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.

- Beyond 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 perplexing is the associated cost and benefits to the public of competing investment programs 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, the public education funding follows in two streams. The first and major stream of education comprised of general public schools and colleges, and the second and relatively smaller stream includes cadet colleges, PAF colleges, etc. Now, it is a matter of fact that investing in public education is 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 have 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 have also assessed the delivery approach of both steams for lesson learning and system strengthening. To address these questions, this study adopted a mix-method approach (both quantitative and qualitative approaches).
- By delivery approach (DA), we mean the process of getting things done or the chain process being from goal setting to implementation and its effects on the students' 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 issues such as discontinuity in government policies, weak supervisory and 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 public education provision.
- 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, 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. 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.
- 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) is higher by 1963.90 PKRs than in Cadet Colleges (CCs). Likewise, on annual basis, a student in IMCs is getting an amount equal to 654.63 PKRs more than a student in CCs. Contrary to the common narrative that CCs are getting more

funding from the government, our analysis showed that funding to the IMCs is higher than the CCs.

- We undertook the cost-benefit analysis (CBA) of both education streams from three different perspectives. Such as CBA based on the cost to the government; CBA based on the cost to govt. and private cost; and CBA based on cost to govt., private cost, and opportunity cost.
- The CBA based on the cost to the government for IMCs shows that the BCR is equal to 3.33 which implies that per unit of PKR that had been invested by the government over 2018-21will generate 3.33 PKRs for the economy. The CBA based on cost to government plus private cost the BCR reduced to 3.26, which implies that IMCs will generate net benefits equal to 3.26 in the future. Finally, the CBA based on cost to the government, private cost, and opportunity cost the BCR we get is 1.40 implies that the IMCs still produce positive net benefits considering all the three types of cost.
- The CBA for cadet colleges considering government funds only, the BCR we get is equal to 7.92 which indicates that each unit 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 CCs by considering cost to government plus private cost, our estimates shows that the BCR decreased to 2.26. The investment remains profitable as the value of CBR is greater than 2 units against each unit invested.
- Lastly, the CBA based on cost to the government, private cost, and opportunity cost the BCR reduced to 1.27 of CCs. However, the investment is still profitable as BCR is still greater than 1. Here, it is important to note that in this particular CBA we have 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 the contributions of private and opportunity costs, the return on investment in CCs is considerably higher as compared to the IMCs.
- In simple pooled regression analysis, the results indicate that institutes belonging to cadet colleges stream have 1.75 higher GPAs on average as compared to the institutes belonging to IMCs stream. This implies that the performance of CCs is better in 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 prospect, health, and 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 expected that CCs are contributing more to social well-being by producing higher academic grades as compared to IMCs.
- When it comes to the delivery approach, IMCs are linked with a relatively long chain of administrative and supervisory structures that involve multiple departments along with large numbers of agents. This larger chain makes the system prone to delivery inertia and bureaucratic pathology. For instance, if the system faces inadequacy of enablers at various points of the delivery road or ambiguity in roles and 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, goes straight down to principal level, vice-principal level, 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), and 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 meeting, they also decide tactical goals according to institutional mission and strategic goals. 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 & decentralized 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, more experimental, innovative, and think out of the box. Despite getting lower funds from the government in comparison to the IMCs, CCs are accumulating higher resources by shifting the cost burden to Alumni, students, and other trustees. The CCs do relatively better in the conception of 21-Century Learning/Skills delivery, engage and utilize its alumni to gain tangible and intangible support to the institution in terms of mentoring, etc., possess better enablers, have better teachers 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; expensive in terms of private cost, heavily-enforced control, and punishment mechanisms, their delivery approach is relatively opaque data-wise, their delivery approach has a tendency to create cultural shocks for students due to weaknesses in transition mechanisms, and finally, all cadet colleges are working for the same goals but independently without any formal horizontal integration mechanisms and unifying central body.
- In addition, the major weaknesses in the delivery approach of IMCs include; IMCs are relatively costly to the government, comparatively lagging in 21-Century Learning/Skills, poor teachers training mechanism, the delivery approach of IMCs manifests bureaucratic pathology affecting its smooth functioning and educational outcomes. Likewise, lower living standards and deficiency of staff at several institutes are some more weaknesses of the system.
- Finally, the positive aspects of the delivery approach of the IMCs include: 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 such as Human Resource Management Information System (HRMIS); it's relatively better in data transparency; it offers minimal private cost to the public, offers better accessibility, and social inclusiveness. 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.

INTRODUCTORY OVERVIEW

Public education provision plays a key role in the social, cultural, political, and economic development of a nation. Therefore, 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 system, outdated curriculum, directionless education, low enrollment rate, 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] and the vision document states willingness and determination to overcome these issues. In addition, vision 2025 has also included "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, owing to this reason worldwide economies are investing 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 many folds over the last two decades. Today, one-fifth of all children or one-third of all students go to a private school in Pakistan. Private school students tend to come from urban, better-off, and more educated families than do 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 of general public schools and colleges, and 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. Prince of Wales Royal Indian Military College (RIMC) was the first military college established in 1922 at Doon Valley, Punjab Province (now the Indian state of Uttarakhand). 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, Attock District in 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 presence of these two parallel education systems, Pakistan's public education funding flows in these two streams and the purpose of this funding is to extend the better provision of education to the public.

Beyond any doubt, the public education provision is one of the core investments that a state can make to develop its gross national prospect. 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 necessary

[1] Available online at https://www.pc.gov.pk/uploads/vision2025/Pakistan-Vision-2025.pdf

but not sufficient condition to gain desirable education outcomes. Because policymakers are interested in how educational expenditures are targeted and what outcomes can be realistically linked with that funding. With this conception, this research has assessed a comparative cost-benefit analysis on the aforementioned two mainstreams 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 chain process being from goal setting to implementation and its effects on the students. We have tried to assess the working mechanisms of both streams, particularly in the context of 21st-skills. It is shown that our education system is plagued with issues such as unsustainability/discontinuity in government policies, corruption, weak supervision, and monitoring mechanisms, poor examination system, political intervention, higher dropouts rate, etc (Ahmad & Rauf, 2012; Rizvi, 2016). All these issues somehow are linked with the delivery mechanisms of public education provision, therefore, the evaluation of the education delivery mechanisms of parallel streams in public education will help education policymakers in vicarious policy learning and system strengthening.

OBJECTIVES OF THE RESEARCH

This research will have the following objectives:

1. To study the current method of funding publicly funded schools.
2. To do a cost-benefit analysis of Cadet colleges and Islamabad Model Colleges.
3. To study the education delivery system of both Cadet colleges and Islamabad Model Colleges for lesson learn and system strengthening. The delivery approach refers to focusing on implementation and "getting things done".

2.1 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 reportedly remained under the inadequacy of the public education budget. 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 is never been adequate for the rising educational requirements of the country in the modern age. Pakistan's education is reportedly lowermost among neighboring countries as in percentage of GDP (Khan and Ahmed, 2021).

Moreover, reduced provision of educational development funds in the first place and then their inefficient utilization due to various governance-related issues is the major hurdle that restrains people from gaining optimal benefits from the public money. In a situation like this, the enhancements in practices and processing of funds distribution, management, and application are necessary to improve the utility of these resources. Various other issues in budgetary mechanisms also required to be enhanced such as targeting capacity building of budgetary faculty, guaranteeing the stakeholder involvement in budgetary processes, etc. (Tabassum, Zahid, & Saleem, 2016).

2.2 Education and Cost-benefit analysis

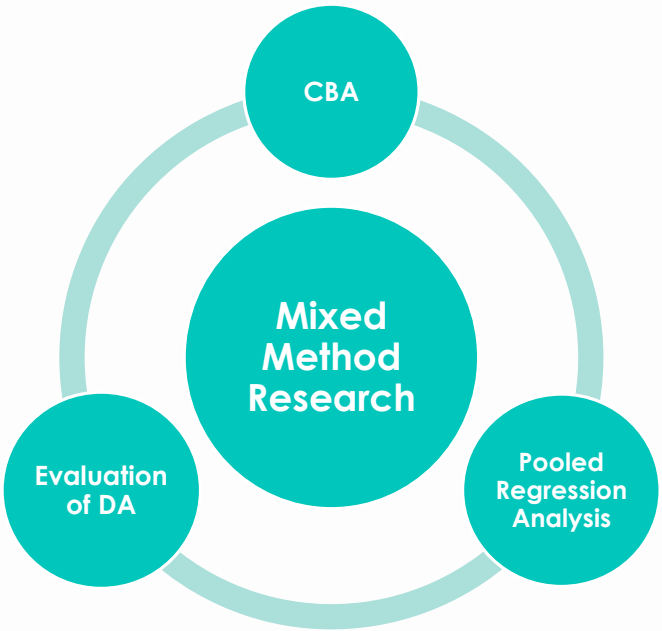
Educational cost-benefit analysis is currently, and has been for some years, a widely accepted technique, used to assess the profitability of investment in education (Jimenez and Patrinos, 2008). Educational rate of return studies has been carried out in most developed countries and many developing countries. In the great majority of cases, the results are in favor 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 does not provide all answers for educational planning but the CBA helps in deciding among alternative choices for investment, which is central in the key components of planning and has a practical significance.

METHODOLOGY

To translate the afore discussed conceptualized scheme of research into real and functional form this research has decided on a systematic methodology to specify the methods and techniques that we will use to derive relevant and reliable data and to analyze that data concerning our research problem. The blueprint of this research has been 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 forthcoming research process.

3.1 Nature of Research

This study has applied mixed-method to direct the research process, which implies that this study has approached the research problem in both qualitative and quantitative dimensions. In the quantitative domain, we have covered the Cost-Benefit Analysis (CBA) and Pooled Regression Analysis (PRA). CBA tells us how much each stream is beneficial in terms of producing an economic return to education, and who is better in comparative terms. PRA will tell us about the comparative status of both streams in producing cognitive skills (test scores). In the qualitative domain, we will assess the education delivery approaches of both education streams. *Here, we have tried to understand how both streams set their goals and priorities, and how they are followed by processes such as measurement and monitoring, accountability and incentivization, problem-solving, and management routines to get things done. The evaluation of (DA) helps us to do a juxtaposition 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 learning and system strengthening.*



3.2 Data Collection and Sampling

The data for this research is obtained in both primary and secondary forms to cover (a) CBA of both education streams, (b) pooled regression analysis to analyze the performance of both education streams in producing better academic scores, (c) studying the education delivery system of both Cadet colleges and Islamabad Model Colleges for education system strengthening.

For the extraction of secondary data, online government databases and official and online documents are considered.

Data Collection for CBA

For CBA, this study has used lifetime expected earning as a benefit based on higher secondary schooling and the expenditure by government & other sources on higher secondary schooling as cost of education. The data on earnings have been taken from the work of Alif Ailaan & SAHE, (2016). Whereas the data on enrollment and expenditure (by government & other sources) have been 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, student's gender, parent's occupation, parents' education, provincial belonging, and teacher's qualification at the institute level of both education streams. The data for this section is provided by both institutions. Further, we also used the data repository of FBISE and other boards for test scores in 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 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 conduct in-depth interviews with teachers, administration, and students. We also conduct interviews with the alumni of both streams working in the same enterprise or business firm in Islamabad.

3.3 The Three Scaling Pans of Cost-Benefit Analysis

The benefit of education is based on the private return to education. We consider three decisive Cost-Benefit measures: the Net Present Value (NPV), Economic Rate of Return (ERR), and the Benefit-Cost Ratio (BCR). We assess the average expected monetary benefit by school type and education level. Following measures and formulas have been 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 on education) over a specified period. In Formula 1 "r' represents the discount rate and "n" denotes the period**.** If time duration (n) is higher, the more influencing the discount rate will be. Hence, the higher positive NPV denotes safer and more productive investments.

  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 zero (Formula 2). Similarly, to the NPV, the higher positive ERR denotes 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 direct juxtaposition of benefits and costs of a project at time zero. Ideally, the greater the output of BCR the better and 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

$$Benefit\ -\ Cost\ Ratio\ = (PV\ of\ benefits) \div\ (PV\ of\ costs)$$

- ***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 is being set to reflect the entire course of the investment projects from the sum of cash outflow(s) to cash inflow(s). In the education context, earnings cash flows throughout working life needed to be discounted by a real interest rate (a rate that is adjusted to inflation rate). According to OECD to reach a sensible discount rate, long-term government bonds can be used as a point of reference. OECD noticed that the average long-term interest rates across countries affiliated to 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 their aforesaid assumption they expected that a real interest rate will tend to variate 2.5% to 3%, therefore the decision to set the real discount rate 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 level of discount rate has also been used by Khan & Ahmed, (2021) to assess the present value of lifetime earning of students in Pakistan. Thus, this study has also used a 3% discount rate to find the present value of future earnings.

[2] Visit: https://data.worldbank.org/indicator/FR.INR.RINR?locations=PK

3.4 Indicators of Benefit and Cost Analysis

We have elaborated briefly on the indicators of the CBA separately 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 are expecting that investments in education to rise individuals' productivity and the shadow price of that increased productivity will be equal to the earnings over their entire lifespan. Individual earning will be assumed equal to average starting real salary by school type and education level. The data on average starting real salary has been taken from Alif Ailaan & SAHE, (2016).

- ***Total Cost on Public Schooling***
  The total cost of schooling is the sum of the cost to the government, private cost and cost to other sources, and the opportunity cost of schooling.
  a. *Per Student Cost to Government*
     Cost to the government has been measured based on government spending per student which is calculated as the total cost to the government divided by a total number of enrolled students.
  b. *Per Student Private Cost*
     The tuition fee paid by individual students.
  c. *Opportunity Cost of Schooling*
     The opportunity cost is the number of earnings foregone due to being engaged in schooling. The most obvious opportunity cost of schooling could be the number of earnings that a nonstudent can expect to obtain. In computing the foregone earnings at higher secondary education (opportunity cost) we can utilize the minimum wage as a proxy for what a student could able earn in case he or she would not enroll in school. *This is because we are not able to distinguish student earnings from earnings of those in the labor market (non-students).* Owing to this reason, the minimum wage is perhaps a useful approximation as the students probably have some earnings at more or less equal to minimum wage (OECD, 2011). According to Wage Indicator Foundation, (2021) unskillful and juvenile (14 to 17 years old) workers in Punjab, Sindh, and Baluchistan even in the Islamabad Capital Territory get a minimum wage round about 13,000 PKR per month. Therefore, we could use 13,000 PKR per month as an approximation for the opportunity cost for attending Higher Secondary School.

3.5 Comparative Performance of both Eduction Stream in Producing Good Academic Scores

Student scores and GPA are the most commonly used measure of academic success and the most important determinant 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 if we were able to obtain data of those students who were leftover on the margin (the student who attempt the entrance test to secure enough score but weren't able to secure admission in their preferred education). This is because it is

being 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 students' scores/grades at all education levels (Hosch, 2010). So this complicates the comparison of students based on scores among different education streams. Owing to this reason, it would be better if we can get data of those the student who attempted entrance test secure enough score but couldn't able to secure admission in the preferred education institute by close margins (as presumably the motivation of these students would be identical, if not equal) and compare their HSSC score to those are studying reputed institute (e.g. Cadet Colleges) for assessing the impact of school type on student grades. For instance, when Abdulkadiroğlu et al., (2014) compared the academic grades of the student who attempt entrance test of elite schools of Boston and New York City but who leftover on the margin with those managed entrance into the elite schools on margins they found no substantial difference in their academic grades. We tried to get access to such data from cadet colleges but we were not able to get hold of such type of 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 tried to get entrance tests but were not able to secure admission in Cadet Colleges.

Specification of the regression Model

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

$$Y = b0 + b1X1 + b2\,X2 + e$$

Where Y = Institutions' GPA, X_1 = School Type, and $X2$ = vector of other control variables

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 taken support from the literature of deliverology that focus 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 are intended to evaluate 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 P21 Framework together for this study is discussed in the conceptual framework of the study. Before discussing the conceptual framework, in the coming sub-sections, we have done a discussion on the concepts of deliverology and the P21 Framework to give a theoretical background for the readers.

4.1 What Do We Mean By "Delivery Approach" In This Study?

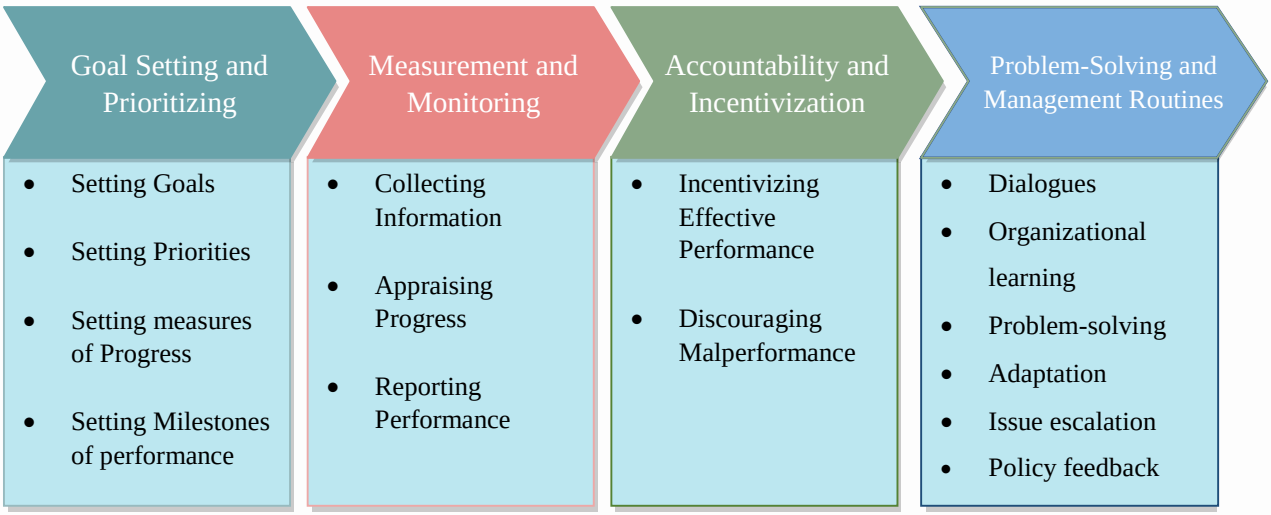
In recent decades, the term "deliverology" has become a buzzword after the work of Sir Michael Blaydon Barber in early 2000 under Prime Minister's Delivery Unit (PMDU) in the UK. Here, we need to understand that from the delivery approach we don't mean the standard form of delivery approach that is defined in deliverology (Barber, Moffit, & Kihn, 2010). 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 of the education streams to get things done or to deliver proposed policy objectives in a practical sense. The operationalization delivery mechanism through a specific delivery unit is a new trend but the process of getting things done is not new. As Schacter, (2016, p.2) 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".* So, the delivery approach of both education streams may be different from Baber's form 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 which are adapted to convert or implement key educational policy objectives into practice. Following this assumption, we have 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.

4.2 The Functional Mechanism in Deliverology

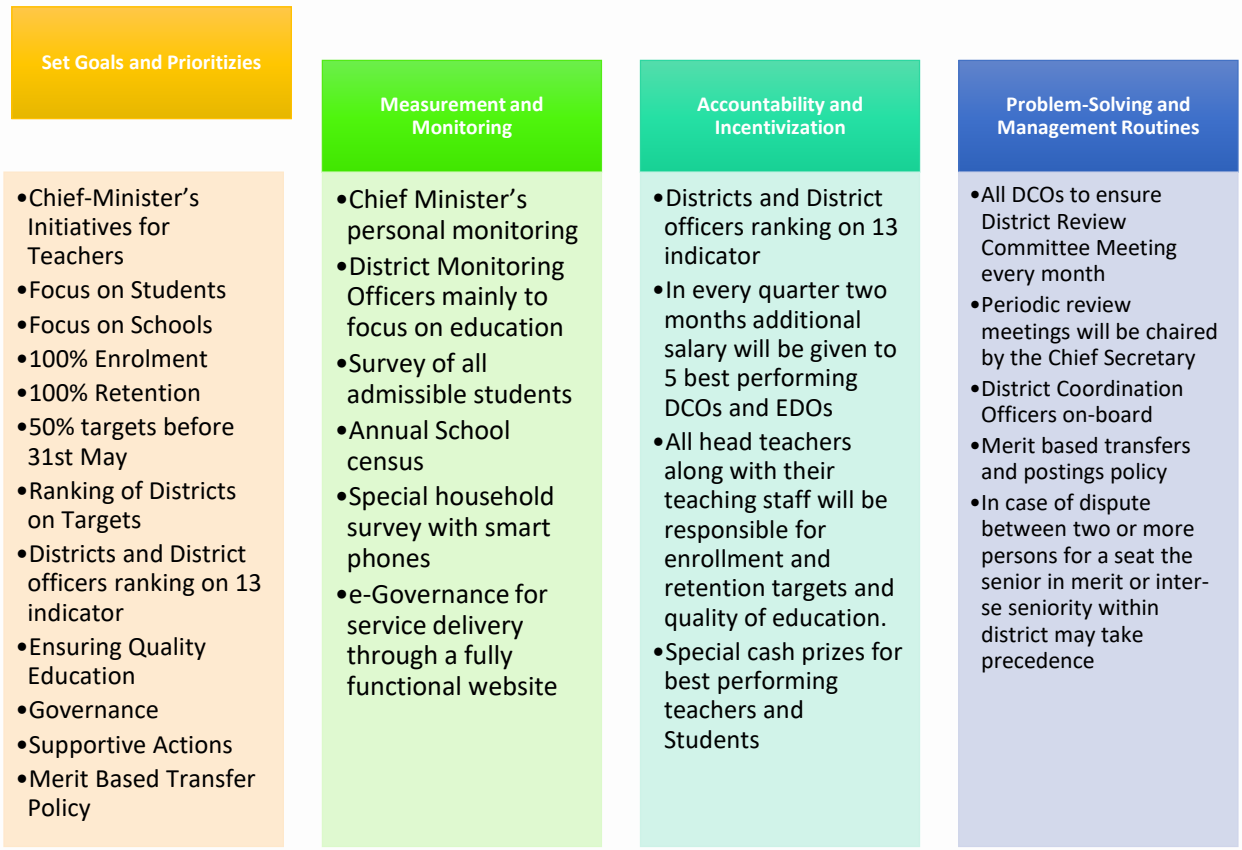
This study has deduced some basic principle processes of the delivery system from the study of Williams et al., (2020) such as *(a) Goal setting and prioritizing:* the setting up of key priorities, goals, assessable indicators to define progress against the set goals, and milestones of performance to be accomplished in a particular time. *(b) Measurement and Monitoring:* implementation of mechanisms to collect data, measurement, and reporting about the progress on goals vertically from divisions to districts to schools to an individual level and horizontally across the organizations/ sectors. *(c) Accountability and Incentivization:* 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, organizational learning for *local problem-solving, adaptation, issue escalation, and policy feedback across the delivery chain* (Williams et al., 2020).

Figure 1: The Basic Principle Processes Of The Delivery Approach



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



4.3 What is The P21 Framework?

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 organizations 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". P21 Framework has specified 4 core dimensions for 21st-Century learners such

as learning and innovation skills; information; media, and technology skills; Life and career skills, and 21st-century themes, which are depicted along with the elementary units in the below table. The table is followed by a discussion on all 4 core dimensions along with the elementary units.

Figure 2: 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

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 of present and future times. These skills include:

- *Creativity and Innovation*
  Creativity and Innovation are two interconnected variables that *you 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 the 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 maximize 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).

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

  Solve Problems: Solve different nature 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 ensured mutual respect. It requires practicing 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 social environment that is immersed in media and technology, that 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 and 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 is inevitable for the life in the 21st century. Moreover, knowledge is also needed to know how information can be utilized and managed properly and creatively. Furthermore, the basic understanding of the ethical/legal factors attached to the processes of accessing and utilization of information (Partnership for 21st Century Learning, 2015).

- *Media Literacy*

  Analyzation 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: Able to comprehend and use the most suitable media creation tools along with the features and conventions. Further, the ability to appreciate and utilize 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 projector, 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 the 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 the 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 a readiness to function successfully in rapidly changing environments and priorities (Partnership for 21st Century Learning, 2015).

  Flexibility: Exhibiting a positive attitude in response to admirations, 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 cultural 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; ability to maintain equilibrium between tactical goals

(in the short run) and strategic goals (in the long run); effective utilization 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 (Partnership for 21st Century Learning, 2015).

- *Social and Cross-Cultural Skills*

  Effective Interaction with Others: It includes approaching social actors respectably, 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 quality of work (Partnership for 21st Century Learning, 2015).

- *Productivity and Accountability*

  Managing Projects: Being skillful 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 multitasking; 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 (Partnership for 21st Century Learning, 2015).

- *Leadership and Responsibility*

  Guiding and Leading others: it is the utilization 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 conducts 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).

4.4 Key Subjects and 21st-Century Themes

According to the P21 Framework, proficiency in the key subjects and 21st-century themes which are suggested by P21 are crucial for all 21st-century learners, therefore, schools must focus on those subjects and themes. The subjects which are 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 utilization of 21st-century skills to realize and address global problems; the acquisition of knowledge from the social actors belong to diverse cultures and working collaboratively with them; 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 vacant by a globalized in an effective manner to expand the global interest.

- ***Financial, Economic, Business and Entrepreneurial Literacy***

  According to the P21 framework, the realization of how to take appropriate individual economic choices, adequate awareness about the functionalities of the economy, and know-how about the utilization 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 to get engage in civic life effectively. It includes understanding and remaining informed about governmental processes; upholding individual and communal rights; fulfilling responsibilities being a citizen at communal, provincial, national, and global spheres; knowing the local and global implications of civic decisions (Partnership for 21st Century Learning, 2015).

- ***Health Literacy***

  Health literacy is a literateness that include the ability to attain, interpret and comprehend elementary health information and services; utilization 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-inform about national, regional, and global public health and safety problems (Partnership for 21st Century Learning, 2015).

- ***Environmental Literacy***

  In the P21 framework, environmental literacy appears to be 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.; ability to examine and analyze of environmental issues; and drawing feasible conclusions about solutions; active engagement in the activities intended to counter environmental challenges such as involvement in global environmental movements, and formulating solutions that can encourage actions on environmental concerns, etc. (Partnership for 21st Century Learning, 2015).

CONCEPTUAL FRAMEWORK FOR THE QUALITATIVE STUDY

The conceptual framework of this study is an analytical tool that intends to evaluate the education delivery approach of both education streams with contextual lenses. All over the world countries adheres 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, 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. 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, therefore, our education delivery mechanism (from goal setting to getting things done) must be aligned with 21st-century learning. Therefore, apart from the general understanding, it is also important to assess the education delivery approaches in both streams in the context of the 21st-century that what kind of education should be delivered to the students in today's world? This is a challenging question for education systems around the world. Previously, dexterity of the *"three Rs" (reading, writing, and arithmetic)* and proficiency in the core academic subjects were considered to the requirement for effective navigation in life and career but the requirements in the 21st century exceeded beyond dexterity of *three Rs* and mastery of the core subject. Now, to contribute effectively to the progress of complex and globalized life, students must able to think critically, communicate effectually, collaborate with diverse groups/actors, solve modern issues, internalize a global frame of mind, and utilize and engage properly with ICT, etc. (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/organizational disciplines are the key reasons that have beset the educational policy delivery in Pakistan.

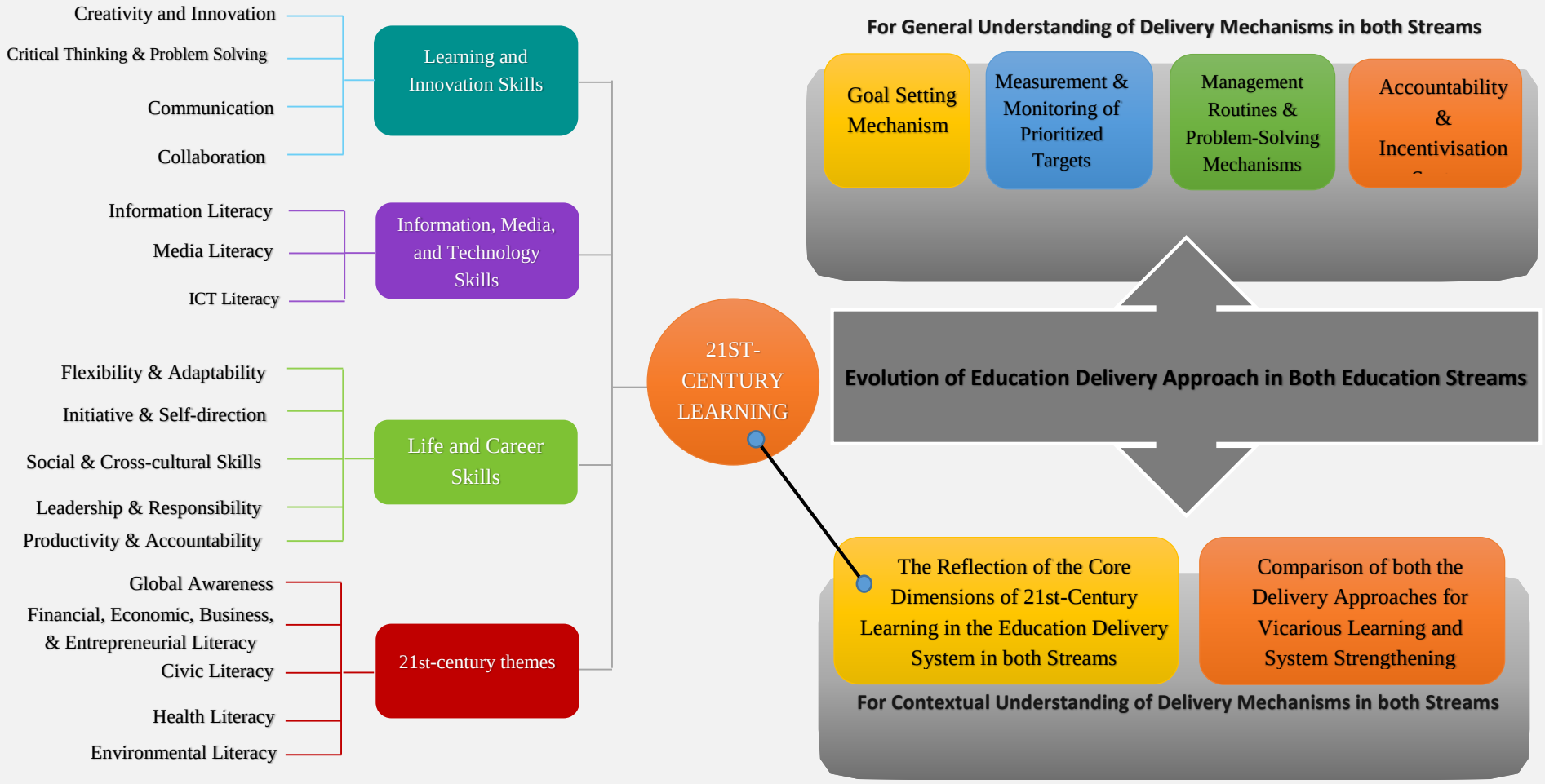
Looking at these issues, we can notice that most of them are related to education delivery mechanisms. Therefore, in this study, we evaluate the delivery mechanisms of both streams in the context of 21st-century learning. The contextual understanding of delivery mechanisms in both streams will help us to know that 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 have been depicted. 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 Frameworks 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 required to thrive in work and life, also to support systems essential for the 21st-century learning outcomes[3]. On the left side, the basic integrated process of delivery mechanism such as (a) Goal Setting Mechanism, (b) Measurement & Monitoring of Prioritized Targets, (c) Management Routines & Problem-Solving (d) Mechanisms Accountability & Incentivisation System has been illustrated. The main essence to which we refer here is that the more robust an education delivery system is the more improved are the core competencies of the children.

[3] Visit: http://www.battelleforkids.org/networks/p21/frameworks-resources

FIGURE 1: CONCEPTUAL FRAMEWORK: LINKING EDUCATION DILIVERY WITH 21ST CENTURY LEARNING



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 on 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 1 reports per-student costs to the government in both education streams from FY 2018-19 to FY 2020-21. During these 3 years government has funded about 569 million PKRs to six Cadet Colleges (CCs), whereas, approximately 6369 million PKRs to nineteen Islamabad Model Colleges. Dividing the three years of total government funding to CCs by total enrollment in CCs, we got an average per student Cost (APSC) equal to 72808.44 PKRs for three years. Similarly, we got APSC equal to 74772.35 PKRs for three years in the Islamabad Model Colleges (IMCs). Hence, for the last three years on an average basis, each student of IMCs has 1963.90 PKRs more than the student studying in CCs from the government. Likewise, on average a student in IMCs is getting an amount equal to 654.63 PKRs more than a student in CCs annually. Contrary to the common narrative that CCs are getting more funding from the government, our analysis showed that funding to the IMCs is higher than the CCs.

Table 1: Per Student Government Funding (All Children)

Education Streams	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 3 years	Annually
Cadet Colleges	569.08 million	72808.44	24269.48	1963.90	654.63
Islamabad Model Colleges	6368.88 million	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. Such as CBA based on the cost to the government; CBA based on the cost to govt. and private cost; and CBA based on cost to govt., private cost, and opportunity cost.

Table 2: CBA of Islamabad Model Colleges and Cadet Colleges for Higher Secondary School Level (HSSL). (in Million PKRs)

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

Source: Author's calculations.

The CBA based on the cost to the government for IMCs shows that 1834.45 PKRs invested on IMCs from 2018-21 will expectedly generate NPV equal to 5626.57 PKRs for the economy at a 3% discount rate. The BCR is equal to 3.33 which implies that per unit of PKR that had been invested by the government in course of 2018-21 on ICMs stream will generate 3.33 PKRs for the economy. The reason behind conducting 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 decisions making.

The CBA based on cost to government plus private cost includes a) direct funding to ICMs by the government, and b) the revenue school generated from its students. The NPV of future benefit is equal to 5616.09 PKRs. This implies that 1874.07 PKRs invested on IMCs from 2018-21 will expectedly generate 5616.09 PKRs. With the incorporation of private cost, the BCR reduced from 3.33 to 3.26, which implies that the ICMs stream generates net benefits equal to 3.26 in the future.

Finally, the CBA based on cost to the government, private cost, and opportunity cost the NPV considerably decreased to 4958.90 at a 3% discount rate. This implies that the investment of 4359.31 PKR on IMCs will expectedly generate 4958.90 PKR for the economy in 45 years. The BCR we get is 1.40 implies that the IMCs still produce positive net benefits considering all three types of cost. In other words, considering the cost to the government, private and opportunity cost this study expects that 1 unit of PKR invested on HSSL in IMCs will produce net positive returns equal to 1.40 units for the economy in the future.

The CBA for cadet colleges considering Government expenditure only, we assessed that, at a 3% discount rate, 1156.74 PKRs invested on HSS from 2018-21 will probably generate NPV equal to 8866.83 PKR for the economy, which implies that this investment will produce positive returns to investment. Subsequently, the projection of BCR was found to be equal to 7.92 which indicates that each unit PKR that had been invested by the government in course of 2018-21 on CCs is expected to produce 7.92 rupees for the economy in long-run. From a fiscal point of view, without

considering the contributions of private and opportunity costs, the return on investment in CCs is considerably higher as compared to the IMCs.

The CBA of CCs by considering cost to government plus private cost our estimates shows that the NPV of expected lifelong earning will be equal to 8099.96 PKRs against the cost equal to 4056.74 rupees during 2018-21. The BCR decreased to 2.26 when we incorporate private cost alongside government funding but still, the investment remains profitable as the value of CBR is above 2 units against each unit invested.

Lastly, the CBA based on cost to the government, private cost, and opportunity cost the NPV reduced to 7263.59 rupees at a 3% discount rate. The BCR was reduced to 1.27. However, the investment is still profitable as BCR is still greater than 1. Here, we should note that in this particular CBA we have 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 have also performed a regression analysis on pool data of three years 2018,2019, and 2021. We intentionally excluded 2020 because in that year ministry of education had canceled exams of secondary and higher secondary school and students were promoted without examination owing to the COVID-19 pandemic.

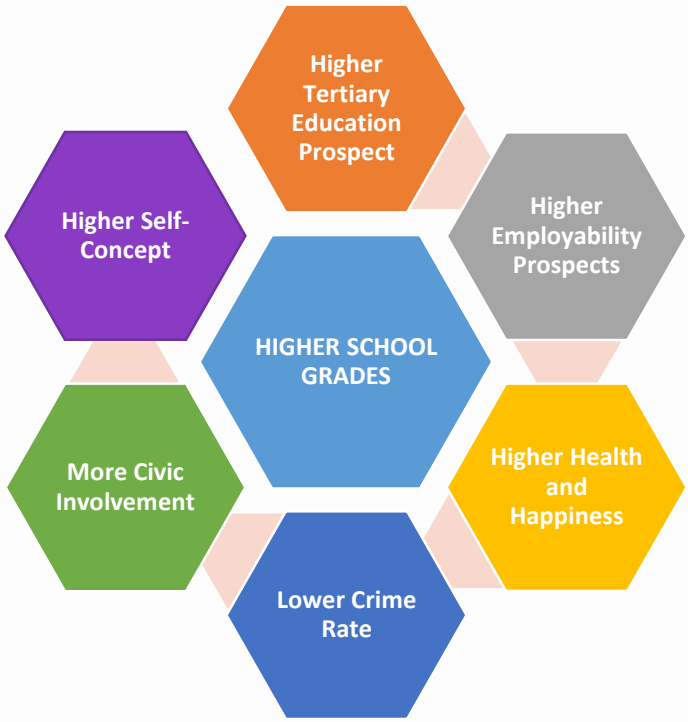
Table 3: Pooled Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
School Type (CCs)	1.75	0.22	8.00	0.00
C	2.5	0.07	35.58	0.00
R-squared	0.25	Adjusted R-squared		0.24

In this pooled regression, we have taken 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 respective years. We have taken school type as a dummy independent variable labeled as Cadet colleges (CCs) = 1 and IMCs = 0. The results of Pooled regression indicate that Cadetcolleges on average produce 1.75 higher GPAs as compared to the IMCs. This implies that the performance of CCs is better in producing good academic scores as compared to the IMCs.

People who have higher educational achievements and higher qualifications are more probable to get a job, job stability, and have diverse occupation opportunities as compared to those with lower academic achievements, better chances of promotions, and more likely to earn more (Zeidner, 1998; Tentama & Abdillah, 2019). Higher 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) at various graduation colleges and universities. Therefore, high grades in higher secondary level can assist the student in securing a place in a desired higher education institute and subject. Thus, students' HSSC scores put a substantial impact on students' career prospects by placing them in better higher education institutes and desired subjects. Additional, many government jobs also assign specified weightage to HSSC grades during the selection process.

Figure 3: Potential Social Benefit of higher academic grades



Moreover, good academic performance is also significantly associated with various positive life outcomes such as the ones who perform well in academics are more probable to obtain health insurance, are less likely to be reliant on social support, have lower chances to involved in criminal actions, manifest more civic involvement, greater engagement in charity and volunteerism, and generally more likely to be healthy and happy. Furthermore, the people with higher academic achievements are more probable to have a positive self-concept, lower depression and anxiety, higher social motivation, and lower drug abusive behaviors (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.

CASE STUDY OF CADET COLLEGE HASANABDAL

Brief History of the Cadet College Hasanabdal

Punjab Cadet College presently known as Cadet College Hasanabdal (CCH) was the origination of 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 arm 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 founding Principal.

Board of Governors

Chairman	•Honorable Governor of Punjab
Vice Chairman	•Chairman POF's board
Other Official Members	•Commissioner, Rawalpindi Division •Secretary, Finance Dept, Govt of Punjab •Secretary School, Education Dept, Govt of Punjab •Principal, Cadet College Hasanabdal
Non-official Members	•Mr. Mahfooz Rehman •Lt Gen (R) Khawar Rehman, HI (M) •Maj Gen Nauman Zakria, HI (M) •Brig (R) Dr. M. Khaliq ur Rashid Kayani •Mr. Musaddaq Zulqurnain •Lt Gen (R) Najib Ullah Khan, HI (M) •Mr. Faisal Mushtaq TI •Dr. Salma Siddiqui •Dr. Saima Hamid •Dr. Maryam Rab

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 organized. 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 Mannerism. Cadet College Hasan Abdal, along with several of its renowned sister schools, such as MCJ, Lawrence College, APS, and PAF College Sargodha, organizes 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 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.

Extra-Curricular 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 House Master, an Assistant House Master, 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 at 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 measures 4 feet in depth, while the deep section measures 13 feet in depth. Swimming events between the wings are held every year. Riding is an inevitable part of life at CCH. Those who want to gallop can hire some trained military personnel. This organization 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 Namazies at any given time. This gorgeous mosque also offers Jumma Prayers, Travih Prayers in Ramadan, and Eid Prayers in addition to every day 5 times prayers. The Cadets are housed in an eighteen-bed unit at the 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 has been made to assure impenetrable security, and more is on the way. The college has a fiber 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 Fiber 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. There are also shared printers and scanners 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 organization, but, since 1985 the institute received 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 operationalized 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 in the hands of the Punjab government. For instance, this year we requested 250 million rupees from the government but they release only 50 million. Currently, the employees in CCH are not considered as employees of Punjab government rather they are considered as employees of 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 organization are not met. More according to officials of CCH, annual government-based funding is increasing at 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-hasana program for the student has been offered with the support of its Alumni. Apart from scholarship and loans, 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. Baluchistan, Gilgit-Baltistan, Southern Punjab, and Tribal Districts are the main emphasis areas (KPK). During the summer break, the participants live on campus for two months, immersed in the vibrant life of 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 Baluchistan. This is a clear representation of the wide community of Abdalians that 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 Figures 3 and 4.

Figure 4: Delivery Approach of Cadet Colleges

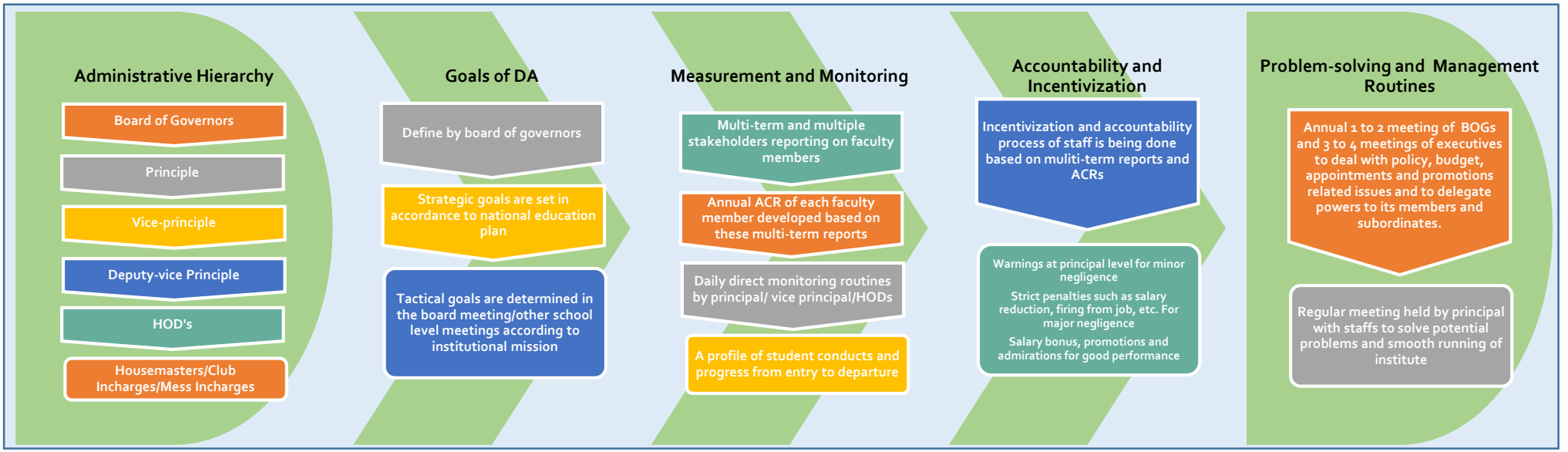
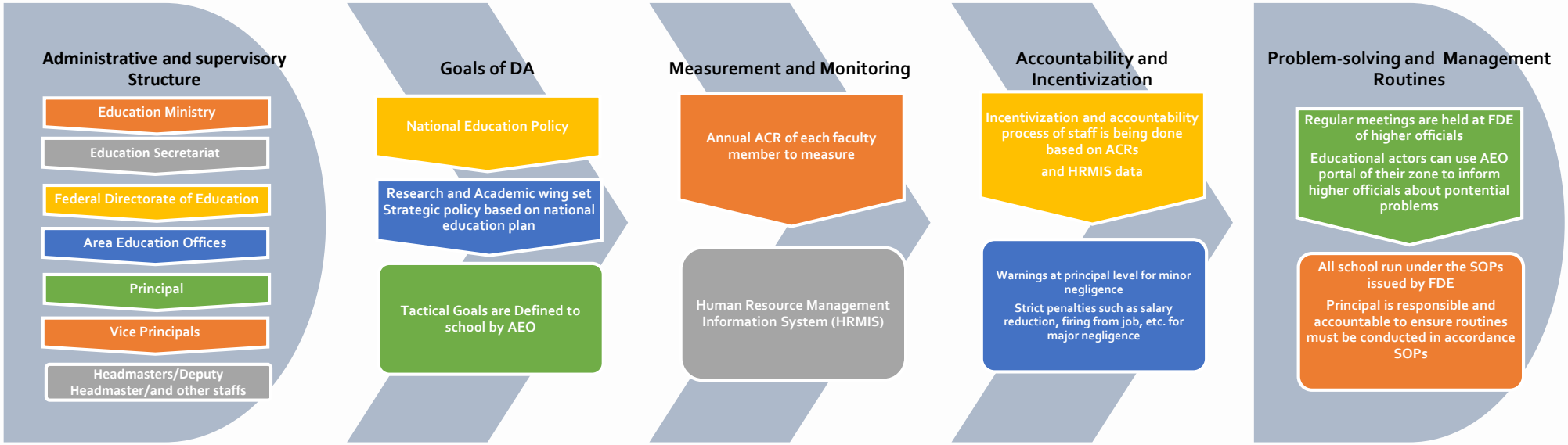


Figure 5: Delivery Approach of Islamabad Model College



DELIVERY APPROACH CADET COLLEGES

The "Board of Governors (BOGs)" is at the helm of the institution and works as the apex body of the organization. This makes cadet colleges institutional autonomy and enjoys great delegated power to form decentralized governance to regularize their campus system in their own way but following the laws of the state. BOGs are responsible for making rules and regulations and device 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 Standing Operating procedures (SOPs) under the direct supervision of the Principal and Vice-Principal. Moreover, the cadets also made contributions in 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, conducts, 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 Principle, Deputy vice-principal, Head of Academics, Head of Department, and HouseMaster. Incentivization and accountability processes are also being conducted based on these reports.

11.1 Delivery Approach of Islamabad Model Colleges

The Ministry of Education is the apex of the central body for formulating National Education Policies and coordinating with all education systems within Pakistan. Similarly, it is at the helm of the federal overall education system. Then comes the role of the Education Secretariat, who is generally concerned with the implementation of the decisions. Under Education Secretariat, many wings are working on different responsibilities. Then comes the role of 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 220,00 students, more than 9000 teaching faculty, and more or less 4450 supporting staff. Then and there, area education offices directly coordinate with institutes like IMCs in their relevant zones. The principal headed 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 coordinate with area education offices. Area education offices, defined tactical goals to schools to implement strategic goals in practical form.

Moreover, evaluation and monitoring of educational performance are being done through ACRs of each faculty member and the Human Resource Management Information System (HRMIS). Through its HREMIS, FDE can get data about *Human Resource Management, Students 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 carryout. For instant problems 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 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 will be accountable to 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, discuss the case of Cadet Colleges and subsequently of Islamabad Model Colleges.

12.1 Strengths of Cadet Colleges' Delivery Approach

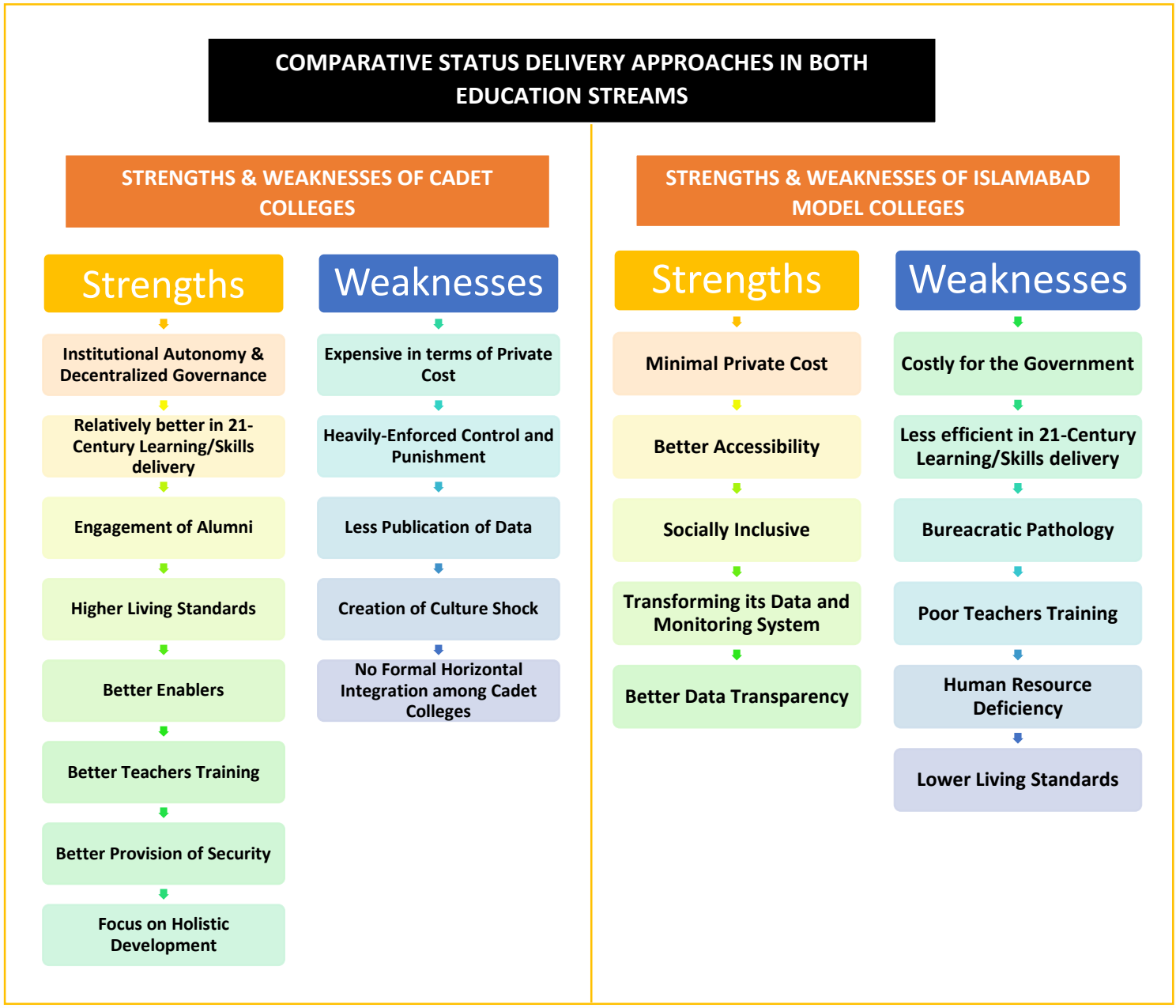
The diagrammatic representation of the strengths of the Cadet Colleges' Delivery Approach is depicted in figure 5 and discussed accordingly.

Institutional Autonomy and Decentralized Governance

According to Litvack & Seddon (1999), around the world, most governments have witnessed the downsides of centralized education service provision, primarily due to opaque decision-making, bureaucratic and budgetary inefficiency, and below-par quality and accessibility of education services, therefore, possibilities of decentralization seem to be very appealing. The process of decentralization can significantly enhance effectiveness, transparency, accountability, and responsiveness of services delivery relative to centralized systems. Decentralized education delivery can offer more efficiency, inspire participation, and, ultimately, lead to coverage and excellence. In particular, countries with higher budgetary issues can get more benefits from the potentialities of decentralization 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 prototypical examples of Institutional Autonomy & 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 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.

Figure 6: Comparative Status Delivery Approaches in Both Education Streams



Relatively Better in 21-Century Learning/Skills delivery

Cadet colleges such as CCH are going far ahead from the parallel public education streams like IMCs in the provision of 21-century learning and provision. For example, 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 time to time speech competitions to improve communication skills of students. Likewise, CCs are doing better in developing social skills among their students by organizing events such as social evenings, dinner nights, singing competitions, and other social events they are effectively working on socio-cultural skills. Additionally to improve creative and innovative skills cadet colleges have done unique initiative names as hobbies clubs that polish creative and innovative skills of cadets in various domains ranging from science, art, media, to ICT where students are practically involved

in creative and innovative practices. For instance, CCH has 13 hobbies clubs namely as 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, 4 students from the Astronomy Club represented CCH in the International Astronomy and Astrophysics Competition along with 10,000 contestants from various nations. Out of which around 1700 managed to make it to the final including two of our Cadets. In the competition, one student manage to win Bronze Award and another student won the special award. Thus, these hobby clubs are contributing well in grooming student creativity and innovative skills. More or less, these hobbies Clubs exist almost in every known cadet college of Pakistan. CCH has also a well functional Makerspace. According to the vice-principle, the well-off domestic and overseas alumni of CCH have pooled funds and established a well-established makerspace (that is equipped with modern gadgets such leaser cutting tools, 3D printers, laptops, smart screens, and many other such staffs) for the students. This is another worthwhile effort made by CCH to improve student creativity, innovative, collaborative skills. Owing to these reasons, we can conclude that cadet colleges are doing relatively better in 21-Century Learning/Skills delivery.

Engagement of Alumni

Worldwide, it has been acknowledged 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 like CCH recognized the value of engaging alumni. For instance, vice-principle expressed "Our Alumni to a great extent is intact to 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 like 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 sport and games, healthy and good quality mess, clean hostel rooms, improved sanitation, better computer and science related labs, language labs, standard form of 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 of deliverology, *there are four basic elements of delivery system strengthening: 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 at CCH expressed that "here in

CCH we live as a community as the majority of staff and all of the students reside inside the campus, thus, we developed strong relations and we work collaboratively with a sense of ownership. One of the officials state that I have internalized collaborative behavior from the campus because when I came here I 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, therefore, 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. Furthermore, we found that cadet colleges have a better system to include skillful people in their institutes. To ensure the right people for the right job they have developed merit-based selection for 18-grade and higher administrative posts. They don't rely merely on the years of service instead they select people based on interviews, performance, and systematic judgment of BOGs. However, only for grade 17 to 18 promotions are decided based on government service-based promotion criteria. Likewise, recruitment of teachers is based on: shortlisting of applicants based on their experience, academic records, and other certifications related to their skills; minimum qualification of the candidate must be equivalent to 16 years of education; a committee (that include a panel of multiple stakeholders i.e. Psychologist, Principal, HOD of the relevant subject, etc.) takes interviews from candidates. Normally, a contract of one year is given to see the teacher's adjustment to the environment and performance, then the school administration decides on whether the teacher is to be included as permanent faculty or not? For the improvement of teachers' skills, teachers' training is being conducted on regular basis. For instance, 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 are availing physical and online training from international institutions such as Cambridge. Through all these processes they are acquiring skillful people for their institute and skillful people are one of the important enablers for strengthening the delivery system. We noticed neglect in one enabler that is good data. The principle of CCH told us that since our system operates on a small scale we don't generate formal data regularly we mostly rely on a feedback basis. According to the literature, without generating and keeping such data system long-term system strengthening is extremely challenging.

Better Teacher Training

The entire process of education delivery is run by the chain of many agents functioning at different stages and the teachers are one of them. The teacher as front-line agents 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 skillful enough to efficiently execute this duty of paramount importance. Realizing this fact, societies worldwide, are putting a substantial amount of focus on teacher's training programs. Teacher training is a continuous process, that should be focused at both personal and institutional levels, to continuously update teaching skills, master fresh knowledge; press existing proficiencies forward, which in return will contribute to getting improved students' learning outcomes. In this regard, we found that cadet colleges are doing better by organizing more frequent and high-quality teachers 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-curriculum, and extra-curriculum activities. Furthermore, they are doing better in the domain of co-curriculum and extra-curriculum as they are organizing 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.

12.2 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, and we are fully admiring this fact. However, this is also a fact that even though IMCs relatively weaker quality of education as compared to CCs, they are vital for the masses because they are affordable to lower-middle and low-class people. Though CCs are trying hard to accommodate the poor class through the provision of scholarships, interest-free student loans, and other efforts, yet, they are far behind in this domain as the majority of their student still paying fees to pursue their academic journey.

Heavily-Enforced Control and Punishment

Worldwide, especially in developed societies, tough physical punishments to the student are considered to be a pre-modern world phenomenon. Many of the students who completed their study have complained that strict corporal punishments are considered to be 'normal' tools 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 in this way: "in cadet colleges, some are less and some more but every student receives tough physical punishment and mental touchers on marginal disciplinary negligences". He further asserted that "unfortunately, higher authorities in the governing body, knowingly or unknowingly I am not sure, taking no actions to restrain this bad practice". Another ex-student of 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 accepts the existence of strict punishments in CCH for disciplinary purposes. Apart from punishment, heavily-enforced control also seems to be another issue in education delivery mechanisms of cadet colleges, they remain restricted within the campuses most of the time, they can't use the mobile phone 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 student the freedom of speech is also restricted. On the other hand, IMCs are also not free of enforced control and punishments but the current and ex-students of IMCs seem to be less complaint about this phenomenon as compared to current and ex-students of CCs.

Less Publication of Data

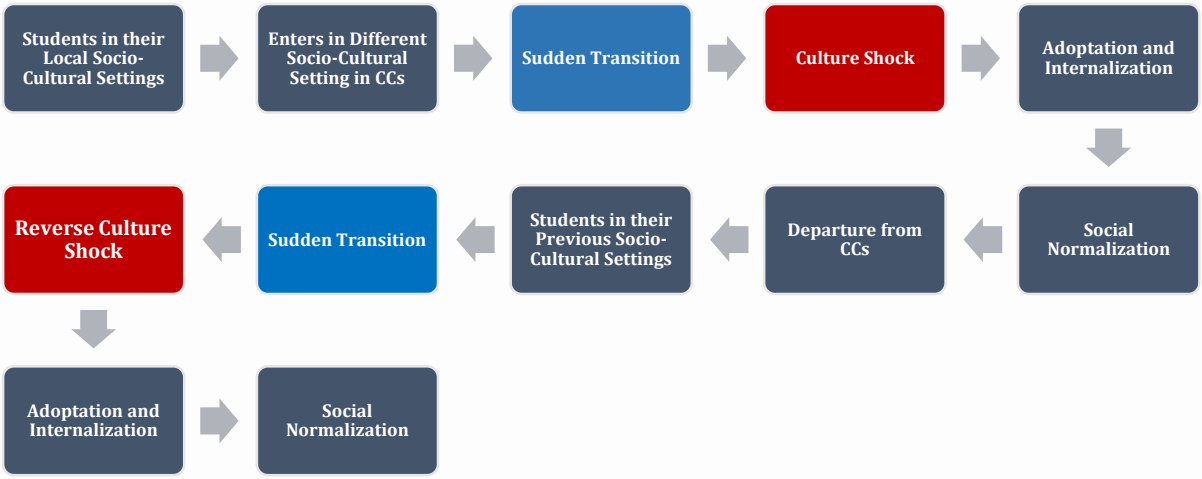
This study has not found any systematic educational data or statistical publications on cadet colleges on annual or other fixed interval bases. Some sort of information and data are available in parts and bits but are not enough to see the actual picture of CCs or perform scientific inquiries on them. It would be better if CCs will develop open databases to publicize non-confidential data about students and faculty members, grades, annual findings, enrollment, demographics details,

new interventions, and other such kinds of education. This will improve their transparency and public trust, as well as, this will facilitate research in return CCs will get new ideas and suggestions to further improve their system, as there is always room for improvements. 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 their campus environment as a result of culture shocks.

Figure 7: Flow chart of culture and reverse culture



According to the respondents, in many aspects, life inside the campuses is quite different for newcomers from the society where they were living in. There are several socio-cultural factors that combinedly and suddenly happened to a student when he enters a cadet college such as 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 he encounters 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.

Further, many students, especially ex-students also reported reverse culture shock after completing studies from cadet colleges. Reverse culture shock happens when someone internalizes and normalizes a new culture and he gets difficulties in adjusting after returning to his previous or orthodox culture (Gaw, 2000). Some of them express that they find it extremely difficult in adjusting themselves in public sector universities due to different working mechanisms, different disciplines, higher freedom and self-regulation issues, a lower standard of living in the campuses in some cases, and so on. Students from lower and/or rural backgrounds suddenly become deprived of the living standard and facilities which they were consuming at CCs. Owing to these factors students suddenly get reverse cultural shocks.

No Formal Horizontal Integration among Cadet Colleges

Horizontal integration of the organization that is 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 could be pooling of resources, retrieving more funding means, and economies of scale; increase prospects of vicarious policy learning and system strengthening, enhanced curriculum and development; exchange of skills, and much more. Even though cadet colleges in Pakistan by and large work for the same cause yet, unfortunately, this study found that there is no formal networking system among cadet colleges in Pakistan for horizontal integration, this fact is also accepted by the officials of CCH.

12.3 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 the higher cost is a must, and this study is fully admiring this fact. However, this is also a fact that even though IMCs relatively weaker in quality of education as compared to CCs, they are vital for the masses because they are affordable to lower-middle and low-class people. Though CCs are trying hard to accommodate the poor class through the provision of scholarships, interest-free student loans, and other efforts, yet, they are far behind in this domain as the majority of their student still paying 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 provision of equal access to public services; ensuring that individuals don't disconnect with their families, friends, work, community, and individual goals; and have the freedom to speech. So, 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 like 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, though 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 taking place to meet advanced data and monitoring systems. For instance, the Federal Directorate of Education (FDE) has taken initiatives such as Human Resource Management Information System (HRMIS) for the biometric attendance of teaching and non-teaching staffs; 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 resource, 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

FDE gives 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.

12.4 Weakness in the Islamabad Model Colleges' Delivery Approach

Costly for the Government

In the case of IMCs, the cost of education is loaded almost totally on the shoulders of the federal government. Based on the fact that Pakistan is facing drastic funding constraints we can highlight it as the weaknesses of the IMCs delivery approach.

Less efficient in 21st-Century Learning/Skills delivery

When it comes to 21st-century learning and skills IMCs are found to underperform in comparison to the CCs. School laboratories are considered to be a good foundation for incepting practical and innovative skills. But unfortunately, many of the students and ex-students complain about the scarcity of materials and equipment in the science laboratories. Some students even said that teachers discourage the use of laboratory items stating that these are expensive, we can't use them on regular basis. Likewise, many students complained about the non-availability of the internet, poor computer labs, and related training professionals at campuses. Likewise, many of them complain about the non-availability of sports materials. The lesser attention to 21st-century skills and concepts in the education delivery mechanism of IMC is 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 conducting new interventions and initiatives such as STEM programs, and blended-learning programs". Further, he stated that "in May 2021, a contract had been signed between the officials of Ministry of Federal Education and Google representatives for digitalization of the schools in ICT including IMCs. Besides, the government has included the development of the knowledge economy as one of the primary national goals in Vision 2025 of Pakistan. 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 organizational goals. This can stifle any rethinking and change in bureaucratic processes. According to higher official reforms and new initiatives to improve the delivery mechanism don't fully implement 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 is not fully reached to target populations or students. He exemplified when Dr. Ishrat Hussain think of merit-based promotions for all civil servants beyond grade 17 posting via special tests and performance, as usual, this reform proposal aroused strong disapproval from the quarter

concerned. Because Pakistani bureaucracy is working comfortably without proper accountability or monitoring. For the strengthening of the delivery mechanism, the elimination of bureaucratic pathology is the much-awaited reform.

Poor Teachers Training

According to a higher official of FDE 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, CCs conduct proper aptitude tests before hiring a teacher and then 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. degree from open/virtual universities or other universities with poor professional records. Many universities can't train school teachers properly yet they are training them and then giving them degrees. Furthermore, he also maintained that I have seen through my professional service that when new initiatives or interventions are introduced by the governments, most of them remained unsuccessful because the current pool of teachers is not competent enough to deliver on those initiatives. It is beyond any doubt that without high-quality teachers training educational goals cannot be achieved because they are the front-line agents of the delivery system.

Human Resource Deficiency

This study has also traced many complaints about deficiency of human resources such as there are many schools which are running without principals, some school have teachers' shortage, others have no computer and science in charge[4].

Lower Living Standards

Other issues in the delivery system include that teachers and students were not satisfied with living standards. They showed their dissatisfaction about bad toilet conditions, weak internet conditions, the inadequacy of on-campus canteen services, poor classroom facilities, lack of sports equipment, unfortunate conditions of computer and science labs.

[4] The complains on shortage of human resources are also available at: http://www.fde.com.pk/profile/

CONCLUSION

In this study, we tried to assess the Islamabad Model Colleges and Cadet Colleges on three dimensions: in producing earning benefits, in producing better academic grades, and in getting things done. For this purpose, we applied a mixed-method approach to compare both streams of education. This implies that this study has approached the research problem from both quantitative and qualitative dimensions. In the quantitative domain, we covered 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 has shown that investment in both streams is beneficial for the economy in the long run. However, considering the cost to the government only, the cadet colleges are producing more benefits than Islamabad Model Colleges, while considering the overall cost (including cost to the government, private cost, and opportunity cost) Islamabad Model Colleges are slightly ahead of cadet colleges not because higher-earning but because of lower private cost. On the other hand, Pooled regression analysis showed that Cadet colleges are 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, however, in the last few years FDE has taken some admirable steps to strengthen its education delivery system.

RECOMMENDATIONS OF THE RESEARCH

- 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.
- This research has witnessed 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 so as to allow:
    - Research organizations 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 decentralized governance and institutional autonomy. Therefore, the administrative and management responsibility, as well as the power of principals in IMCs, should be increased. It will improve institutional autonomy, accountability, and monitoring processes as principals have 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 skillful teachers such intervention 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. degree from open/virtual universities or other universities with poor professional training. Many universities can't train school teachers properly yet they are training them and giving them degrees. Furthermore, he also maintained that I have seen through my professional service that when new initiatives or interventions are adopted by governments most of them remained unsuccessful as teachers are not that competent to deliver on those initiatives. It beyond any doubt that without high-quality teachers 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 kids in the cadet colleges, the student's scores are always confounding in the presence of selection bias i.e., parental effect or home background effect and motivation. So, 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 specialized autonomous residential institutions that focus on imparting holistic education to young learners of secondary and higher secondary levels following the English version of the national curriculum. CCs also emphasize extra-curricular and co-curricular activities. The aim of the cadet colleges is special schools and colleges which run directly under the supervision of the armed forces and aims to produce students capable of leading the country and acting as skilled Army Officers. Contrary, the aim of public schools is to educate the masses, so the aim is different thus comparing the parallel streams would be a bit normative.
- Cadet colleges are quite expensive – though some are affordable to middle-income families – and their tuition fees increase significantly for senior classes. This is because cadet colleges offer superior boarding and lodging, spacious playgrounds, well-equipped libraries and laboratories, a wide range of extracurricular activities like swimming, football, etc., and faculty with advanced degrees. Additionally, there are other costs, such as the cost of producing European clothing coats, shirts, trousers, boots, socks, and caps that contribute to their elitist status. On the other hand, the public colleges are less expensive, and the extracurricular activities are quite low, so we only lift to comparison on a price-to-price basis.

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APPENDIX

Structured Interview Questions For Actors Directly Involved in Delivery Mechanism		
Name		**Age**
Institution:		**Position/role:**
How and why was this person selected as an informant?		
PART (1)		
Q1. Which institutionalized unit (any apex or central body i.e. a directorate, a Secretariat or a board) regulate structured processes (the process through which the apex body vertically integrate and coordinate 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 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 2500 schools, establishing of 5 cadet colleges in Punjab, contracting with Microsoft company for I.T training, increasing the number of libraries to Middle to 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 of gathering (e.g. surveying monthly or annually) and reporting information (periodic reports such as monthly, quarterly, annually based on prioritized indicators) about the progress and performance of divisions, districts, teams, schools, and/or actors and 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. How the accountability and incentives system is being done? What kind of incentives and sanctions (i.e. bonus/special cash awards/promotions and firing/poor ranking/warnings/salary deduction, etc) are used to strengthen the delivery mechanism? If possible share some exemplary cases, and some manuscripts that explain the process?

PART (2)

Q6. Which of the following 21st-century skills and Learning themes are part of your short-term and long-term goals?

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, & Entrepreneurial Literacy
○ Communication	○ ICT Literacy	○ Social and Cross-Cultural Skills	○ Civic literacy
○ Collaboration		○ Productivity and Accountability	○ Health literacy
		○ Leadership and Responsibility	

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.

Q8. How do management routines focus on your afore-selected 21st-century skills/Learning themes?

Q9. How does the accountability and incentives system focus on your afore-selected 21st-century skills/Learning themes?

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?	
Semi-Structured Interview Questions For Employers	
Flexibility and Adaptability	***Adaptability*** *is an ability to adjust with 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 admirations, 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 tend to be variegated*
Q1. Based on your observation and experience, usually between the students of IMC and CC who are more flexible and adaptable to the work environment? Also, discuss the personal experiences and reasons that resonate with your stance.	
Initiative and Self-Direction	*Managing Goals and Time: Effective utilization 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 IMC and CC who are more initiative and self-Directed in the workplace? and 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, 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 IMC and CC who have more Social and Cross-Cultural Skills in the workplace? and discuss the personal experiences and reasons that resonate with your stance.	
Productivity and Accountability	***Managing Projects:*** *Being skillful 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 multitasking; 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 IMC and CC who are more Productive and Accountable in the workplace? and discuss the personal experiences and reasons that resonate with your stance.	

Leadership and Responsibility	*The utilization 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.*
Q4. Based on your observation and experience, usually between the students of IMC and CC, who are better at Leading and taking Responsibility in the workplace? and 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 Higher Secondary Education and how?	
Q2. To what extent your educational institute has polished your Critical thinking and problem-solving skills at Higher Secondary Education and how?	
Q3. To what extent your educational institute has polished your Communication skills at the Higher Secondary Education level, and how?	

Q4. To what extent your educational institute has polished your Collaboration skills at the Higher Secondary Education level, and how?	
Q5. To what extent does your educational institute has propagated Information literacy in you at Higher Secondary Education and how?	
Q6. To what extent does your educational institute has propagated Media Literacy in you at Higher Secondary Education and how?	
Q7. To what extent does your educational institute propagate ICT literacy in you at Higher Secondary Education and how?	
Q8. To what extent does your educational institute develop Flexibility and adaptability skills in you and how?	
Q9. To what extent did your educational institute has developed you to become an Initiative and self-directed person and how?	
Q10. To what extent does your educational institute has developed your Social and cross-cultural skills and how?	
Q11. To what extent does your educational institute has developed your productivity and sense of accountability and how?	

Q12. To what extent your educational institute has developed your Leadership and responsibility and How?	
Q13. To what extent your educational institute has propagated Global awareness in you at Higher Secondary Education and how?	
Q14. To what extent your educational institute has propagated Financial, economic, business, and entrepreneurial literacy in you at Higher Secondary Education, and how?	
Q15. To what extent your educational institute has propagated Civic literacy in you at Higher Secordry Education and how?	
Q16. To what extent your educational institute has propagated Health literacy in you at Higher Secondary Education and how?	
Q17. To what extent your educational institute has propagated Environmental literacy in you at Higher Secondary Education and how?	