Input Resources and Academic Achievements of the Students

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Abstract
The study was primarily intended to examine the association of input resources and academic achievements of the students in public and private sector colleges. Input resources were measured in terms of physical, financial, human, and information resources. The academic achievements of the students were measured through results of respective colleges in annual BISE examinations and treated as output of the colleges. For sampling, the colleges of district Kotli AJ&K were selected. The study employed primary data, collected through mailed questionnaire, to determine the level of input resources in respective colleges. In the meantime, secondary data regarding academic achievements of the students were extracted from annual board gazettes. The collected responses were analysed by using correlation and regression analysis. The study found difference between input resources and academic achievements of the students in public and private colleges. Positive and significant correlation between input resources and academic achievements of the students was also observed. Separate regression analysis for public and private sector colleges exposed that the effect of input resources on academic achievements of the students remained pronounced in private as compared to public colleges. Based on results, the study suggested the effective deployment and sharing of available resources to and from each category for mutual gain and better educational outcomes.
Keywords: Physical Resources, Financial Resources, Human Resources, Information Resources, Academic Achievements

Introduction

Education has been playing a leading role in promoting awareness, creating harmony and prosperity of the nations. Its role remained dominant in the progression of human civilization. It enabled the mankind to recognize the difference of right and wrong. Education has significantly contributed in the emergence and progression of modern society. It helped in gaining knowledge, preserving and transforming the good traditions across the generations. Indeed, it played a pivotal role in every segment of the society to promote human resource quality. In a broader sense, the education can be referred as the process aimed at imparting knowledge, skills and attitudes which is essential for individuals helping them to manage the environment effectively and efficiently (Verma, 2001). Education may also strengthen the productivity and understanding of the individuals and thereby facilitates in gaining private welfare (Levin, 1999). The education can develop skills among the individuals, promote a sense of adaptability to changes, enhance socio-economic development and enable the nations in chasing the goal of sustainable economic development (Nasir & Nazli, 2000).

The importance of education has long been recognized and it has substantially contributed in human civilization process. Transmission of cultural, social and societal values across the generations became possible with the help of education. The investment and allocations by the governments in this sector have been considered pivotal for political, economic, social and human development. Traditionally, it was assumed that the State is responsible for providing education to the citizens. This concept was changed with the passage of time and gradually it was realized that the State alone cannot manage this crucial activity. The policies were, therefore introduced to attract the investors for investment in the education sector that resulted in the emergence of private schooling system in the

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societies. Last few decades witnessed a tremendous growth in this sector and the contribution of private sector substantially enhanced. Deployment of better resources, provision of modern facilities, hiring qualified teachers and students' facilitation by the private sector created an attraction for the parents who gradually diverted their children from public to private schooling. Despite of this all, the public sector is still catering the growing educational demand of the masses and ensuring the provision of quality education to its citizens.

Considering the importance of education, the governments all over the world are allocating substantial amount of resources for education sector. The resources in the developing countries are, however scarce (Tan, Lane, & Coustere, 1997). The competitive pressure is developing rapidly and quality became an important aspect of the personal progress (Ramaswamy, 1990). The careful deployment of the resources is, therefore highly crucial and policymakers have limited window of management. The desire of high performance increased and academic achievements of the children became a key concern for the parents. In this entire situation, it became imperative to identify and determine the resources that may significantly contribute in educational outcomes. Owing to its significance, a good number of studies on educational resources and associated outcomes have been conducted (Behrman, Khan, Ross, & Sabot, 1997; M.A. Dahar, R.A Dahar, R.T. Dahar, & Faize, 2011; Heyneman & Loxley, 1983; Mok & Flynn, 1997). This study attempted to contribute in this important discussion by addressing the area of AJ&K where literacy rate is comparatively high and significant share of private sector exists. The study examined the input resources and their relationship with students' academic achievements. For this purpose, the study selected the colleges of district Kotli AJ&K. Primary data of input resources were collected from sample colleges while secondary data of outputs from AJKBISE annual results. Appropriate statistical techniques were used for analysis of the collected data. The study found a difference of resources sufficiency and students' academic achievements in public and private colleges. The existence of significant relationship between resource inputs and academic achievements was also observed which remained relatively prominent in private colleges. Furthermore, the effect of resource inputs on academic achievements were found stronger in private sector. The findings are expected to be helpful in effective decision making regarding deployment of resources in educational sector. This will also help the private investors to locate and place the effective resources for better results.

Research Objectives

This study was primarily aimed to:
1)   Compare the input resources in public and private colleges.
2)   Compare the academic achievements of the students in public and private colleges.
3)   Probe the relationship of input resources and academic achievements of the students.
4)   Analyse the effect of input resources on students' academic achievements in public and private colleges.

Research Questions

This study was intended to address the following research questions:
1)   Does public and private colleges differ in input resources sufficiency?
2)   Does public and private colleges differ in terms of the students' academic achievements?
3)   How input resources are related with academic achievements of the students?
4)   Whether and how the effect of input resources on students' academic achievements differ in public and private colleges?

Literature Review

Educational investment is considered important in most of the nations and its importance in socio-economic progression and economic development of the countries has long been recognized (Hallack, 1990; Harris, Batley, Mcloughlin, & Wales, 2013; Monteiro, 2014; Todaro & Rocha, 2004). In daily life, education plays a significant role to solve the issues (Sovic & Blythman, 2013). The desired knowledge and skills enabled the individuals to achieve success and growth in the career. It has developed the sense of mutual cooperation and understanding that is helpful for societal development. The education thus played a leading role in individual and societal development. Professional training and development also helped in raising productivity and efficiency level thereby improving the living standard and the economic advancement (Barro, 1997; Krueger & Lindahl, 2001; Psacharopoulos, 1994). The education also helped in reduction of poverty level and contributed in the betterment of the

masses (Tilak, 2002). The importance of education influenced the policy formulation of the countries almost all over the world. It remained a prioritized area from last many decades. Despite of resource constraints, the governments all over the world spared and allocated substantial resources for this sector.

Economists considered and treated the learning similar to the production activities of the firms. They used the data of input resources and associated outcomes for estimating the education production function. This has helped in determining the relevance, efficiency and effectiveness of educational resources. The deployment of educational resources and their role in performance determination remained a hot topic of research. In some studies, substantial role of resources in educational and learning outcomes and attainment of educational objectives was observed (Deswary, 2015; Greenwald, Hedges, & Laine, 1996; Harbison & Hanushek 1992; Hedges, Laine, & Greenwald, 1994; Kyriakides, Stylianou, & Menon, 2019; Lunenburg, 2010). Contrary to this, some researchers proposed the irrelevance of additional resource deployment in academic outcomes and achievements (Hanushek, 1986, 1997; Hanushek & Luque, 2003; Hanushek, Rivkin, & Taylor, 1996; Harbison & Hanushek, 1992). Variety of resources are required in the educational institutions that may directly or indirectly influence the students learning and grooming process. The effect is not much stronger in the developed countries where socio-economic conditions and family characteristics matter more (Boissiere, 2004; Coleman, et al., 1966; Ferguson, 1991; Hanushek & Luque, 2003). The phenomenon is, however more relevant in less developed countries where the institutions lack basic amenities.

The expenditure on education, development of resources and facilities in educational institutions significantly influenced the educational outcomes and academic achievements of the students (Cullen, Polnick, Robles-Piña, & Slate, 2015; Figueroa, Lim, & Lee, 2016; Heyneman & Loxley, 1983; Jeynes, 2003; Kreisman & Steinberg, 2019; Lee & Zuze, 2011; Rashida, 2016; Suryadarma, Suryahadi, Sumarto, & Rogers, 2006; Teodorovic, 2011; Zakharov, Tsheko, & Carnoy, 2016). It can also help in improving the educational quality (Gigliotti & Sorensen, 2018). The studies in this domain were also conducted to relatively examine the phenomenon across public and private sector educational institutions. Difference in resources, performance and academic achievements was observed in majority of the studies (Anand, Mizala, & Repetto, 2009; Bedi & Garg, 2000; Braun, Jenkins, & Grigg, 2006; Coulson, 2009; Ehteshamuddin & Azimuddin, 2014; S.T. Lubienski & C. Lubienski, 2006; Olasunkanmi & Mabel, 2012). These studies were conducted in different countries and in different institutional settings. Low and middle income countries are facing the scarcity of resource issues and find it difficult to properly allocate the resources in educational sector. The proper deployment of resources with vibrant outcomes is, therefore much relevant in such countries. Considering the importance, the researchers attempted to explore the phenomenon in developing countries including Pakistan. Dahar (2011) observed a significant relationship of input resources and students' academic achievements in Pakistan. Furthermore, Shabbir, et al. (2014) noticed and reported a better performance of private schools in AJ&K. The current study aimed to contribute in existing discussion by examining the resources sufficiency, academic achievements of the students, association of both the variables and differential effect of input resources on academic achievements of the students in public and private colleges, for which it is hypothesized:

H_1: Sufficiency level of input resources differ in public and private sector colleges.
H_2: Academic achievements of the students differ in public and private sector colleges.
H_3: Input resources and academic achievements of students are significantly correlated.
H_4: The pattern of effect of input resources on students' academic achievements differ in public and private sector colleges.

Methodology
This study examined the sufficiency level of input resources, academic achievements of the students and their relationship in public and private colleges. For analysis purposes, the study took a sample of 29 public and 37 private colleges from most populous district of AJ&K, i.e. Kotli. For collecting primary data pertaining to independent variable of input resources, the study used a questionnaire. The study of Dahar (2011) was followed for this purpose. Input resources were classified into four categories, i.e. physical, financial, human and information. Physical resource inputs were comprised of tangible assets, infrastructure and resources that the college own and use for teaching-learning

process. Such facilities are important for facilitation of the process in a conducive and peaceful environment. Financial resource inputs were measured in terms of the annual budgetary allocations and expenditure for recurring, development and students' scholarship purposes. The availability of required capital is key to the success of any organization and it can facilitate the college administration in arranging facilities for students and staff. To measure the human resource inputs, the study applied the measures related to qualification, experience and professional training of the staff. Human resource quality is much important and pivotal to the success of teaching-learning process in the colleges. For probing the information resource inputs, the measures pertaining to the availability of instructional material in the college library were used. Such material could be helpful in the preparation of examination as well as for real life challenges.

The responses on input resources were sought on a 4-point scale with the anchors (1= Sufficient, 2= To Some Extent, 3= Insufficient, and 4= Not at All). The study specified the levels instead of absolute values to overcome the issues related to differential size of the colleges. In parallel to input resources, the study also collected secondary data on academic achievements of the students. The data in terms of success ratio, grades and positions were gathered from the annual gazettes of AJKBISE. This data was also sought from the college administration through the questionnaire. The questionnaires were addressed to the principals of the respective colleges and sent through registered post and reliable courier services. The confidentiality of the responses was assured to the respondents. Through repeated follow up, the responses were gathered from all the colleges, except one. The data of consecutive three years were collected from each college. After collection, the responses were converted to numerical form for analysis purposes. For comparison of input resources and academic achievements of the students in public and private colleges, the study checked simple mean values. The study then applied the correlation analysis to examine the relationship of input resources and academic achievements of the students. The study further used the regression analysis to probe the effect of input resources on academic achievements in public and private sector colleges of Kotli AJ&K. SPSS was used in the process of data analysis.

Results and Discussion

Before formal data analysis, the basic characteristics of the collected responses were examined. Descriptive statistics are followed for this purpose and its results are reported in table 1.

Table 1. Descriptive statistics

Variable	N	Mean	S.D
PRI	195	2.499	.519
FRI	195	2.195	.362
HRI	195	2.419	.462
IRI	195	2.400	.856
AA	195	2.138	.730

Descriptive statistics presented above show a highest mean value of physical resource inputs while lowest of academic achievements. Higher mean score of input resources mean the lesser availability of the respective resource. Highest dispersion was observed for information while lowest for financial resource inputs. The statistics confirmed the normal distribution of data. The study then compared the public and private colleges in terms of sufficiency of input resources and its results are presented in table 2.

Table 2. Sufficiency of input resources

Year	Mean (Public)	Mean (Private)
1.	2.74	2.27
2.	2.59	2.27
3.	2.43	2.09

The results show a difference of public and private colleges in terms of the sufficiency of input resources. In terms of overall resource sufficiency, the private colleges outperformed the public colleges. The study then compared the colleges on the basis academic achievements which were determined with the help of success ratio and converted to 4-point scale for uniformity purposes. Results related to academic achievements are in table 3.

Table 3. Academic achievements of the students

Year	Mean (Public)	Mean (Private)
1.	2.90	1.85
2.	2.62	1.75
3.	2.41	1.59

The results, again revealed similar trend and observed better performance of private colleges in terms of students success rate. The relationship of input resource and academic achievements was then examined with the help of correlation analysis and its results are summarized in table 4.

Table 4. Relationship of input resources and students' academic achievements

Variable	PRI	FRI	HRI	IRI	AA
PRI	1.000				
FRI	0.1745**	1.000			
HRI	0.3074*	0.2530*	1.000		
IRI	0.3286*	0.1504**	0.2767*	1.000	
AA	0.2313*	0.1283***	0.2309*	0.5408***	1.000

*, **,*** indicates significance level.

The results of correlation analysis show a strong positive relationship of financial and information resource inputs with the academic achievements of the students. The relationship of physical and human resource inputs with academic achievements also remained positive though weakly significant. The study finally applied the regression analysis to examine the effect of input resources on students' academic achievements in public and private colleges of Kotli AJ&K. The result of regression analysis are summarized in table 5.

Table 5. Effect of input resources on academic achievements of the students

DV: AA	(1)	(2)
Intercept	2.4462* (.8080)	.1432 (.2277)
PRI	.5074*** (.3037)	.04186 (.0426)
FRI	.1755 (.1838)	.3732* (.1189)
HRI	-.4892 (.4268)	.2002* (.0478)
IRI	.0946 (.2579)	.1019* (.0383)

*, **,*** indicates significance level.

Model 1 and 2 are portraying the effect of input resources on academic achievements of the students in public and private sector colleges, respectively. The results show a positive effect of physical resource inputs on academic achievements in public sector colleges while the effect of financial, human and information resources remained weakly significant in private sector colleges. The overall results of the study showed a difference of public and private colleges in terms of resource sufficiency and academic achievements of the students. The study results further showed a significant association of all the resource categories with academic achievements and a bit stronger effect of the majority of input resource categories in private sector colleges.

Conclusion

The association of input resources and outputs in educational sector remained a long debated domain of research from last many decades. Numerous contributions were made by the researchers all over the world. The researchers used different input-output combinations and reported some mixed evidences. Many studies observed a positive and significant influence of input resources on outputs of the educational institutions. Still, a negative or insignificant effect was reported in some research studies. The discussion remained inconclusive and alive in the literature. Considering the significance of the discussion, this study also examined the situation of input resources and associated outcomes in the colleges of AJ&K. The study selected the colleges from one district to empirically examine the phenomenon. The selected colleges were from both public and private sector. Input resources were categorized into physical, financial, human and information resources. For gathering the data pertaining to input resources of the colleges, the study used a questionnaire and mailed to the principals of the respective colleges. The outputs of the colleges were measured through academic achievements of the students and in terms of the success ratio of students. The study was proceeded from four major aspects, i.e. sufficiency level of input resources in public and private colleges, academic achievements of the students in each category, relationship of input resource with academic

achievements and the relative position of public and private colleges in terms of the effect of input resources on academic achievements of the students.

The study applied correlation and regression analysis for empirical analysis. The study found a difference among public and private colleges in terms of resources sufficiency and students' academic achievements. Private colleges were observed stronger in both the aspects. The study further observed a significant relationship of each input resource category with the academic achievements of the students. The association of financial and information resource inputs with the academic achievements remained relatively stronger. Furthermore, the study found a stronger role of physical resource inputs in public colleges while of financial, human and information resource inputs in private colleges. Based on results, it was concluded that the private sector is making a significant contribution in the educational sector. Private investors substantially invested in developing a stronger resource base of the colleges and allocated extensive resources for teaching-learning process. Based on findings, the study offered certain recommendations. The study recommended that the public-private partnership can be a viable strategy for improving educational outcomes in AJ&K. The government may introduce this idea after comprehensive analysis and development of feasibility plan through relevant departments. It is further recommended that the resource sharing policy among the public and private sector colleges on concessional charges can also be helpful in securing fruitful results. Moreover, some subsidies to the private sector and policies of protection to the teachers in private colleges could be helpful in attaining better outcomes and lessening the government burden. Suitable measures in public colleges are also required for effective utilization of resources and improving the success ratio. The study was, however delimited to the colleges of only one district of AJ&K which were affiliated with AJKBISE. This can be extended by taking a broader sample of educational institutions from all over the AJ&K for more comprehensive and productive results. This can also be extended by using some additional inputs and outputs of the educational institutions.

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