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Quality and Standardization: A Twin-Dilemma of Public Examinations at Higher Secondary School Level in Pakistan

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MESSAGE OF
Prof. Ahsan Iqbal
Federal Minister, Ministry of Planning, Development and Reform

Qualitative aspects of education in Less Developed Countries (LDCs) lagged behind considerably due to limited fiscal jacket stitched with primary focus on quantitative progression of education to meet universal targets. Therefore, these countries could not tailor and train human capital with desired skills and level of productivity. In order to seize the situation, the Planning Commission of Pakistan as envisaged in its vision 2025 called for immediate departure from traditional to a meaningful educational system to promote creativity and critical thinking. Apart from enhanced fiscal allocation, a set of structural reforms like establishment of National Curriculum Council to revisit existing curriculum in-line to cater required the skills for 21st century, determination of minimum educational standards, extension of gizmos and gadgets of cutting edge technology to improve pedagogy and modernization of examination system for valid and reliable results across various examining bodies of the country, etc have been introduced. Apart from transformation of Federal Board of Intermediate and Secondary Education (FBISE), Islamabad as model board of international standards for other boards of the country to follow, Planning Commission of Pakistan also entrusted FBISE to design a comprehensive research study to address the twin dilemma of quality and standardization of public examinations' output at higher secondary school level in Pakistan. Report in hand empirically testify glowing variation in question papers at intra-and-inter board levels; Overall low performance of students during entry test in relation to their performance in terminal board examination and expectations of institutions of higher learning; weaker role of majority of examining bodies particularly working in thickly populated areas; and, non-standardized examination output across the country. Findings of the study are an eye opener for all stakeholders and reiterate the growing realization and efforts at federation level to improve the quality of examination system by departing from rote-to-higher order testing skills examinations across the country especially when 28 out of 32 examination boards are under the administrative control of respective provincial/area governments in Pakistan.

I am pretty confident that this effort is a right step in right direction envisaging the vision 2025 of Federal Government towards attainment of required 21st Century skills. I wish FBISE to prosper yet more in its educational assessment achievements.

MESSAGE OF
Engr. Muhammad Baligh ur Rehman
Minister of State, Ministry of Federal Education and Professional Training

In this era of globalization, the knowledge and skill required to cater the needs of 21st Century require more focus on creativity, innovation, critical thinking, problem solving, collaboration, information & IT literacy and personal & social responsibilities. Educational system - a triangular phenomenon consist of curriculum, pedagogy and examination system. These three components are indispensable and mutually inter-linked with role of examination system as wash back effect on the whole educational system in different ways and at different stages. Generally, teachers and students align their teaching learning material and processes in accordance with what will be examined. However, co-existence of multiple but poorly coordinated examination bodies meant for external assessment at secondary and higher secondary levels stitched with sundry test designing at intra-and-inter subject levels; high quotient of questions of low cognitive levels; and, non-standardized examination output as identified by this research report are the real shortcoming of our examination system.

Non-standardized examination output of public examination system in Pakistan has compelled the employers and institutions of higher learning to opt for alternate tests in recruitment and admission to their undergraduate programs, respectively. This research endeavor is first of its kind and its findings are highly appreciated by IPEMC during its 10th meeting held from May 24-25, 2017 and Ministry of Planning, Development and Reform with anticipated far-reaching affects at sub-national and national levels to help frame new region specific policy matrices to improve and standardize inland examination system. I must also acknowledge and place on record the appreciation for sincere efforts of Chairman FBISE and his team for initiation of comprehensive structural reforms program envisaging the vision of Federal Government to improve the quality of examination system by departing from rote-to-higher order testing skills/examinations and sharing of facilities and expertise with other boards of country for overall improvement and standardization of examination system.

ACKNOWLEDGMENT

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Sincere efforts of absolutely superb colleagues - Brig. Abdul Khalique of APS who helped in decomposition analysis of question papers; Mr. Aqeel Imran who managed entire process of data handling through consistent and indefatigable efforts; Mr. Muhammad Sarwar for his continuous participation in each step; and, every member of my personal staff who always cheerfully served coffee and meals during the long working hours are also acknowledged.

Grateful thanks are expressed to the followings for provision of valuable data to materialize this research endeavor requested vide GF.II(22)/FBISE/ADMN/3236 dated August 23, 2016 and February 17, 2017 *(Annex-I)*

Sr. No.	Vice Chancellors/Rectors
1	University of Health sciences, Lahore
2	National University of Medical Sciences (NUMS), Rawalpindi
3	Lahore University of Management Sciences (LUMS), Lahore
4	Federal Medical and Dental College, Islamabad
5	Khyber Medical University, Peshawar
6	Jinnah Sindh Medical University, Karachi
7	University of Engineering and Technology (UET), Lahore
8	University of Engineering and Technology (UET), Peshawar
9	National University of Sciences & Technology, H-12, Islamabad
10	International Islamic University (IIU), Islamabad

Chairmen/ Heads of Boards of Intermediate & Secondary Education
Abbottabad, AJK Mirpur, AKU -EB, Bahawalpur, Bannu, Dera Ghazi Khan, Dera Ismail Khan, Faisalabad, Gujranwala, Hyderabad, Karachi, Kohat, Lahore, Larkana, Malakand, Mardan, Mirpur Khas, Multan, Peshawar, Rawalpindi, Sahiwal, Sargodha, Sukkur, Swat

Individual identity of examining bodies have been concealed objectively to remain focus on the issue of non-standardized examination output. However, any desirous examining bodies can officially request for its exact rank from amongst the group or all examining bodies. Feedback (comments/suggestions) is encouraged for further improvement and may be shared electronically (ikram@uaar.edu.pk), if any!

May, 2017

ABSTRACT

Desired but ignored qualitative attributes of educational assessment in Pakistan have always been a matter of great intellectual concern. Apart from sub-standard quality of high stake examinations; non-standardized examination output of multiple examining bodies is another serious concern for employers in recruitment, universities for admission and policy makers in national bench marking of educational system. Research is based on multi-source primary data extracted by decomposing administered question papers in terms of proportionate share of test items of various cognitive levels and performance score(s) of each element of study in higher secondary school examination and subsequent entry test conducted by professional universities for admission to their undergraduate program. Decomposition analysis show an overall vivid inconsistency of varied extent in composition of question papers with about half the quotient of question items of higher cognitive levels when compared with an international foreign examining body operating in Pakistan. Varied and visible inconsistency of reduced performance up to 47.42 percent is found in students' achievement during entry test in relation to scores obtained in the examination of higher secondary school. Lowest Mean Covariance (MCV) in the students' achievements is found for those who passed their higher secondary examinations from examining bodies with nation-wide jurisdiction, followed by boards of Punjab, Khyber Pakhtunkhwa and Sindh provinces, respectively. Similar but marginally diverse pattern is observed when analysis is carried out at inter-region, intra-group and subject level for different group(s) of examining bodies. Degree of association in achievement of higher secondary school examination and the entry test measured by correlation and its coefficient of determination ranged from 0.6796 - 0.0071 points, suggesting varied and relatively weaker role of examining bodies in majority of cases.

Keywords: *sub-standard and non-standardized public examinations; cognitive levels: higher secondary level; entry test, Pakistan*

Chapter 1

INTRODUCTION

1.1 Background and Understanding

Owing to the importance of education as way forward to absorb modern technology and develop capacity for self-sustaining growth and development, the Governments of Less Developed Countries (LDCs) are striving to allocate increased resources from within limited fiscal jacket, primarily for quantitative expansion of education to cater the ever growing needs of population in juxtaposition with support of private sector. During this progression, qualitative aspects lag behind considerably, resulting varied and sub-standard extension of this important service with downwardly sliding social marginal returns and complications in matching in-house talent with growing needs of the market. This results in dissatisfaction amongst different stakeholders in general and parents and students in particular about the existing system which induce them to look around for alternate sources. Pakistan is not exception to it.

Education system is a triangular phenomenon - curriculum, pedagogy and examination system. These three components are indispensable and mutually inter-linked. Mutual instructiveness and harmony amongst these with role of examination system as wash back effect (in different ways and at different stages) on the whole educational system is pivotal (Alderson and Wall, 1993; Cheng, 1997; Kellough and Kellough, 1999; and, Zhang *et al.*, 2014). Many of the studies carried out internationally find a very close relationship between examination systems and the outcomes of teaching / learning processes. It is widely believed that nature of assessment (dynamic/static) drives teaching quality and cultivate students' creativity and learning ability. Nature of test (s)/examination(s) shape teaching learning material and processes. According to these studies, students align their learning in accordance with what will be examined and the teacher decides what should be teaching learning material and processes, if tests are designed scientifically. Critics are of the view that more an examination is valid and reliable, its impact is expected to be more on how the teacher teach even at expense of learners understanding, non-integration of life skills, selective study, etc. than how the student learn from assessment pattern (Crooks, 1988; Trigwell and Prosser, 1999; and Shepard, 2000), as discussed and cited by Havnes, 2004 and concluded by Boit *et al.*, 2012. Therefore, an examination system is a powerful instrument which triggers efforts of both teacher and students to improve learning and also counteract shortcomings of curricula and pedagogy as positive wash back effect contrary to critics view point.

1.2 Rationale of the Study

In Pakistan, education system is divided into five stratums starting from primary school (Year I-V) to elementary/middle school (Year VI-VIII), high school (Year IX-X), higher secondary school/college (Year XI-XII) and university degree programs (Year XIII-onward). Examinations and assessment are an integral part of pedagogy for promotion to next classes. Public Examinations

in Pakistan at grade 5th and 8th are held both internally as well as externally by concerned Education Departments in different provinces/areas of the country while such examinations at grade 9th to 12th i.e. Secondary School Certificate (SSC) and Higher Secondary School Certificate (HSSC) are held externally across the country by the respective board(s) (Khattak, 2012).

In Pakistan, there are 29 examination boards termed as "Board of Intermediate and Secondary Education" (BISEs) responsible to conduct examinations at Secondary and Higher Secondary School levels for the purpose of promotion and certification. Amongst these, 27 BISEs are conducting examinations both at SSC and HSSC levels while two BISEs of Karachi are responsible to conduct SSC and HSSC examinations separately. Besides, there are three technical boards offering education at SSC and HSSC levels in areas of technical education. In addition to these 32 inland examining bodies, foreign examining bodies like Cambridge International Examination, Pearson Edexcel, etc. are also offering their qualifications equivalent to SSC and HSSC levels in Pakistan since 1959.

All inland examining bodies still have primary focus on quantitative progression as an indicator of their accomplishment - annual registration for an examination, success rate to prevent leakage of question papers, effectiveness to prevent the use of unfair means / cheating during examination, timely processing and declaration of results, effectiveness to reduce tabulation errors, framing and revisit of existing regulations for management of examination processes, etc. Similarly, focus of our teacher is to teach for testing to get good score by the students in an examination than learning and school to pass an examination with high grades aimed to add good name in eyes of public but at the cost of ignored required learning outcomes (Rehmani, 2003). During this pursuit, qualitative attributes of enhanced performance (validity and reliability) of an examination system have been ignored and thus have inadequate space on priority agenda of such examining bodies which is converse to important concept of modern education assessment - "evaluation is not to prove but to improve". So what we need is to stitch ignored but desired qualitative attributes in the existing examining mechanism to hedge against erosion of public trust and rebuild confidence in inland examination system. Efforts are required to make all stakeholders in general and teachers/examiners in particular to be well conversant with precise reasons for inclusion of a specific topic in a course (Students Learning Objectives - SLOs); alignment of assessments with SLOs; testing practical skills of an examinee required in field for which one is trained; orientation to problems or technology likely to be encountered by the student in the field; sensitization about expectations of a university or an employer from students and returns thereof, etc.

However, co-existence of multiple but poorly coordinated examination bodies meant for external assessment at secondary and higher secondary levels are predominated with sundry test designing at intra-and-inter subject levels; high quotient of questions of low cognitive levels; increase in incidence of repeated questions and promotion of selective studies; recommendation of single text book and setting of text book based question items; lacking training in test designing and modern

approaches of assessment to depart from rote to higher order learning skills; malpractices during examination; deficiencies in marking process, etc. are the shortcomings in examination system of Pakistan (Crighton *et al.*, 1995; and, Shah and Afzal, 2004), as discussed by Ahmad and Malik (2011) and Khattak (2012). Resultantly, public education system of Pakistan up to higher secondary school level is not delivering desired quality of education and is predominated with inefficiency and mismanagement (Benz, 2012).

In this backdrop, our examination system has reinforced in-capabilities of our education system and we are confronting at two fronts:

i) Substandard and sundry test designing with overall low quality of high stake examinations in comparison to internationally accepted standards; and,
ii) Non-standardized examination output of various inland examining bodies.

Consequently, despite high cost, the children of upper middle classes of urban localities opt for private schools well equipped with requisite resources and better learning environment, offering foreign advanced comprehensive curricula and international examination systems, flexibility in subjects, international acceptability and preference by foreign universities and employers, status icon for family, etc (Ishfaq, 2009; Ishfaq et al., 2014; and, EFA, 2015). Resultantly, there is persistent upsurge in number of Pakistanis preferring foreign education system every year leading not only to huge foreign exchange outflow but also promote future horizontal educational inequality amongst upper-middle and high income groups.

This situation crop up certain questions in minds of researchers, like: i) if our examination bodies are promoting cramming then why we are unable to depart from testing of traditional rote learning to higher-order-thinking skills to achieve desired attributes of quality?; ii) what are the expectations of a university or an employer from students and why professional educational institutions (medical, engineering and others) in Pakistan have started massive exercise of conducting entry tests for admission to their undergraduate programs despite the fact that high stake examinations at HSSC level are conducted externally by various independent examining bodies?; iii) is a student's achievement in an examination is true reflection of acquired skills or otherwise? iv) which examination body of the country has more meaningful system educational assessment at sub-national or national level?; v) why we are unable to standardize our examinations across various bodies as common measuring yardstick?; and, vi) how an individual examination body can depart from testing of traditional rote learning to higher-order-thinking skills?

To hedge against erosion of public trust and rebuild confidence in inland examination system, these concerns call for immediate attention of researchers. However, there is great dearth of literature on these issues in Pakistan's perspective. Very few published/unpublished studies cited in preceding paragraphs in context to Pakistan have used limited data, range of coverage and measures of analysis. These studies are usually confined to the data of an individual examining body or entry

test's score of a professional university without considering the nature of such pattern and trends at sub-national or national level. According to our knowledge, this research endeavor for the first time examines the qualitative aspects of question papers administered by various examining bodies and their comparison with international standards; consistency in students' performance in entry test of reputed professional universities of the country in relation to result of examining bodies at national and sub-national/regional levels; relationship amongst various correlates of consistency in performance; and, ranking of various examining bodies on these parameters at sub-national and national levels. The results are expected to provide valuable insights to help frame new region specific policy matrices to improve and standardize examination system at SSC and HSSC levels in Pakistan.

1.3 Objectives of the Study

To achieve the desired targets, the study has been designed with following objectives:

i) Comparative analysis of composition of question papers in terms of quotient of question items of various cognitive levels and their comparison with international standards;
ii) Consistency in students' performance during Higher Secondary School examinations conducted by various inland and foreign examining bodies in Pakistan and in entry tests conducted by professional universities in various regions of Pakistan;
iii) Determination of contribution of examining bodies towards actual performance of students during entry test; and,
iv) Ranking of various examining bodies at sub-national and national levels on basis of consistency in students' performance in Higher Secondary School examinations and entry test.

The document is organized into four main sections. Section 2 provides a brief discussion on the methodology (data source, issues of quality, cleaning, grouping, tabulation, and statistical measures employed). Section 3 presents the main findings and ranking of various examining bodies. A final section summarize and concludes

Chapter 2

METHODOLOGY

2.1 Universe of Study

Universe of this study is whole Pakistan and elements of study are the students who passed their HSSC or equivalent examinations from any examining body (Board of Intermediate and Secondary Education (BISEs) or any foreign examining body like Cambridge International Examinations, Edexcel, etc. recognized and equated to HSSC level by Inter-Board Committee of chairmen in Pakistan-IBCC Pakistan) and appeared in entry test conducted by various professional universities of the country for admission to their undergraduate programs during 2016.

Pakistan's federal structure reflect administrative division of country in different units, resource endowments by each unit, political representation at federal level, allocation of resources by the federal government, etc. Federation consists of four provinces (Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan), Islamabad Capital Territory (ICT), area governments of Gilgit-Baltistan (GB), Azad Jamu & Kashmir (AJ&K) and federally administrated tribal areas (FATA). Regional distribution of students' enrollment in different institutions of all regions at SSC and HSSC levels is given in Table 2.1.

Table 2.1 Regional distribution of students enrollment for the year 2015-16

Sr. #	Region	Enrollment at SSC level (9^{th}-10^{th})	Enrollment at HSSC level (11^{th}-12^{th})	Total Enrollment [Percentage]
1	Punjab Province	2049255	786968	2836223 [55.24]
2	Sindh Province	631959	407743	1039702 [20.25]
3	Khyber Pakhtunkhwa Province	496296	379964	876260 [17.07]
4	Balochistan Province	77270	5068	82338 [01.60]
5	Azad Jamu & Kashmir (AJ&K)	71037	53874	124911 [02.43]
6	Gilgit-Baltistan (GB)	25512	7775	33287 [00.65]
7	Federally Administrated Tribal Area (FATA)	33600	17006	50606 [00.99]
8	Islamabad Capital Territory (ICT)	52377	39045	91422 [01.78]
	Total	34,37,306	16,97,443	51,34,749 [100]

Source: *Pakistan Education Statistics 2015-16, AEPAM, Government of Pakistan*

"In addition to cross-regional economic and non-economic disparities due to relative size of sub-national units, accesses to the market and distance from provincial headquarters are major factors explaining disparities within each unit. Amongst the four provinces, Punjab is the largest province in terms of population (representing roughly 55 percent of the country's population) while Balochistan is largest in terms of area but smallest in terms of population (representing roughly 5 percent of the country's population). Balochistan and Khyber Pakhtunkhwa are relatively less developed in comparison to Punjab and Sindh. Further, intra-regional disparity is also noticeable within Punjab as its Southern part is relatively less developed than its Central and Northern parts. Sindh also faces

visible urban-rural bias on different socioeconomic fronts. Rural areas of Southern Punjab, Sindh and Balochistan are dominated by landlord-tenant system, resulting in concentration of wealth in a few hands" (Ali, 2016). Similar disparities also exist in quality of education.

To examine the students externally at SSC and HSSC levels, federal, provincial and area governments have established their examination boards with defined jurisdiction of each. A brief profile of various BISEs whose tangible number of students were included in sample data provided by various professional institutions/universities for the year 2016 is summarized in Table 2.2.

Table 2.2 Brief profile of sampled boards of intermediate and secondary education of Pakistan

Sr. #	Examining Bodies	Year of Establishment	Jurisdiction	Student Appeared (2016)		Student Passed Percentage (2016)		Sample Size	Rank in Terms of Sample Size
				SSC	HSSC	SSC	HSSC		
1	BISE, Bahawalpur	1978	Ad. Div. Punjab	73154	42662	75.70	57.81	1518	10
2	BISE, D G Khan	1989	Ad. Div. Punjab	71028	35353	69.31	65.33	2162	8
3	BISE, Faisalabad	1988	Ad. Div. Punjab	215663	99090	77.38	66.68	2615	6
4	BISE, Gujranwala	1982	Ad. Div. Punjab	197350	113258	75.70	51.38	2840	5
5	BISE, Lahore	1954	Ad. Div. Punjab	214711	149276	71.48	60.85	6045	2
6	BISE, Multan	1968	Ad. Div. Punjab	100162	57308	73.23	60.13	2546	7
7	BISE, Rawalpindi	1978	Ad. Div. Punjab	121981	58755	71.35	56.95	1835	9
8	BISE, Sahiwal	2012	Ad. Div. Punjab	60186	33664	73.80	57.58	1191	12
9	BISE, Sargodha	1968	Ad. Div. Punjab	76367	36850	75.10	64.85	1062	14
10	FBISE, Islamabad	1975	Pakistan	82894	58632	79.49	74.33	8951	1
11	AKU-EB	2002	Pakistan	2764	1447	95.00	93.00	202	25
12	BISE, Abbottabad	1990	Ad. Div. KPK	58796	31420	78.00	69.50	1302	11
13	BISE, Bannu	1990	Ad. Div. KPK	20532	13703	99.00	81.58	433	19
14	BISE, D I Khan	2006	Ad. Div. KPK	19719	11672	77.00	76.00	490	18
15	BISE, Kohat	2002	Ad. Div. KPK	34050	16554	77.40	80.41	590	17
16	BISE, Malakand	2003	Ad. Div. KPK	38703	20266	79.38	73.99	372	21
17	BISE, Mardan	2002	Ad. Div. KPK	60606	31551	77.40	76.33	1070	13
18	BISE, Peshawar	1961	Ad. Div. KPK	70369	49171	80.40	79.65	3739	3
19	BISE, Swat	1990	Ad. Div. KPK	31367	17233	84.00	78.00	775	16
20	BIE, Karachi	1974	Ad. Div. Sindh	---	120228	---	45.43	3218	4
21	BISE, Hyderabad	1960	Ad. Div. Sindh	66752	52497	82.74	78.80	278	23
22	BISE, Larkana	1995	Ad. Div. Sindh	42916	30760	79.16	79.00	241	24
23	BISE, Mirpur Khas	2004	Ad. Div. Sindh	30437	19322	92.38	87.10	311	22
24	BISE, Sukkur	1979	Ad. Div. Sindh	54566	39411	75.18	73.66	420	20
25	BISE, AJK Mirpur	1973	AJ & K	62276	40541	66.29	49.28	897	15

Source: *Data is obtained from respective BISE. Ad.Div. means administrative division of respective province and KPK means Khyber Pakhtunkhwa Province*

2.2 The Data

Data mainly used in the study is not only primary but also panel obtained from various professional institutions / universities of Pakistan who conducted their entry test for admission to their undergraduate programs during 2016. Data is also extracted by the experts by decomposition analysis of past three years papers of thirteen inland and a foreign examining body for selected subjects (Physics, Chemistry, Biology and Mathematics) at HSSC or equivalent level to determine the quotient of question items of various cognitive levels. Study is also augmented with the data obtained from various BISEs regarding their year of institution, jurisdiction, enrollment and output of their annual examination 2016. More specifically, data source and respective use of each is detailed as under:

i) To determine the composition of question papers in terms cognitive level of the question items, question papers of past three years administered by the 13 different BISEs of the country and a foreign examining body were decomposed and analyzed by the subject experts. Decomposition of papers was made at three cognitive levels i.e. Knowledge, Understanding and Application. Sampled boards represent nation wide participation. Possible efforts were made to conceal the identity of papers of various examining bodies to mitigate the biasness of subject experts, if any.

ii) To determine the extent of consistency in performance of students at HSSC or equivalent examination(s) of different examining bodies/boards in relation to their performance in entry test of reputed professional institutions / universities across the country who conducted entry tests for admission in their undergraduate program were requested for provision of data. Requested data of each applicant consist of two scores (marks obtained in HSSC or equivalent examination and the entry test), identification of individual examining body/board and the applicants.

iii) To prepare a brief profile of sampled BISEs, data is obtained from concerned BISE.

2.2.1 Sample size

A sample data of 1,02,679 candidates was received from 10 organizations, whereas; two organizations i.e. Quetta Institute of Medical Sciences, Chiltan Road Quetta Cantt, Balochistan and Comsats Institute of Information Technology (CIIT) Park Road, Islamabad did not provide the requisite data while compiling this report. Further, some of the institutions provided the data of all applicants while others provided the same for selected candidates only as they were not maintaining the data of all candidates in desired format.

2.2.2 Issues of data quality

During tabulation of data, following shortcomings were observed regarding data quality:

i) Missing records (one or more) of applicants in terms of marks of HSSC or equivalent examination, entry test, identification of examining body.
ii) Use of unfair means / absentee in entry test record.
iii) Duplicate records of an individual applicant(s).
iv) Other outliers like intangible number of elements from an examining body, etc

To address the above issues, data was cleaned in following two steps:

Step # 1

Incomplete and non-recoverable data of various elements of study have been discarded reducing the sample size to 76718 candidates (74.72 percent of total elements of population). This data was complete in terms of required variables i.e. identity of individual and respective examining body/board, marks obtained in higher secondary school examination and entry test of professional institution/university.

Step # 2

Review of complete data of 76718 candidates revealed inconsistency in certain records. For instance, a candidate with very high grade in HSSC or equivalent examination had very low percentage in the entry test; Non-adherence to eligibility criteria in terms of minimum required percentage of marks (at least 60%) in HSSC or equivalent examination; and, other outliers. To improve the quality of data for precision of the results, data was further refined by selection of only those candidates who had at least 60% marks in HSSC or equivalent examination and secured at least 40% marks in the entry test. Fixation of lower ceiling of 40% marks in the entry test was based on rounded figure of overall variance of Average score in both at HSSC an Entry Test of selected sample. Sample size was further reduced to 46276 candidates i.e. about 45 percent of initially received data. Distribution of sample in terms of data source is summarized in Table 2.3.

Table 2.3 Source and contribution of sampled data

Sr. #	Data Source	Initial Sample Size	Final Sample Size [Percentage share]
1.	Federal Medical and Dental College, Islamabad	102	101 [0.22]
2.	International Islamic University (IIU),Islamabad	5445	2522 [5.45]
3.	Jinnah Sindh Medical University, Rafiqui H.J Shahee d Road, Karachi	5216	2721 [5.88]
4.	Khyber Medical University Peshawar	27573	4454 [9.62]
5.	Lahore University of Management Sciences (LUMS), D.H.A, Lahore Cantt.	3022	702 [1.52]
6.	National University of Medical Sciences (NUMS) The Mall, Rawalpindi	52393	28895 [62.44]
7.	National University of Sciences & Technology, H -12, Islamabad	1500	1498 [3.24]
8.	University of Engineering and Technology (UET) Lahore	1933	1711 [3.70]
9.	University of Engineering and Technology (UET) Peshawar	2205	382 [0.83]
10.	University of Health Sciences Khayaban-e-Jamia Punjab, Lahore	3290	3290 [7.11]
	Total	**102679**	**46276**

Distribution of final sampled data of various examining bodies is detailed in Table 2.4.

Table 2.4 Distribution of sampled data over examining bodies

Sr. #	Examining Bodies/Boards	Sample Size	Percentage Share	Rank
1.	AKU-EB	202	0.44	26
2.	BIE, Karachi	3218	6.95	4
3.	BISE, Abbottabad	1302	2.81	11
4.	BISE, AJK Mirpur	897	1.94	16
5.	BISE, Bahawalpur	1518	3.28	10
6.	BISE, Bannu	433	0.94	20
7.	BISE, Dera Ghazi Khan	2162	4.67	8
8.	BISE, Dera Ismail Khan	490	1.06	19
9.	BISE, Faisalabad	2615	5.65	6
10.	BISE, Gujranwala	2840	6.14	5
11.	BISE, Hyderabad	278	0.60	24
12.	BISE, Kohat	590	1.27	18
13.	BISE, Lahore	6045	13.06	2
14.	BISE, Larkana	241	0.52	25
15.	BISE, Malakand	372	0.80	22
16.	BISE, Mardan	1070	2.31	14
17.	BISE, Mirpur Khas	311	0.67	23
18.	BISE, Multan	2546	5.50	7
19.	BISE, Peshawar	3739	8.08	3
20.	BISE, Rawalpindi	1835	3.97	9
21.	BISE, Sahiwal	1191	2.57	12
22.	BISE, Sargodha	1062	2.29	15
23.	BISE, Sukkur	420	0.91	21
24.	BISE, Swat	775	1.67	17
25.	Foreign Examining bodies	1173	2.53	13
26.	FBISE, Islamabad	8951	19.34	1
	Total	**46276**		

Similarly, when we grouped the examining bodies on the basis of regional jurisdiction basis, five groups are formed. Distribution of sample data in each group is summarized in Table 2.5.

Table 2.5 Distribution of sample at regional jurisdiction level

Sr. #	Region	Sample Size	Percentage Share	Rank
1.	Sampled examining bodies with all Pakistan Jurisdiction, including foreign, FBISE and AKU-EB	10326	22.31	2
2.	Punjab	21814	47.14	1
3.	Khyber Pakhtunkhwa	8771	18.95	3
4.	Sindh	4468	9.66	4
5.	AJK Mirpur	897	1.94	5
	Total	**46276**		

2.2.3 Statistical analysis

Following Statistical techniques have been employed to analyze the data:

2.2.3.1 Average mean

Average mean is calculated through following formula:

$$\text{Mean} = \frac{\sum (x_1 + x_2)}{n}$$

2.2.3.2 Standard deviation

Standard Deviation is calculated through following formula:

$$\text{Standard Deviation } (s) = \sqrt{\frac{\sum x^2}{N} - \left(\frac{\sum x}{N}\right)^2}$$

2.2.3.3 Co-efficient of variation

Co-efficient of Variation is calculated through following formula:

$$CV\,(\%) = 100 \times \frac{s}{Mean}$$

2.2.3.4 Mean co-efficient of variation

Mean co-efficient of Variation is calculated through following formula:

$$\text{MCV} = \frac{CV(\%)}{n}$$

2.2.3.5 Co-efficient of correlation

Co-efficient of Correlation is calculated through following formula:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{\left[n(\sum x^2) - (\sum x)^2\right]\left[n(\sum y^2) - (\sum y)^2\right]}}$$

2.2.3.6 Determinant of correlation

Determinant of Correlation r2 is calculated by taking square of Co-efficient of Correlation.

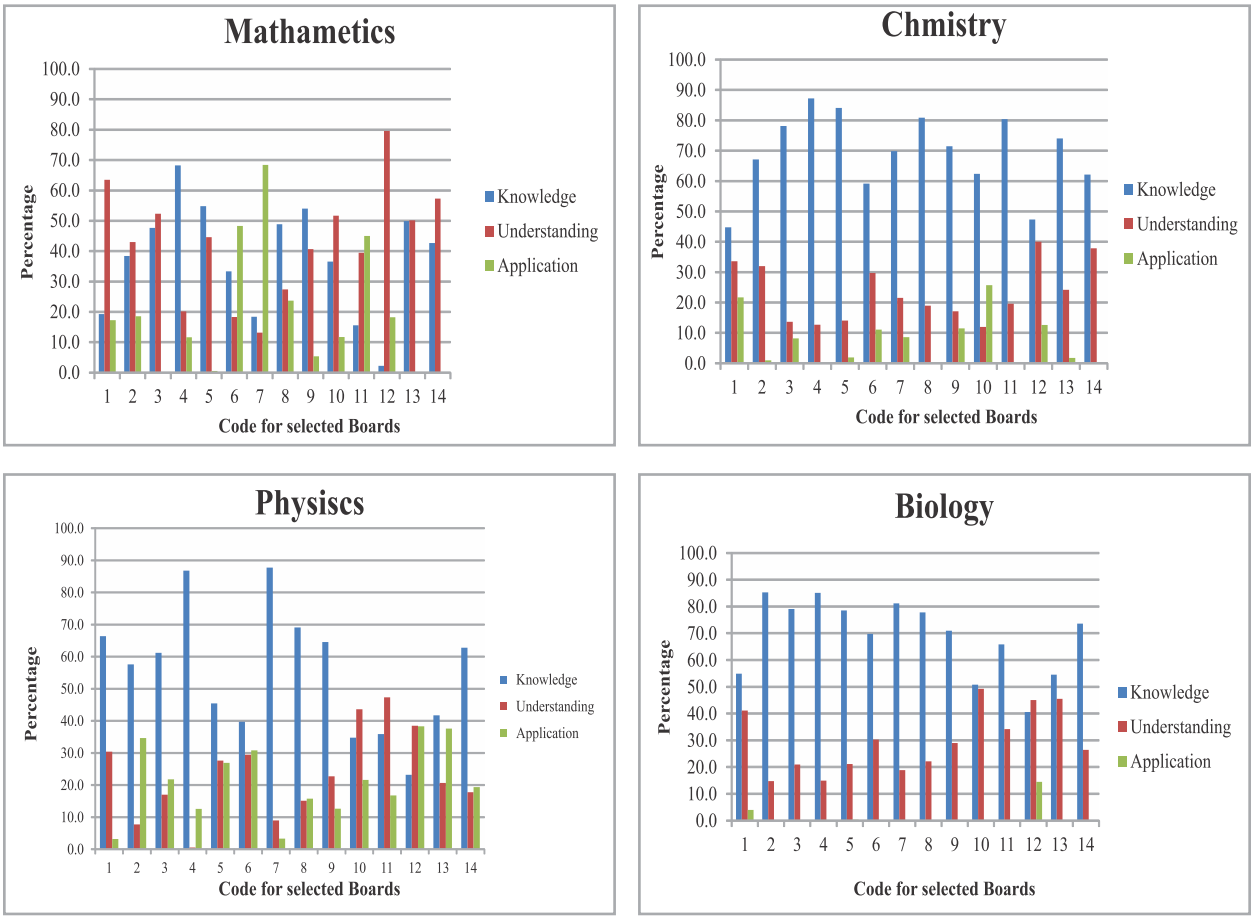
RESULTS & FINDINGS

In pursuance to the objectives of the study, data was analyzed to determine quotient of question items of different cognitive levels in the question papers of various examining bodies for selected subjects; consistency in students' scores during examination at higher secondary school level or its equivalent examination and the entry test conducted by a professional university; degree of association between the marks obtained by the students of an examining body and in the entry test; determination of performance of students in different groups of subjects; and, across various segments (quartiles) of population, etc. Results and main findings of the study are as under:

3.1 Decomposition Analysis of Question Papers

Graph 3.1 depict the quotient of question items of different cognitive levels in the papers of various examining bodies for selected subjects.

Graph 3.1 Decomposition analysis of question papers in terms of quotient of question items of different cognitive levels



A unique fictitious code ranging from 01 to 14 have been used for different examining bodies under investigation to conceal their identity aimed to avoid any controversy as decomposition analysis

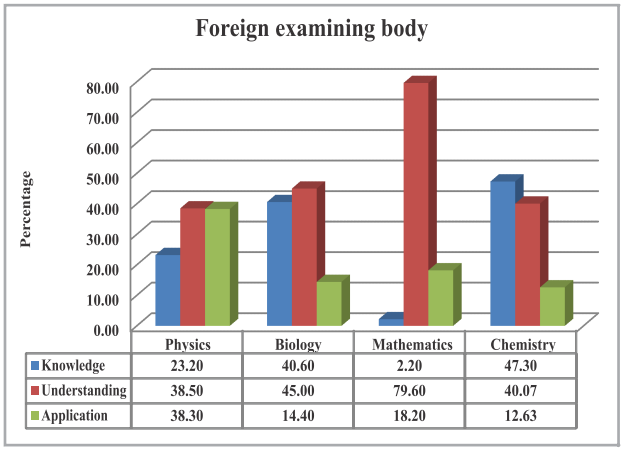
involve subjective assessment too. Decomposition analysis depicted in graph 3.1 revealed an overall irregular and non-standardized apportionment of question items (in terms of cognitive levels - Knowledge, Understanding and Analysis) in question papers of last three years of all selected examining bodies, including an international foreign examining body. Papers are vividly dominated with questions of lower cognitive levels. Further, mean of the decomposed data of the question papers for all thirteen inland examining bodies at subject level have been organized and compared with a reputed foreign examining body in Table 3.1 and Graph 3.2.

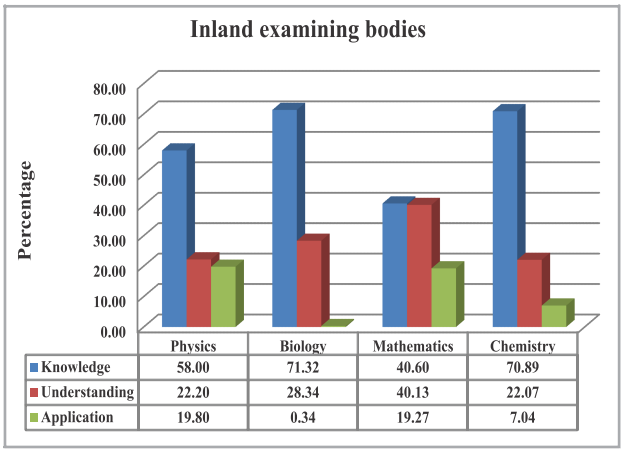
Table 3.1 Comparison of question papers in terms of average cumulative cognitive levels for all inland examining bodies with a foreign examining body

Subject	Knowledge (K)	Understanding (U)	Application (A)	Column (3+4)
Physics	58.00(23.20)	22.20 (38.50)	19.80 (38.30)	42.00 (76.80)
Biology	71.32 (40.60)	28.34 (45.00)	00.33 (14.44)	28.68 (59.40)
Mathematics	40.61 (02.20)	40.14 (79.60)	19.27 (18.20)	59.39 (97.80)
Chemistry	70.89 (47.30)	22.06 (40.00)	07.04 (12.60)	29.11 (52.70)

Source: *Data reported is extracted by the experts from decomposition of question papers of fourteen examining bodies/ boards for last three years. Data in parenthesis (.....) is for an international examining body to compare it with inland examining bodies of Pakistan.*

Graph 3.2 Comparison of question papers of inland examining bodies with foreign examining body in terms of average cumulative cognitive level





Analysis shows much lower share of questions with higher cognitive levels (Understanding and application) for Physics, Chemistry and Biology in comparison to Mathematics both for inland and foreign examining body. Large portion of questions based on knowledge suggest promotion of rote learning in our educational system. Quotient of question items of higher cognitive levels is almost double in case of foreign examining body when compared with inland examining bodies which calls for immediate corrective measures to enhance quality of inland examinations and overall education system for international compatibility. However, co-existence of multiple and poorly coordinated examining bodies in Pakistan are real obstacle to depart from rote-to-higher learning

skills. Under this situation an individual examining body is resistant to have solo flight to depart from rote-to-higher learning skills as this situation may translate examination output/performance in relatively low marks and grades when absolutist criterion is used in evaluation. Similar situation has been experienced by Federal Board of Intermediate and Secondary Education (FBISE), Islamabad, Pakistan in 2007 when average pass percentage fall drastically from around 80 percent of past years to 52.04 percent for SSC with similar trend in case of HSSC (FBISE, 2007). Therefore, public pressure and serious apprehension to lose its clientage in short run are real threats for inland examining bodies to depart from rote-to-higher learning skills in prevalence of "Absolute Marking System" across the country. Thus, departure from "Absolute to Relative Marking System" can be a way-forward in the given situation to depart from rote-to-higher learning skills by an individual examining body in isolation.

3.2 Consistency in Performance

3.2.1 Students' performance of various examining bodies

Performance dynamics of students who passed their HSSC or equivalent examinations from various examining bodies and then appeared in entry tests for admission into undergraduate programs of professional universities across country are summarized in Table 3.2. Sampled data of twenty six examining bodies as detailed in Table 2.2 is classified into five groups on basis of their regional jurisdiction within the country. This classification is again aimed to conceal identity of each individual examining body to avert any negative impression relating to performance.

Analysis reveals the following key findings:

i) Relative performance of the students at higher secondary school level or its equivalent examination have been higher in comparison to entry test across all examining bodies. Range of this reduced performance in entry test is from 19.14 to 37.81 percentage i.e. variance of 18.67 percentage points which is 51.2 percent of total variations

ii) Candidates sampled from BISEs of Punjab are ahead in terms of average marks at higher secondary school level (> 80 percent except one BISE) in comparison to the students from three examining bodies with nation-wide jurisdiction but their performance in entry test remained low in comparison to students from later examining bodies. Intra-provincial inter-board variation in performance during entry test measured by percentage decrease in HSSC average mean is found highest for Sindh (18.59 percent), followed by Punjab (14.20 percent) and Khyber Pakhtunkhwa (10 percent), respectively;

Table 3.2 Consistency in students' performance of different examining bodies measured by percentage change

Sr. #	Examining Body/Board	Sample Size	HSSC Avg. Mean	Entry Test Avg. Mean	Percentage Decrease in HSSC Avg. Mean
1.	Sampled examining bodies with all Pakistan Jurisdiction, including foreign, FBISE and AKU-EB	1173	81.62	66.00	19.14
		8951	79.69	61.66	22.63
		202	76.79	57.56	25.04
2.	09 BISEs of Punjab Province	1062	82.20	63.53	22.71
		2546	83.66	64.58	22.81
		2615	83.88	63.87	23.86
		2162	83.14	63.23	23.95
		1518	84.09	63.93	23.97
		2840	82.85	62.72	24.30
		1835	79.68	60.27	24.36
		6045	84.16	63.63	24.39
		1191	85.14	62.60	26.47
3.	BISE, AJK Mirpur	897	79.59	57.07	28.30
4.	08 BISEs of Khyber Pakhtunkhwa Province	1302	76.17	54.50	28.45
		490	78.34	54.48	30.46
		1070	77.19	53.49	30.70
		3739	77.60	53.60	30.93
		590	78.24	53.66	31.42
		433	77.45	52.99	31.58
		372	76.69	52.45	31.61
		775	77.94	53.30	31.61
5.	05 BISEs of Sindh Province	278	77.90	52.81	32.21
		3218	79.16	53.53	32.38
		420	81.02	53.90	33.47
		311	79.49	55.02	30.78
		241	82.65	51.40	37.81

Pattern and consistency in performance (both in HSSC examination and entry test) is further measured using Mean Coefficient of Variance (MCV) - a measure of spread that describes the amount of variability relative to the mean.

Estimations summarized in Table 3.3 reveals the following key findings:

i) Least MCV is estimated for students who passed their HSSC or equivalent examination from two out of three examining bodies having nation-wide jurisdiction, followed by BISEs of Punjab, BISE AJK Mirpur, BISEs of Khyber Pakhtunkhwa and BISEs of Sindh, respectively. Range of overall difference in MCV of examining bodies is 12.47 percentage points which is equal to 47.42 percent of the total variation; and,

ii) Intra-provincial inter-board variation in MCV is found highest amongst the BISEs of Sindh (21.37percent), followed by Punjab (15.29 percent) and Khyber Pakhtunkhwa (11.25 percent), respectively; and,

iii) General trend of low performance during entry test as measured by Tables 3.2 and 3.3, one can safely opine that institutions of higher learning in Pakistan are more demanding in relation to what we teach and examine at secondary and higher secondary school levels.

Table 3.3 Consistency in performance of students' of different examining bodies measured by mean coefficient of variance

Sr. #	Examining Body/Board	Sample Size	MCV	Rank
1.	Sampled examining bodies with all Pakistan Jurisdiction, including foreign, FBISE and AKU-EB	1173	11.21	1
		8951	13.63	2
		202	14.67	6
2.	09 BISEs of Punjab Province	1062	13.85	3
		2546	14.09	4
		2615	14.59	5
		2162	14.72	7
		1835	14.80	8
		1518	14.84	9
		2840	14.87	10
		6045	14.98	11
		1191	16.35	12
3.	BISE AJK Mirpur	897	17.07	13
4.	08 BISEs of Khyber Pakhtunkhwa Province	1302	17.12	14
		490	18.37	15
		1070	18.53	16
		3739	18.79	18
		372	19.14	19
		590	19.19	20
		775	19.25	21
		433	19.29	22
5.	05 BISEs of Sindh Province	311	18.62	17
		278	19.57	23
		3218	19.73	24
		420	20.58	25
		241	23.68	26

3.2.2 Inter-region and intra-group students' performance at subject level

Inland examining bodies as detailed in Table 2.2 are functioning in various provinces/areas of the country as per defined jurisdiction. When grouped accordingly, five groups are formed. Sample of each group is bifurcated into two sub-groups i.e. candidates applied for admission in medical and non-medical subjects at undergraduate level. In order to assess intra-group performance of each group of examining bodies, population of each examining body was further divided into four equal parts i.e. Quartiles in descending order on the basis of percentage of marks obtained in HSSC or equivalent examination. Detailed performance (MCV) for various examining bodies (quartile-wise) is summarized in the Table 3.4

Table 3.4 Consistency in performance of students across regional examining bodies at subject level

Sr. #	Region (Sample Share)	Discipline	Sample Size	Mean Coefficient of Variance (MCV)				
				Quartile 1	Quartile 2	Quartile 3	Quartile 4	Overall (Rank)
1.	Sampled examining bodies with all Pakistan Jurisdiction, including foreign, FBISE and AKU-EB	Medical	8520	10.45	14.37	16.18	15.41	14.10 (1)
		Non Medical	1806	11.91	12.26	9.03	6.54	9.94 (2)
		Overall	**10326**	**10.70**	**14.21**	**15.49**	**13.08**	**13.37 (1)**
2.	Punjab (47.14%)	Medical	18354	8.04	13.92	17.71	18.41	14.52 (2)
		Non Medical	3460	14.88	19.42	19.45	11.04	16.20 (4)
		Overall	**21814**	**8.97**	**14.92**	**18.01**	**17.24**	**14.78 (2)**
3.	AJK Mirpur (1.94%)	Medical	766	15.98	19.40	19.93	19.06	18.59 (3)
		Non Medical	131	10.64	8.02	8.35	5.78	8.21 (1)
		Overall	**897**	**16.39**	**19.09**	**18.85**	**13.97**	**17.07 (3)**
4.	Khyber Pakhtunkhwa (18.95%)	Medical	7479	21.24	21.12	19.26	14.66	19.07 (4)
		Non Medical	1292	22.99	17.88	12.77	9.77	15.85 (3)
		Overall	**8771**	**21.44**	**21.01**	**18.61**	**13.33**	**18.60 (4)**
5.	Sindh (9.66%)	Medical	4342	19.91	20.48	20.63	19.03	20.01 (5)
		Non Medical	126	18.09	18.67	18.07	14.18	17.27 (5)
		Overall	**4468**	**19.89**	**20.38**	**20.64**	**18.84**	**19.94 (5)**
Total Sample Size			**46276**					

Estimations summarized in Table 3.4 reveal the following key findings:

i) Overall calculations of each group exhibited similar pattern i.e. least value of MCV in case of students of examining bodies with nation-wide jurisdiction, followed by the students of group BISEs of Punjab, BISE AJK Mirpur, group BISEs of Khyber Pakhtunkhwa and Sindh, respectively;

ii) Students' scores at subject level exhibited completely diverse pattern. In case of students in non- medical group, least MCV for BISE AJK Mirpur, followed by examining bodies with nation-wide jurisdiction, group BISEs of Khyber Pakhtunkhwa, Punjab and Sindh, respectively.

iii) Students from examining bodies with nation-wide jurisdiction and from Punjab clustered in first quartile performed utmost contrary to students from examining bodies of Khyber Pakhtunkhwa and Sindh in which last quartile performed better in terms of lowest value of MCV;

iv) Highest values of MCV of first quartile (medical students) for BISEs of Khyber Pakhtunkhwa and Sindh provinces shows that relative performance of their

top scorers during entry test has been poor in comparison to the students placed in their respective lower quartiles.

v) Students of non-medical field placed in last quartile across all examining bodies have least value of MCV. This suggest loss in entry test has relatively been smaller for students falling in last quartile in relation to their performance in HSSC or equivalent examination.

3.2.3 Correlation coefficient and coefficient of determination

After determination of consistency in performance, it was imperative to determine the degree of association in two scores i.e. marks obtained in HSSC or equivalent level of examinations and entry test conducted by various professional universities, using Coefficient of Correlation and Coefficient of Determination. Value of the coefficient range between zero to one (0-1). Zero means no association and one mean infinite degree of association between scores of HSSC or equivalent examination and the entry test. The value of Correlation Coefficient and Coefficient of Determination for each examining body is given in the Table 3.5. The analysis revealed the following key findings:

i) Highest value of coefficient of correlation for one examining body with nation-wide jurisdiction, followed by majority of BISEs of Punjab, Sindh and Khyber Pakhtunkhwa, respectively;

ii) Value of correlation coefficient (>0.5) shows relatively strong positive linear correlation for examining bodies with nation-wide jurisdiction and BISEs of Punjab province; and,

iii) Lower value of correlation (<0.5) and its square suggest week degree of association for remaining BISEs and tangible role of factors other than respective examining body in students' achievement during entry test.

In Pakistan, admission to undergraduate programs in medical and engineering disciplines offered by public sector universities is highly competitive in terms of merit due to extremely low/subsidized cost in comparison to the same in private sector. Therefore, immediately after HSSC or equivalent examinations, the students join specialized private tuition academies for several months to prepare for entry test which is clearly depicted by the estimations of Coefficient of Correlation and its square i.e. tangible role of factors other than respective examining body in students' achievement during entry test.

Table 3.5 Correlation coefficient and coefficient of determination

Sr. #	Examining Body/Board	Sample Size	Correlation Coefficient (r)	Coefficient of Determination (r^2)
1.	Sampled examining bodies with all Pakistan Jurisdiction, including foreign, FBISE and AKU-EB	202	0.6796	0.46186
		1173	0.6138	0.37675
		8951	0.5650	0.31923
2.	09 BISEs of Punjab Province	2546	0.6616	0.43771
		6045	0.6337	0.40158
		1062	0.6300	0.39690
		1518	0.6243	0.38975
		2162	0.6163	0.37983
		1191	0.6153	0.37859
		2840	0.6038	0.36457
		2615	0.5906	0.34881
		1835	0.4957	0.24572
3.	BISE, AJK Mirpur	897	0.3475	0.12076
4.	08 BISEs of Khyber Pakhtunkhwa Province	490	0.2272	0.05162
		1070	0.1128	0.01272
		3739	0.1113	0.01239
		1302	0.0914	0.00835
		590	0.0842	0.00709
		433	0.0465	0.00216
		775	0.0131	0.00017
		372	0.0071	0.00005
5.	05 BISEs of Sindh Province	3218	0.5422	0.29398
		311	0.4628	0.21418
		278	0.2185	0.04774
		420	0.1949	0.03799
		241	0.0735	0.00540
Total		**46276**		

Chapter 4

SUMMARY AND CONCLUSION

Review of literature revealed great dearth of relevant literature in Pakistan's perspective to address the concerns of intellectuals, academicians, employers, policy makers and other important stakeholders, like students, parents, etc. about sub-standard quality of high-stake examinations and non-standardized examination output of uncoordinated multiple examining bodies of the country at secondary and higher secondary school levels;

ii) Thus, there was dire need of a comprehensive study to address these concerns empirically. According to our knowledge, this research endeavor for the first time examines the qualitative aspects of question papers administered by various inland examining bodies and their comparison with international standards in juxtaposition to evaluate consistency in students' performance in entry test of reputed professional universities of the country in relation to result of HSSC or equivalent examinations of various examining bodies. Moreover, relationship amongst various correlates of consistency in performance and ranking of various examining bodies at sub-national and national levels are the exclusive features of this research endeavor. Results are expected to provide valuable insights to help frame new region specific policy matrices for improvement and standardization of examination system at SSC and HSSC levels in Pakistan as ultimate objective of the study.

iii) Multi-source primary data extracted by decomposing administered question papers of past three years for thirteen inland and one foreign examining body in terms of proportionate share of test items of various cognitive levels; score of each element of study in higher secondary school examination and subsequent entry test conducted by professional universities for admission in their undergraduate program in 2016; and, data from other sources was analyzed using statistical measures, like Mean Coefficient of Variance (MCV) and Coefficient of Correlation to gauge the desired attributes.

iv) Decomposition analysis of administered question papers showed an overall vivid inconsistency of varied extent in composition of question papers of various subjects for different inland examining bodies with about half the quotient of question items of higher cognitive levels (understanding and analysis) when compared with an international foreign examining body conducting its examinations in Pakistan.

v) Overall performance of students from all examining bodies have been lower in entry test in relation to the same in their performance in higher secondary school or equivalent examinations. Range of this reduced performance in entry test is from 19.14 to 37.81 percentage across various examining bodies;

vi) Intra-provincial inter-board variation in performance during entry test measured by percentage decrease in HSSC average mean is found highest for Sindh (18.59percent), followed by Punjab (14.20 percent) and Khyber Pakhtunkhwa (10 percent), respectively. It therefore, can safely be opined that institutions of higher learning in Pakistan are more demanding in relation to what we teach at secondary and higher secondary school levels.

vii) Least MCV is estimated for students who passed their HSSC or equivalent

examination from two out of three examining bodies having nation-wide jurisdiction, followed by BISEs of Punjab, BISE AJK Mirpur, BISEs of Khyber Pakhtunkhwa and BISEs of Sindh, respectively. Range of overall difference in MCV of examining bodies is 12.47 percentage points which is equal to 47.42 percent of the total variation;

viii) Intra-provincial inter-board variation in MCV is found highest for Sindh (21.37percent), followed by Punjab (15.29 percent) and Khyber Pakhtunkhwa (11.25 percent), respectively.

ix) Students' scores at subject level exhibited completely diverse pattern. In case of students in non- medical group, least MCV for BISE AJK Mirpur, followed by examining bodies with nation-wide jurisdiction, group BISEs of Khyber Pakhtunkhwa, Punjab and Sindh, respectively;

x) Students from examining bodies with nation-wide jurisdiction and from Punjab clustered in first quartile performed utmost contrary to students from examining bodies of Khyber Pakhtunkhwa and Sindh in which last quartile performed better in terms of lowest value of MCV; and,

xi) Highest values of MCV of first quartile (medical students) for BISEs of Khyber Pakhtunkhwa and Sindh provinces shows that relative performance of their top scorers during entry test has been poor in comparison to the students placed in their respective lower quartiles.

xii) Students of non-medical field placed in last quartile across all examining bodies have lowest value of MCV. This suggest loss in entry test has relatively been smaller for students falling in last quartile in relation to their performance in HSSC or equivalent examination.

xiii) Highest value of coefficients of correlation for one examining body with nation-wide jurisdiction, followed by majority of BISEs of Punjab, Sindh and Khyber Pakhtunkhwa, respectively;

xiv) Value of correlation coefficient (>0.5) shows relatively strong positive linear correlation for examining bodies with nation-wide jurisdiction and BISEs of Punjab province; and,

xv) Lower value of correlation (<0.5) and its square suggest week degree of association for remaining BISEs and tangible role of factors other than respective examining body in students' achievement during entry test.

Conclusion

Important concept of modern educational assessment "valuation is not to prove but to improve" has never been on priority agenda as evident from acute dearth of related meaningful literature in Pakistan's perspective. To empirically testify the concerns of intellectuals, academicians, employers, policy makers and other important stakeholders about twin-dilemma of sub-standard and non-standardized examination output of uncoordinated multiple examining bodies of the country at sub-national and national levels necessitated this comprehensive study. Results with glowing variation in question papers at intra-and-inter board levels with almost half the quotient of questions of higher learning order in comparison to international standards substantiate the concerns about substandard and non-standardized examination output. Overall low performance of students from across all examining bodies in entry test in comparison to the same at HSSC or equivalent examinations suggest that institutions of higher learning in Pakistan are more demanding in relation

to what we teach at secondary and higher secondary school levels. Apart from inter-provincial disparity in quality of examinations, intra-regional disparity is also visible within provinces. Amazingly, performance of boards operating in provincial capitals and major cities of various provinces predominated with urban and sub-urban population have been mediocre during the entry tests in comparison to their counterparts with larger rural participation despite the fact that allied facilities and academic opportunities in urban areas are more conducive. Possible reason for this mediocre performance might be more quotient of private institutions in such major cities with more focus on examination oriented studies than overall learning of students. Relatively weaker role of majority of examining bodies performance of students during entry test calls for immediate interventions to improve the quality of examination system. Domino effect of study validate the notion of non-standardized examination output of various examining bodies and provide good reasons for alternate tests conducted by professional universities for admission and employers in recruitment. However, validity, reliability and standardization of these alternate tests is also required to be ascertained for level playing field and fair competition amongst students from all examining bodies across the country. Growing realization at federation level to improve the quality of examination system by departing from rote-to-higher order testing skills/examinations is hindered by devolution of education as provincial chapter especially when 28 out of 32 examination boards (with exceptions of FBISE, KIU Education Board, AIOU Education Board and AKU-EB) are under the administrative control of respective provincial/area governments in Pakistan. In case of disagreement amongst the inland examining bodies at broader canvas to improve the quality of questions with increased quotient of question papers with higher cognitive levels, "who will bell the Cat" as an effort to depart from rote-to-higher order testing skills in isolation is real impasse? Apart from issues of capacity and desire to change, real apprehension in this departure is anticipated public retaliation due to low marks/grades as consequence of increased quotient of questions with higher cognitive levels and subsequent abrupt reduction in clientage for an individual board. Moving out of this vicious trap dictate bold decision but short term tenure appointment of senior most management and quality of human capital of examining bodies are the real constraints in this departure. Despite these constraints, any desirous examining body can step ahead in isolation by exploring the possibility to shift from “Absolute to Relative Marking” - a potential area for future research in Pakistan. FBISE is working on it diligently and has reiterated its commitment during Ist conference of IBCC on Examination Reforms held in January 2017 and 10th meeting of IPEMC held from May 24-25, 2017.

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"If we wish to discover the truth about an educational system, we must first look to its assessment procedures"
(Rowntree, 1987)

FBISE Structural Reforms 2014-16: A Success Story

Driving Force

Sub-standard quality of high stake examinations coupled with non-standardized examination output of various boards at secondary and higher secondary school levels as serious concern of employers in recruitment, universities for admission and policy makers in national bench marking of educational system. Ultimate erosion of public trust in inland examination system and their increased inducement to alternate examination system offered by foreign examining bodies as threat. So what we need is to stitch ignored but desired qualitative attributes in the existing examining mechanism to rebuild confidence in inland examination system and hedge against outflow of foreign exchange and reduction in horizontal educational inequality.

Major Initiatives Undertaken

FBISE is the unique examination board of Pakistan having its nation-wide and global operations in 14 different countries. Vast jurisdiction necessitated improvement in:

Sr.#	Objective	Sr.#	Objective
1.	**Remote and trouble free access to its services on one hand to cater needs of remote and far flung areas using IT tools**	2.	**Improvement in quality, reliability and transparency of its examination system through a well designed rigorous capacity building program**
3.	**Revisit of rules, processes, functions, their monitoring and periodic appraisal through defined KPIs to transform FBISE as Showcase of Good Governance for others to follow**	4.	**Sharing of developed expertise and technology with other ex amination boards of the country for improvement and standardization of examination system at national level**

To improve overall functioning in both short and long run, a well defined multifaceted holistic approach addressing academic, administrative, technical and financial aspects based on the canons of clarity, brevity, simplicity, certainty, convenience and economy have been defined and being executed coherently as summarized below:

1. ACCESS

Remote trouble-free access through Value Chain e-Solutions and One Window Operations for efficient, reliable & transparent pre-and-post examination services through:

A. Value Chain e-Solutions

i	Online Fee Payment	ii	Online Registration
iii	Online Admission	iv	Online Roll Number Slip & its Correction
v	Online Intimation of Results	vi	Online Paper Rechecking Application
vii	Online Duplicate Marks Sheet	viii	Online Application for Migration Certificate
ix	Online Verification of Documents	x	Online Application for Change of Subjects
xi	Online Verification of Doc uments	xii	Online Application for Cancellation of Result
xiii	FBISE Mobile App	xiv	SMS Alert
xv	Online Chat Room	xvi	Online Appointment with Senior Management

Online Chat Room is so effective that there is no need to visit FBISE office or to make call or write and email and wait for reply. Just visit www.fbise.edu.pk and seek the desired information directly from staff dedicated for the purpose. Online Chat Room remains responsive from 0800 - 2400 hrs during seven days a-week. Documents applied through online are sent to the client through courier services within 24 hours with electronic intimation at each step. i.e. acknowledgment of application, approval or discrepancy, postage detail etc.

B. One Window Operations

To provide prompt and trouble free access to various services of board, a state of the art One Window Cell (OWC) equipped with following facilities is serving the visitors :

i	Queue Management System (QMS)	ii	Separate Reception @ Delivery Counters
iii	KIOSK machines for self help to prepare and print applications	iv	Dedicated counters for ladies & senior citizens
v	Bank and Post-Office Counters	vi	Tuck Shop, photocopier and clean drinking water fountain
vii	Dedicated Waiting Area & Wash Rooms	viii	Dedicated Computer Work Stations equipped with Cameras for online submissions
ix	**No Concept of Tomorrow**	x	**95 percent services rendered within 30 minutes**

A Panoramic view of One Window Cell

Detail of year of deployment and n extent of use of these online services is summarized in following Table:

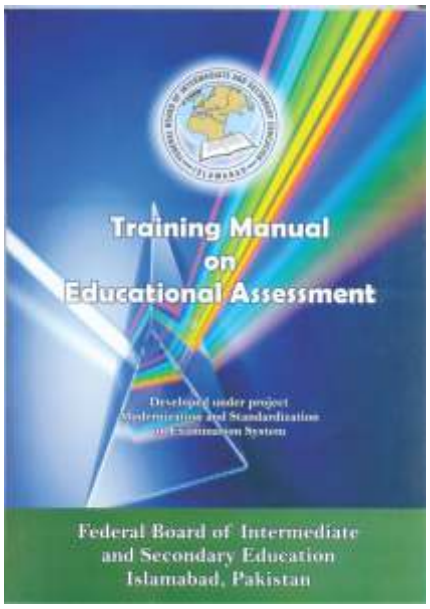
Sr.#	Facility	Year of Deployment & Users
i	Online Fee Payment	2014 / > 0.5 million
ii	Online Registration	2015 / 279031
iii	Online Admission	2015-16 / 424822
iv	Online Roll Number Slip & its Correction	2015 / > 300000
v	Declaration & Intimation of Results	2016 / > 300000
vi	Online Paper Rechecking Application	2016 / 2850
vii	Online Application for Duplicate Marks Sheet	2016 / 763
viii	Online Application for Migration Certificate	2016 / 4711
ix	Online Application for ve rification of Documents	2016 / 3466
x	Online Change of Subjects and Cancellation of Result	2017/ 285
xi	Online Appointment with Senior Management	2016 / 570
xii	Online Chat Room	2017 /117298 with >0.5 million texts
xiii	FBISE Mobile App	2017 / Unlimited user
xiv	SMS Alert	> 0. 5 million each year
xv	Visitors at One Window (Average/month)	2015 / > 18000

2. QUALITY

Improved examination system through capacity building and enabling environment to match in-house talent with growing market needs by establishment of Quality Enhancement Cell for:

I. Establishment of Training Laboratory equipped with latest electronic gadgets including 40 personal computers, printers, multi-media projector; Wide Area Networking with access to Internet facility and initiation of training programs thereafter.

ii. Development of two Training Manuals in collaboration with foreign and local experts. The documents prepared under supervision of Professor Norman Reid, University of Glasgow bring together numerous findings from carefully conducted research to provide a picture of ways forward for assessment.



iii. Instructional Guides contain revisited and elaborated SLOs of each topic at more disaggregated or micro level aimed to move from rote learning to higher cognitive levels to meet 21st century skills.

iv. Capacity Building include training of Master Trainers, Examination Staff, Educational Managers, Board Employees, etc. by the local and foreign experts from April 2016 onward participated by paper setters, markers and examination supervisory staff of FBISE, other BISEs of the country and from Deeni Madaris. All such developed facilities and expertise have been offered to all BISEs of the country for their development and standardization of examination system at national level. Detail of trainees and duration of each training completed till March 2017 is as under:

- 35 Master Trainers (Two trainings of 05 full days each - one by local and one by international experts)
- 753 Paper Setters/Markers in 24 trainings of 05 full days
- 200 Educational Managers in 06 trainings of 04 full days
- 200 FBISE Employees in 06 trainings of 03 full days

v. Departure from Pencil to Pixel through Online Examinations and E Marking (OMR/OCR & On Screen) for valid and reliable marking through qualified staff across the country as pilot test from Supplementary Examination 2017.

vi. Revisit of SLOs to elaborate each topic at more disaggregated or micro level to develop teaching guide aimed to move from rote learning to higher cognitive level by developing instructional guides in selected subjects at the first instance.

vii. Revisit of outmoded academic rules in conformity to changed scenario with focus on canon of simplicity, convenience, certainty and economy.

viii. Panel marking (compulsory & science subjects) to reduce variance amongst examiners and enhancement of monetary compensation of supervisory and assessment staff up to 30 percent to attract highly qualified and experienced persons for qualitative improvement.

ix. Reconstitution of academic committee and committees of courses as per proviso of Act and Regulations for advice on academic matters. These committees were nonexistent since 2002.

x. Development of a set of four multiple objective papers, initially for compulsory and science subjects aimed to improve transparency and fairness during examination.

Training of Master Trainers by Prof. Norman Reid, University of Glasgow

xi. Gradual Departure from rote learning to higher cognitive levels and publication of Examiners' Reports for quality of examination and guidance for teacher-students t prepare for examinations effectively.

xii. Reduction in number of sub-standard examination centers by administering papers of compulsory subjects into two groups, initially at HSSC levels.

xiii. Development Of Question Item Bank and reduction in number of sub-standard examination centers etc for enhanced validity and reliability of examinations.

xiv. GIS Mapping and Ranking of all affiliated institutions on basis of on-ground survey through a comprehensive structured questionnaire covering physical and human resources, facilities, academic environment, pedagogy, examination output etc. aimed to educate the public in choice of right institution, effective monitoring and promotion of healthy competition in qualitative improvement of overall education system. This is first ever step of this nature on the analogy of HEC.

xv. Online Parent-Students Feedback mechanism for academic audit of affiliated institutions for continuous monitoring and improvement. This is first ever step of this nature recognizing the importance of students and parents in decision making process.

xvi. Initiation of "Certification on Educational Assessment" as pre-requisite to be on roll of FBISE as Examination Staff either by professional teachers or non-teachers but highly qualified persons to be started from summer vacations 2017.

xvii. Establishment of purpose built examination centre coupled with central laboratories, library and sports facilities in different areas for fair and transparent testing in conducive environment and promotion of science and sports culture at school level where these facilities are not available, initially in ICT and gradually to other regions of jurisdiction. Tangible progress has already been made towards acquisition of land from CDA/FDE and requisite funds.

3. GOVERNANCE

i. Stringent fiscal management to divert resources from non-development to developmental expenditures

ii. For administrative discipline, developed detailed key performance indicators (KPIs) for each section of FBISE stitched with schedule/ time frame for each activity over the year quantifiable in well defined measuring units/yardstick along with mechanism of regular surveillance and periodic appraisal for

improved governance. Every section plan it's all activities to meet the defined targets well in time to improve measuring units.

iii. **Reconciliation** of Board's accounts electronically

iv. **Acquisition of development project** of Rs. 50 millions

v. **Biometric attendance system** to ensure punctuality and regularity of the employees.

vi. **Door step delivery** of application package to failed students

vii. **Digitization/computerization** of old record for efficient online services

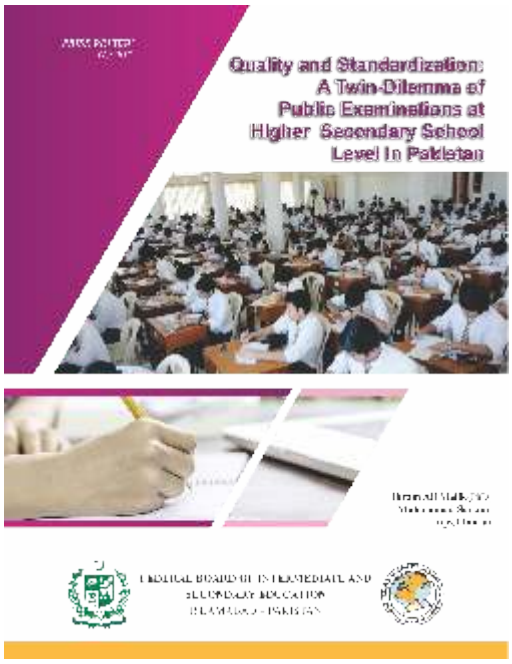
viii. **Complaint box** at One Window Cell under direct control of Chairperson.

ix. **Comprehensive Integrated Software** stitching all sections of board aimed to document every transaction, activity, transparency, prompt disposal of services, avoid duplication of work, reduction in consumption of papers, etc. Project is designed with single input and multiple output.

4. STANDARDIZATION OF EXAMINATION SYSTEM

To improve and standardize the examination system at national level, following initiatives have been undertaken:

I. **Research Study** titled "Quality and standardization: A twin-dilemma of public examinations at higher secondary school level in Pakistan" has been conducted with following rationale:



Desired but ignored qualitative attributes of educational assessment in Pakistan have always been a matter of great intellectual concern. Apart from sub-standard quality of high stake examinations; non-standardized examination output of multiple examining bodies is another serious concern for employers in recruitment, universities for admission and policy makers in national bench marking of educational system. To hedge against erosion of public trust and rebuild confidence in inland examination system, these concerns call for immediate attention of researchers. However, there is great dearth of literature on these issues in Pakistan's perspective. Very few published / unpublished studies cited in preceding paragraphs in context to Pakistan have used limited data, range of

coverage and measures of analysis. These studies are usually confined to the data of an individual examining body or entry test's score of a professional university without considering the nature of such pattern and trends at sub-national or national level. According to our knowledge, this research endeavour for the first time examines the qualitative aspects of question papers administered by various examining bodies and their comparison with international standards; consistency in students' performance in entry test of reputed professional universities of the country in relation to result of examining bodies at national and sub-national/regional levels; relationship amongst various correlates of consistency in performance; and, ranking of various examining bodies on these parameters at sub-national and national levels.

The results have provide valuable insights to precisely locate the position of each board of country in terms of defined qualitative attributes of examinations to help frame new region/board specific policy matrices to improve and standardize examination system at SSC and HSSC levels in Pakistan.

ii. Two National Conferences (in April and December 2016) of Controller of Examinations and IT heads of all BISEs were organized to weed out anomalies in function, procedures and rules amongst all boards of the country and move towards standardization through IBCC forum for which a committee of IBCC has already been constituted .

A view of inaugural session of conference of Controllers and IT heads of all BISEs

iii. Capacity Building of various boards of country through participation in training workshops of FBISE for paper setter, markers and examination staff and sharing of technology developed. To scale-up this capacity building program, all boards of the country have been offered to hold free training workshops for their paper setter, markers and examination staff by FBISE Master Trainers in their respective region. Moreover, developed training material, sophisticated software and online applications have also been offered free of cost for their modernization and standardization as per aspirations of Ministry of Federal Education & Professional Training and Ministry of Planning, Development & Reform.

iv. National Examination Reforms Committee dully participated by all provinces and area governments has been constituted by the Inter-provincial Education Ministers Conference (IPEMC) for uniform structural reforms across all examination boards of the country ***on the analogy of FBISE to improve and standardize national examination system.***

FEDERAL BOARD OF INTERMEDIATE
AND SECONDARY EDUCATION
H-8/4, ISLAMABAD

Annexure - I
Ph: 051-9269500
Fax: 051-9269560

No. GF.II (22)/FBISE/ADMN/3236 August 23, 2016

Subject: **ANALYSIS OF BOARD'S VS ENTRY TEST MARKS**

Dear Sir السلام علیکم

It is to inform your good-self that Federal Board of Intermediate and Secondary Education (FBISE) Islamabad has been entrusted with responsibility for comprehensive Structural Reforms Program for qualitative improvement of examination system across the country in general and FBISE in particular. In this pursuit, it is expedient to initially identify and compare the gaps in the marks obtained by a student in Higher Secondary School Examination (HSSC) of any Board of the country or any equivalent examination conducted by external examining bodies like Cambridge, Edexcel etc versus the marks obtained by the same student as candidate for admission in the Entry Test Examination of your esteemed organization for the year 2016.

2. In this regard, your good office is requested for necessary direction to concerned office of your esteemed organization for nomination of a focal person and provision of requisite data in the following format to enable FBISE to accomplish this task of national importance:

Sr. No.	Name	HSSC or equivalent Marks		Board/ Examining body	Entry Test Marks	
		Obtained	Total		Obtained	Total

3. Mr Aqeel Imran, Deputy Secretary (Office Ph: 051-9269529; Cell Ph: 0333-9119335 and E-mail: aqeelimran@gmail.com) is hereby nominated as focal person to liaison for this assignment.

4. Your cooperation shall be highly appreciated towards completion of this national task at an earliest.

Sd/-
(DR IKRAM ALI MALIK)
CHAIRMAN

Vice Chancellors/Rectors of Professional Educational Institutions

FEDERAL BOARD OF INTERMEDIATE
AND SECONDARY EDUCATION
H-8/4, ISLAMABAD

Ph: 051-9269500
Fax: 051-9269560

February 17, 2017

Subject: **PROVISION OF INFORMATION/DATA**

Dear Sir السلام علیکم !

It is to share that Federal Board of Intermediate and Secondary Education (FBISE) is compiling a research report focused on relative performance of students from various BISEs in the entry test(s) of various professional institutions/universities. To augment the background component of this report, a brief information/data of each BISE is required in the following format:

Sr. #	BISE	Year of establishment	Jurisdiction	Institutions affiliated			Students appeared in Annual 2015 (not of 9th and 11th)		Students passed (Percentage)	
				SSC	HSSC	Both	SSC	HSSC	SSC	HSSC

You are therefore requested to provide the requested information/data to enable FBISE to proceed further. Information requested may be sent through email (chairman@fbise.edu.pk) or by fax (051-9269560).

With Regards!

Sd/-
(DR IKRAM ALI MALIK)
CHAIRMAN

Chairmen/Directors of BISEs

FEDERAL BOARD OF INTERMEDIATE AND SECONDARY EDUCATION
ISLAMABAD – PAKISTAN

www.fbise.edu.pk