The Impact of Demographic Characteristics on Human Capital Investment in Government vs. International School Teachers (A Comparative Analysis of Teachers' Human Capital Investment in Government vs. International Schools in the Western Province)

[1] Senior Lecturer
Department of Economics and Statistics
Faculty of Social Sciences and Languages
Sabaragamuwa University of Sri Lanka.

A.M. Indika Gunarathna[1]*

* Correspondence: indika331@yahoo.com

Abstract

This study investigates the relationship between demographic factors and Human Capital Investment (HCI) on teacher effectiveness and productivity in government and international schools within Western Province. While acknowledging the limited comparative research on HCI across different school types, the study aims to fill this gap by examining the impact of human capital investment on organizational performance within the selected schools. A multi-phase sampling procedure was used to select a sample of 432 government school teachers and 98 teachers from international schools. Questionnaires were used to gather primary data to record pertinent demographic factors and HCI. A binary logistic regression model is utilized in the analysis to determine the teacher demographic factors related to HCI. The findings show that among teachers in government schools, the inclination towards HCI rises with age albeit at a decreasing rate. Although this likelihood decreases as they get closer to retirement age the results indicate that older teachers are more likely to invest in human capital. To further understand these factors' effects on HCI the study also looks at other demographic factors like gender years of teaching experience and educational program. Government and foreign school teachers comparative study reveals unique trends in HCI inclinations that are a reflection of variations in institutional support resource accessibility and career advancement opportunities. The study comes to the conclusion that to improve teacher HCI and eventually educational outcomes focused on policies and professional development initiatives are crucial. This study offers important implications for policymakers and educational administrators by shedding light on the demographic factors influencing HCI and adding to the larger conversation about teacher development and educational investment.

Keywords: Human Capital Investment (HCI), Teacher Productivity, Demographic Factors, Government vs. International Schools, Educational Policy

1. Introduction

Human capital investment is one of the major determinants of the endogenous growth model and this discussed the importance of investing in knowledge, innovation, and research and development activities to generate new technological advancement in both goods and service sectors. Generation of human capital advancement always creates new knowledge for the country leading to accelerated economic growth of service sectors. The role of human capital enhancement was mainly discussed in both macro and micro-economic aspects. The focus of this paper is to see the demographic factors influencing of human capital investment of schoolteachers in both government and international schools in Sri Lanka.

2. Literature Review

As the Life- Cycle theory explains there are different stages in a person's life and at each stage of life, the needs of an individual differ. Along with changes in the needs of individuals, the supply of labour to economic activities also changes.

When a person does not have family obligations and living with them, they have better needs compared to a person with family obligations. As a result, the tendency to invest in human capital is less. However, once they get married and are forced with family responsibilities such as the responsibility of both the child and the elderly, their needs increase. Which in turn, encourages them to engage in secondary employment to earn an additional income to cover up the extended needs. At the preceding stage of life which is, when the employees have children of younger age who are about to get married, then the employees tend to invest less in human capital and try to do a second job to earn an additional income. As when individuals move later adulthood stage their needs and responsibilities decline, and because of it, the tendency to invest human capital will also decline.

Rao (2016) demonstrates that the decision to invest in the human capital of an individual depends on economic factors, relative deprivation, and life cycle squeeze. Life cycle squeeze is a phase where a person becomes unable to meet the needs using available resources due to the number of children as per their age.

In the Ben Porath Model of Life Cycle theory, he contrived this theory that each person will determine to maximize the current value of lifetime earnings based on the investment. Reducing investment gains leads to continually decreasing investments of human capital. This implies that human capital stock and earning power increase over the life cycle. This implies that human capital stock and earning power increase over the life cycle. When a person gets older, though human capital stock increases, there is a decrease in the amount of investment in human capital.

Figure 1: Pattern of Earnings Over Years
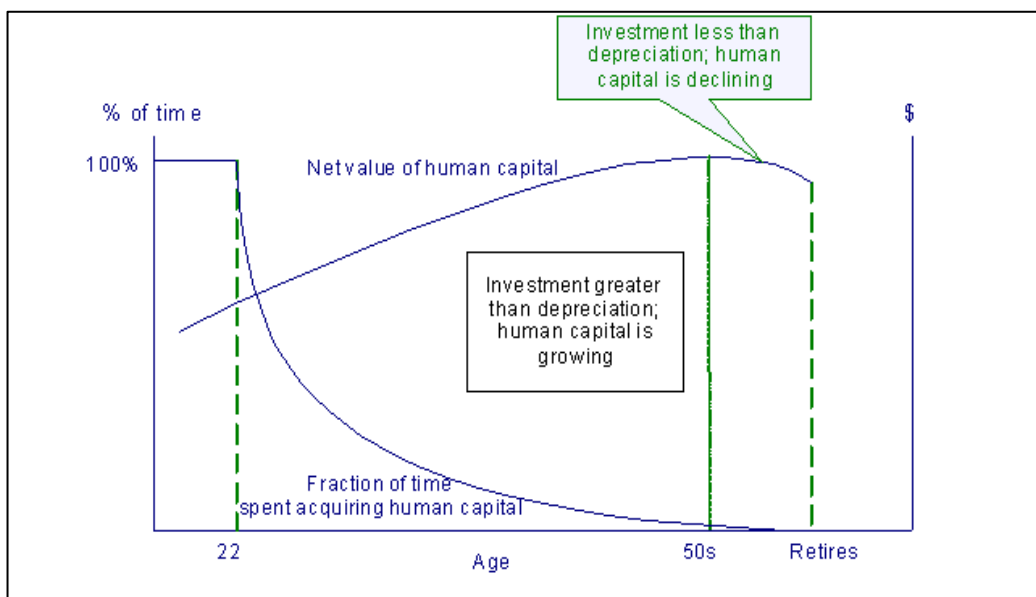
Source: Polacheck, 2008

As Figure 1 illustrates Ben-Porath model describes that when time passes, and a person grows old, investment in human capital will start declining continuously and reach zero. By the time it reaches zero, the experience of the worker will be at maximum. Due to investing in human capital skills, the experience and earnings of the employee will improve along the life cycle stages. Improvement in earnings due to human capital investment is shown in Figure 1. Human capital development will open up many additional job opportunities to individuals which encourages them to earn extra income. According to the Ben-Porath model people tend to completely stop investing in human capital even before they retire.

Most authors who studied human capital investment have identified age as a critical factor that determines the decision to invest in human capital or not. (Chen & Cheng, 2012; Lee & Chiu, 2017; Baumann & Krskova, 2016; Amzat, 2017; Huguenin, 2015; Feldman, 2017; Hartog, 2000; Chatterjee, 2017, Duleep et al., 2020) At different stages of age peoples' decision to invest in human capital differs as explained through their studies.

According to Feldman, (2017); Hartog (2000); Amzat (2017); Huguenin (2015); Zeicher & Hollar, (2016); Futagami & Yanagihara (2008); Duleep et al., (2020) there is a positive relationship among probability of invest in human capital and age irrespective of gender. This means, that when a person passes through the stages of the life cycle they tend to engage in investing in human capital because they need to improve their skills to earn additional income. Feldman, (2017) has pointed out that older people are more vulnerable to engaging in moonlighting, therefore they pay less attention to investing in human capital. Furthermore, younger people tend to invest in human capital than people who are about to retire. (Chatterjee, 2017).

Furthermore, Lee & Chiu (2017) have found that when age increases the tendency to invest in human capital declines and Baumann & Krskova (2016) also have found an inverse relationship between residents' age and the probability to invest in human capital. Persons aged 25 – 29 have been identified as an age group, with a high tendency to invest in human capital rate due to, they find it difficult to survive in their profession (Behrman, 1996; Joona, 2018). Chen & Cheng (2009) have identified that a high rate of investment in human capital is recorded among middle-aged workforce due to compulsory requirements of promotions in their career path.

Age^2, explains the rate of change in the probability of human capital investment when age is subjected to change. This rate of change can occur at an increasing rate or decreasing rate. (Feldman, 2017; Hartog, 2000; Duleep et al., 2020). As empirical evidence shows age^2 is negatively related to the probability of human capital investment irrespective of gender. (Feldman, 2017; Hartog, 2000). The negative coefficient of age^2 (Assuming the coefficient of age is positive) conveys that, when age tends to increase the probability of human capital investment increases at a decreasing rate. This type of behavior has been identified by Hartog (2000).

Gender also plays an important role in human capital investment. As past works explained decision to invest in human capital differs from male or female. (Baumann & Krskova, 2016; Behrman, 1996; Chatterjee, 2017; Ehrenberg et al., 2021; Rao,2016; Tschirhart et al. ,2008; Zeicher & Hollar, 2016; Duleep et al., 2020; Ansah & Mueller,2021)

The reason that males invest in human capital more than females is that the productivity levels of females in both market and non-market activities are lower compared to males.

Further, the decision of females to invest in human capital is affected by income potentials, family life cycle situations such as bringing up children, the attitude of females towards engaging in work, and the attitude of husbands towards their wives engaging in work. (Rao, 2016)

In the United States, Tschirhart et al. (2008) examined that graduate males were significantly and positively affected in the public sector, and also, found that males are more capable of working in government (p>0.05) and business (p>0.05) than females. Therefore, it has been proved that the factor of gender affects government employment. This result is consistent with previous findings. Then Pfeifer (2011) examined that women have a positive impact on employment in the public sector in Germany. These analyses were performed using the Probit regression model.

According to the Roy model, the returns of human capital investment depend on gender differences. There are biological facts about brawn. According to this theory, men are substantially stronger than women on average. Therefore, men have a comparative advantage in brawn (The Roy model, 1951). Evidence of past studies is somewhat contrasting when considering gender as a determinant of human capital investment. The impact of being a male and a female, on the decision to invest or not depends on the economic needs and social benefits of that particular country under study.

When a person is female, it increases the probability of investment in human capital (Behrman, 1996; Hartog, 2000; Pfeifer, 2011; Zeicher & Hollar, 2016) and when a person is male the probability of investment in human capital declines (Baumann & Krskova, 2016). Contrastingly, Hartog (2000) has derived two models in his paper where in model 2 he found out that, being a female reduces the probability of investment in human capital. The reason behind that is the 'triple burden' on females. Female employees are enforced with three roles: reproductive, productive, and socially productive. Behrman (1996) found out that being a male could increase the probability of investment in human capital.

Amzat (2017) has demonstrated, that male employees are more likely than female employees, to be employed in part-time jobs in the services sector, and therefore female employees tend to engage in human capital investment than males. Females are motivated to invest in human capital especially due to job reputation and job promotion motives (Zeicher & Hollar, 2016).

The extent to which human capital enhances the talent of the teachers of international and government schools has been identified to be significantly impacted by gender differences in the world. A lot of literature previously has identified different impacts of gender differences on the performance of teachers. According to Harris & Brown (2020), he has concluded that the level of job satisfaction of males is higher than that of females, based on his research studies done on different types of schools.

This conclusion is different per Koustelious (2001), who has concluded that female teachers have a greater tendency to invest in human capital than males. Gender differences also impact the level of commitment of teachers. According to Kumari & Jafri (2011), investment in human capital among the male and female teachers of secondary schools is different in that the overall percentage of investment in the human capital of female teachers is much higher than that of male teachers.

Further, they have emphasized that the attitudes of male and female teachers which are different have a significant impact on the job satisfaction level. However, Suki (2011) has revealed that gender difference has no significant impact on the probability of investment in human capital, and therefore the institutional commitment of both male and female teachers is very similar.

Becker (1975) discusses about labour market consequences of both men and women based on the marriage market by presenting "The Theory of Marriage". Only a skeleton of a theory of marriage has been represented by the author concerning two assumptions that everyone attempts to do the best they can, and the so-called market is in a state of balance. The author was able to gain some diverse remarkable suggestions concerning behavior within this market with the support of various auxiliary simplifying suppositions. For example, a male and female's benefit from being married over being single is manifested to switch on emphatically in their human capital, incomes, and comparative difference in wage rates.

Studies conducted by Lee & Chiu, 2017; Baumann & Krskova, 2016; Huguenin, 2015; Feldman, 2017; Behrman, 1996; Hartog, 2000; Duleep et al., 2020 have identified that when marital status differs, from married to unmarried the probability of investing in human capital tend to change.

Young, single individuals who are free from family obligations are enthusiastic to invest in human capital due to the lesser work experience they attain, compared to rest in the workforce and availability of time (Behrman, 2006). In contrast, people who are married also tend to invest in human capital to get promotions in their career path to execute their family responsibilities.

The following authors have constructed different categories for marital status in their research.

Table 1: Different Categories Developed by Authors for Marital Status

Author	Material Status
Feldman, 2017	o Married o Not Married
Behrman, 1996	o Single (Never married) o Married o Other
Ismail, 2016	o Unmarried Women o Previously Married Women o Married women o Married men
Samaraweera, 2016	o Being married o Never married was an omitted category

Source: Developed by Author, 2024

According to Martins (2019), married people tend to show a negative relation along with the probability of investing in human capital. Even if the particular person is a widower, separated, or divorced still it has a positive relationship with the probability of investing in human capital. If a person is single then it will have a positive relationship with a probability of investing in human capital (Baumann & Krskova, 2016).

Mostly, unmarried men invest in human capital compared to married men. The main reason is that married males are engaged in moonlighting since they have limited resources (financial) to fulfil family and children's responsibilities. Therefore, they do not have enough time to engage in human capital investment (Hartog, 2000).

When considering females, most of the time single women tend to invest in human capital than married women with responsibilities and tough schedules (Rao, 2016; Chatterjee, 2017). Amzat, (2017) further illustrates that females who were never married before and previously married found highly engaging to invest in human capital due to fewer responsibilities. Ansah & Mueller (2021) found that marital status significantly and positively affected on investment choice of Human Capital in the government sector. Therefore, they have proved that the factor of marital status affected Human Capital Investment in government workers.

2. Methodology

The study is conducted using data collected from the Western Province of Sri Lanka. The population of schoolteachers in the western province is 53,938. The sampling procedure of the survey is explained in the following section.

Multi-stage sampling procedure was followed in this study. In the first stage of the study, the Western province was selected due to the high representation of schoolteachers from the Western province in Sri Lanka. In the second stage, 5 percent of schools from each district including Colombo, Gampaha, and Kaluthara were selected, and 76 schools were selected for the data collection using a stratified sampling technique. The final stage of the sampling is simple random sampling with a 10-present representation of school teachers from 76 schools representing 67 government schools and 9 international schools.

Using the Stratified Random Sampling method 5% of Schools were selected by each district both government and international. After that using a random table of the schools of each district and using a simple random sampling method got the 10% of teachers at each school. The final sample is attached herewith.

Table 2: Sample of the Study

District	No of Govt. Schools Selected	No of the Teachers Selected	No of the International Schools Selected	No of the Teachers Selected
Colombo	20	156	6	60
Gampaha	26	168	2	28
Kaluthara	21	108	1	10
Total	67	432	09	98

Source: Department of Census and Statistics, 2018

The data collected through primary data will be presented using data presentation tools such as tables, bar charts, and pie charts first and binary logistic regression models will be used as the main analytical tool for identifying the determinants.The intention of using data presentation tools is to identify different proportional distributions of characteristics of the sample. To show statistical values tables will be used and for graphical presentations both

bar charts and pie charts will be used. Data under study is planned to be analyzed using STATA data analyzing software. The logit estimation model will be used in model building.

1. *Logit estimation*

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 D_1 + \beta_4 D_2 + \beta_5 D_3 + u\ldots\ldots\ldots\ldots(1)$$

Where:

Y = Choice of investment

β_0 = Constant

β_1 = Coefficients of independent variables

X_1 =Age

X_2 = Age Square

D_1 = Being female

D_2 = Sector of employment

D_3 = Being ever married

u = error term

Hypothesis of the Study

H_1: There is a relationship between human capital investment and demographic characteristics.

The summary of variables and their measurements used in the study is reported in Table 3.

Table 3: Measurement of Variables

	Variables	**Measurements**
Dependant Variable	Choice of Investment(Y)	1 for invest, 0 for not invest
	Demographic factors	
	Age (X_1)	in the number of years.
Independent Variables	Being female (D1)	1 for female, 0 for male
	Being ever married (D2)	1 for forever married, 0 for never married
	Sector of employment (D_2)	1 for government school, 0 for international school

3. Results and Discussion

Human capital investment of teachers was defined in this study as the investment to improve the performance of teaching after entering into the teaching career. 44 percent of teachers invested in human capital development after entering into the career while 43 percent of female teachers and 46 percent of male teachers invested in Human Capital enhancement during their career. 76 percent of the samples are males. The average age of teachers in the

sample was 41 while the average age for females and males were 40 and 45 respectively. 81 percent of teachers represent government schools. 42 percent of teachers hold secondary employment while the tendency for moonlighting is higher for government teachers than the teachers from international schools. The majority of teachers have an average education of 16 years, and this indicates that most of them generally have higher education at the tertiary level after the GCE AL examination at the end of the school age. Most of the sample is married and permanent workers in their employment (Table 4).

Table 4: Descriptive Statistics for Total Sample and by Demographic Factors

Variable	Total		Female		Male	
	n=530		n=402		n=128	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Ever Invested in HCI during a teaching career	0.442	0.497	0.435	0.496	0.461	0.500
Being Female	0.758	0.428				
Age	41.453	10.23	40.415	10.248	44.711	9.488
Age^2	1822.74	848.27	1738.162	837.049	2088.383	831.372
Being ever married	0.796	0.403	0.776	0.417	0.859	0.349
Being government teacher	0.815	0.389	0.803	0.398	0.852	0.357

Source: Developed by author, 2024

Key determinants of human capital investment of school teachers for the whole sample and for gender-specific samples were presented in Table 5. When age increases, the tendency for human capital investment increases at a decreasing rate. The decreasing rate is due to biological deprivation and school teachers' lifetime earnings. The opportunity cost of human capital investment rises with age and this also causes for the diminishing rate of involving human capital investment. When age increases future working years will decrease. Therefore, the return to human capital would be diminished with age leading to diminishing human capital investment of teachers slowly. These findings also match the Ben Porath model's findings on human capital investment.

The tendency of human capital investment to increase with age at a decreasing rate for both male and female teachers. Female teachers invest more in human capital than males when they are getting older. The diminishing rate is relatively similar for both men and women. This finding matches with the findings of Duleep et al., 2020. Their research on human capital investment and the Gender Division of Labor in a Brawn-Based Economy also stated that more tendencies toward human capital investment by female teachers can be observed.

According to Magau et al., 2021, there is a significant and positive connection between the age of the respondent and human capital investment of female workers. It is confirmed by many researchers, such as Chen & Cheng, 2009; Lee & Chiu, 2017; Baumann & Krskova, 2016; Amzat, 2017; Huguenin, 2015; Feldman, 2017; Behrman, 1996; Hartog, 2000; Chatterjee, 2017; Zeicher & Hollar, 2016; Futagami & Yanagihara, 2008 considers the age as one of the independent variables to develop their empirical model. When age increases there is a drop in the probability of human capital investment rate for women.

Contrastingly Lee & Chiu (2017) stated that when women get older rate of human capital investment rises. Age is an important driver that highly influences women in choosing between household work and human capital investment. Women reach their maximum rate of human capital investment participation between the ages of 45-54 and 55-64.

Human capital investment is 18 percent higher for government teachers while male teachers would like to invest more in human capital than female teachers. Being a government teacher increases the tendency to invest in human capital in comparison to teachers from international schools. Among male teachers, government teachers have a 33 percent higher tendency to invest in human capital than the male teachers from the international school while being government teachers among female teachers increases the tendency of investing in human capital by 20 percent in comparison to the international female teachers.

Table 5: Marginal Effects of Logit Models: For Total Sample and by Gender

Variable	Total		Male		Female	
	n=530		n=128		n=402	
	ME	Z	ME	Z	ME	Z
Being Female	0.027	0.54				
Age	0.060	2.85	0.067	1.48	0.085	3.53
Age^2	-0.001	-2.56	-0.001	-1.35	-0.001	-3.21
Being government teacher	0.184	3.06	0.339	3.02	0.209	2.87
Being ever married	-0.004	-0.07	0.150	1.05	-0.043	-0.56

Source: Developed by author, 2024

Family income which shows the financial wealth of the household shows a significant positive relationship with the human capital investment of teachers. Family income is a highly sensitive factor for males on human capital investment than that of females and the general sample. Female involvement in human capital investment will depend on several other factors including their time allocation on non-market activities. Hence the responsiveness of income on human capital investment is relatively lower. According to Ansah & Mueller (2021) in their research "Microeconomic Analysis of Private Returns to Education and Determinants of Earnings" also stated that female human capital investment is low due to factors such as time constraints, balancing household activities, work of children and family responsibilities.

However, according to the research conducted by (Ehrenberg et al., 2021), in their research title "The Economics of Multiple Job Holding" claimed that they had a contradictory view. The findings of the research demarcated that the female Human Capital Investment is relatively higher than the male human capital investment. The main reason for this as stated in their research was that females are keener on enhancing private financial returns to education such as increasing educational qualifications, improving earnings, interested in gaining promotions, and gaining self-recognition and self-esteem are some of the factors.

Chatterjee (2017) Human Capital Investments and Productivity has found a negative relationship between female workers in higher family income groups and the probability of human capital investment. Hartog (2000) and Rao (2016) in their research state that females

who are engaged in secondary jobs are engaged in multiple work in addition to their primary jobs because female teachers have to carry out the multiple roles of a woman. As a result, they have less time to invest in human capital in comparison to male teachers.

According to the research conducted by Feldman (2017) a contradictory view, one of the reasons for the differences in human capital investment is due to the specialized field in degree. That is, males who have degrees in the fields of science, and business have high incomes. Therefore, their investment in human capital investment is high. And males with degrees in the field of humanities, and social sciences and relatively less earnings. Therefore, their investment in human capital investment is low. Nevertheless, women in all these fields have even less earnings in comparison with males. Therefore, females' investment in human capital investment takes a very low proportion.

According to the Roy model, the returns of human capital investment depend on gender differences. There are biological facts about brawn. According to this theory, men are substantially stronger than women on average. Therefore, men have a comparative advantage in brawn (The Roy model, 1951).

This conclusion is different as per; (Ballout, 2007), who concluded that female teachers are more satisfied than males. Gender differences also impact the level of commitment of teachers. According to Amzat (2017), the overall level of organizational commitment among the male and female teachers at secondary schools is different the overall percentage of commitment of female teachers is much higher than that of male teachers. Further, they have emphasized that the attitudes of male and female teachers which are different have a significant impact on the job satisfaction level. However, Zeicher and Hollar (2016) have revealed that gender difference has no significant impact on the level of job satisfaction, and therefore the organizational commitment of both male and female teachers is very similar.

4. Conclusions

Age is the key demographic factor associated with age, with a positive sign as expected. The choice of investing in human capital enhancement increases with age but at a decreasing rate. This is common for the whole sample, for male and female teachers separately, for non-urban teachers, government teachers aligned with the ben-porth model. Human capital investment among government teachers is significantly higher than that of international school teachers for the overall sample, males, females, non-urban sector teachers, and graduate teachers. The career stability of international school teachers is relatively low and their social security is also lower for them than the government teachers. Therefore, the expected duration of the employment duration is a bit lower for them than the government teachers due to this and their tendency to invest in human capital is relatively lower. This could negatively affect the capacity building of pupils in international schools.

Therefore, the study concludes that age, and being a government teacher, are the main determinants of human capital investment of school teachers in the Western province in Sri Lanka.

5. Recommendations

Newcomers to the teaching profession should be promoted for human capital investment with a career goal. Since lifelong learning is very important for teachers as a key mode of knowledge dissemination for future generations, increasing human capital investment

among senior teachers should also be focused on policymaking. The training programmes should be focused on the field of teaching, capacity building, professionalism and skill development to create role models in the minds of children rather than fulfilling a requirement for promotion. The Ministry of Higher Education is currently practising "Training Programmes of Modules" as a requirement for promotions. However, that does not focus on the real requirement of the teacher to match them with their individual training needs. Human capital investment should be well-focused and school administration and specific teachers should be able to decide the most important module that is relevant to their organizational and individual needs at different stages of their careers. There should be a proper administrative mechanism to absorb the knowledge of trained teachers in the development of individuals, pupils and the overall organization. The Ministry of Higher Education should tune up the current programme by ensuring the real requirements of teachers and incorporating a mechanism to absorb the knowledge of the newly trained teachers to the whole organization. The training mechanism should be developed regardless of the age or the seniority of teachers since all of them are playing the role of nation builders rather than just being facilitators for pupils.

Human capital investments of government school teachers are significantly higher than those of private school teachers. Instability and poor job security cause to discourage teachers from investing in human capital further and this would create negative consequences for the pupils of international schools. Since job turnover is high among international schools due to the same issue training and recruitment costs are relatively high for them and lack of experienced teachers is an issue mainly in the higher grades of education which could lead to poor quality of education in higher grades. Job turnover is very low among government school teachers due to high job security with pension benefits and the recognition of employment. The Duration of the work hours per day is higher for international school teachers than the government school teachers and government school teachers enjoy more freedom than international school teachers with time and vacation. The validity given by government school teachers on their career is relatively higher as a result of and stability of employment that encourages them to invest more in human capital enhancements. Therefore, ensuring job security and having a common system of upgrading career parts are essential components for teachers from international schools. The Ministry of Higher Education should intervene to monitor the capacity building and the training among international school teachers and the unit of private schools in the ministry could monitor this further. This will enhance the quality of education in international schools, and this will further reduce the higher completion made by the labour force to enter government employment.

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