conducted in-depth interviews with teachers, administration, and students. We also conducted interviews with the alumni of both streams working in the same enterprise or a business firm in Islamabad.

The Three Scaling Pans of Cost-Benefit Analysis

The benefit of education is based on private returns to education. We considered three decisive cost-benefit measures, namely the net present value (NPV), the economic rate of return (ERR), and the Benefit-Cost Ratio (BCR). We assessed the average expected monetary benefit by school type and education level. The following measures and formulas were used for the calculation (Cortes and Mayrhofer, 2019).

The Net Present Value (NPV)

The NPV is the difference between the current value of future cash inflows (here monthly income after certain years of schooling) and the current value of investment (here cost of education) over a specified period. In Formula 1 "r' represents the discount rate and "n" denotes the period. If the time duration (n) is higher, the more influential the discount rate will be. Hence, the higher positive NPV denotes a safer and more productive investment.

Formula 1: NPV

$$NPV = \sum_{t=0}^{n} Benefits - Costs \div (1 + r)n$$

Economic Rate of Return (ERR)

The economic rate of return is the minimum discount rate at which investment in schooling would be justifiable. The ERR can be decided by setting the NPV to zero (Formula 2). Similar to the NPV, the higher positive ERR denotes a safer and more productive investment.

Formula 2: ERR

$$NPV = 0 = \sum_{t=0}^{n} Benefits - Costs \div (1 + r)n = ERR$$

Benefit-Cost Ratio (BCR)

The BCR is the ratio of the sum of all discounted benefits (NPV of benefits) to the sum of all discounted costs (NPV of costs) concerning the base year (Formula 3). BCR offers a directly compare benefits to the costs of a project at time zero. Ideally, the greater the output of BCR the better and the lower threshold should be more than 1.0 because any value below 1.0 implies that the costs exceed the monetary benefits of the project.

Formula 3: Benefit-Cost Ratio

$$Benefit\text{–}Cost\ Ratio = (PV\ of\ benefits) \div (PV\ of\ costs)$$

Determining the Discount Rate

The discount rate is one of the core concepts when it comes to deciding on an investment. The discount rate can be considered as the time value of money and it offers the possibility to compare the cash flows over time. Picking a suitable discount rate for the estimation of net present value is a challenging and critical matter as it reflects the entire course of investment projects from the sum of cash outflow(s) to cash inflow(s). In the education context, earnings cash flows throughout the working life are needed to be discounted by a real interest rate (a rate that is adjusted to the inflation rate). According to the OECD, to select a reasonable discount rate, long-term government bonds can be used as a point of reference. The OECD noticed that the average long-term interest rates

across countries affiliated with the OECD were roughly 4.5% in 2006. They assumed that central banks in all OECD states will efficaciously maintain a long-term nominal interest rate of around 4.5%. Based on this assumption they expected that a real interest rate will tend to variate from 2.5% to 3%. Therefore the real discount rate was set at 3%. According to the World Bank, Pakistan's average long-term real interest rate (from 2004-to 2019) is 2.6%.[2] The same discount rate was used by 'Khan & Ahmed (2021) to assess the present value of lifetime earnings of students in Pakistan. Thus, this study also used a 3% discount rate to find the present value of future earnings.

Indicators of Benefit and Cost Analysis

The indicators of the CBA are briefly discussed in the following sub-section.

Individual Earnings

The most observable benefit of investing in public education is productivity growth. The gain in the shape of earnings can be considered as the shadow price of the growth in productivity after acquiring certain years of education. Therefore, we expect that investments in education to raise individuals' productivity and the shadow price of that increased productivity will be equal to the earnings over their entire lifespan. Individual earning was assumed to be equal to the average starting real salary by school type and education level. The data on average starting real salary was taken from Alif Ailaan & SAHE (2016).

Total Cost of Public Schooling

The total cost of schooling is the sum of the cost to the government, private cost, cost to other sources, and opportunity cost of schooling.

Per Student Cost to Government

Cost to the government was measured based on government spending per student, which was calculated as the total cost to the government divided by the total number of enrolled students.

Per-Student Private Cost

The tuition fee paid by individual students.

Opportunity Cost of Schooling

The opportunity cost is the foregone earnings foregone due to being enrolled in school. The most obvious opportunity cost of schooling could be the earnings that someone can expect to obtain if they were not enrolled in school. In computing the foregone earnings at higher secondary education (opportunity cost) we can utilise the minimum wage as a proxy for what a student could earn in case they were not enrolled in school. This is because we are not able to distinguish a

2. World Bank 2022.

student's earnings from the earnings of those who are in the labour market (non-students). Owing to this reason, the minimum wage is perhaps a useful proxy as the students probably would have some earnings more or less equal to the minimum wage (OECD, 2011). According to Wage Indicator Foundation, (2021) unskillful and juvenile (14 to 17 years old) workers in Punjab, Sindh, and Baluchistan, and even in the Islamabad Capital Territory, get a minimum wage of around about 13,000 PKR per month. Therefore, we used 13,000 PKR per month as an approximation for the opportunity cost of attending higher secondary school.

Comparative Performance of both Education Streams in Producing Good Academic Scores

Student scores and GPA are the most commonly used measures of academic success and the most important determinants of an individual career (York et al., 2015). Thus, we can compare both education streams (school types) in terms of students' scores to know their relative performance. A better approach would have been to obtain data on those students who took the entrance test and secured enough scores but were not able to secure admission to their preferred institute. We assumed that highly motivated students prefer to attend popular/reputed institutes, and less motivated students tend to attend relatively less reputed institutes. A range of studies has confirmed that a higher degree of motivation is related to higher scores/grades at all education levels (Hosch, 2010). This complicates the comparison of students based on scores in different education streams. Therefore, it would have been better if we had the data of those students who attempted the entrance test, secured enough scores but were not able to secure admission to the preferred education institute by a close margin (presumably, the motivation of these students was identical, if not equal) and compared their HSSC scores to those studying in reputed institutes (e.g. Cadet Colleges) for assessing the impact of school type on student grades. When Abdulkadiroğlu, et al., (2014) compared the academic grades of the students who attempted the entrance test of elite schools in Boston and New York City but were not able to get admission to elite schools by a small margin with those who managed admission to the elite schools by a small margin, they found no substantial difference in their academic grades. We tried to get access to such data from Cadet Colleges but were not able to get hold of the required data. Therefore, we relied on comparing the GPA of children currently educated in both education streams. However, to get a sense of the bias (if any) we tried to interview those students who took entrance tests but were not able to secure admission to Cadet Colleges.

Specification of the Regression Model

For the comparison of student's scores by school type, we used the following pooled regression model:

$$Y_i = b0 + b1X_i + e_i$$

Where Y = Institutions' GPA, Xi= School type, and e_i is the error term.

THEORETICAL BACKGROUND FOR QUALITATIVE STUDY

In this section, we elaborate on theoretical constructs and concepts that are relevant to the qualitative part of the study. To work on the qualitative part of the study we have consulted the literature on deliverology that focuses on getting things done and from the P21 Framework which has been developed by the grand partnership of academia and business leaders to define and illustrate the skills/knowledge for modern leaners that are required to navigate effectively in 21st-century. In fact, we intended to evaluate the delivery approaches of both education streams to understand the general working mechanism of getting things done in both education systems and its relevance to the P21 Framework. The explanation of how we linked the concepts of deliverology and the P21 Framework together for this study is discussed in the conceptual framework of the study. Before discussing the conceptual framework, in the following, we discuss the concepts of deliverology and the P21.

What Do We Mean by "Delivery Approach" in This Study?

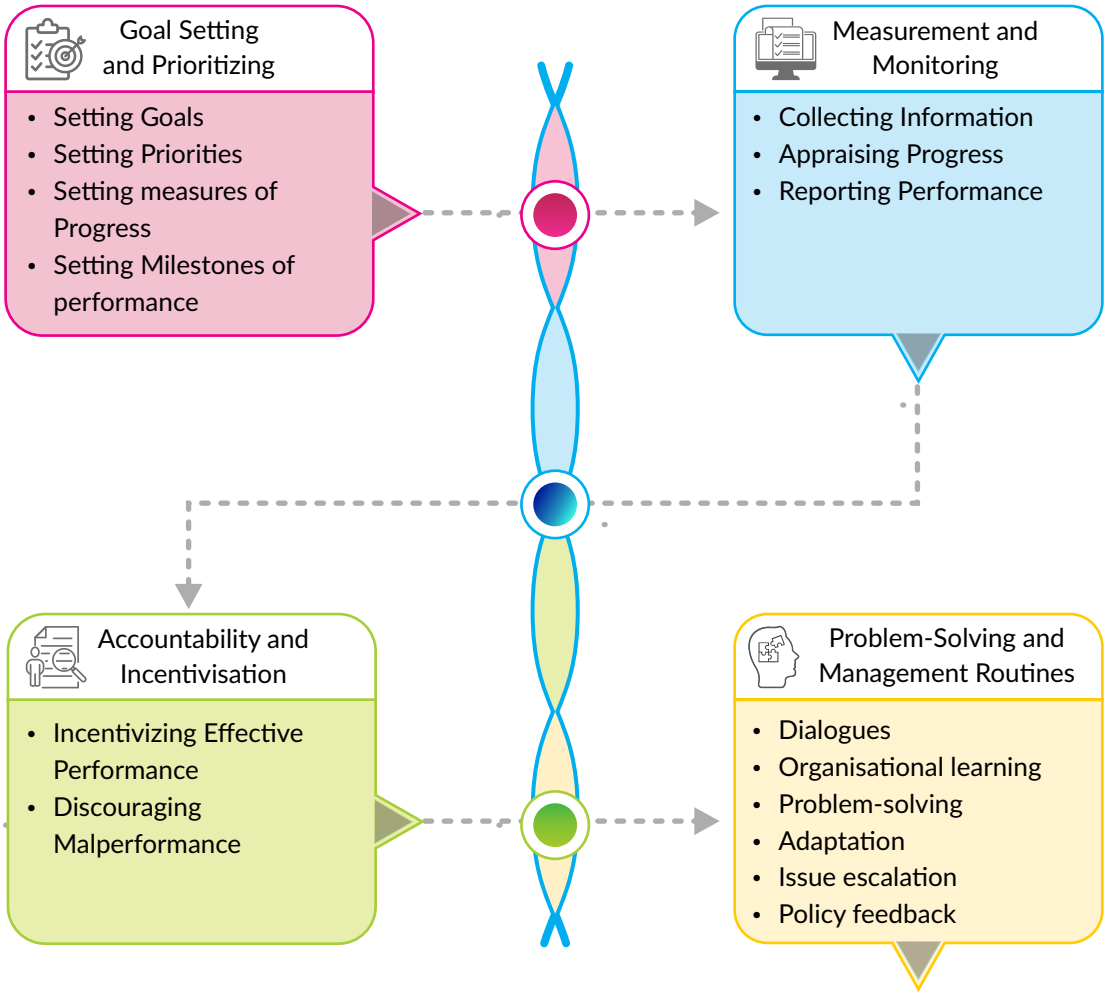
In recent decades, the term "deliverology" has become a buzzword after the work of Sir Michael Blaydon Barber in early 2000 under Prime Minister's Delivery Unit (PMDU) in the UK. Here, we need to understand that from the delivery approach we do not mean the standard form of delivery approach that is defined in deliverology. We accept the fact that the standard form delivery unit may not exist in both education streams but it can be argued that there must be a mechanism in each education stream to get things done or to deliver proposed policy objectives in a practical sense. The operationalisation delivery mechanism through a specific delivery unit is a new trend but the process of getting things done is not new. As stated "the concept of a dedicated delivery unit would also be new. But the novelty is about form, not substance. That there should be staff focused on creating a vision of what good performance looks like, using data and reporting to track performance and hold people accountable is not new. In Canada, this responsibility rests with program managers and their supervisors, and so on up the line to senior executives." Thus, the delivery approach of both education streams may be different from Baber's form of deliverology but the substance (major processes and mechanisms of implementing policy objectives and getting things done) would be there. Therefore, in this study "the delivery approach" refers to the existing mechanisms that are adapted to convert or implement key educational policy objectives into practice. Following this assumption, we examined the delivery approaches of both Cadet Colleges and Islamabad Model Colleges. In a nutshell, this study intended to review the existing state of delivery in both education streams for juxtaposition and vicarious learning.

The Functional Mechanism in Deliverology

This study has deduced some basic principle processes of the delivery system from the study of such as (a) Goal setting and prioritising: the setting up of key priorities, goals, and assessable

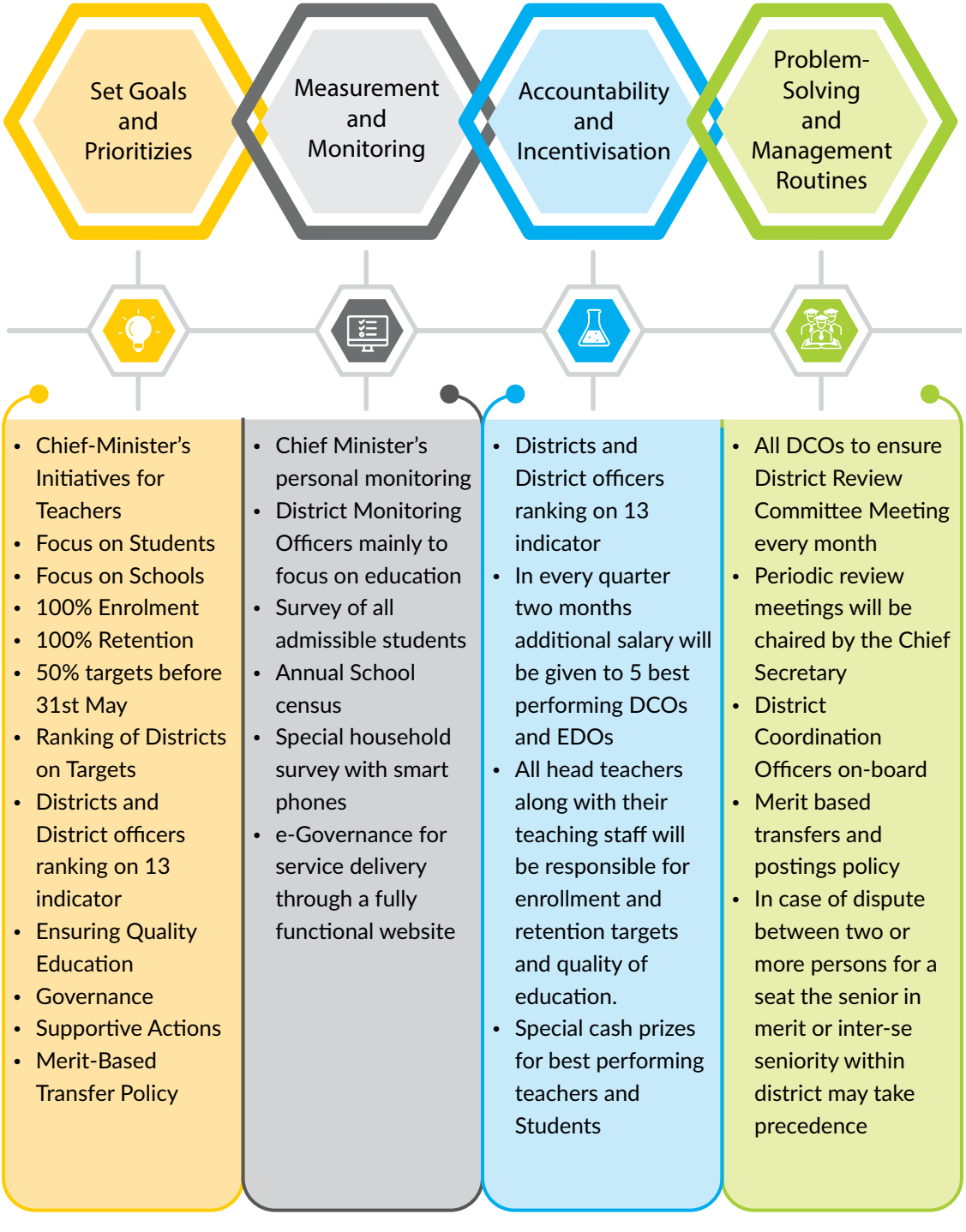
indicators to define progress against the set goals, and milestones of performance to be accomplished in a particular time. (b) Measurement and Monitoring: the implementation of mechanisms to collect data, measure, and report the progress on goals vertically from divisions to districts to schools to an individual level, and horizontally across organisations/sectors. (c) Accountability and Incentivisation: the implementation of incentives and penalties against performance (the carrots and sticks). Incentives and penalties may include financial incentives, firing, job promotions, naming and shaming, etc. (d) Problem-solving and Management Routines: The routine wise processes of dialogues, collaboration, organisational learning for local problem-solving, adaptation, issue escalation, and policy feedback across the delivery chain. (Williams et al, 2020).

Figure 2: The Basic Principle Processes of the Delivery Approach



Source: Todd and Waistell (2019)

Figure 3: Punjab Education Roadmap 2014: Case Study Example to Understand Functional Mechanism in Deliverology



Source: Barber and Donnelly (2014)

What is the P21 Framework?

The P21 Framework is a framework for 21st-century learning developed by a partnership of the US Department of Education, businesses such as Apple, AOL, Microsoft, Cisco, and SAP, and organisations involved in education such as the NEA for integrating 21st-century skills into academic programs. Jointly, this partnership is phrased as "the Partnership for 21st Century Learning." The P21 Framework has specified 4 core dimensions for 21st-Century learners which are learning and innovation skills, information, media, and technology skills. Life and career skills, and 21st-century themes are depicted along with the elementary units in the table below. The table is followed by a discussion on all 4 core dimensions along with the elementary units.

Table 1: P21 Framework for 21st-Century Learning

Learning and Innovation Skills	Information, Media, and Technology Skills	Life and Career Skills	21st-Century Themes
Creativity and Innovation	Information Literacy	Flexibility and Adaptability	Global Awareness
Critical Thinking and Problem Solving	Media Literacy	Initiative and Self-Direction	Financial, Economic, Business, and Entrepreneurial Literacy
Communication	ICT Literacy	Social and Cross-Cultural Skills	Civic Literacy
Collaboration		Productivity and Accountability	Health Literacy
		Leadership and Responsibility	Environmental Literacy

Source: Partnership for 21st Century (2015)

Learning and Innovation Skills

In the modern world, learning and innovation are the decisive skills that decide who is ready for highly complex life and work environments both in present and future. These skills include:

Creativity and Innovation

Creativity and innovation are two interconnected variables implying that one cannot innovate without creativity (Akanbi & Iortimbir, 2015) as creative action takes place not "inside" individual creators but "in-between" actors and their environment (Glaveanu et al., 2013). Creative thinking can be comprehended as a conscious cognitive process that employs a range of idea-creation techniques (i.e. brainstorming) to create novel and useful ideas both in the form of incremental and fundamental concepts. To increase and maximise creative thinking an individual elaborates, refines, analyzes, and evaluates his ideas (Partnership for 21st Century Learning, 2015). Implementing innovation requires thinking and working creatively for making a tangible and worthwhile contribution. Innovation can be defined as the introduction of something new or innovation is the implementation of creative inspiration(Akanbi & Iortimbir, 2015).

Critical Thinking and Problem Solving

Effective Reasoning: Engaging in different types of reasoning (i.e. inductive, deductive) according to a given situation(Partnership for 21st Century Learning, 2015).

Practising Systems Thinking: the ability to analyse how the constituents of a whole act together to yield products in complex systems(Partnership for 21st Century Learning, 2015).

Making Judgments and Decisions: Ability to analyse, assess, and compare different shreds of evidence, arguments, assertions, and beliefs as well as the ability to decide between different alternatives. And also to be able to reflect on learning experiences critically to interpret information and draw conclusions based on the best possible analysis (Partnership for 21st Century Learning, 2015).

Solve Problems: Solve different natures of unaccustomed problems by applying both orthodox and unorthodox innovative ways(Partnership for 21st Century Learning, 2015).

Communication and Collaboration

Communicating Clarity: Ability to convey opinions and ideas in an articulated way using verbal and nonverbal communication skills in different contexts and settings. It also includes listening effectively to understand the meaning, knowledge, and intentions that are conveyed by the communicator. Further clarity in communication also requires the ability to use communication skills for a variety of objectives such as informing, instructing, motivating, and persuading the addressees(Partnership for 21st Century Learning, 2015).

Effective Collaboration: it includes the ability to work with different groups and members effectively along with ensuring mutual respect. It requires practising flexibility and willingness to assist and make required compromises to achieve mutual goals (Partnership for 21st Century Learning, 2015).

Information, Media and Technology Skills

In the 21st century, mankind is living in a social environment that is immersed in media and technology, which entails several features such as 1) accessibility to voluminous information, 2) rapid developments in technology, and 3) the capability to collaborate as well as making personal contributions has reached to extraordinary scale. The residents and workers of the modern world must be able to exercise a variety of functional skills in information, media, and technological domains(Partnership for 21st Century Learning, 2015).

Information Literacy

The knowledge is important to understand how to access and assess information efficiently (timely), effectively (from valid sources), and critically. It is inevitable for the life in the 21st century. Moreover, knowledge is also needed to know how information can be utilised and managed properly and creatively. Furthermore, the basic understanding of the ethical/legal factors attached to the processes of accessing and utilisation of information (Partnership for 21st Century Learning, 2015).

Media Literacy

Analysation of Media: This is the ability to know how and why media communications are created. It also includes the ability to understand how people interpret media messages subjectively, how different values and opinions are included or excluded from these messages, and how media can influence the views and actions of users. Moreover, it also includes the basic knowledge of the ethical/legal concerns that may emerge during the process of approaching and consuming the media products(Partnership for 21st Century Learning, 2015).

Production of Media Products: The ability to comprehend and use the most suitable media creation tools along with the features and conventions. Further, the ability to appreciate and utilise the most suitable expressions and explanations as media products reach diverse-cultural environments(Partnership for 21st Century Learning, 2015).

Literacy of Information, Communications and Technology

Information, Communications, and Technology (ICT) literacy is the capacity to use digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information to function in a knowledge society –(ICTL Panel, 2002).

Effective Application of Technology: Ability to apply digital technologies (computers, PDAs, media players, multimedia projectors, GPS, communication/networking tools and social networks, etc.) to perform functional roles in a knowledge economy. For instance, arranging, and evaluating information to direct a research project, appropriately accessing, managing, integrating, evaluating, and creating information to give a presentation to the office work team, etc. Furthermore, the basic

knowledge of the ethical/legal factors attached to the access and use of information and technologies(Partnership for 21st Century Learning, 2015).

Life and Career Skills

Life in the contemporary world has transcended from mere reliance on thinking skills and content knowledge. Now, navigation in modern life (where the complexity and competition in work environments have increased to an unprecedented level across the globe and still growing to higher scales) demands students to put extra effort and attention into developing advanced life and career skills(Partnership for 21st Century Learning, 2015).

Flexibility and Adaptability

Adaptability to Change: The student must be able to adapt to wavering functional roles, obligations, timetables, and circumstances. In other words, they should have the readiness to function successfully in rapidly changing environments and priorities (Partnership for 21st Century Learning, 2015).

Flexibility: Exhibiting a positive attitude in response to admiration, failure, and criticism, and showing responsiveness to feedback. Moreover, flexibility also includes negotiating and balancing a diversity of opinions and credences to find feasible solutions, particularly in an environment where cultures tend to be variegated(Partnership for 21st Century Learning, 2015).

Initiative and Self-Direction

Managing Goals and Time: It includes the ability to decide goals with tangible and intangible achievement criteria; the ability to maintain equilibrium between tactical goals (in the short run) and strategic goals (in the long run); effective utilisation of time and managing workload efficiently.

Being a self-directed Worker: Requires a personal ability that includes monitoring, defining, prioritising, and accomplishing tasks without direct surveillance of a mentor or supervisor.

Being a Self-directed Learner: Requires proceeding beyond basic skills attainment and curriculum to discover and expand opportunities to learn more and to gain higher skills (Partnership for 21st Century Learning, 2015).

Social and Cross-Cultural Skills

Effective Interaction with Others: It includes approaching social actors respectably and professionally; knowing when it is appropriate to speak and when to listen during professional and academic dealings(Partnership for 21st Century Learning, 2015).

Effective Working with Diverse Groups: it requires the quality of being respectful towards cultural variances and working efficaciously with people from different socio-cultural backgrounds. It also

includes the skill of leveraging socio-cultural variances for exploring new ideas and increasing both innovation and the quality of work(Partnership for 21st Century Learning, 2015).

Productivity and Accountability

Managing Projects: Being skilful enough to manage ways to get goals and tasks done even if challenged by hitches and competing forces.

Production of high-quality outcomes: Delivering additional attributes that are affiliated with the creation of high-quality outcomes (products/services) that include the skills to work positively and ethically; balancing time and projects effectively; able to multitask; active engagement; being reliable and punctual; internalising professionality and work protocols; collaborating and cooperating efficiently with teammates; respecting and admiring work team diversity; readiness to be accountable for outcomes, etc.(Partnership for 21st Century Learning, 2015).

Leadership and Responsibility

Guiding and Leading others: it is the utilisation of interpersonal and problem-solving skills of influencing and guiding others toward a goal. It also includes leveraging the merits of others to achieve a common interest; inspiring others to extend toward their best by setting examples and showing selflessness to them; establishing integrity and ethical conduct while influencing and using leadership power; remaining responsible to others and acting responsibly to regard the interest of community goals(Partnership for 21st Century Learning, 2015).

Key Subjects and 21st-Century Themes

According to the P21 Framework, proficiency in the key subjects and 21st-century themes suggested by P21 are crucial for all 21st-century learners. Therefore, schools must focus on those subjects and themes. The subjects highlighted in the P21 Framework are: English, reading or language arts, world languages, arts, mathematics, economics, science, geography, history, government, and civics. In addition to these key subjects, the P21 framework suggests that educational institutes must focus on merging the interdisciplinary 21st-century themes into the curriculum/program of study the themes such as global awareness, financial, economic, business and entrepreneurial literacy, civic literacy, health literacy, and environmental literacy to expand the scope of academic content to advanced levels(Partnership for 21st Century Learning, 2015).

Global Awareness

In the P21 framework, “global awareness” is a broad concept that refers to the capability of integrating the utilisation of 21st-century skills to realise and address global problems; the acquisition of knowledge by social actors belonging to diverse cultures and working collaboratively; living subjective religious and social life with the spirit of reciprocal respect; remaining open to exchange of ideas at the individual, work and community levels; getting awareness about other

nations, cultures, and international languages (Partnership for 21st Century Learning, 2015). In other words, the integration of the aforementioned skills, knowledge, and attitudes is important for an individual to interact with the challenges and opportunities created by a globalized world effectively to expand global interest.

Financial, Economic, Business and Entrepreneurial Literacy

According to the P21 framework, the realisation of how to take appropriate individual economic choices, adequate awareness about the functionalities of the economy, and know-how about the utilisation of entrepreneurial skills to career choices, are important for 21st-century learners (Partnership for 21st Century Learning, 2015).

Civic Literacy

Civic Literacy is the knowledge of how to engage in civic life effectively. It includes understanding and remaining informed about governmental processes, upholding individual and communal rights, fulfilling the responsibilities of being a citizen in communal, provincial, national, and global spheres, and knowing the local and global implications of civic decisions (Partnership for 21st Century Learning, 2015).

Health Literacy

Health literacy is the knowledge that includes the ability to attain, interpret, and comprehend elementary health information and services; the utilisation of that information and services to maintain good health; knowing and adapting preventive measures (such as having appropriate diet and nutrition, doing regular exercises, avoiding risk and stress management, etc.) for physical and mental health care; well-informed health-related decisions; developing and monitoring private and familial health goals; being well-informed about national, regional, and global public health and safety problems(Partnership for 21st Century Learning, 2015).

Environmental Literacy

In the P21 framework, environmental literacy is the development of human knowledge, skills, and positive attitudes about the environment. It includes the knowledge about the conditions and factors that are affecting our environment, specifically those related to air, climate, land, food, energy, water, and ecosystems; knowledge about the societal factors that influence the natural environment, such as population growth, economic growth, unsustainable resource consumption rate, etc.; the ability to examine and analyse environmental issues; drawing feasible conclusions about solutions; active engagement in the activities intended to counter environmental challenges, such as involvement in the global environmental movement and formulating solutions that can encourage actions on environmental concerns, etc.(Partnership for 21st Century Learning, 2015).

CONCEPTUAL FRAMEWORK OF THE QUALITATIVE PART OF THE STUDY

The conceptual framework of this uses an analytical tool to evaluate the education delivery approach of both education streams with a contextual lens. All over the world countries adhere to ambitious goals and reforms to enhance the quality-of-service delivery, predominantly in the education domain. These ambitious goals and reforms require actionable strategies and effective transmission through a complex and multisided bureaucratic system to get delivered on the ground but this delivery process can be challenging in the presence of potential bureaucratic inertia, as well as the complexity, coordination, discretion, and innovation required to achieve systemic change (Williams et al., 2020). Therefore, the question that "how to enhance mechanisms of bureaucratic functioning and policy delivery?" has become one of the key challenges for governments around the globe. Owing to this reason, the general understanding of the delivery mechanisms of both education streams is important to see the efficiency of each stream in achieving their respective goals.

As "ensuring competitiveness in the modern world that has shifted towards a knowledge economy" is one of the key elements of Pakistan's Vision 2025, our education delivery mechanism (from goal setting to getting things done) must be aligned with 21st-century learning. Therefore, apart from general understanding, it is also important to assess the education delivery approaches in both streams in the context of the 21st century to analyse what kind of education should be delivered to students in today's world. This is a challenging question for education systems around the world. Previously, proficiency in the "three Rs" (reading, writing, and arithmetic) and proficiency in the core academic subjects were considered to be the requirement for effective navigation in life and career. However, the requirements in the 21st century have exceeded proficiency in the three Rs and mastery of the core subjects. Now, to navigate the complex and globalised life, students must able to think critically, communicate effectually, collaborate with diverse groups/actors, solve modern issues, internalise a global frame of mind, and utilise and engage properly with ICT. (Johnson, 2009) –Silva, 2009; Trilling & Fadel, 2009; –Frydenberg & Andone, 2011; –Kay & Greenhill, 2011; –Saavedra & Opfer, 2012; Partnership for 21st Century Learning, 2015). According to Ahmad & Rauf (2012), unsustainability/ discontinuity in government policies, corruption, deficiency of funding, insufficiency of trained human resources, weak vision of leaders and political will, poor follow-ups, weak monitoring mechanisms, and declining institutional/organisational disciplines are the key reasons that have beset the educational policy delivery in Pakistan.

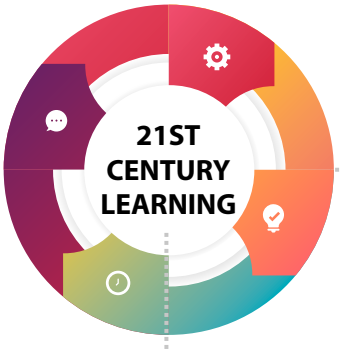
Looking at these issues, we can notice that most of them are related to education delivery mechanisms. Therefore, in this study, we evaluated the delivery mechanisms of both streams in the context of 21st-century learning. The contextual understanding of delivery mechanisms in both streams will help us to know to what extent the set goals of delivery in both streams are aligned with

learning and skills in the P21 framework and how goals are converted into real form, and, finally, which delivery approach is doing a better job in comparative terms.

Figure 1 demonstrates our conceptual framework. On the left side, the core components of 21st-century learning are shown. The core components of 21st-century learning such as (a) learning and innovation skills, (b) information, media, and technology skills, (c) life and career skills, and (d) 21st-century themes. P21's Framework for 21st-Century Learning has been constructed by engaging teachers, education experts, and business leaders to determine and demonstrate "the 21st-century skills and knowledge" that students require to thrive in work and life, and also to support systems essential for the 21st-century learning outcomes.[3] On the left side, the basic integrated process of delivery mechanisms such as (a) goal setting mechanism, (b) measurement & monitoring of prioritised targets, (c) management routines & problem-solving (d) mechanisms accountability & incentivisation system is illustrated. The main essence to which we refer here is that the more robust an education delivery system is the more improved the core competencies of the children.

3. BatteleforKids (n.d.).

Figure 4: Conceptual Framework: Linking Education Delivery with 21st Century Learning



Learning and Innovation Skills
- Creativity and Innovation
- Critical Thinking & Problem Solving
- Communication
- Collaboration

Information, Media & Technology Skills
- Information Literacy
- Media Literacy
- ICT Literacy

Life and Career Skills
- Flexibility & Adaptability
- Initiative & Self-direction
- Social & Cross-cultural Skills
- Leadership & Responsibility
- Productivity & Accountability

21st-century themes
- Global Awareness
- Financial, Economic, Business, & Entrepreneurial Literacy
- Civic Literacy
- Health Literacy
- Environmental Literacy

For General Understanding of Delivery Mechanisms in both Streams

- Goal Setting Mechanism
- Measurement & Monitoring of Prioritized Targets
- Management Routines & Problem-Solving Mechanisms
- Accountability & Incentivisation System

Evolution of Education Delivery Approach in Both Education Streams

- The Reflection of the Core Dimensions of 21st-Century Learning in the Education Delivery System in both Streams
- Comparison of both the Delivery Approaches for Vicarious Learning and System Strengthening

For Contextual Understanding of Delivery Mechanisms in both Streams

RESULTS AND DISCUSSION

In this section, we report and discuss the results of our analysis. First, we discuss our findings from the Cost-Benefit Analysis. Second, we report the results of students' scores. Finally, we assess the comparative strengths and weaknesses of the education delivery systems of both streams of public education provision.

Cost-Benefit Analysis

Table 2 reports per-student costs to the government in both education streams from FY 2018-19 to FY 2020-21. During these 3 years government funded about PKR 569 million to six Cadet Colleges (CCs), whereas approximately PKR 6,369 million were given to nineteen Islamabad Model Colleges. Dividing three years of total government funding to CCs by total enrollment in CCs, we got an average per student cost (APSC) of PKR 72,808.44 for three years. Similarly, we got an APSC of PKR 74,772.35 for three years in the Islamabad Model Colleges (IMCs). Hence, for the last three years on average, each student of IMCs was allocated PKR 1,963.90 more than a student studying in CCs. Likewise, on average a student of IMCs got PKR 654.63 more than a student in CCs. Contrary to the common narrative that CCs get more funding from the government, our analysis showed that funding to the IMCs is higher than the CCs.

Table 2: Per Student Government Funding (All Children)

Education Stream	Total Funding by Govt. in 3-FYs	Average Per Student Cost to Govt. in 3-FYs	Annual Average Per Student Cost to Govt.	The difference in Average Per Student Cost to Govt. between IMCs and CCs	
	In millions			3 Years	Annually
Cadet Colleges	569.08	72808.44	24269.48	1963.90	654.63
Islamabad Model Colleges	6,368.88	74772.35	24924.11		

Source: Author's calculations based on official data.

We undertook the Cost-Benefit Analysis (CBA) of both education streams from three different perspectives. The three CBAs are the CBA based on the cost to the government; the CBA based on the cost to the government and private cost; and the CBA based on cost to the government, private cost, and opportunity cost.

Table 3: CBA of Islamabad Model Colleges and Cadet Colleges for Higher Secondary School Level (HSSL) (Million PKR)

Education Stream	Description	Discount Rate	NPV	BCR
IMCs[1]	CBA BASED ON COST TO GOVT.	0.03	5626.57	3.33
IMCs[2]	CBA BASED ON COST TO GOVT. + PRIVATE COST	0.03	5616.09	3.26
IMCs[3]	CBA BASED ON COST TO GOVT., PRIVATE COST, AND OPP. COST	0.03	4958.90	1.40
CCs[1]	CBA BASED ON COST TO GOVT.	0.03	8866.83	7.92
CCs[2]	CBA BASED ON COST TO GOVT. + PRIVATE COST	0.03	8099.96	2.26
CCs[3]	CBA BASED ON COST TO GOVT., PRIVATE COST, AND OPP. COST	0.03	7263.59	1.27

Source: Author's calculations.

The CBA of IMCs based on the government cost shows that PKR 1,834.45 invested in IMCs from 2018 to 21 will generate an NPV equal to PKR 5,626.57 for the economy at a 3% discount rate. The BCR was equal to 3.33, which implies that per unit of PKR that was invested by the government during 2018-21 on the ICM stream will generate PKR 3.33 for the economy. The reason behind conducting a Cost-Benefit Analysis exclusively based on government funding was to examine the case through the fiscal vantage point as this particular cost is directly linked with government budgetary decision-making.

The CBA based on the cost to the government and private costs was done including direct funding to ICMs by the government and the revenue school generated from its students. The NPV of future benefit was equal to PKR 5,616.09. This implies that PKR 1,874.07 invested on IMCs from 2018-21 will expectedly generate PKR 5,616.09. With the incorporation of the private cost, the BCR reduced from 3.33 to 3.26, which implies that the ICM stream will generate a net benefit of 3.26 in the future.

Finally, the CBA based on the government cost, private cost, and opportunity cost the NPV considerably decreased to 4,958.90 at a 3% discount rate. This implies that the investment of PKR 4359.31 on IMCs will expectedly generate PKR 4,958.90 PKR for the economy in 45 years. The BCR, in this case, was 1.40, which implies that the IMCs still produced positive net benefits considering all three types of costs. In other words, considering government, private, and opportunity costs this study expects that 1 unit of PKR invested in HSSL in IMCs will produce net positive returns equal to 1.40 units for the economy in the future.

The CBA of Cadet Colleges considering government expenditures only shows that, at a 3% discount rate, PKR 1,156.74 invested in HSSL from 2018 to 21 will probably generate an NPV equal to PKR 8,866.83 for the economy, which implies that the investment will have a positive return. Subsequently, the projection of BCR was found to be equal to 7.92 which indicates that each unit of PKR that had been invested by the government from 2018 to 21 on CCs is expected to produce 7.92 rupees for the economy in the long run. From a fiscal point of view, without considering the contributions of private and opportunity costs, the return on investment in CCs was considerably higher as compared to the IMCs.

The CBA of CCs considering the government and private costs shows that the NPV of expected lifelong earnings was equal to PKR 8,099.96 against the cost of PKR 4056.74 during 2018-21. The BCR decreased to 2.26 when we incorporated private cost alongside government funding but still, the investment remained profitable as the value of BCR was above 2 units against each unit invested.

Lastly, according to the CBA based on the government, private, and opportunity costs, the NPV decreased to 7,263.59 rupees at a 3% discount rate. The BCR decreased to 1.27. However, the investment was still profitable as BCR was still greater than 1. Here, we should note that in this particular CBA we relied on private benefits instead of social benefits, which implies that the actual benefit would be much higher than our estimated benefits.

Pooled Regression Analysis

In this study, we also performed a regression analysis on pool data for three years – 2018, 2019, and 2021. We intentionally excluded 2020 because in that year the Ministry of Education had cancelled exams of secondary and higher secondary schools due to the COVID-19 pandemic-induced lockdown and students were promoted without examination.

Table 4: Pooled Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
School Type (CCs)	1.75	0.22	8	0
C	2.50	0.07	35.58	0
R-squared	0.25	Adjusted R-squared		0.24

In this pooled regression, we took the grade point average (GPA) for the cross-section of colleges as the dependent variable. The data on institution-wise GPA was extracted from the result gazette published by the Federal Board of Intermediate and Secondary Education (FBISE) for all three years. We took school type as a dummy independent variable, which was equal to one if the institution

was a cadet college and 0 if it was an Islamabad Model College. The results of pooled regression indicate that the student of Cadet Colleges, on average, had 1.75 higher GPAs as compared to the IMCs. This implies that the performance of CCs was better in producing good academic scores as compared to the IMCs.

People who have higher educational achievements and higher qualifications are more likely to get a job, have job stability, have diverse occupation opportunities, have better chances of promotion, and are more likely to earn more as compared to those with lower academic achievements, (Zeidner, 1998; Tentama & Abdillah, 2019). High school grades are important for any student as they perform a vital role in the entrance process (Hodara & Lewis, 2017). In Pakistan, higher secondary school grades are also critical for the entrance process (from eligibility to final merit list) of various graduation colleges and universities. Therefore, high grades at a higher secondary level can assist the student in securing a place in a desired higher education institute and subject. Thus, students' HSSC scores have a substantial impact on students' career prospects by placing them in better higher education institutes and desired subjects. Additionally, many government jobs also assign specified weight to HSSC grades during the selection process.

Moreover, good academic performance is also significantly associated with various positive life outcomes. For example, those who perform well in academics are more likely to obtain health insurance, are less likely to be reliant on social support, have lower chances to be involved in criminal activities, manifest more civic involvement, greater engagement in charity and volunteerism, and generally are more likely to be healthy and happy. Furthermore, people with higher academic achievements are more probable to have a positive self-concept, lower depression and anxiety, higher social motivation, and lower drug-abuse behaviour (Chen & Lu, 2009; –Bradley & Greene, 2013; Kumari & Chamundeswari, 2013; Regier, 2015 Tentama & Abdillah, 2019).

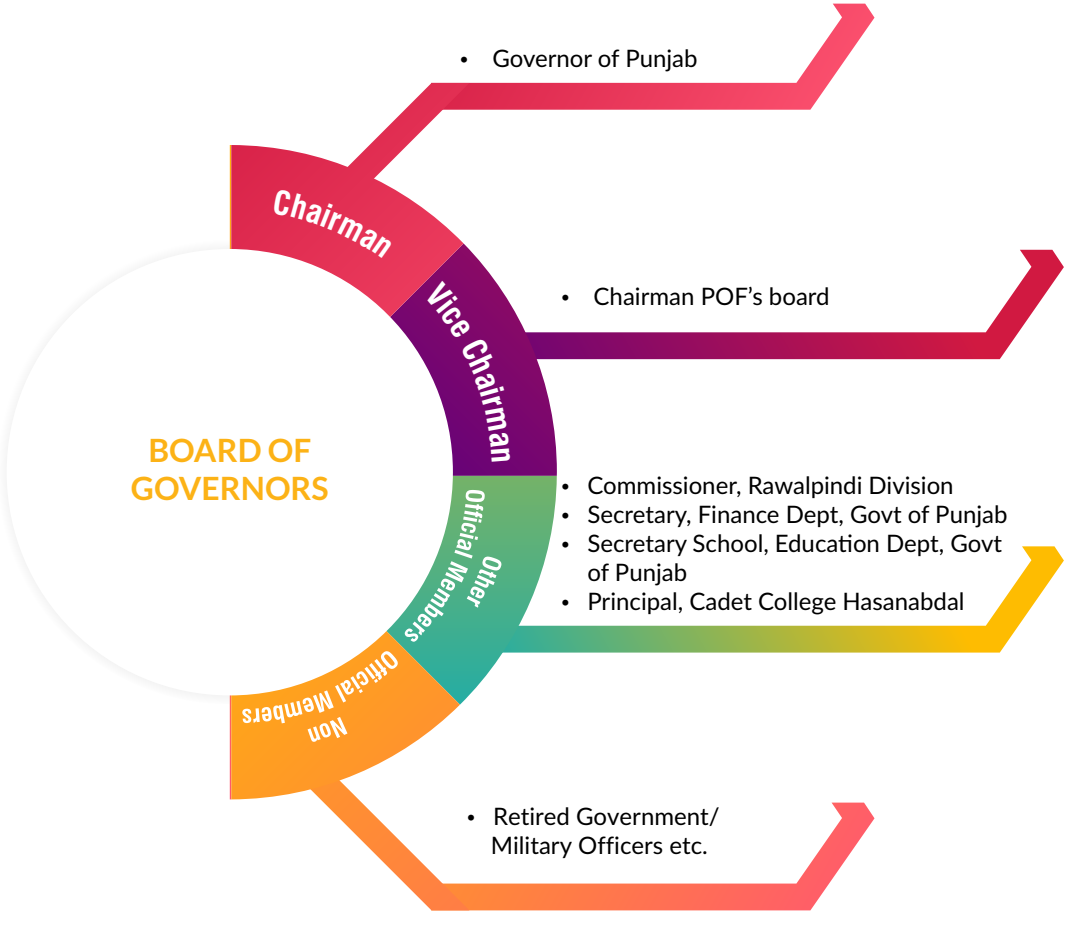
Therefore, it can be inferred that Cadet Colleges are contributing more to social well-being by producing higher academic grades as compared to Islamabad Model Colleges.

Figure 5: Potential Social Benefit of Higher Academic Grades

A CASE STUDY OF CADET COLLEGE HASANABDAL

Brief History of the Cadet College Hasanabdal

Punjab Cadet College, presently known as Cadet College Hasanabdal (CCH), originated the legacy of Cadet Colleges in Pakistan. Its induction was made by the Government of Punjab under the command of General Muhammad Ayub Khan in 1952. The intention was to develop a high-standard feeder for the armed forces of Pakistan. In conjunction with this project, military annexes were launched in 1952 on the campuses of various colleges such as Government College, Sahiwal, and Islamia College, Peshawar. When the structure of CHH concluded in April 1954, these military annexes were shifted to CCH. The system of the institute was rooted in colonial legacy under the leadership of Hugh Catchpole as he was designated as the founding principal.



Co-Curricular Activities

Cadets must participate in afternoon games, drills, and physical training to be physically fit and healthy. Cadets can participate in whatever sport they like, including football, hockey, cricket, basketball, swimming, tennis, squash, and horse riding. Every year in November/December, an inter-wing athletics tournament is organised. Each wing has a dinner night regularly. Every Thursday, one of the houses participates in this activity. The goal of these meal events is for the cadets to develop mess mannerisms. Cadet College Hasan Abdal, along with several of its renowned sister schools, such as MCJ, Lawrence College, APS, and PAF College Sargodha, organises yearly sports games. Only major sports such as football, hockey, cricket, and basketball are included in a weekend fixture. These games are generally held in the second term (September & October). Every Thursday following the Dinner Night, one house participates in this activity. Cadets perform skits, give short speeches, sing songs, and do other activities during the social evening. The goal of these social evenings is for the cadets to gain confidence in their public presentation. Inter-wing competitions are given special emphasis in the calendar of events to promote a spirit of competitiveness among the cadets.

Extracurricular Activities

Cadets participate in a variety of extracurricular activities outside of the usual curriculum of schooling and co-curricular activities. Speeches, singing contests, quizzes, spelling bees, social service projects, education & excursion trips, and so on are some of the extracurricular activities.

Facilities and Resources

Six hostels are established at the campus. Around 90 cadets are housed in each hostel. A housemaster, an assistant housemaster, a house tutor, and an assistant house tutor administer it. Evening preps add to the boarding experience, and the house staff is invaluable in helping the boarding cadets. Cadets must participate in afternoon games, drills, and physical training. Several sporting grounds, including cricket, hockey, and soccer pitches, are available on the campus. In addition, the cadets have access to six basketball courts and two volleyball courts. The college pool is 100 meters long and 200 meters wide, allowing for more professional and confident swimming. The shallow part is 4 feet deep, while the deep section is 13 feet deep. Swimming events between the wings are held every year. Riding is an inevitable part of life at the CCH. Those who want to gallop can hire trained military personnel. This organisation gives support and encouragement to young riders who not only learn the fundamentals of riding but also demonstrate their abilities in riding at different college events. The college gymnasium is equipped with the most up-to-date workout equipment, as well as a qualified staff that instructs cadets on proper strength training techniques. Cadets can assess their strengths and make use of this resource as needed. The cadets' food needs are met by two dining halls, each having a capacity of 500 people. All religious activities

revolve around the college mosque. It can hold around 1000 Namazis at any given time. This gorgeous mosque also offers Jumma prayers and Tarawih prayers in Ramadan, and Eid Prayers in addition to five daily prayers. For medical needs, there is an eighteen-bed college hospital. It is headed by a college resident medical officer, who is aided by other medical personnel. At the hospital, even minor diseases are handled. In the event of a power outage, a large, autonomous, and efficient generator provides electricity to the whole campus. Through an effective security system, the college is entirely protected and adequately guarded. Every effort is made to assure impenetrable security, and more is on the way. The college has a fibre optic internet connection at a speed of 100 megabits per second. To take advantage of this high-speed internet, the whole education block, all six hostels, and the homes of faculty members are all connected through fibre optic/Cat 6 cables. Cadet College Hasanabdal has opened a new Language Lab in the academic block with a donation from the 25th entry. It has high-speed Wi-Fi internet access as well as multimedia capabilities. Since February 21, 2014, licensed Berlitz software has been installed and the lab has been operational. On the first floor of Ayub Block, the college features a large, well-equipped, and air-conditioned computer lab. The lab has 35 computers for students and one for office work, all of which are linked to the main server and give full multimedia support. Shared printers and scanners are also available. A bio lab facility that allows students to conduct scientific research, tests, and measurements under controlled settings.

Funding Mechanisms

Initially, it was a fully-funded governmental organisation but since 1985 the institute has been receiving partial funding from the government. It has been given institutional autonomy under the Punjab Government Educational and Training Institutions Ordinance, 1960. Since then, it has been operationalised under the board of governors (BOGs) with semi-government status. According to one of our respondents, "after 1985 government started contributing through grants and aids. Cadet colleges can make requests for grants but the authority of how much to be granted remains with the Punjab Government. For instance, this year we requested 250 million rupees from the government but they released only 50 million. Currently, the employees in the CCH are not considered employees of the Punjab Government; rather they are considered as employees of the CCH, and their hiring, firing, promotion, and other matters are under the command of BOGs." From current funding by the government, even the salaries of the organisation are not met. Moreover, according to the officials of the CCH, annual government-based funding is increasing at a decreasing rate. A large portion of our expenditures is covered by institution self-generated revenues via student fees and alumni findings, etc.

Social Inclusion Efforts

Scholarships are offered to needy and talented students to eliminate financial barriers to education. Additionally, the Qarz-e-Hasna programme for students is being offered with the support of its

alumni. Apart from scholarships and loans, the CCH launched its National Outreach Program (NOP), intending to provide an equitable opportunity to people from underserved communities by improving candidates' prospects of acceptance in cadet college entrance exams, with a focus on students from Pakistan's rural and impoverished areas. Balochistan, Gilgit-Baltistan, Southern Punjab, and Tribal Districts (KPK) are the main emphasis areas. During the summer break, the participants live on campus for two months, immersed in the vibrant life of THE CCH and the charms it has to offer. The 4th CCH NOP featured 50 participants, including 17 from Gilgit-Baltistan, 17 from KPK's tribal zone, and 18 from Balochistan. This is a clear representation of the wide community of Abdalians that the CCH inherits each year.

Delivery Approaches of both Education Streams

In this section, we discuss the delivery approaches of both education streams. The diagrammatic representation of the delivery approaches of both education streams constructed based on interviews conducted with the officials of both streams is given in Figure 6 and Figure 7.

Figure 6: Delivery Approach of Cadet College

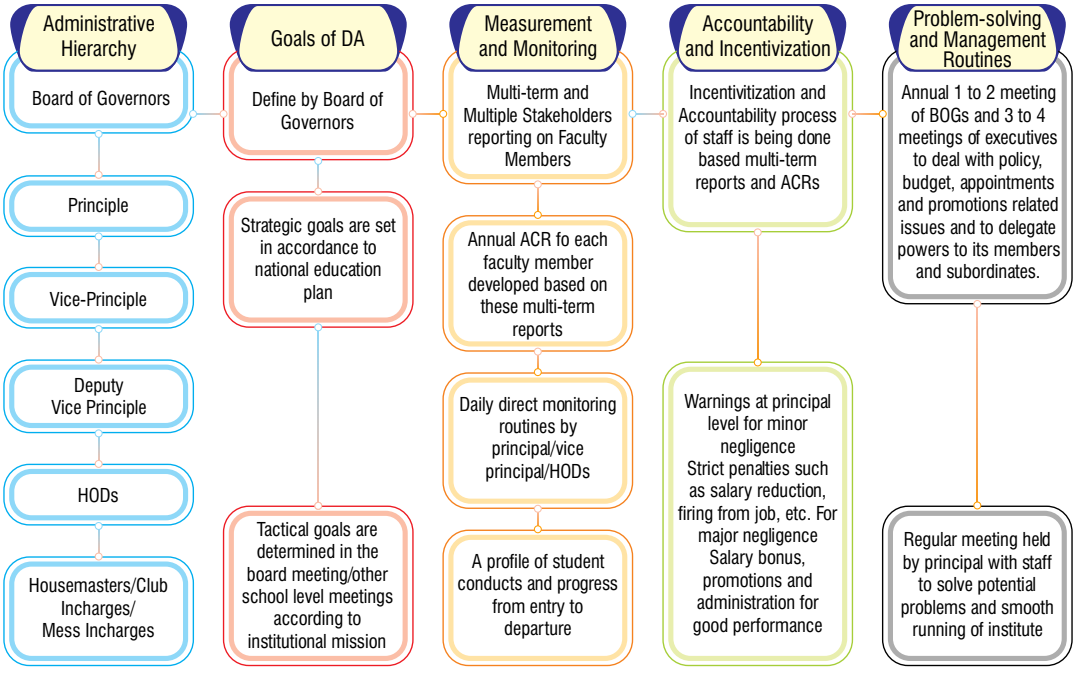
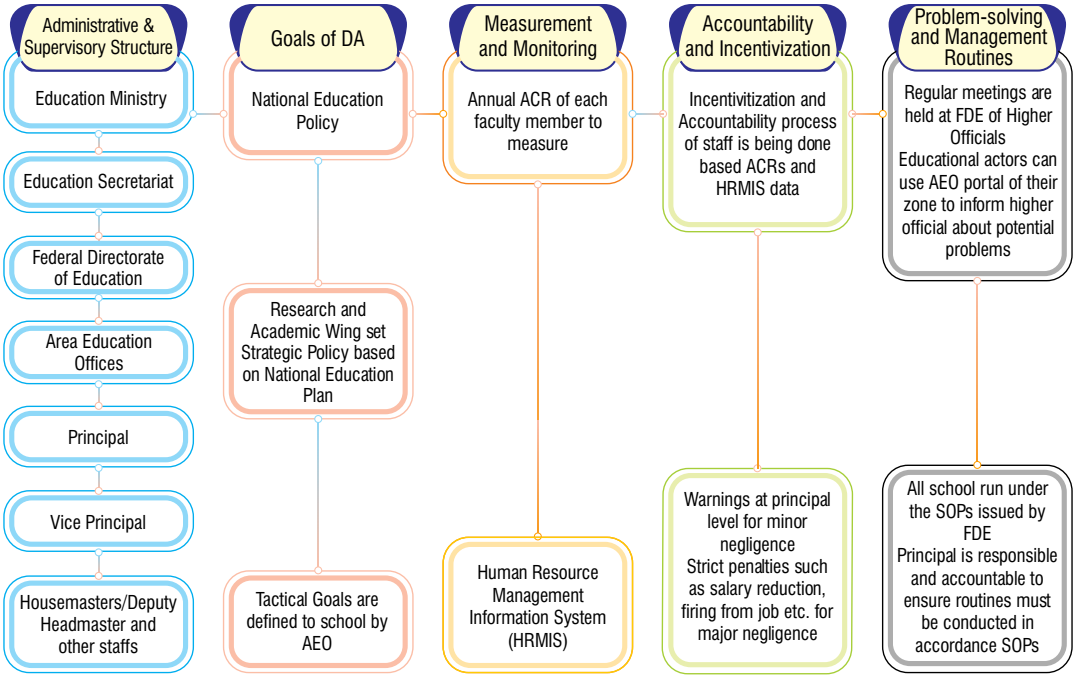


Figure 7: Delivery Approach of Islamabad Model College



Delivery Approach of Cadet Colleges

The board of governors (BOGs)" is at the helm of the institution and works as the apex body of the organisation. This gives Cadet Colleges institutional autonomy and the power is delegated to form decentralised governance to regularise their campus system in their way within the laws of the state. BOGs are responsible for making rules and regulations and devising education goals in alignment with the national education plan. Moreover, coordination with other sectors of government is also made by this board. Annually 1 to 2 meetings of all BOGs, and 3 to 4 meetings of executives are conducted to deal with policy, budget, appointments, and promotions-related issues and to delegate powers to its members and subordinates. The routine administrative and management activities are executed by the experienced faculty/managers following standard operating procedures (SOPs) under the direct supervision of the principal and vice principal. Moreover, the cadets also contribute to some daily routines such as discipline enforcement, house management, and cadets' mess affairs under the direct supervision of relevant officials. The annual confidential report (ACR) is used for a fair evaluation of the characters, conduct, capabilities, and performances of the staff. The ACR is developed based on term reports of staff three times per year by multiple stakeholders such as the principal, the deputy vice principal, the head of academics, the head of the department, and the housemaster. Incentivisation and accountability processes are also conducted based on these reports.

Delivery Approach of Islamabad Model Colleges

The Ministry of Education is the apex central body for formulating National Education Policies and coordinating with all education systems within Pakistan. Similarly, it is at the helm of the overall federal education system. Then comes the role of the Education Secretariat, which is generally concerned with the implementation of the decisions. Under the Education Secretariat, many wings are working with different responsibilities. Then comes the role of the FDE to oversee the public schools and colleges in the Islamabad Capital Territory. FDE oversees FGs and IMCs that include more than 420 schools, over 22,000 students, more than 9,000 teaching faculty, and approximately 4,450 supporting staff. Area education offices directly coordinate with institutes such as IMCs in their relevant zones. A principal heads an institute and under their supervision vice principal, headmaster, and other faculty work.

The Research and Academic wing set strategic policy based on national education policy and coordinates with area education offices. Area education offices define tactical goals for schools to implement strategic goals in practical form. Moreover, evaluation and monitoring of educational performance are being done through the ACRs of each faculty member and the Human Resource Management Information System (HRMIS). Through its HREMIS, the FDE can get data on human resource management, student management, institute management, education census, budget management, and attendance management system. Each institution is liable to transfer data on daily basis. Based on evaluation and monitoring reports, penalties such as stagnation of promotions, salary reduction, firing from a job, etc. are carried out. For instant problem-solving, educational actors can use the AEO portal of their zone to inform higher officials about potential problems. Moreover, school management routines have to be run under SOPs issued by the FDE, and the principal is responsible for maintaining the management routine of institutes. If any negligence in SOPs inside a school is reported, the principal is accountable to the AEO.

Strengths and Weaknesses of Both Streams

In this section, we discuss the strengths and weaknesses of both education systems for policy learning and system strengthening. First, we discuss the case of Cadet Colleges and subsequently of Islamabad Model Colleges.

Strengths of Cadet Colleges' Delivery Approach

The diagrammatic representation of the strengths of the Cadet Colleges' delivery approach is depicted in Figure 7 and discussed accordingly.

Institutional Autonomy & Decentralized Governance

According to Litvack & Seddon (1999), around the world, most governments have witnessed the downsides of centralised education service provision, primarily due to opaque decision-making,

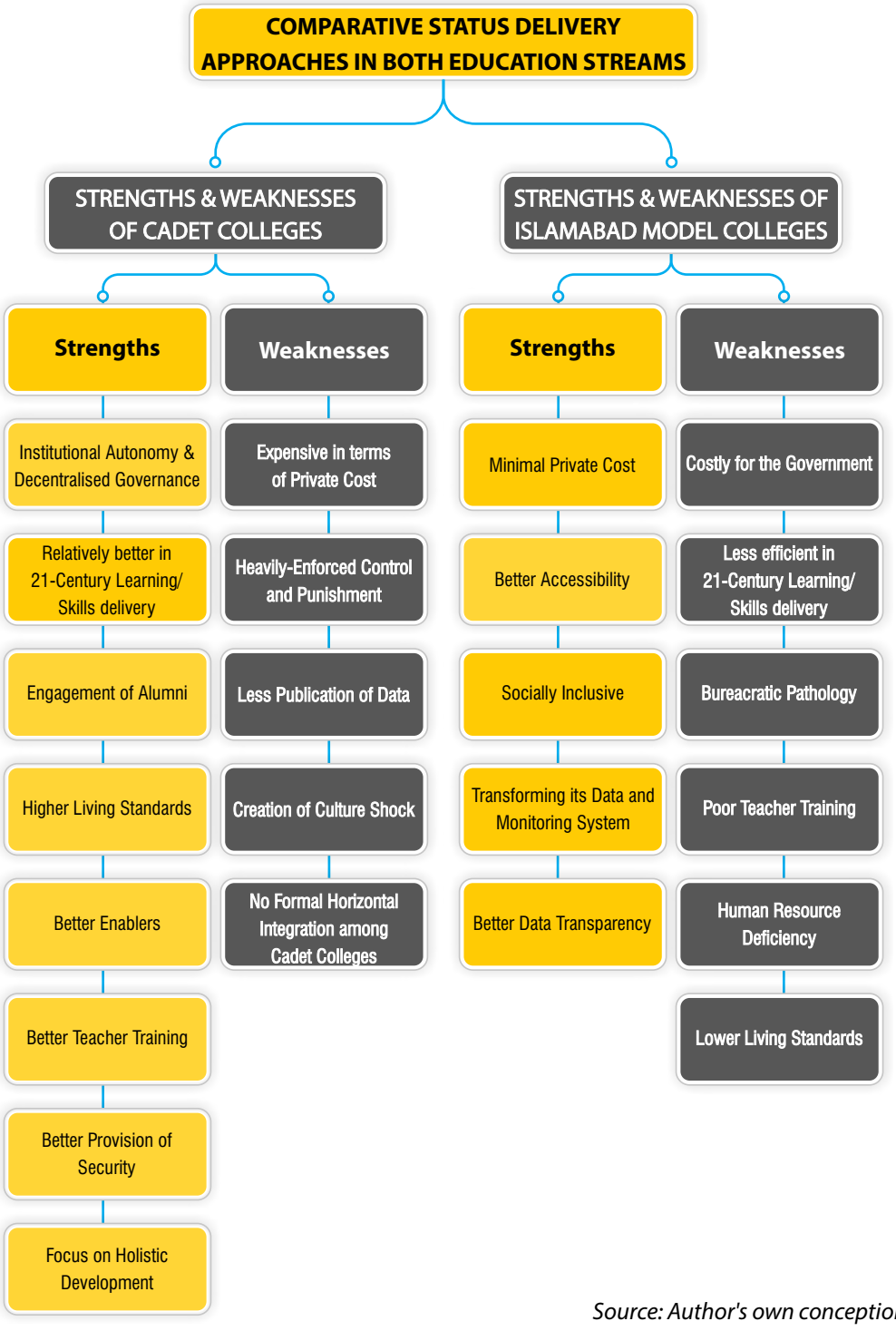
bureaucratic and budgetary inefficiency, and below-par quality and accessibility of education services. The possibilities of decentralisation, therefore, seem to be very appealing. The process of decentralisation can significantly enhance the effectiveness, transparency, accountability, and responsiveness of service delivery relative to centralised systems. Decentralised education delivery can offer more efficiency, inspire participation, and, ultimately, lead to wider coverage and excellence. In particular, countries with budgetary issues can get more benefits from the potentialities of decentralisation to raise effectiveness. Cost recovery arrangements such as community financing have emerged as means for central governments to off-load some of the financial burdens of education service provision. Therefore, the bedrock of education governance in the present age is to develop a modern school system that functions per the law along with adequate autonomy, under democratic parameters and involves all stakeholders of the society (Fan & Zhang, 2020).

In Pakistan, Cadet Colleges are a prototype of institutional autonomy and decentralized governance in the education sector as they are working under an ordinance passed in 1960 that gives ample amount of autonomy to Cadet Colleges to work under a governing body within some constitutional boundaries. Due to this institutional autonomy, they are more adaptive and flexible to changing world orders, more experimental, innovative, and take more initiative as they have substantial room to do things out of the box. Despite getting lower funds from the government as compared to the IMCs, Cadet Colleges are accumulating higher resources by shifting the cost burden on students, alumni, and other trustees.

Relatively better in 21-Century Learning/Skills delivery

Cadet colleges, such as the CCH, are going far ahead from the parallel public education streams like IMCs in the provision of 21st-century learning and provision. For example, the CCH has a better computer lab, multimedia projectors, sound system, high-speed Wi-Fi, international computer courses, and well-trained trainers to improve ICT, media, technology-related literacy, and skills. Automated Language Lab and professionals, daily mulita-lingual speeches, and occasional speech competitions to improve the communication skills of students. Likewise, the CCs are doing better in developing the social skills of their students by organising events such as social evenings, dinner nights, singing competitions, and other social events. Additionally, to improve creative and innovative skills, Cadet Colleges have taken unique initiatives as hobby clubs that polish the creative and innovative skills of cadets in various domains ranging from science, art, and media to ICT where students are practically involved in creative and innovative practices. For instance, the CCH has 13 hobbies clubs, namely Aero-Modelling Club, Art Club, Astronomy Club, Biology Club, Calligraphy Club, Chemistry Club, Computer Club, Music Club, Photography Club, Electronics Club, Geo-modelling Club, Handicraft Club, Robotic Club. Last year, four students from the Astronomy Club represented the CCH in the International Astronomy and Astrophysics Competition along with 10,000 contestants from various nations. Out of 10,000 contestants, around 1700 managed to make it to the final including two of our cadets. In the competition, one student managed to win

Figure 8: Comparative Status Delivery Approaches in Both Education Streams



Source: Author's own conception.

the bronze award and another student won a special award. Thus, these hobby clubs are contributing to grooming student creativity and innovative skills. More or less, these hobby clubs exist almost in every known cadet college in Pakistan. The CCH has also a well-functioning makerspace. According to the vice principal, the well-off domestic and overseas alumni of the CCH have pooled funds and established a well-established makerspace (equipped with modern gadgets such as laser cutting tools, 3D printers, laptops, smart screens, and many other such gadgets) for the students. This is another worthwhile effort made by the CCH to improve student creativity, innovativeness, and collaborative skills. Owing to these reasons, we can conclude that Cadet Colleges are doing relatively better in 21st-century learning/skill delivery.

Engagement of Alumni

It has been acknowledged worldwide that developing long-lasting positive relationships with alumni is conducive to the success of schools. They can deliver tangible and intangible benefits through donating financial and other resources, mentoring students, attending school events to motivate and encourage future generations, developing the soft image of the institute, etc. This legacy is usually missing in the case of Pakistani schools, especially in public schools and colleges. However, Cadet Colleges, such as the CCH, recognised the value of engaging alumni. For instance, the vice principal expressed "Our alumni to a great extent is in touch with our institute and offer us intangible and tangible support via the provision of financial and other resources, mentorship to students." He further exemplified his view by saying "for instance, our alumni have developed makerspace for us, building for the mess, mentorship to children regarding career and foreign scholarships, and gives us innovative ideas such as NOP and such beneficial contributions."

Higher Living Standards

Cadet colleges offer higher living standards to students, by providing good quality health facilities, better resources for sports and games, healthy and good quality mess, clean hostel rooms, improved sanitation, better computer and science related labs, language labs, library, modern classrooms, secure environment, hobbies clubs, etc. which collectively put a positive impact on student satisfaction, engagement, and overall well-being.

Better Enablers

According to the literature on deliverology, there are four basic elements of delivery system strengthening, i.e., an agreed set of genuine priorities; time-bound implementation plans with clear metrics and milestones; effective management routines; support to analyze and unblock problems. However, the success of these four elements depends on five enablers: good data, strong relationships and a culture of collaboration, skilled people, clear roles and responsibilities, and clear accountabilities. In this study, we noticed strong relationships and a culture of collaboration as many of our respondents testified its existence. For instance, the vice principal of the CCH

expressed that “here in the CCH, we live as a community as the majority of staff and all of the students reside inside the campus. Thus, we have developed strong relations and we work collaboratively with a sense of ownership.” One of the officials stated that they have internalised collaborative behaviour from the campus because when they came here they found it easy to collaborate with faculty members due to the already existing culture of collaboration inside the campus. Further, the official also justified that since we have a shorter chain of administrative hierarchy, we are always under the supervision of our higher authorities, which makes the process of accountability smooth and faster as well as increases our sense of responsibility.

We found that Cadet Colleges have a better system to include skilful people in their institutes. To ensure the right people for the right job they have developed merit-based selection for grade 18 and higher administrative posts. They do not rely merely on years of service; instead, they select people based on interviews, performance, and systematic judgment of BOGs. However, only grade 17 to 18 promotions are decided based on government service-based promotion criteria. Likewise, the recruitment of teachers is based on shortlisting of applicants based on experience, academic records, and other certifications related to the required skills. The minimum qualification for the candidate is 16 years of education. A committee (that includes a panel of multiple stakeholders, i.e., a psychologist, the principal, the HOD of the relevant subject, etc.) interviews the candidates. Normally, a contract of one year is given to see their performance and if the teacher has adjusted to the environment. The school administration then decides whether to include the teacher in the permanent faculty.

For the improvement of teachers' skills, teacher training is conducted on regular basis. For instance, the CCH is registered with the British Council and has been working diligently with the teachers for the enhancement of the standard of teaching and learning in the institute. Their teachers avail physical and online training from international institutions such as Cambridge. Through all these processes, they acquire skilled people for their institute since skilled people are one of the important enablers for strengthening the delivery system. However, we noticed a lack of good data. The principle of the CCH told us that since their system operates on a small scale, they do not generate formal data regularly but mostly rely on a feedback basis. According to the literature, without generating and keeping such data systems, long-term system strengthening is extremely challenging.

Better Teacher Training

The entire process of education delivery is run by a chain of many agents functioning at different stages and the teachers are one of them. The teacher as a front-line agent must translate the education policy goals into final consumers (students). Thus, they have to perform a central role in the success of the education delivery scheme. Owing to this reason, they have to be fully prepared and skilled enough to efficiently execute this duty of paramount importance. Realising this fact, societies worldwide are putting a substantial amount of focus on teacher training programmes.

Teacher training is a continuous process that should be focused on both personal and institutional levels to continuously update teaching skills, master fresh knowledge, and take existing proficiencies forward, which in return will contribute to getting improved student learning outcomes. In this regard, we found that Cadet Colleges were doing better by organising more frequent and high-quality teacher training programs. The CCH frequently arranges both internal and international teachers' training programs.

Focus on Holistic Development

Cadet colleges ensure a good balance of curricular, co-curricular, and extra-curricular activities. Furthermore, they are doing better in the domain of co-curricular and extra-curricular as they organise more regular co-curricular and extra-curricular activities in comparison to the general stream of education. Moreover, they also have better facilities for all three domains of education.

Weaknesses in Cadet Colleges' Delivery Approach

Expensive in Terms of Private Cost

It is a matter of fact that private cost is the only aspect in which Islamabad Model Colleges are having a comparative advantage over Cadet Colleges. Here, an argument can be given that for a high-quality education delivery system higher cost is a must. However, this is also a fact that even though IMCs offer a relatively weaker quality of education as compared to the CCs, they are vital for the masses because they are affordable for lower-middle and low-class people. Though the CCs are trying hard to accommodate the poor class through the provision of scholarships, interest-free student loans, and other efforts, they are far behind in this domain as the majority of their student still pay fees to pursue their academic journey.

Heavily-Enforced Control and Punishment

Worldwide, especially in developed societies, tough physical punishment for the student is considered a pre-modern world phenomenon. Many of the students who completed their studies complained that strict corporal punishments were considered to be a 'normal' tool in Cadet Colleges to discipline students due to which students remain in a constant state of stress and fear. One of the interviewees put the phenomenon this way: “in Cadet Colleges, some less and some more but every student receives tough physical punishment and mental torture even for marginal disciplinary negligences.” He further asserted that “unfortunately, higher authorities in the governing body, knowingly or unknowingly, I am not sure, take no actions to restrain this harmful practice.” Another ex-student of a cadet college expressed that “sometimes we were beaten up so hard by the faculty that the marks of stick were used to remain on our body for many days.” One of the staff also accepted the existence of strict punishments in the CCH for disciplinary purposes. Apart from punishment, heavily-enforced control also seems to be another issue in the education

delivery mechanisms of Cadet Colleges. For example, they remain restricted within the campuses most of the time, they cannot use mobile phones even inside their hostel rooms, using social media is banned, after admission students are not allowed to contact their families for general conversations, and, as per the students, the freedom of speech is also restricted. The IMCs are also not free of enforced control and punishments but the current and ex-students of the IMCs seem to have fewer complaints about this phenomenon as compared to current and ex-students of the CCs.

Less Publication of Data

This study did not find any systematic educational data or statistical publications on Cadet Colleges on annual or other fixed interval bases. Some sort of information and data were available in parts and bits but were not enough to see the actual picture of the CCs or perform scientific inquiries. It would be better if the CCs develop open databases to publicise non-confidential data about students, faculty members, grades, annual findings, enrollment, demographic details, new interventions, and other such information. This will not only improve transparency and public trust but will also facilitate research. In return, the CCs will get new ideas and suggestions to further improve their system as there is always room for improvement. This will ultimately benefit the whole community.

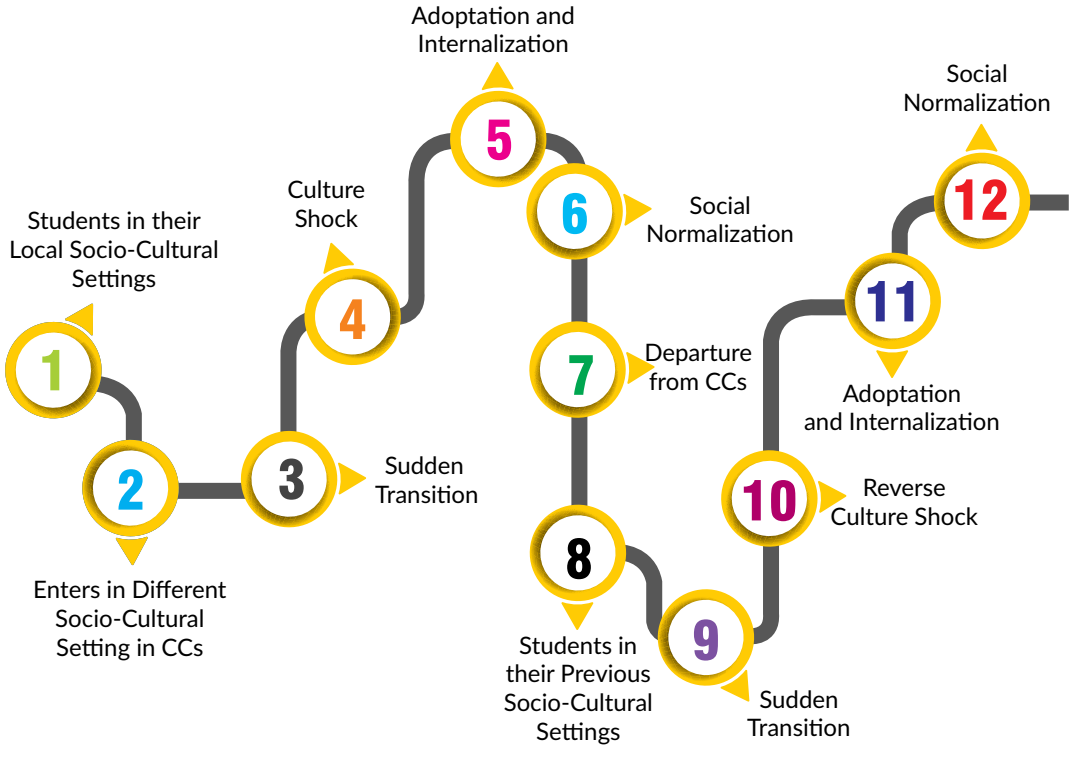
Creation of Culture Shocks

It seems that Cadet Colleges' delivery is underperforming when it comes to ensuring a smooth transition of students to the campus environment as a result of a culture shock.

According to the respondents, in many aspects, life inside the campuses is quite different for newcomers from the environment in which they were living. There are several sociocultural factors that combinedly and suddenly happen to a student when he enters a cadet college. For example, there is a sudden restriction on freedom, enforcement of strict discipline, improvement in living standards, especially for those who come from far-flung areas, hostel life, homesickness, and cultural diversity. The combined and sudden happening of these factors produces cultural shock for students. Culture shock is a jargon that use to refer to a socio-psychological phenomenon that invokes stress, fear, anxiety, and frustration for an individual when they encounter a relatively unaccustomed culture or social setting –(Garza-Guerrero, 1974). According to students, culture shock is very impactful on students in the initial year of entry.

Furthermore, many students, especially ex-students, also reported reverse culture shock after completing studies at Cadet Colleges. Reverse culture shock happens when someone internalises and normalises a new culture and finds it difficult to adjust after returning to the previous or orthodox culture –(Gaw, 2000). Some of them expressed that they found it extremely difficult in adjusting themselves to public sector universities due to different working mechanisms, different discipline, higher freedom and self-regulation issues, a lower standard of living on the campuses in

Figure 9: Flow Chart of Culture and Reverse Culture



Source: Author's own conception.

some cases, and so on. Students from lower and/or rural backgrounds suddenly become deprived of the living standard and facilities that they were consuming at the CCs. Owing to these factors students suddenly get reverse cultural shocks.

No Formal Horizontal Integration among Cadet Colleges

The horizontal integration of organisations working for the same cause and interest can produce a win-win situation for all parties. The main benefit of inter-school integration could be economic gains by pooling resources, retrieving more funding means, economies of scale, increasing prospects of vicarious policy learning and system strengthening, enhanced curriculum and development, the exchange of skills, etc. Even though Cadet Colleges in Pakistan, by and large, work for the same cause, unfortunately, this study found that there was no formal networking system among Cadet Colleges in Pakistan for horizontal integration. This fact was also accepted by the officials of the CCH.

Strengths of Islamabad Model Colleges' Delivery Approach

Minimal Private Cost

It is a matter of fact that private cost is the only aspect in which Islamabad Model Colleges have a clear comparative advantage over Cadet Colleges. Here, an argument can be given that for high-quality education delivery a higher cost is a must. However, this is also a fact that even though IMCs are relatively weaker in terms of the quality of education compared to the CCs, they are vital for the masses because they are affordable to lower-middle and low-class people. Though the CCs are trying hard to accommodate the poor class through the provision of scholarships, interest-free student loans, and other efforts, they are still far behind in this domain as the majority of their students still have to pay fees to pursue their academic journey.

Greater Accessibility and Socially Inclusive

Social inclusion is giving equal opportunities to social actors so they can participate in society. Social inclusion is a process that aims to provide equal access to public services, ensures that individuals do not disconnect from their families, friends, work, community, and individual goals; and have the freedom of speech. Thus, the fundamental purpose of accessibility and social inclusion "is about making sure that no one is left out" (Triggs, 2013). The general stream of public schools, including IMCs and FGs, has better coverage and accessibility as they hold a greater network and provide education to people at their proximate locations. Moreover, general public education, such as the IMCs, on average, gets higher enrollments.

Transforming its Data and Monitoring System

An efficient data and monitoring system is one of the important components of a high-quality education delivery system. The federal government lately has started taking steps in the right direction to transform its data and monitoring system. Many new initiatives have been taken recently and many are in pipeline to meet advanced data and monitoring requirements. For instance, the Federal Directorate of Education (FDE) has taken initiatives such as a Human Resource Management Information System (HRMIS) for the biometric attendance of teaching and non-teaching staff, an online monitoring system through online tablets that inspectors will use to transfer instant data to the server, and working on School Information System (SIS) for obtaining basic but important information about human resources, schools, transfer and posting process, inventory system, learning and management system, and so on. Steps like these will enhance future learning outcomes.

Better Data Transparency

The FDE has relatively better transparency of data on many education variables such as performance-based ranking of institutions, institution-wide enrollment rate, human resources, complaints and recommendations done by school staff, etc.

Weakness in the Islamabad Model Colleges' Delivery Approach

Costly for the Government

In the case of the IMCs, the cost of education is borne almost totally by the federal government. Based on the fact that Pakistan is facing drastic funding constraints, we can highlight it as a weakness of the IMCs' delivery approach.

Less efficient in 21st-Century Learning/Skills delivery

When it comes to 21st-century learning and skills, the IMCs are found to underperform in comparison to the CCs. School laboratories are considered to be a good foundation for imparting practical and innovative skills. But unfortunately, many of the students and ex-students complained about the scarcity of materials and equipment in the science laboratories. Some students even said that teachers discouraged the use of laboratory items stating that these were expensive and could not be used regularly. Likewise, many students complained about the non-availability of the internet, poor computer labs, and related training professionals at campuses. Many of them also complained about the non-availability of sports equipment. The lesser attention to 21st-century skills and concepts in the education delivery mechanism of the IMCs was also accepted by an official of the FDE as "currently, we are quite behind in 21st learning and skills but we have started focusing on such dimensions. The current government is actively focusing on 21st-century learning and skills and introducing new interventions and initiatives such as STEM programmes and blended-learning programmes." Further, he stated that "in May 2021, a contract has been signed between the officials of the Ministry of Federal Education and Google representatives for the digitalisation of the schools in ICT including the IMCs." Besides, the government has included the development of the knowledge economy as one of the primary national goals in Vision 2025. The discussion with officials shows their resolve for improving the delivery approach of the general stream of public education through the most warranted initiatives.

Bureaucratic pathology

Bureaucratic pathology can be understood as infighting and excessively rigid organizational phenomenon that emerge inside bureaucratic establishments to perpetuate the conventional working mechanisms, even if those mechanisms are counterproductive for organisational goals.

This can stifle any rethinking and change in bureaucratic processes. According to a higher official, reforms and new initiatives to improve the delivery mechanism are not fully implemented due to the existence of inertia and procrastination in the bureaucratic chain. Due to this bureaucratic pathology, the trickledown effect of the national-level policy does not fully reach the target populations or students. The official gave the example of Dr Ishrat Hussain's proposal of merit-based promotions for all civil servants beyond grade 17 via special tests and performance. The reform proposal, as expected, attracted strong disapproval from the concerned quarters because the Pakistani bureaucracy has gotten used to working comfortably without proper accountability or monitoring. For the strengthening of the delivery mechanism, the elimination of bureaucratic pathology is a much-awaited reform.

Poor Teachers Training

According to a higher official of the FDE, the biggest problem within the public sector is the poor professional training of teachers. Teachers are not hired based on proper aptitude tests. He further expressed that, on the other hand, the CCs conduct proper aptitude tests before hiring a teacher. Moreover, they hire them initially on a contract basis to further gauge their performance. Unfortunately, in civil sector education, such a process is not being followed properly and candidates for teaching get B.Ed. degrees from open/virtual universities or other sub-standard universities. Many universities cannot train school teachers properly yet they give them degrees. Furthermore, he also maintained that he had observed in his professional service that when new initiatives or interventions were introduced by the governments, most of them remained unsuccessful because the current pool of teachers was not competent enough to deliver on those initiatives. It is beyond any doubt that without high-quality teacher training, educational goals cannot be achieved because they are the front-line agents of the delivery system.

Human Resource Deficiency

This study also traced many complaints about the deficiency of human resources as many schools are operating without principals, some schools have teacher shortages, and others have no computer and science in charge.[4]

Lower Living Standards

Other issues in the delivery system included the dissatisfaction of teachers and students with living standards. They showed their dissatisfaction with bad toilet conditions, weak internet connections, the inadequacy of on-campus canteen services, poor classroom facilities, lack of sports equipment, and shabby conditions of computer and science labs.

4. The complains on shortage of human resources are also available at AEO (n.d.).

CONCLUSION

In this study, we tried to assess Islamabad Model Colleges and Cadet Colleges on three dimensions, namely producing earning benefits, producing better academic grades, and getting things done. For this purpose, we applied a mixed-method approach to compare both streams of education. This implies that this study approached the research problem from both quantitative and qualitative dimensions. In the quantitative domain, we used the Cost-Benefit Analysis (CBA) and pooled regression analysis (PRA), whereas, in the qualitative domain, we focused on comparing the delivery approach of both school systems.

The Cost-Benefit Analysis showed that investment in both streams was beneficial for the economy in the long run. However, considering the cost to the government only, the Cadet Colleges were producing more benefits than Islamabad Model Colleges, while considering the overall cost (including the government, private, and opportunity costs). Islamabad Model Colleges were slightly ahead of Cadet Colleges not because of higher earnings but because of lower private costs. On the other hand, the pooled regression analysis showed that Cadet Colleges were producing higher academic grades than Islamabad Model Colleges. Further in this study, we found that, currently, the delivery approach of Cadet Colleges is relatively better than the delivery approach of Islamabad Model Colleges. Nevertheless, in the last few years, the FDE has taken some admirable steps to strengthen its education delivery system.

RECOMMENDATIONS

Both education streams are cost-effective, so a genuine demand for scaling up or for launching new projects from either stream can be responded to positively.

There were complaints about the shortage of human resources in the IMCs. Therefore, such demands should be appraised critically and the shortages, if any, should be filled as soon as possible for system strengthening.

The transparency in education-related data should be increased in all streams to allow:

- Research organisations and independent researchers to conduct their research. This will enhance scholarly/intellectual inputs into education policymaking.
- It will enhance the effectiveness of the evaluation of programs, resources, and interventions.
- It will increase civic involvement in the education delivery system.

Cadet colleges are implementing their policies better due to decentralised governance and institutional autonomy. Therefore, the administrative and management responsibility and the power of principals in the IMCs should be increased. It will improve institutional autonomy, accountability, and monitoring processes as the principals will have the access to school-level information to oversee the daily educational processes of schools. Capacity building needs of the school-level administration should also be appraised to improve the administrative and management skills of principals and other staff.

New initiatives and interventions are important for improving education outcomes but without competent and skilled teachers such interventions and initiatives may not produce desirable outcomes. Therefore, we should bring back professionalism to the teaching profession. This suggestion is well reflected in the following statement by a senior staff working in IMCs: “candidates for teaching get B.Ed. degrees from open/virtual universities or other universities with poor professional training. Many universities cannot train school teachers properly yet they give them degrees.” He further said, “I have seen throughout my professional service that when new initiatives or interventions were adopted by the governments most of them remained unsuccessful as teachers were not that competent to deliver on those initiatives. It is beyond any doubt that without high-quality teacher training educational goals cannot be achieved because they are the front-line agents of the delivery system.”

LIMITATIONS

There are some limitations of the study which are:

- Given the performance of students in the Cadet Colleges, students' scores are always confounding in the presence of selection bias, i.e., parental effect or home background effect and motivation. Therefore, these aspects need to be kept in consideration to reflect on the dimension of home background effect vs school effect. In addition, it is also important to mention that the enrolment in these schools is minimal (given the limited number of cadet schools in the country), so declaring it as a parallel stream in the public sector also needs further elaboration.

- Cadet colleges are specialised autonomous boarding institutions that focus on imparting holistic education to young learners of secondary and higher secondary levels following the English version of the national curriculum. The CCs also emphasise extra-curricular and co-curricular activities. The Cadet Colleges are special schools and colleges, which run directly under the supervision of the armed forces and aim to produce students capable of leading the country and acting as skilled army officers. On the contrary, the aim of public schools is to educate the masses. Therefore, so the aim is different and comparing the parallel streams would be a bit subjective.

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APPENDIX

Structured Interview Questions For Actors Directly Involved in the Delivery Mechanism	
Name	Age
Institution:	Position/role:
How and why was this person selected as an informant?	
PART (1)	
Q1. Which institutionalised unit (any apex or central body, i.e., a directorate, a secretariat or a board) regulates structured processes (the process through which the apex body vertically integrates and coordinates with subordinate divisions/units to grass root level within the educational stream; and to horizontally integrate and coordinate with other departments and sectors) for setting major goals and delivering them in the practical domain?	
Q2. How long-term goals (strategic or broad goals that reflect the vision of the education system, i.e., creating a sense of nationhood, inclusive education, preparing the student for 21st-century challenges, improving quality of education, fostering civic sense, etc) and short-term targets (the set of narrow and tactical targets for implementing the strategic plan or long-term goals,) are set and prioritized? For instance, the focus on schools was the long-term goal of the Punjab education road map, and they were using providing 4,286 computer labs in high schools, upgrading 2,500 schools, establishing 5 cadet colleges in Punjab, contracting with Microsoft company for I.T training, increasing the number of libraries in middle and high Schools, and many more to ensure long-term target.	
Q3. Does regular and reliable performance data are used to monitor progress against the set milestones (e.g., 60% enrollment within 2 years) and targets? If “YES” What are the mechanisms for gathering (e.g., surveying monthly or annually) and reporting information (periodic reports such as monthly, quarterly, and annually based on prioritised indicators) about the progress and performance of divisions, districts, teams, schools, and/or actors; can you provide a reference or sample of such reports? If “NOT” Why?	
Q4. What are the existing management routines to effectively manage the delivery mechanisms? (i.e., the frequency of meetings chaired by the senior system leaders; other mechanisms of dialogue, and coordination; policy feedback across the delivery chain; problem-solving mechanisms across individuals, divisions, or organizations, etc.).	
Q5. What is the accountability and incentives system? What kind of incentives and sanctions (i.e., bonuses/special cash awards/promotions and firing/poor ranking/warnings/salary deduction, etc.) are used to strengthen the delivery mechanism? If possible, share some example cases, and some manuscripts that explain the process.	

<table>
<tr><td colspan="4">PART (2)</td></tr>
<tr><td colspan="4">Q6. Which of the following 21st-century skills and learning themes are a part of your short-term and long-term goals?</td></tr>
<tr><td>Learning and Innovation Skills</td><td>Information, Media, and Technology Skills</td><td>Life and Career Skills</td><td>21st-Century Themes</td></tr>
<tr><td>○ Creativity and Innovation</td><td>○ Information Literacy</td><td>○ Flexibility and Adaptability</td><td>○ Global Awareness</td></tr>
<tr><td>○ Critical Thinking and Problem Solving</td><td>○ Media Literacy</td><td>○ Initiative and Self-Direction</td><td>○ Financial, Economic, Business, & Entrepreneurial Literacy</td></tr>
<tr><td>○ Communication</td><td>○ ICT Literacy</td><td>○ Social and Cross-Cultural Skills</td><td>○ Civic literacy</td></tr>
<tr><td>○ Collaboration</td><td></td><td>○ Productivity and Accountability</td><td>○ Health literacy</td></tr>
<tr><td></td><td></td><td>○ Leadership and Responsibility</td><td></td></tr>
<tr><td colspan="4">Q7. How data collection, measurement, and reporting on your afore-selected 21st-century skills/learning themes is being done? Also, describe the indicators used to assess the performance.</td></tr>
<tr><td colspan="4">Q8. How do management routines focus on your afore-selected 21st-century skills/learning themes?</td></tr>
<tr><td colspan="4">Q9. How does the accountability and incentives system focus on your afore-selected 21st-century skills/learning themes?</td></tr>
<tr><td colspan="4">Q10. How 21st-century skills/learning themes have been incorporated into the curriculum of your education program? Can you refer to a manuscript of your education system that reflects 21st-century skills/learning themes?</td></tr>
<tr><td colspan="4">Semi-Structured Interview Questions For Employers</td></tr>
<tr><td colspan="2">Flexibility and Adaptability</td><td colspan="2">Adaptability is an ability to adjust to wavering functional roles, obligations, timetables, and circumstances or a readiness to function effectively in rapidly changing environments and priorities.
Flexibility is exhibiting a positive attitude in response to admiration, failure, criticism, and showing responsiveness to feedback. Moreover, flexibility also includes negotiating and balancing a diversity of opinions and credences to find feasible solutions, particularly in an environment where culture tends to be variegated</td></tr>
<tr><td colspan="4">Q1. Based on your observation and experience, usually between the students of the IMCs and the CCs, who are more flexible and adaptable to the work environment? Also, discuss the personal experiences and reasons that resonate with your stance.</td></tr>
</table>

Initiative and Self-Direction	Managing Goals and Time: Effective utilisation of time and managing workload efficiently. Being a self-directed Worker: Requires a personal ability that includes monitoring, defining, prioritizing, and accomplishing tasks without direct surveillance of a mentor or supervisor. Being a Self-directed Learner: Requires proceeding beyond basic skills attainment and curriculum to discover and expand opportunities to learn more and to gain higher skills.
Q2. Based on your observation and experience, usually between the students of the IMC and the CCs, who take more initiative and are self-directed in the workplace? Also discuss the personal experiences and reasons that resonate with your stance.	
Social and Cross-Cultural Skills	Effective Interaction with Others: It includes approaching social actors respectably, and professionally; knowing when it is appropriate to speak and when to listen during professional and academic dealings. Effective Working with Diverse Groups: it requires the quality of being respectful towards cultural variances and working efficaciously with people from different socio-cultural backgrounds. It also includes the skill of leveraging socio-cultural variances for exploring new ideas and increasing both innovation and quality of work.
Q3. Based on your observation and experience, usually between the students of the IMCs and the CCs, who have more social and cross-cultural skills in the workplace? Also discuss the personal experiences and reasons that resonate with your stance.	
Productivity and Accountability	Managing Projects: Being skilled enough to manage ways to get goals and tasks done even if challenged by hitches and competing forces. Production of high-quality outcomes: • to work positively and ethically; • balancing time and projects effectively; • able to multitask; active engagement; • being reliable and punctual; • internalizing professionality and work protocols; • collaborating and cooperating efficiently with teammates; • respecting and admiring work team diversity; • readiness to be accountable for outcomes, etc.
Q4. Based on your observation and experience, usually between the students of the IMCs and the CCs, who are more productive and accountable in the workplace? Also discuss the personal experiences and reasons that resonate with your stance.	
Leadership and Responsibility	The utilisation of interpersonal and problem-solving skills of influencing, guiding others, and leveraging the merits of others to achieve a common interest Establishing integrity and ethical conduct while influencing and using leadership power; remaining responsible to others and acting responsibly to regard the interest of common goals.
Q5. Based on your observation and experience, usually between the students of the IMCs and the CCs, who are better at leading and taking responsibility in the workplace? Also discuss the personal experiences and reasons that resonate with your stance.	

Semi-Structured Interview Questions For Alumni and Students
Q1. To what extent your educational institute has polished your creativity and innovation skills at the higher secondary education level, and how?
Q2. To what extent your educational institute has polished your creativity and innovation skills at the higher secondary education level, and how?
Q3. To what extent your educational institute has polished your creativity and innovation skills at the higher secondary education level, and how?
Q4. To what extent your educational institute has polished your creativity and innovation skills at the higher secondary education level, and how?
Q5. To what extent has your educational institute improved your information literacy at the higher secondary education level, and how?
Q6. To what extent has your educational institute improved your media literacy at the higher secondary education level, and how?
Q7. To what extent has your educational institute improved your ICT literacy at the higher secondary education level, and how?
Q8. To what extent has your educational institute developed flexibility and adaptability skills in you, and how?
Q9. To what extent has your educational institute developed you to take initiatives and become a self-directed person, and how?
Q10. To what extent has your educational institute developed your social and cross-cultural skills, and how?
Q11. To what extent has your educational institute improved your productivity and sense of accountability, and how?
Q12. To what extent has your educational institute developed your leadership skills and responsibility, and how?
Q13.To what extent has your educational institute inculcated global awareness in you at the higher secondary education level, and how?
Q14. To what extent has your educational institute improved your financial, economic, business, and entrepreneurial literacy at the higher secondary education level, and how?
Q15. To what extent has your educational institute improved your civic literacy at the higher secondary education level, and how?
Q16. To what extent has your educational institute improved your health literacy at the higher secondary education level, and how?
Q17. To what extent has your educational institute improved your environmental literacy at the higher secondary education level, and how?

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