

## Dimensions of Schools' Characteristics for Promoting their Internal Efficiency

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### Abstract

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*School's efficiency depends on the availability and utilization of facilities and addressing the learning needs of the students. The internal efficiency is determined through assessment based on performance of students and taking into consideration a number of factors and inputs. The internally efficient schools demonstrate characteristics that are correlated to their success and are within the domain of school administration to manipulate. School size is ultimately linked to the students' learning outcomes, because in overcrowded classrooms more and acute discipline problems arise. Students' sense of belongingness decreases as school size increases. Moreover only a few students are benefitted from co-curricular activities in larger schools. An efficient programme of facilities, equipment and technology requires a comprehensive plan for the orderly growth and improvement of school. For this purpose the physical plant needs of the community and the resources could be determined, which can be marshaled to meet those needs. An environment of respect is essential among parents, students, and teachers for their involvement in school based-activities. This tradition is ensured when they are familiar to each other. This culture is more visible in smaller schools. Principals in small schools depend more on verbal communications and have more meetings with parents as compared to principals in large schools, which increase the internal efficiency of schools.*

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**Key words:** Internal efficiency, Inputs, Learning outcomes, School size and Discipline

### 1. Introduction

School efficiency also depends on the availability and utilization of facilities and addressing the learning needs of the students. The internal efficiency is determined through assessment based on performance of students and taking into consideration a number of factors and inputs. The internally efficient schools demonstrate characteristics that are correlated to their success and are within the domain of school administration to manipulate. Schools' characteristics like number of teachers, students' enrollment in school, the kinds and form of conveniences (furniture and equipments and lavatories) and the availability of technology have an impact on the students' achievements.

#### 1.1 Size and Growth Rate of School

School size is ultimately linked to the students' learning outcomes, because in overcrowded classrooms more and acute discipline problems arise. Students' sense of belongingness decreases as school size increases. Moreover only a few students are benefitted from co-curricular activities in larger schools. As growth rate of population increases, the enrollment enhances but the strength of staff remains the same in most of the schools in KP, which adversely affects teaching-learning process as well as school efficiency. Gustafsson and Patel (2008:25) documented about the class size of South African Schools and concluded that it certainly affects students' achievements.

Meier (1996:10) argued that schools having more than 400 learners, approximately 30% of the scholars have a sense of belongingness as compared to small schools; nearly 70% of the pupils have such feelings. Due to close contact and friendliness in small schools the scholars know and respect each other. The contact among students in large schools decreases, which creates problems of discipline, and resultantly, affect teaching-learning process. Moreover small schools are more accessible and less threatening for parents as compared to larger schools.

## **1.2 Facilities, Equipment and Technology**

An efficient programme of facilities, equipment and technology requires a comprehensive plan for the orderly growth and improvement of school. For this purpose the physical plant needs of the community and the resources could be determined, which can be marshaled to meet those needs. The school building, furniture and equipment should be properly utilized to promote the health of pupils and enhance their achievement, which improve the internal efficiency of a school. Here, a constant and continued watchfulness of the schools managers is required.

Appropriate measure of secondary level libraries and the number of books at this level must be available from librarians. Number of books purchased for the libraries is often a good indicator, which determines the motivation of students in the classroom to study and search out the assignment given to them by their teachers. Since the pattern in most under developed countries is frequently to study in, and use books in the library rather than to purchase books from bazaar. The number of students entering and using the libraries could reveal that they are fond of study and invest their time in it, which enhance their achievement and promote internal efficiency of school.

World Bank (2010:76) reported in a study about the Education System in Malawi that, in general, the availability of facilities has a positive effect on examination pass rates. Endowments, such as latrines, libraries, and electricity are positively correlated with pass rates. Electricity has the most important impact, with a marginal effect of 0.071(All other things being equal, schools with electricity show an average pass rate that is 7 percent higher than schools without) against 0.062 for latrines and 0.040 for libraries. The availability of water does not seem to be as critical because its net effect is not statistically significant.

The Government of Khyber Pakhtunkhwa (KP) emphasized too much on school buildings. This point is illustrated by more allocation for up-gradation of schools and re-construction of the bomb-blasted school buildings. However, the non-availability of teaching staff and fewer students in these schools are signs of wastage of human and material resources. A meager amount has been spent on science equipment and audio-visual aids. The access to schools is provided by constructing more buildings but the quality is provided by committed and qualified teachers and provision of facilities, equipment and instructional aides.

The National Educational Policy Pakistan (2009: 39) documented that there is a lack of libraries, computers and sparsely arrangement of co-curricular activities in most schools. It is evident from the fact that 60.2% and 63.9% of schools had drinking water in 2005-06 and 2007-08 respectively; 52.4% and 60.8% had latrine facilities in 2005-06 and 2007-08; and 50.8% & 60% had boundary walls in 2005-06 & 2007-08 respectively.

### **1.2.1 Furniture and Equipment**

There is a severe deficiency of furniture and equipment in most of the secondary schools in Khyber Pakhtunkhwa province of Pakistan. The furniture, where available, is in dilapidated and unserviceable state and students usually sit on the floor for approximately 5 hours with mid break. Moreover principals have no power to auction the unserviceable furniture because iron/steel is used in manufacturing of furniture, which is beyond the jurisdiction of principals' authority. This situation aggravated the teaching-learning process, which have negative impact on the internal efficiency of schools.

Even the available benches and desks may prove injurious to health of the pupils when they are made to sit for long time at a stretch. Hence, care is needed to reduce the harm as far as possible. A slope of 15 degrees for each desk is sufficient. Since there is variation in the growth rate of students and reshuffling in their seating arrangement has not been made for long time, which adversely affects teaching- learning process.

Most of the secondary schools are poorly equipped in teaching aids, science equipment and apparatus. Teaching aids are not given to the schools for a couple of years due to which teaching becomes teacher-centred and students are only passive learners. The worst condition of science equipments (apparatus and chemicals) is worth-mentioning. Even the available apparatus are of low quality and rusted due to un-utilization or under-utilization and lack of proper maintenance. The chemicals are sub-standard and expired (out-dated) and do not give the exact experimental results. These circumstances hinder the teaching- learning process and needs more allocation for purchasing of furniture and equipments but the situation is reverse. The non-salary budget has been decreased up to 4% and cannot fulfill the teaching requirements of increasing number of students, which adversely affects the internal efficiency of schools.

### **1.2.2 Lavatories**

The provision for enough lavatories and washing rooms is often a neglected feature in secondary schools, in Khyber Pakhtunkhwa province of Pakistan. The total schools without latrine facilities are 37.2% (30.1% urban areas and 38.5% rural areas). (NEP 2009).The minimum requirement is one lavatory for every fifty children. In fact one for every twenty five students should be more satisfactory in most congested schools. As personal cleanliness is the utmost importance, it ought to be regarded as one of the chief lessons to be learnt in school. Therefore, school should begin this lesson by providing hygienic washing and lavatory arrangement as well as urinals. The principals report to the DEOs for the availability of lavatory either by themselves or through the Parent Teacher Council (PTC). Proper drainage system of the school can be ensured through PTC fund so that the school environment ought to be congenial.

## **2.Literature Review**

There is a tendency that small schools are more physically and mentally close to residence of students than do larger schools, and such nearness enhances parental association due to easy approach to small schools. An environment of respect is essential among parents, students, and teachers for their involvement in school based-activities. This tradition is ensured when they are familiar to each other. This culture is more visible in smaller schools. Principals in small schools depend more on verbal communications and have more meetings with parents as compared to principals in large schools, which increase the internal efficiency of schools. School characteristics includes: size and growth of school and facilities, equipments and technology.

Oosthuizen and Borat (2006:74) documented that effective schools were located in areas where the adults were educated up to secondary or tertiary levels. As against this situation less effective or ineffective schools accommodated children who belonged to areas where adults were not literate.

According to Marzano (2000:69) the future achievements of students are judged by their past performance. This reveals the collective nature of students' gains, which is affected by numerous factors. The most important contributor to students' gains is schools; other related measures include innate and attained capabilities, personality, learning approaches, and family and community characteristics.

The analysis of forgoing discussion transpired that the schools are more effective in areas where adults of the community are educated as compared to those schools, where people of the vicinity are illiterate.

The important factors contributing to students' gains are effective teaching strategies, capabilities, family and community characteristics. [Oosthuizen and Borhat (2006:74) and Marzano (2000:69)].

## **2.1 Size and Growth of School**

The size and growth of the school depends upon nature of the local community and its stratification, urban or rural. Schools in urban areas are more overcrowded than rural area due to awareness of parents, provision of facilities and proximity of the schools.

Ibitoye (2003:26) documented the correlation among size of secondary school, consumption of resource and school efficiency in Ilorin Local Government Areas. It was found that there is a close association between enrollment and the use of classrooms available for instructional process. Consequently there was more occupation of classrooms by increasing number of students in the school. The study depicts the relevance of physical resources in meeting the increase demand of school enrollment. Efficient management of school's physical facilities is mandatory in order to make the school a pleasant, safe and comfortable center for the community activities, recreational equipment and other instructional aides.

Velez et al (1993:13) documented school characteristics, which included class and school size, teacher/learner ratio, school location and funding, and shifts (morning/afternoon); educational materials like availability of textbooks and supporting materials, other instructional materials and facilities.

According to Seiler et al (2006:74) the provision of staff, school size, infrastructure, technology provision, community involvement and variety of students are different characteristics of school, which have an impact on students' learning outcomes.

Haller (1992:14) documented that small schools with an average size of 443 students in rural areas create less disciplinary problems than large schools in the urban areas with 1200 students. As the size of the rural area school increased, in the same way, problems of discipline increases.

The given references when subjected to analysis revealed that size and growth of school required both classrooms and additional teachers for instructional purposes. Increasing enrollment requires provision of proper infrastructure, basic facilities, equipment and instructional aides. Overcrowded classes have more disciplinary problems in large schools as compared to small class size. [Ibitoye (2003:26), Velez et al (1993:13, Seiler et al (2006:74) and Haller (1992:14)].

## **2.2 Facilities, Equipment and Technology**

Facilities, Equipment and Technology are the basic requirement for efficient teaching learning process. Schools having appropriate infrastructure, staff and instructional support services are reputable and have positive impact on their efficiency.

Oyedeji (2000:25) classified school plant into site, building and equipment, which includes permanent and semi- permanent structures such as machines, laboratory equipment, chalk, boards and office assistants' tools such as brooms and clearing materials. School building is said to have positive impact on the comfort, safety and academic performance of the students.

Legotlo et al (2002:115) viewed that some schools lack facilities and where these are available, these were insufficient and not properly looked after, while congestion in some schools was a crucial problem. In addition, other issues linked to congested schools were caused by lack of teachers. More than 60 learners were forced to sit in one classroom in some schools due to non-availability of qualified teachers and/or classrooms. These circumstances lead the students to undesirable activities in the society like sabotage and stealing. All these factors had negative effect on the internal efficiency of schools.

UNESCO (2012:38-39) stated in a report a number of indicators that adversely affected quality. Those included lack of resources and materials, school mismanagement, insufficient and overcrowded classrooms, poor plant facilities, insufficient water and sanitation facilities, inadequate safety system and ineffective home-school relationship.

Wilson et al (2009:25) described that internal efficiency of schools were affected by physical infrastructure as well as teaching-learning environment. The school effectiveness was also influenced by other considerations such as teacher-student ratio, textbooks and supporting aids for teaching-learning process.

The analysis of preceding discussion indicated that in overcrowded schools disciplinary problems were caused to affect adversely the advantages of those schools. In those schools the control mechanism was the main concern of the principals. As a result in overcrowded and large schools many students learn little and their expectations are not entirely met. However in small schools things are different, where students enjoy a greater sense of their relationship with such schools. Moreover the achievement level of students is increased by the provision of physical infrastructure, equipment, technology and instructional aides for teaching-learning process. [UNESCO (2012:38-39), Wilson et al (2009:25), Legotlo et al (2002:115), Oyedeji (2000:25) and Haller (1992:14)].

### 3. Methodology of the Study

The study attempted to identify different dimensions of schools' characteristics for promoting their internal efficiency in the context of Khyber Pakhtunkhwa province of Pakistan. It chose a descriptive methodology based on scientific method of research. Both qualitative and quantitative approaches were applied for analysis of data. The study was delimited to Boys' High Schools in public sector both in urban and rural areas of five districts of Khyber Pakhtunkhwa province of Pakistan. Girls' schools as well as private schools were not included in the scope of the study.

Population may be target or sampled depending on the situation. The target population of the study was 1229 principals/heads of secondary schools and 4201 senior school teachers in Khyber Pakhtunkhwa province of Pakistan. The sampled population of the current study was 297 principals/ heads of secondary schools and 1433 senior school teachers in five districts of five divisions of Khyber Pakhtunkhwa province of Pakistan.

**Table-1 Population of High Schools' Principals and Senior School Teachers (SSTs)**

Population of Respondents, District-wise	District Bannu	District Kohat	District Lower Dir	District Mardan	District Peshawar	Grand Total
Population of High Schools' Principals	48	44	62	69	74	297
Population of SSTs	248	145	275	410	355	1433

The study chose stratified random sampling technique as the population was spread over five districts. Therefore districts were purposively selected and sample from every district was randomly chosen in order to provide equal opportunity to subjects, for inclusion in every unit of the population. The sample of the study was adequate because 75 (25%) principals and 359 (25%) senior school teachers were included in the study from all five districts of five divisions of Khyber Pakhtunkhwa province of Pakistan. The following table gives a synoptic picture of the sample in five districts of Khyber Pakhtunkhwa province.

**Table-2 Sample of High Schools' Principals and Senior School Teachers (SSTs)**

Sample of Respondents, District-wise	District Bannu	District Kohat	District Lower Dir	District Mardan	District Peshawar	Grand Total
Sample of High Schools' Principals %age	12 (25%)	11 (25%)	16 (25%)	17 (25%)	19 (25%)	75 (25%)
Sample of SSTs %age	62 (25%)	36 (25%)	69 (25%)	103 (25%)	89 (25%)	359 (25%)

The following statistical manipulations were used for determination of consistency in data of the respondents.

Standard Deviation of principals ( $S_p$ ) =3.03, Standard Deviation of SST ( $S_t$ ) =23.04

Principals' average per district ( $\bar{X}_p$ ) =15.00, SSTs' average per district ( $\bar{X}_{sst}$ ) =71.80

Co-efficient of variation (C.V) for principals and SST are given as

$$C.V_p = S_p / \bar{X}_p \times 100$$

$$C.V_{sst} = S_t / \bar{X}_{sst} \times 100$$

$$C.V_p = 20.20$$

$$C.V_{sst} = 32.09$$

Co-efficient of variation of principals (20.20) is less than SST (32.09), which means that data of principals are more consistent (reliable).

#### 4. Research Instruments

The study used opinionnaire for collecting data from principals and senior school teachers regarding financial category for improving school efficiency in five districts of Khyber Pakhtunkhwa province of Pakistan. The opinionnaire was administered to the subjects using Likert Scale with five options for each statement. They were handed over to participants and collected in person.

#### 5. Data Collection, Analysis and Discussion

The primary data were obtained through closed-ended opinionnaire personally handed over to the principals and senior school teachers in urban and rural areas in five districts of Khyber Pakhtunkhwa province of Pakistan. The secondary data were obtained from office records, documents and review of relevant literature both in local and global perspectives.

The analysis of data was given both quantitative and qualitative treatment. The quantitative data were supported by statistical measures and converted into percentages in tabular form duly supported by graphic presentation. The qualitative data were placed under different patterns and categories, discussed and interpreted for drawing inferences. Chi-square test was also applied for validation of results.

The following statements were framed under schools' characteristics and the respondents were asked to prioritize their choices out of Most Essential, Quite Essential, Essential, Essential to Some Extent and Not So Essential. School:

1. Makes profile of students composition with respect to intelligence.
2. Has record of size and growth rate in terms of enrollment and promotion of students.
3. Provides facilities, equipments and technology with regard to building condition, classrooms, laboratories, water, electricity, latrines computers and no. of aides per teacher

**Table-3 Responses of 75 Principals Regarding Schools' Characteristics**

Options (Likert Scale)	Statement number	Districts					Total Responses (Row)	Percent-ages (%ages)
		Bannu 12	Kohat 11	Lower Dir 16	Mardan 17	Peshawar 19		
Most Essential	1	7	1	8	10	6	32	14.22
	2	6	1	7	4	7	25	11.11
	3	7	2	14	13	11	47	20.89
Total Resp. (Column)		20	4	29	27	24	104	46.22
Quite Essential	1	4	4	5	2	8	23	10.22
	2	4	2	6	9	7	28	12.45
	3	4	3	2	4	7	20	8.89
Total Resp. (Column)		12	9	13	15	22	71	31.56
Essential	1	1	6	3	3	5	18	8.00
	2	1	6	3	4	3	17	7.56
	3	1	5	0	0	1	7	3.11
Total Resp. (Column)		3	17	6	7	9	42	18.67
Essential To Some Extent	1	0	0	0	2	0	2	0.89
	2	1	2	0	0	1	4	1.78
	3	0	0	0	0	0	0	0.00
Total Resp. (Column)		1	2	0	2	1	6	2.67
Not So Essential	1	0	0	0	0	0	0	0.00
	2	0	0	0	0	1	1	0.44
	3	0	1	0	0	0	1	0.44
Total Resp. (Column)		0	1	0	0	1	2	0.88
G. Total		36	33	48	51	57	225	100

**N=75**

Out of (75x3)225 responses of 75 principals in all the five districts 104 (25.01%) responses were opted for 'Most Essential', 71 (31.56%) for 'Quite Essential', 42 (18.67%) for 'Essential', 6(2.67%) for 'Essential to Some Extent' and 2 (0.88%) for 'Not So Essential'. The analysis indicated that out of 225 responses a majority of 104 responses were in favour of 'Most Essential'. It revealed that schools' characteristics were useful for improving enrollment and promotion of students. The inferences drawn were that enrollment and promotion of students could be affected by providing facilities, equipments and technology with regard to building condition, classrooms, laboratories, seating arrangement, water, electricity, latrines, computers and number of aides per teacher resultantly promoting internal efficiency of schools. These findings are coincide with literature review on the given topic in that basic infrastructure and provision of equipment and technology will help improve students' gains, which promote internal efficiency of schools. [UNESCO (2012:38-39), Wilson et al (2009:25), Seiler et al (2006:74), Marzano (2000:69), Oyedeji (2000:25) and Velez et al (1993:13)].

The data reflected in Table-3 were further subjected to statistical measures for authentication.

**H<sub>0</sub>** = Schools' Characteristics and Internal Efficiency of Schools are independent or they are not associated.

$H_1$  = Schools’ Characteristics and Internal Efficiency of Schools are not independent or they are associated.

Level of significance  $\alpha=0.05$  (for 95% confidence level)

Critical Region  $\text{Chi-Sq (cal)} \geq \text{Chi-Sq } \alpha (r-1) (c-1) \text{ d.f.}$

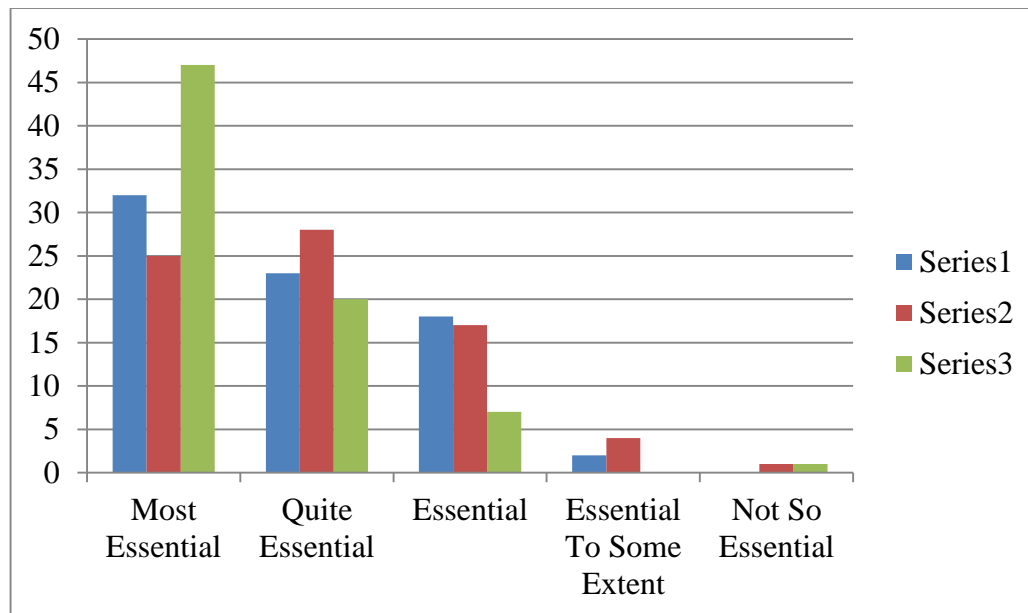
$\text{Chi-Sq (cal)} \geq \text{Chi-Sq } 0.05 (2) (4)$

$\text{Chi-Sq (cal)} \geq \text{Chi-Sq } 0.05 8 \Rightarrow \text{Chi-Sq (tab)} = 15.51$

$\text{Chi-Sq (cal)} = 18.954.$

Since  $\text{Chi-Sq (cal)}$  (18.954) is greater than  $\text{Chi-Sq (tab)}$  (15.51), which falls in the critical region. So we reject  $H_0$  and conclude that ‘Schools’ Characteristics’ and ‘Internal Efficiency of Schools’ are associated. The data were further elaborated by Figure-1.

**Figure-1 Responses of 75 Principals Regarding Schools’ Characteristics**





**Table-4 Responses of 359 SSTs Regarding Schools' Characteristics in Five Districts of KP**

Options (Likert Scale)	Statement number	Districts					Total Responses (Row)	Percent- ages (%ages)
		Bannu 62	Kohat 36	Lower Dir 69	Mardan 103	Peshawar 89		
Most Essential	1	26	11	33	47	27	144	13.37
	2	21	5	24	30	22	102	9.47
	3	35	15	50	61	55	216	20.06
Total Resp. (Column)		92	31	107	138	104	462	42.90
Quite Essential	1	17	7	17	25	32	98	9.10
	2	29	7	20	37	19	112	10.40
	3	20	11	8	23	15	77	7.15
Total Resp. (Column)		66	25	45	85	66	287	26.65
Essential	1	14	13	15	24	21	87	8.08
	2	7	16	16	26	36	101	9.38
	3	5	9	5	12	12	43	3.99
Total Resp. (Column)		26	38	36	62	69	231	21.45
Essential To Some Extent	1	5	5	4	7	6	27	2.51
	2	5	8	6	5	12	36	3.34
	3	1	1	5	3	5	15	1.39
Total Resp. (Column)		11	14	15	15	23	78	7.24
Not So Essential	1	0	0	0	0	3	3	0.28
	2	0	0	3	5	0	8	0.74
	3	1	0	1	4	2	8	0.74
Total Resp. (Column)		1	0	4	9	5	19	1.76
G. Total		186	108	207	309	267	1077	100

**N=359**

Out of (359x3)1077 responses of 359 senior school teachers in all the five districts 462 (42.90%) responses were opted for 'Most Essential', 287 (26.65%) for 'Quite Essential', 231(21.45%) for 'Essential', 78 (7.24%) for 'Essential to Some Extent' and 19 (1.76%) for 'Not So Essential'. The data indicated that out of 1077 responses a majority of 462 responses were in favour of 'Most Essential'. The analysis revealed that schools' characteristics were useful for improving enrollment and promotion of students. The inferences drawn were that enrollment and promotion of students could be affected by providing facilities, equipments and technology with regard to building condition, classrooms, laboratories, seating arrangement, water, electricity, latrines, computers and number of aides per teacher resultantly promoting internal efficiency of schools. These findings go along with the citations reviewed and confirm that basic infrastructure and provision of equipment and technology will help improve students' gains, which promote internal efficiency of schools. [UNESCO (2012:38-39), Wilson et al (2009:25), Seiler et al (2006:74), Marzano (2000:69), Oyedeji (2000:25) and Velez et al (1993:13)].

The data reflected in Table-4 were further authenticated with the help of statistical analysis.

**H<sub>0</sub>** = Schools’ Characteristics and Internal Efficiency of Schools are independent or they are not associated.

**H<sub>1</sub>** = Schools’ Characteristics and Internal Efficiency of Schools are not independent or they are associated.

Level of significance  $\alpha=0.05$  (for 95% confidence level)

Critical Region  $\text{Chi-Sq (cal)} \geq \text{Chi-Sq } \alpha (r-1) (c-1) \text{ d.f.}$

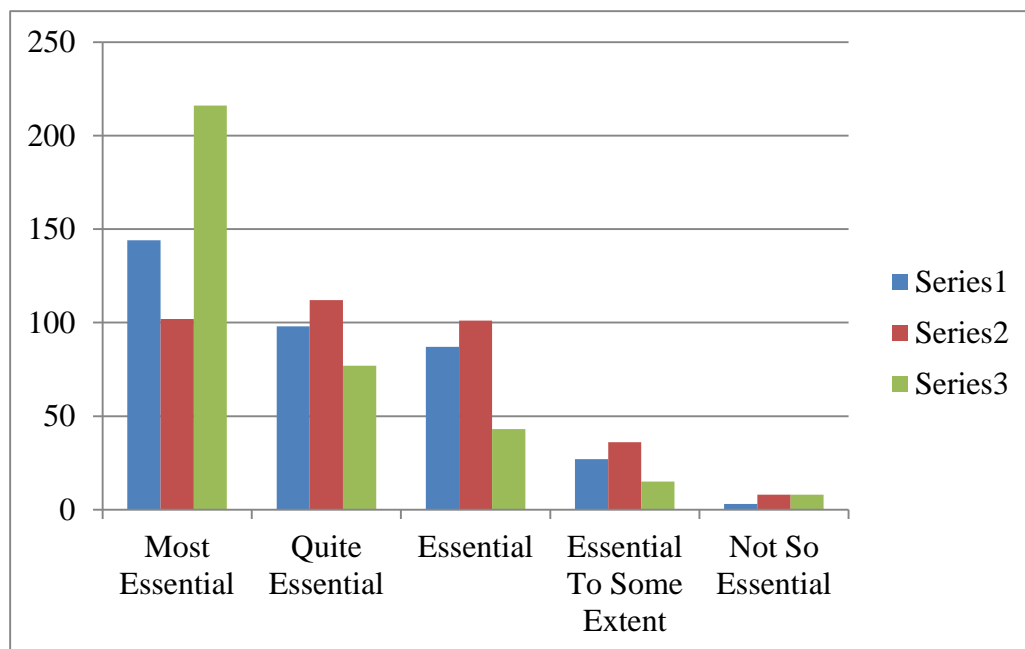
$\text{Chi-Sq (cal)} \geq \text{Chi-Sq } 0.05 (2) (4)$

$\text{Chi-Sq (cal)} \geq \text{Chi-Sq } 0.05 8 \Rightarrow \text{Chi-Sq (tab)} = 15.51$

$\text{Chi-Sq (cal)} = 84.619$

Since  $\text{Chi-Sq (cal)} (84.619)$  is greater than  $\text{Chi-Sq (tab)} (15.51)$ , which falls in the critical region. So we reject  $H_0$  and conclude that ‘Schools’ Characteristics’ and ‘Internal Efficiency of Schools’ is not independent. The data were further elaborated by Figure-2.

**Figure-2 Responses of 359 SSTs Regarding Schools’ Characteristic**



**6. Outcome of the Study**

It was observed that out of 225 responses of principals and 1077 responses of senior school teachers a majority of 104 (46.22%) and 462 (42.90%) responses were respectively in favour of ‘Most Essential’. It revealed that schools’ characteristics were useful for improving enrolment and promotion of students. Majority of subjects worked out that enrollment and promotion of students could be affected by providing facilities, equipments and technology with regard to building condition, classrooms, laboratories, seating arrangement, water, electricity, latrines, computers and a number of aides per teacher resultantly promoting internal efficiency of schools. The Government should ensure that all necessary facilities are made available to secondary schools. Those include appropriate buildings, classrooms, laboratories, furniture, water, electricity, lavatories, computers and a number of instructional aides on priority basis.

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