An Analysis of Social Cost in School Level Education of Nepal

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ABSTRACT

Social costs in education plays decisive role for education development and economic growth of a nation. In this context, this article tries to analyze the size, trend and growth rate of social cost in the education sector of Nepal by disaggregating it into total social cost, recurrent social cost, capital social cost, unit cost and marginal cost in community based school education of Nepal. The study is based on the secondary data obtained from official documents of Nepal's Government such as flash report, budget speech, red book and so on. The time series data from 2011 AD to 2015 AD were collected for the analysis by using convenience non-random sampling method. The overall finding of the study shows that the share of the annual average social cost in education is 15.84 percent of the total cost of the government of Nepal. In other words, the government has allocated annual average Rs 68930697.6 thousands as social cost in educational sector during the study years. The average annual growth rate of this cost is 5.15 percent. The study also indicates that annual average total social cost is Rs 68930697.6 thousands, recurrent social cost is Rs 5,71,63,418.79 thousands and capital social cost is Rs 1,17,67,278.81 thousands in Nepal. Similarly, annual average total social cost is estimated to be Rs 3,33,35,928.80 thousands. The total social unit cost per teacher and total social unit cost per student are Rs 196.39 thousands and 5.51 thousands respectively. The annual average marginal social cost per teacher and marginal social cost per

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student are Rs 1308.08 thousands and -202.96 thousands respectively. The negative sign indicates that student enrolment has decreased over the study period. The findings of the study conclude that there is no any predictable relationship among student enrolment, teaching and non-teaching staffs and social cost of education in case of Nepal. However, UNESCO (1999) had analyzed public investment on education of 16 countries and it found that their average investment on education was 19.2 percent of GDP. Therefore, Nepal government should increase in educational investment from its current status of 15.80 percent to at least more than it in the coming years to develop educational sector of Nepal.

Keywords: Social cost, educational efficiency, direct school expenditure, economies of scale, enrolment, recurrent social cost, capital social cost, unit cost and marginal cost.

General Background

The use of time and money in education is called educational investment. Employment option and better income in the future is the main incentive to make educational investment even curtailing present consumption out of the regular income. Many people believe that a higher level of education is associated with better chances to get a best paid job in the labor market. However, the chance of acquiring quality higher education largely depends on the foundation of secondary level or school level education (Lugaz & Grauwe, 2016). Educational cost is a measure of what a student, an institution of learning, or the public has to give up in order to education an individual or a group of people. Cost of education may be incurred by producers (educational institutions) or consumers (students and their parents) (Babalolaj, 1995).

Education is both a private and social investment, which contributes to economic development and raises the level of incomes of the poor as much as the investment in physical capital does. Because of that the subsequent civilian governments in this region have continued to invest in education. Moreover, education has been declared as the constitutional responsibility of the government and this has resulted in rapid and unabated increase in demand for education. However, such demand for education at all levels has its attendant consequences on educational expenditure (as cited in Akpotu, 2008).

Generally, costs in education are classified into social and private costs. Social costs represent social investment or government expenditures on education while private costs are incurred by the students and their households. Social and private costs are further divided into direct and indirect costs. Direct social cost refers to the actual direct expenditures by government and direct private cost refers to the actual direct

expenditures by students or their parents in providing education. Direct social cost of education which is the focus of this study is further distinguished as recurrent social cost and capital social cost. The crucial distinction between recurrent and capital cost lies in the source of finance. Direct social cost is usually divided into two categories for accounting purposes: recurrent cost and capital cost. Recurrent cost is the costs of educational inputs or services which is expended in a period of one year: it consists of personnel costs (salaries, employment benefits and supplementary benefits paid to teachers, school administrators, and other school staff) and non-personnel costs (costs of instructional materials, teaching aids, school supplies, minor repair and regular maintenance, utilities, and student welfare) (as cited in Tsang, 1995). They are financed from current income or revenue, while capital expenditures are financed by loans from international agencies as well as other sources of income (as cited in Akpotu, 2008).

Direct social cost of education implies the actual financial expenditures on education by government, which includes teachers and non-teachers' salaries and allowances, expenditures on books equipment, stationary and transport, imputed rent on educational buildings, maintenance cost and other expenditures on goods and services. In its broad usage, cost implies the resources (money, materials, and men) used up for the operation of a business enterprise (as cited in Aghenta, 1993). Cost in education represents the real resources in terms of money and sacrifices that are used up to produce an educated person.

Statement of the Problem

All socialists, educationalists and economists have univocally agreed that social cost of education is a backbone for educational, social and economic development of a nation because education supplies skillful and capable human resources for market which assists to find out excavate and discover new goods and services for the betterment of human beings. Mostly, educational planners and managers are encouraged to translate all educational inputs used in school operation into monetary value to make the qualification of cost feasible mostly by limiting it to the unit of graduate. This discourse persuades the economists, planners and policy makers to use unit cost as a basis for measurement in the practice of actual cost analysis.

While without sufficient, appropriate and true data about trend and size of student enrolment, teaching and non-teaching staffs and public expenditure, anyone planner cannot make educational plans. This information of education also helps to school management committee to maintain quality of education. But over enrolment, staffing and expenditure or under enrolment, staffing and expenditure both situations are harmful to provide or acquire quality education. It is a big problem or researchable question of the academia industries with reference to government based schools and this research has tried to find out the situation about it.

Similarly, social cost of education refers to that expenditure which is afforded by government. It can be said that it is the government responsibility to incur school level cost on the basis of its legislative provision. In this reference, raising some questions, is total social cost of education incurred by the Nepal government and what is trend, size and growth rate of social cost in school educational sector of Nepal? These are the problems of this research has tried to make solution.

National educational plane is made by authorize body of Nepal government that needs so much information about recurrent social cost, capital social cost, unit cost and marginal cost of education and the information also helps to analyze demand and supply-side of education as well as rate of returns of education. Similarly, aforesaid may help for school management committee to make well academic environment of schools. In this situation, raises a question, what is total social cost, recurrent social cost, capital social cost, unit cost and marginal cost in community based school level education of Nepal? It is a next problem of this research has tried to find out their size.

With the aforementioned rationale or problems, the present study aims at seeking answers of the following research questions:

- What is the trend of student enrolment, teaching and non-teaching staffs and public expenditure in community based school of Nepal?
- What is the size of student enrolment, teaching and non-teaching staffs and public expenditure in community based school of Nepal?
- What is trend, size and growth rate of social cost in education sector of Nepal?
- What is total social cost, recurrent social cost, capital social cost, unit cost and marginal cost in community based school level education of Nepal?
- Objectives of the Study
- The general objective of this research is to find out and analyze the social cost in school level education of Nepal and its specific objectives are:
- To find out the trend and size of student enrolment, teaching and non-teaching staffs and public expenditure in community based school of Nepal.
- To analyze the trend, size and growth rate of social cost in education sector of Nepal.
- To find out the total social cost, recurrent social cost, capital social cost, unit cost and marginal cost in community based school level education of Nepal.

Review of Related Literature

Investment of huge resources of the individuals and society on schooling has aroused special interest to study the relationship between investors and consumers. At societal level, for example, it is interesting in determining whether to allocate more funds to reduce the number of dropouts from high school or to stimulate an increased flow of college graduates. At individual level, it is concerned with deciding whether to continue or to terminate our schooling, on the basis of the relative costs and benefits (as cited in Hansen 1972).

Bray, (2002), in his study, on The Costs and Financing of Education: Trends and Policy Implications into Asian countries with collaboration of Asian Development Bank and Comparative Education Research Centre of The University of Hong Kong has said that some countries are far from achieving universal primary education, let alone substantial enrollment rates in secondary and tertiary education. Most obvious in this category are Afghanistan, Pakistan, and Papua New Guinea, though other countries have primary school gross enrollment rates exceeding 100 percent, presumably because of the existence of underage and overage children in primary schools. At the secondary level, reported enrollment rates were as low as 14 percent in Papua New Guinea as well as 37 percent in Nepal, though reached 101 percent in the Republic of Korea. Whereas expenditures by the Cambodian Government represented only 1.0 percent of GNP, the figure for the Kyrgyz Republic was 6.8 percent. Public expenditures on education as a proportion of the total budget ranged from 7.4 percent in Viet Nam to 23.1 percent in the Kyrgyz Republic. In most countries, government capital expenditures would have been greater at the tertiary than at the primary level, and probably also greater than at the secondary level. Again the figures show major variations. Whereas the Government of the Lao PDR spent only 3.9 percent of its education budget on higher education, in Hong Kong, China the figure was 37.1 percent.

Suryadarma, D. Suryahadi, A. & Sumarto, S. (2006), in their study, "Causes of Low Secondary School Enrollment in Indonesia" have said that there are many causes to effect on enrollment at school education firstly, consumption expenditure, as a proxy for welfare, significantly affects the probability of continuing. Secondly, the individual variables that directly influence the chances of continuing are the child's ability, measured by their performance in the primary school national final examination, and the child's gender, where girls have a lower probability of continuing. Thirdly, the results show that religious background plays a significant role, where children from Muslim families have a significantly lower probability of continuing. Fourthly, the result shows that building more schools increases children's probability of continuing to secondary school. Finally, among the community variables, we find that a higher employment opportunity in a community negatively impacts children's continuation to junior secondary school.

Bray, (2002), in his study, on The Costs and Financing of Education: Trends and Policy Implications into Asian countries with collaboration of Asian Development Bank and Comparative Education Research Centre of The University of Hong Kong have said that in the world, the enrollment rate has been changing time to time. The overall enrollment rate at schools of any type changes in the number of students enrolled in public schools specifically. Between 2000 and 2016, the enrollment rate for students ages 5–6, who are typically enrolled in kindergarten or grade 1, decreased from 96 to 93 percent. In contrast, the enrollment rate increased during this period for students ages 18–19 in secondary education from 16 to 19 percent. Enrollment in grades 9 through 12

increased by 12 percent between fall 2000 and fall 2007, to 15.1 million students, and remained at 15.1 million students in fall 2015.

Trend analysis is a technique used in technical analysis that attempts to predict the future stock price movements based on recently observed trend data. Trend analysis is based on the idea that what has happened in the past gives traders an idea of what will happen in the future. There are three main types of trends: short, intermediate and long-term. It tries to predict a trend, such as educational investment, and ride that trend until data suggests a trend reversal. It is helpful because moving with trends, and not against them, will lead to cost of education, teaching and non-teaching staffs. A trend is the general direction the cost of education is taking during a specified period of time. Trend analysis is the process of trying to look at current trends in order to predict future ones and is considered a form of comparative analysis. This can include attempting to determine whether current educational cost trend, such as gains in a particular educational sector, is likely to continue, as well as whether a trend in one educational sector area could result in a trend in another. Though an analysis may involve a large amount of data, there is no guarantee that the results will be correct (Investopedia, 2019).

It is obvious that education is largely financed by the government sector. Furthermore, government finance of education is increasing largely in the world. Political and /or governmental commitment on accessible education and equal opportunity in education from both government and private sectors enhances education opportunity for those who cannot afford to pay for education. The rate and ratio of the investment on education from the government and private sectors is a debatable issue. In this context, Sheehan (1973) concedes it is difficult to answer the questions about the overall size of the government or private sector in education easily because it is too vague in general involves nature of the government in practical.

The distinction between recurrent expenditure that brings short term benefits and capital expenditure that produces long term benefits leads to certain problems when it its applied to educational investment. All educational expenditures both recurrent and capital can be regarded as a means of forming human capital that will yield benefits throughout the working life of an educated person. Teachers' salaries, which account for more than half of the total costs of education, are classified as recurrent expenditure. In other words, there is an important conceptual difference between recurrent expenditure in the accounting sense of the term, and expenditure that creates a capital asset in the economic sense of the term (as cited in Psacharopoulos and Woodhall, 1985).

Unit cost analysis in education provides useful guide to educational planners and managers as they provide information on the actual cost involved in producing a graduate at any level of education. Unit cost indeed, gives an insight into the pattern of educational expenditures. The various cost concepts are relevant as they help governments to make choices and take varied decisions. For example, the need to compare costs over the years,

for projection of financial needs, the need to either expand existing facilities or build new schools and decisions about alternative educational technologies (Aghenta, 1993).

Cost analysis is very significant in investment planning and financing of education. Adeyemi (1998), Pacharopoulos and Woodhall (1997) assert that cost analysis gives an idea about educational efficiency, which is measured in terms of the utilization of real resources. Cost analysis is often used to identify possible cost reductions. Indeed, the need for cost reducing measures and more generally for policies towards cost-effectiveness is everywhere present and is now becoming more obvious than ever before. Governments invest huge amounts of money on education, being the largest growth industry in the world. This indicates that over the years and in most countries, education remains the largest devourer of taxpayers' money (cited in Coombs, 1985 & Fafunwa, 1986). It is however astonishing that so little is known about the behaviour of educational costs, particularly by educational administrators and governments in developing countries. Ideally, decisions to introduce new educational programmes, expansion of existing ones and employment of new teachers are supposed to be preceded by a careful analysis of cost functions (Aghenta, 1993).

The results of the analysis of the cost of education at the university level indicate that the financial resources of education loans or scholarships were insufficient to cover the cost. Thus, some students resort to taking up part-time jobs or seeking additional financial assistance from parents to bear the cost. Moreover, the cost of education for the first and second semesters is much higher than other semesters. This is due to the need to acquire basic long-term necessities such as laptop, printer, course materials and a variety of fees. Fees and living expenses are the main components of overall student expenditure. In fact, for city-campus universities, the cost of living is much higher. However, this analysis using cross-sectional data is not sufficient to reflect the cost of education from primary school up to university level comprehensively. Therefore, further studies with time-series data or panel data using a larger sample is needed to examine the cost of private education in the country (Ismail, Awang and Noor, 2016).

Jeyhoon (2017), in his study, "The Impact of Educational Expenditures of Government on Economic Growth of Iran" using annual data of Iran's economy during 1981-2012 period has examined Wagner's law and the Keynesian hypothesis about the relationship between government real expenditure and real GDP. Wagner's model, during the long-term and short-term period, is that the variables of capital stock, real GDP, and labor force stock have always had positive and negative impacts. In the Keynesian model, unlike the equation that emphasizes on public expenditures of the government in the educational expenditure model, the coefficient of capital stock variable has positive impact on real GDP. In addition, labor force stock also had a positive impact. On the other hand, the variable educational expenditures have a positive impact in the short-term, while its impact is negative in the long-term.

The trend of social cost of education indicates the time series data. The expenditure in education from the national budget is significant, i.e. average 15.75%. It was highest in FY 2067/68 and the lowest in FY 2057/58. The expenditure in the education is not merely covered by the public resources but also from the foreign aid. The part of educational aid is found highest in FY 2066/67, i.e. 31.22%. It means that the remaining part, i.e.70.78 percent part of educational expenditure of the year was born from the national budget. Likely among the thirteen years data the educational aid was lowest in FY 2058/59, i.e. 17.50%. Education by comparing the GDP The public expenditure in GDP is found 4.2 percent in 2011/12 that indicates the worth of the education with respect to the resource allocation (Devkota, S. P., Chaulagain, R. & Bagale, S. 2016).

No previous researches have indicated the social cost in the school level education of Nepal even if they focused many other aspects of cost. Thus, the present study has placed its effort to fill up the research gap.

Methodology

This study has followed the descriptive and analytical research design under quantitative inquiry approach as its purpose was to explore the trend and size of student enrolment, teaching and non-teaching staffs and public expenditure in community based school level education, and also to find out the total social cost, recurrent social cost, capital social cost, unit cost and marginal cost in government based school level education of Nepal from 2011 to 2015 AD.

As such, data were collected from document analysis of Nepal government. As sources of secondary data, the various published documents through the authorized body of Nepal government were used. The used documents were different year's budget speeches, economic survey, red book and flash report I and II published by Ministry of Finance and Department of Education. Specifically, trend and size of enrolment and teaching and non-teaching staffs were collected from flash report II, department of education, ministry of education and trend and size of social cost of education were collected from budget speech of 2012 to 2016 AD, ministry of finance. The required data were collected by using library method and these data were studied, organized and presented before bringing it to the present shape.

The data of trend and size were collected from aforesaid sources and have presented in table. Trend has represented to time series data and size has represented to volume of required data. Growth rate of social cost was calculated on the basis of growth rate formula. Unit social cost of education was divided into total unit cost of teacher and total unit cost of student, both were obtained dividing by each total number and marginal cost of education was also divided into marginal social cost of teacher and marginal social cost of student, both were obtained additional cost attributable to an extra unit of teacher and student respectively which were calculated on the basis of time series data.

This research is delimited to government based school level education covering from grade 1 to 10. The obtained data are presented and analyzed followed with descriptive discussions.

Results and Discussion

This section caters for interpretation, analysis and discussion of the obtained results from the study and also includes the analysis of the selected documents. The data and discussion of the results are focused by grouping under 8 different categories: student enrollment, teaching and non-teaching staffs, social cost of education, trend and size of social cost, growth rate of social cost, trends and size of total recurrent and capital social cost, The total social unit cost per teacher (TUCt) and The total social unit cost per students (TUCs) of school education and The annual average marginal social cost per teacher (MSCt) and marginal social cost per student (MSCs) of school level education.

Student Enrollment

Students or pupils properly registered or attending in classes at a school is called student enrollment. Students generally should be regular at school to learn after the enrollment. If students do not attain 65 percent at their class, they will not be eligible to appear in final exam at school, but this rule at higher level of education is 80 percent in Nepal (Department of Education, 2019). However, in practice no student has banned to attain any exam in school level till now even if a student is failed to attain at the school below 65 or 80 percent. The trend and size of s student enrollment in government based school level education of Nepal is presented in Table 1.

Table 1: Trend and Size of Enrolment in government based School Education of Nepal

Year	P.L. (Class 1-5)		L.S.L. (Class 6-8)		S.L. (Class 9 -10)		Total Enrolment	Average Enrolment
	Enrolment	Percent	Enrolment	Percent	Enrolment	Percent		
2011	4111679	64.58	1546647	24.30	708154	11.12	6366480	2122160
2012	3885449	63.23	1537167	25.02	722145	11.75	6144761	2048254
2013	3724043	62.11	1544658	25.76	727014	12.13	5995715	1998572
2014	3665659	61.73	1544239	26.00	728456	12.27	5938354	1979451
2015	3611426	60.90	1561616	26.33	757720	12.77	5930762	1976921
Total	18998256	-	7734327	-	3643489	-	30376072	10125358
Ave.	3799651	62.51	1546865	25.48	728697.8	12.00	6075214	2025072

Source: Flash Report II - 2072, Department of Education, Ministry of Education, Nepal.
Note: P.L. = Primary Level, L.S.L = Lower Secondary Level and S.L. = Secondary Level

Table 1 shows the enrolment of students in government based school level education (class 1 to 10) classifying as primary level, lower secondary level and secondary level from 2011 to 2015 AD. It reveals that size of student enrolment in primary level of government based school education has slowly decreased within study period. 64.58 percent students have enrolled at primary level in 2011 AD. But this percent has

decreased and came at 60.90 percent in 2015 AD. Similarly, size of student enrolment in lower secondary level of government based school education has slowly increased within study period. 24.30 percent students have enrolled at this level in 2011 AD. But this percent has increased and came at 26.33 percent in 2015 AD. Again, size of student enrolment in secondary level of government based school education has slowly increased within the period. 11.12 percent students have enrolled at this level in 2011 AD. But this percent has increased and came at 12.00 percent in 2015 AD. The Table 1 also indicates that average percentage of student enrolment in study years at primary level is 62.51, which are 25.48 and 12.00 percent respectively at lower secondary and secondary level.

Teaching and Non-teaching Staffs

The role of teaching and non-teaching staffs at school level education is different. Teaching staffs teach while non-teaching staffs run administrative works. Permanent teaching staffs are appointed by the district education office in the recommendation of teacher service commission while non-permanent teaching staffs and non-teaching staffs are appointed by the school management committee. The salary of both type of staffs are paid by the government except those who have been appointed as per the commitment of giving salary from school's private income source. The salary of both type of staffs is included in social cost of education. Trend and size of teaching and non-teaching staffs are presented in Table 2.

Table 2: Trend and Size of Teaching and Non-teaching Staff in government based School

Year	Teaching Staff			Total Teaching Staff	Non- teaching Staff
	P.L.	**L.S.L.**	**S.L.**		
2011	131617	34400	22825	188842	24686
2012	132379	35268	22965	190612	24875
2013	136863	36295	23822	196980	24434
2014	139922	36771	24125	200818	24067
2015	141973	37085	24334	203392	23165
Average	136550.8	35963.8	23614.2	196128.8	24245.4
Ratio	1:6	1:1.5	1:0.9	1:8	

(Source: Flash Report II - 2072, Department of Education, Ministry of Education, Nepal.)

Table 2 shows that teaching staffs of primary level are higher than teaching staffs of other levels of school. The data reveals that the five year (2011 to 2015 AD) average number teaching staffs at primary level is 136550.8 and the same figure at lower secondary and secondary level is 35963.8 and 23614.2 respectively. The ratio as presented in the last row indicates one non-teaching staff handles the number of teaching staffs. The ratio between non-teaching staff to teaching staffs at primary level is 1:6 and the same figure at lower secondary and secondary level is 1:1.5 and 1:0.9 respectively, but in totality

this ratio is 1:8. It means, one non-teaching staff handles approximately eight teaching staffs in school level of Nepal.

Social Cost of Education

Social or government costs of education are those that include financing by the government on the basis of taxes, loans and other public revenues. The institutional costs of education are directly paid for schools in terms of money are, generally, analyzed using different concepts of costs, such as, variable and fixed costs of education, recurring and non-recurring costs of education and current and capital costs of education. Generally, social costs are further divided into direct and indirect costs. Direct social costs refer to the actual direct expenditures by the government. The direct social cost of education which is the focus of this study is further distinguished as recurrent social cost and capital social cost (Babalolaj, 1995).

Total Social Cost: Total social cost is the summation of recurrent social cost (RSC) and capital social cost (CSC). In other words, both recurrent social cost and capital social cost are added together to arrive at the total social cost (TSC) of education. It can be written as TSC = RSC + CSC (Wachiye, & Ejakait, 2014).

Recurrent Social Cost: It refers to those costs that recurs regularly and covers expenditures on goods and services that bring immediate and short-lived benefits. Thus, expenditures on consumable goods such as materials and personnel salaries, rent, interests, grants etc. used up within an accounting year are classified as recurrent social cost and is commonly expressed as RSC = TSC – CSC (Wachiye & Ejakait, 2014).

Capital Social Cost: It includes the purchase of durable assets such as building or equipment that are expected to yield benefits over a longer period that is expressed as CSC = TSC – RSC (Wachiye & Ejakait, 2014). The crucial distinction between recurrent and capital cost lies in the source of finance. To them, recurrent social costs are financed from current income or revenue, while social capital costs are financed by loans from international agencies as well as other sources of income.

Social Cost in Education Sector of Nepal: Nepal has made remarkable progress in expanding learning opportunities for children and adults. According to economy survey 2074/75, since 1990, net primary school enrollment rate increased from 64 to 97.2 percent up to 2016, with near gender parity. During that period of time, the quality of education has remained low and secondary school completion rate has also remained low. Inadequately trained teachers, a lack of appropriate learning materials, and insufficient support at home, prevent children from developing the reading skills in early grades that will allow them to learn throughout their academic career. To solve these problems Nepal Government should spend big amount of budget in education sector (Siwakoti & Paudel, 2016). Public expenditure on education of Nepal is presented under different sub-titles.

Trend and Size of Social Cost in Educational Sector of Nepal

Education reduces poverty, boosts economic growth and increases income. It increases a person's chances of having a healthy life, reduces maternal deaths, and combats diseases. Education can promote gender equality, reduces child marriage, and promotes peace. In sum, education is one of the most important investments a country can make in its people and their future (Siwakoti & Paudel, 2016). So, Nepal should give priority to develop educational sector. In order to explain the trend and size of social cost of Nepal, the study has collected the data from five- fiscal year's budget speech of ministry of finance, of the government of Nepal. It is given below in Table 3.

Table 3: Trend and Size of Social Cost in Educational Sector of Nepal (Rs. in 000)

SN	Year	Total Cost	Social Cost in Education	Percentage
1.	2011	33,79,00,000.00	5,78,27,542.00	17.11
2.	2012	38,49,00,000.00	6,39,18,839.00	16.61
3.	2013	35,19,30,000.00	5,59,14,972.00	15.89
4.	2014	51,72,40,000.00	8,09,58,080.00	15.65
5.	2015	61,81,00,000.00	8,60,34,055.00	13.92
Total		2,21,00,70,000.00	34,46,53,488.00	
Average		44,20,14,000.00	6,89,30,697.60	15.84

(Source: Budget Speech of 2012 to 2016 AD, Ministry of Finance, Nepal Government)

Table 3 shows that annual average size of total cost equals to the summation of different fiscal year's (five years) as total cost is divided by total years (five years). In Table 3, annual average size of total cost = Rs 2,21,00,70,000 ÷ 5 = Rs 44,20,14,000.00 thousands. Likewise, annual average size of social cost in education equals to the summation of different fiscal year's (five years) social cost in education that is divided by total years (five years). Annual average size of social cost in education = Rs 34,46,53,488.00 ÷ 5 = Rs 6,89,30,697.60 thousands. Annual average percentage of social cost in education equals to the summation of different fiscal year's (five years) percentage divided by total years (five years) = 79.18 ÷ 5 = 15.84 percentage. However, the percentage of total cost on education appears to have stabilized over the years. In the period of five years, figure of social cost in education has increased from Rs 5,78,27,542.00 to Rs 8,60,34,055.00 thousands except in 2013 AD, but in percent, this figure has decreased slowly from 17.11 percent in 2011 to 13.92 percent in 2015. The annual average of social cost in education is 15.84 percent out of total cost of government of Nepal.

Growth Rate of Social Cost in Educational Sector of Nepal

Growth rate refers the values of a variable recorded at different points in time constitutes a time series. Time series is collected by a number of different agencies in the economy. Data are also measured in different time intervals, so we have annual data, which is recorded once a year or quarterly data recorded four times a year or certain months. We also have data recorded every minute such as stock prices. We distinguish between

two types of variables. Discrete time variable is a variable that we can measure only countable times per year. Continuous time variable is a variable that can be measured at any instant. To calculate the annual growth rate of public expenditure on education, following formula has been used (Bar, 2018).

$$r = \frac{1}{n} \times \frac{Pn - P0}{P0} \times 100$$

Where, P0 = Amount of Educational Budget in the Base Year (Rs 5,78,27,542.00 in thousands), Pn = Amount of Educational Budget in Current Year, n = Number of Intermediary Year, and r = Annual Growth Rate. Calculation of growth rate is shown in Table 4.

Table 4: Growth Rate of Social Cost in Educational Sector of Nepal (In % Change)

SN	Fiscal Years	Social Cost in Education (Rs In 000)	Growth Rate
1.	2011	5,78,27,542.00	-
2.	2012	6,39,18,839.00	10.53
3.	2013	5,59,14,972.00	- 6.26
4.	2014	8,09,58,080.00	14.78
5.	2015	8,60,34,055.00	1.57
Annual Average Growth Rate			5.15

(Source: Calculated from the data obtained from Table 3)

Table 4 shows that the growth rate of social cost in educational sector of Nepal. On the basis of tabulated data, it is seen that the government has increased social cost in educational sector year by year. Here, it is noted that the highest growth rate is 14.78 percent for 2014 and negative growth rate is - 6.26 percent for 2013. Annual average growth rate equals to the summation of value of different year's growth rate divided by number of years. Annual average growth rate of four years for public expenditure on education is 5.15 percent.

TSC, RSC and CSC in Nepal

Every government allocates certain percentage of budget for educational sector. Likewise, Nepal government also allocates certain percentage of budget for development of educational sector. Here, educational budget is called as total social cost (TSC) of education. Total figure of social cost of education is classified into recurrent social cost (RSC) and capital social cost (CSC). Trend and figure of total, recurrent and capital social cost of Nepal are given in Table 5.

Table 5: Trend and Size of Total, Recurrent and Capital Social Cost (Rs in 000)

Years	TSC	RSC	Percent	CSC	Percent
2011	5,78,27,542.00	4,60,71,202.71	79.67	1,17,56,339.29	20.33
2012	6,39,18,839.00	5,68,81,374.83	81.99	70,37,464.17	18.11
2013	5,59,14,972.00	4,58,05,545.06	81.92	1,01,09,426.94	18.08
2014	8,09,58,080.00	6,68,55,182.46	82.58	1,41,02,897.54	17.42
2015	8,60,34,055.00	7,02,03,788.88	81.60	1,58,30,266.12	18.40
Annual Ave.	6,89,30,697.60	57163418.79	81.55	1,17,67,278.81	18.47

(Source: Different years' Budget Speech and Red Book (2012 to 2016 AD), Ministry of Finance)

Table 5 shows the trend and figure of total social cost, recurrent social cost and capita social cost in educational sector of Nepal. In five years, the figure of total social cost has increased from Rs 5,78,27,542.00 thousands to Rs 8,60,34,055.00 thousands, but except in 2013. Total social cost is classified into recurrent social cost and capital social cost. On an average of five years, the share of recurrent social cost is 81.55 percent and capital social cost is 18.47 percent. During the period of five years, highest recurrent social cost is 82.58 percent in 2014 and highest capital social cost is 20.33 percent in 2011 in Nepal.

Level-wise Enrolment and TSC in School Level Education

Total enrolled number of students in school education (class 1 to 10) is separated by total enrolled number of students for basic level (class 1 to 8) and for secondary level (class 9 to 10). Similarly, total social cost of school education is also separated by using the same technique. This is done to answer the research question, what is the relationship between student enrolment and total social cost on school education? Also to answer, the level-wise student enrolment and total social cost of school education are collected from different sources and these data are presented in Table 6.

Table 6: Student Enrolment and TSC in Government Based School Level Education

Year	Student Enrolment					Total Social Cost (In Rs 000)				
	Basic Level	%	S.L.	%	Total	Basic Level	%	S.L.	%	Total
2011	5658326	88.88	708154	11.12	6366480	17273173	66.37	8750397	33.63	26023570
2012	5422616	88.25	722145	11.75	6144761	20686197	66.66	10346862	33.34	31033059
2013	5268701	87.87	727014	12.13	5995715	21372222	66.39	10817337	33.61	32189559
2014	5209898	87.73	728456	12.27	5938354	22975000	65.31	12202400	34.69	35177400
2015	5173042	87.22	757720	12.78	5930762	28006953	66.28	14249103	33.72	42256056
Ave.	5346516.6	87.99	728697.8	12.01	6075214.4	22062709	66.21	11273219.8	33.798	33335928.8

Source: Flash Report II - 2072, Department of Education and Red Books (2012 to 2016 AD), Ministry of Finance.

In Table 6, it is found that the student enrolment at basic level has slightly decreased while at secondary level it has continuously increased from 2011 to 2015. Similarly, total social cost of basic level is Rs 1,72,73,173.00 thousands or 66.37 percent and it is Rs 87,50,397.00 thousands or 33.63 percent for secondary level out of total social cost of school education i.e. Rs 2,60,23,570 in 2011. TSC of school level education, TSC of basic level and TSC of secondary have been continuously increased during the study years.

The result reveals that student enrolment in school level education has decreased during the study year but social cost in school level education has increased during the same time which has raised question in the relationship between student enrolment and social cost in the school level education.

Total Unit Cost (TUC)

The unit cost is the same as the average costs or cost per teacher or per student. The TUC is derived by dividing the total social cost by the number of units (teachers or students). Therefore, two indexes are needed to calculate the total unit cost of education. If we want to calculate total unit cost for students, we need the total student enrolment and total social cost of that level of education and if we want to calculate total unit cost for teachers, we need the total number of teachers and total social cost of education of that level of education.

It is expressed as $TUC_t = TSC/N_t$. Here, TUC_t means total unit cost of teacher, TSC means total social cost and N_t means total number of teacher at given level. Similarly, total unit cost of students is calculated as $TUC_s = TSC/N_s$. Here, TUC_s means total unit cost of students, TSC means total social cost and N_s means total number of students at given level (Wachiye, & Ejakait, 2014). Calculated value for total unit cost of teacher and total unit cost of students are presented in Table 7.

Table 7: TUCt and TUCs of Government-based School Level Education of Nepal

Years	Total Teacher	Total Enrolment	TSC (Rs In 000)	TUC_t (Rs In 000)	TUC_s (Rs In 000)
2011	1,88,842	63,66,480	2,60,23,570.00	137.81	4.09
2012	1,90,612	61,44,761	3,10,33,059.00	162.81	5.05
2013	1,96,980	59,95,715	3,21,89,559.00	163.42	5.37
2014	2,00,818	59,38,354	3,51,77,400.00	175.17	5.92
2015	2,03,392	59,30,762	4,22,56,056.00	207.76	7.12
Average	1,96,128.80	60,75,214.40	3,33,35,928.80	169.39	5.51

(Source: Table 2 and Table 6)

Table 7 shows the average unit cost of teacher and student. In other words, it is the expenditure that government bears as the cost per teacher and per student annually. The total social unit cost per teacher in community based school education (class 1

to 10) is Rs 137.81 thousands in 2011. This figure has increased and came up to Rs 207.76 thousands in 2015. Similarly, the total social unit cost per student in community based school education (class 1 to 10) is Rs 4.09 thousands in 2011. This figure has also increased and came up to Rs 7.12 thousands in 2015. Five year average value of total teacher and total enrolment are 1,96,128.80 and 60,75,214.40, similarly, TSC, TUCt and TUCs are Rs 3,33,35,928.80 thousands, Rs 196.39 thousands and Rs 5.51 thousands respectively in Nepal.

Marginal Social Cost

Marginal social cost refers to the cost incurred on an additional unit (teacher or student) or the additional cost attributable to an extra unit (teacher or student).It is associated with decisions to change the level of educational outputs. These include all the acquired skills, attitudes and knowledge that students imbibe from the educational system beyond what they brought to it initially. The unit of measurement of educational output is in respect of a person that succeeds in completing a particular course. Marginal costs refer to the change in total cost of education associated with a unit change in educational output (Babalolaj, 1995).

It is derived by change in total social cost divided by change in number of teacher or student. If we want to calculate the marginal social cost of teachers, it equals to the change in total social cost that comes as a result of the per unit change in teacher and if we want to calculate the marginal social cost of students, it equals to the change in total social cost that comes as a result of the per unit change in student. It is the addition to total social cost caused by appointing one more person of teacher or enrolling one more person of student in the school. In other words, it is addition to the total social cost of investing 'n' units instead of 'n – 1' units.

Marginal social cost is expressed as $MSC_t = DTSC/DN_t$. Here, MSC_t means marginal social cost of teachers, DTSC means change in total social cost and DN_t means change in total number of teachers in given level. Similarly, marginal social cost of students is expressed as $MSC_s = DTSC/DN_s$. Here, MSC_s means marginal social cost of students, DTSC means change in total social cost and DN_s means change in total number of students in given level (Wachiye, & Ejakait, 2014). Calculated value of marginal social cost of teacher and marginal social cost of students are presented in Table 8.

Table 8: MSCt and MSCs of Government based School Level Education of Nepal

Years	Total Teacher	ΔN_t	Total Enrolment	ΔN_s	TSC (Rs In 000)	ΔTSC	$MSC_t = \Delta TSC/\Delta N_t$ (Rs In 000)	$MSC_s = \Delta TSC/\Delta N_s$ (Rs In 000)
2011	188842	-	6366480	-	26023570	-	-	-
2012	190612	1770	6144761	-221719	31033059	5009489	2830.22	-22.59
2013	196980	6368	5995715	-149046	32189559	1156500	181.61	-7.76

2014	200818	3838	5938354	-57361	35177400	2987841	778.49	-52.09
2015	203392	2574	5930762	-7592	42256056	7078656	2750.06	-932.38
Average	196128.8	2910	6075214.4	-87143.6	33335928.8	3246497.2	1308.08	-202.96

(Source: Table 7)

Table 8 shows the marginal social cost of teacher and students. Here, the exciting point is that marginal social cost of teachers has seen positive but marginal social cost of students has found to be negative in sign. It means yearly change in number of teachers is positive and that is negative to the student. It indicates that student enrolment in community based school level education is decreasing but appointed number of teacher and total social cost of community based education is increasing to present day. The annual average marginal social cost for per teacher (MSCt) and marginal social cost for per student (MSCs) are Rs 1308.08 thousands and -202.96 thousands respectively.

Findings and Conclusions

On the basis on data analysis presented above, it is found that annual average social cost in education is 15.84 percent out of total cost of the government of Nepal. Similarly, the annual average student enrolment at primary level is 62.51 percent that is 25.48 percent and 12.00 percent at lower secondary and secondary level respectively in the school level education. Student enrolment at primary and lower secondary levels has slightly decreased but at secondary level it has gradually increased. However, annual average size of teaching staffs at primary level is 1,36,550.80. At lower secondary level it is 35,963.80 and in secondary level it appears to be 23,614.20. Teaching staffs have increased but non-teaching staffs have remained constant during the study period. Nepal government has allocated annual average Rs 6,89,30,697.60 thousands as social cost in educational sector of Nepal during the study years. The average annual growth rate of this cost is 5.15 percent. It is found that annual average total social cost is Rs 6,89,30,697.60 thousands, recurrent social cost is Rs 5,71,63,418.79 thousands and capital social cost is Rs 1,17,67,278.81 thousands in Nepal. It is also observed that there is an inverse relationship between enrolment and social cost of education. Annual average total social cost (TSC) for community based school level education is Rs 3,33,35,928.8 thousands. The total social unit cost per teacher and total social unit cost per student are Rs 196.39 thousands and 5.51 thousands respectively in community based school level education. The annual average marginal social cost for per teacher and marginal social cost for per student are Rs 1308.08 thousands and -202.96 thousands respectively.

The discussion of the data and analysis of results concludes that there is no any predictable relationship among student enrolment, teaching and non-teaching staffs and social cost of education in the case of Nepal. However, UNESCO (1999) had analyzed public investment on education in Argentina, Brazil, Chile, China, Egypt, India, Indonesia, Jordan, Malaysia, Paraguay, Philippines, Russian Federation, Sri Lanka, Thailand, Uruguay and Zimbabwe. It has concluded that the average public investment

on education in aforesaid countries is 19.2 percent of GDP. On the basis of this event, it can be said that Nepal government should increase the share of social cost of education from its current status of 15.80 percent to at least more than it in the coming years to develop educational sector of Nepal.

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