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Human capital and its measurement

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Chapter 1: Introduction

Introduction

The Meaning of the Human Capital

- ✿ The success depends in large part on the people with higher level of competence. In response, the people are becoming valuable assets.
- ✿ In the economic perspective, the capital refers to factors of production used to create goods or services
- ✿ The human is the subject to take charge of all economic activities such as production, consumption, and transaction.
- ✿ Thus, it can be recognized that human capital means one of production elements which can generate added-values through inputting it.

Introduction

Two Types of the Human Capital

- ✿ The first is to utilize 'human as labor force' related to economic added-value that is generated by the input of labor force as other production factors such as financial capital, land, machinery, and labor hours.
- ✿ The other is that the human capital can be viewed as the target of investment through education and training
 - The human capital expansively includes the meaning of "human as creator" who frames knowledge, skills, competency, and experience originated by continuously connecting between "self" and "environment".

Introduction

The Importance of Human Capital as Creator

- ✿ In the 1950's, some economists discovered that the investment of human capital was the primary element to raise individuals' wages compared to other components such as land, financial capital, and labor force (Salamon, 1991).
- ✿ Throughout the investment of human capital, an individual's acquired knowledge and skills can easily transfer certain goods and services with practical values (Romer, 1990).
- ✿ Furthermore, It is acceptable that the conceptual foundation of one's human capital is based on "something like knowledge and skills" acquired by an individual's learning activities.
- ✿ → Human capital = knowledge as broad meaning"

Introduction

The Importance of Human Capital

- ✿ human capital affects... at all levels
 - The growth of an individual' wage, firms' productivity, and national economy (Denison, 1962; Schultz, 1961).
 - “firm's core competences or competitive advantage” (Lepak & Snell,1999).
 - worker's productivity in the workplace (Griliches & Regev, 1995; Lucas, 1988; Rosen, 1999)
 - To easily implement job-seeking activities with increasing the human capital (Vinokur et al., 2000).
 - To relatively receive high rewards in the internal/external labor market (Edward, 1979).
 - National economic growth (Romer, 1986).

Introduction

The Importance of Human Capital Measurement

- ✿ With perceiving about the importance of human capital, many nations have tried to effectively and efficiently measure their human capital to understand their current status.
- ✿ Thereafter, human capital measurement is an important source in terms of suggesting and implementing policies regarding human resources.

Introduction

The Drawbacks of Traditional Measurement Method

- ✿ First, Wolf (2002) suggests that some of indicators can be actually considered as incomplete indicator to measure the human capital. (e.g. proxies such as income and productivity)
- ✿ Second, it is difficult that human capital itself independently contributes to individual development and national economy growth.
 - According to Ashton & Green (1996), it is necessary that the link between human capital and economic performance should be considered within a social and political context to precisely measure the human capital.
 - Financial, human and social capital positively influence “something like individual health” (Blakey, Lochner, & Kawachi, 2002; Veenstra, 2001; Veenstra et al., 2005; Wilson et al., 2004)

Introduction

- ✿ Consequently, the purpose of this presentation is to clarify the new (& additional) approach of human capital measurement through the related literature review.
- ✿ Before doing this, this presentation presents some concepts and characteristics of human capital. On such understanding of human capital, traditional measurement and its demerits, a new approach of human capital measurement is proposed.

Chapter 2: Concept of Human Capital

Concept of Human Capital

The Categorization of that Concept

- ✿ The first viewpoint is based on the individual aspects. Schultz (1961) recognized the human capital as “something akin to property” against the concept of labor force in the classical perspective.
- ✿ There is the second viewpoint on human capital itself and the accumulation process of it.
 - This perspective stresses on knowledge and skills obtained throughout educational activities such as compulsory education, postsecondary education, and vocational education (De la Fuente & Ciccone, 2002, as cited in Alan et al., 2008).

Concept of Human Capital

- ✿ The third is closely linked to the production-oriented perspective of human capital.
 - Frank & Bemanke (2007) define that human capital is “an amalgam of factors such as education, experience, training, intelligence, energy, work habits, trustworthiness, and initiative that affect the value of a worker's marginal product”
 - “the stock of skills and knowledge embodied in the ability to perform labor so as to produce economic value” (Sheffin, 2003).
- ✿ Consequently, human capital simultaneously includes both of the instrumental concept to produce certain values and the “endogenous” meaning to self-generate it.

The human capital is a synonym of knowledge embedded in all levels such as an individual, an organizations and/or a nation.

Chapter 3: Characteristic of Human Capital

Characteristics of Human Capital

3.1. Indigenous Characteristics

- ✿ According to Crawford (1991), compared to physical labor, human capital includes expandable, self-generating, transportable, and shareable characteristics.
- ✿ To begin with, the expandable and self-generating characteristics of human capital are closely linked to the possibility that the stock of knowledge increases individuals' human capital.
- ✿ Secondly, the transportable and shareable characteristics of human capital mean that the original holder of knowledge can distribute his/her knowledge to others.
- ✿ Consequently, the former two characteristics extend the **volume** of human capital, and the latter two expand the **range** of human capital.

Characteristic of Human Capital

3.2. Impacts of Human Capital: On the Perspectives of Individual, Organization, and Society

✿ Individual:

- Much possibility of increasing individual income, resulting from the individual productivity (Becker, 1993; Denison, 1962; Schultz, 1961; Schultz, 1971; Sidorkin, 2007)
- Worker's possibility to move to higher level in the internal market (Sicherman, 1991; Galor 1990)

✿ Organization:

- “collective competences, organizational routines, company culture; and relational capital” (Edvison & Malone, 1997)

Characteristic of Human Capital

✿ Society:

- The possibility of human capital for “democracy, human rights, and political stability” on common consciousness of social constituents (McMahon, 1999)
 - Increase of social consciousness of constituents within community (Beach, 2009)
- Consequently, the link between human capital and social consciousness is based on a close inter-relationship resulting in socio-political development (Alexander, 1996; Grubb & Lazerson, 2004; Sen, 1999).

Characteristic of Human Capital

3.3. Division of Human Capital: On the General- and Specific- Human Capital

- ✿ General human capital is “to be defined by generic knowledge and skill, not specific to a task or a company, usually accumulated through working experiences and education” (Alan et al., 2008).
 - the general human capital embedded in an individual can transfer to different industries.
- ✿ Firm/task specific human capital is usually accumulated through education, training, working experience on “knowledge specific to a firm/task” (Alan et al., 2008).
 - It is difficult that the specific human capital transfers to different industries

Chapter 4: Conventional Measurement Method of Human Capital

Conventional Measurement...

The conventional standard to measure human capital stock has been largely categorized into three parts: Output-, Cost-, and Income-based approach

4.1. Output-Based Approach

- ✿ Some economists attempted to measure the stock of human capital utilizing “school enrollment rates” as a proxy of human capital (Barro, 1991; Barro & Lee, 1993)
 - However, the method includes a drawback that a student’s effectiveness can be recognized after participating in production activities

Conventional Measurement...

- ✿ Nehru, Swanson, & Dubey (1993) attempted to measure relationship between human capital and students' "accumulated years of schooling" in the employable age as educational attainment.
 - It is difficult to clearly demonstrate this relationship, because educational attainment is a part of regular [school] education.
- ✿ Romer (1990) suggested the ratio between skilled-adults and total adults to measure the stock of human capital in the national economy. (e.g. OECD utilizes International Adult Literacy Survey (IALS), the ratio between literated adults and total adults)
- ✿ Psacharopoulos & Arriagada (1986) suggested the average years of schooling to measure the stock of human capital.
 - This method includes a drawback that an individual's years of schooling can be slightly related to his/her productivity

Conventional Measurement...

4.2. Cost-Based Approach

- ✿ Cost-based approach is based on measuring the stock of human capital through summing costs invested for one's human capital.
- ✿ To calculate the invested cost, Kendrick (1976) utilized an individual's investment costs considering depreciation, and Jorgenson & Fraumeni (1989) presented discounted income in the future
- ✿ But this approach is based on indirectly measuring stock of human capital. So it is difficult to precisely classify boundary between investment and consumption in the perspective of costs.

Conventional Measurement...

4.3. Income-Based Approach

- ✿ This approach is based on the returns which an individual obtains from a labor market throughout education investment.
- ✿ Mulligan & Sala-i-Martin (1995) defines that aggregate human capital is the sum of quality adjustment of each individual's labor force, and presents the stock of human capital utilizing an individual's income.
- ✿ But human-unrelated factors can more influence an individual's income. In this sense, this approach rarely presents a complete measurement for human capital.

Conventional Measurement...

4.4. How is Currently Human Capital Measured? : Based on OECD Measures

- ✿ Hansson (2008) shows that OECD measure on human capital is closely linked to international comparable statistics considering investment in human capital, quality adjustments, and result of education.

Table 1. OECD measures on human capital	Factors
1. Investment in human capital	
1-1. High-level qualification	
1-1-1. Growth in university-level qualifications	
Growth in attainment levels in different fields	
1-2. Graduation and enrollment rates	
1-2-1. Trend in university-level graduation output	
1-2-2. Contribution of international students to university graduate output	
1-2-3. Entry rates into tertiary-type A education	
1-2-4. Entry rates at tertiary education compared to population leaving without completing tertiary education	

Conventional Measurement...

Table 1. OECD measures on human capital (Cont'd)

Factors

- 1-3. Time invested in education
 - 1-3-1. Instruction time per year
 - 1-3-2. Number of hours per week spent on self-study or homework
 - 1-4. Investment in education
 - 1-4-1. Expenditure per student at different level of education
 - 1-4-2. Percentage of GDP spent on educational institutions
 - 1-4-3. Private and public expenditure
 - 1-4-4. Public subsidies for education to households
 - 1-4-5. Expenditure on core service, ancillary services, and R&D
 - 1-4-6. Change in student numbers, expenditure, demographic forecasts, etc
 - 2. Quality adjustment in human capital investments
 - 2-1. PISA assessments
 - 2-2. PUIAAC (Program for the international assessment of adult competencies)
 - 3. Results of education
 - 3-1. Matching of education to occupation
 - 3-2. Labor market outcomes by age, gender, and educational attainment
 - 3-3. Rates of return to education
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Conventional Measurement...

- ✿ As can be seen in Table 1,
 - The first sub-factor is “investment in human capital” focused on the current level of human capital investment within a national boundary.
 - The second focuses on how the quality of that investment is managed and adjusted through the international comparison of academic achievement.
 - Third sub-factor presents how the result of educational investment is performed after postsecondary education.

Chapter 5. Demerits of the Conventional Measurement and New Possibilities

Demerits of the conventional...

5.1 Demerits of the Conventional Measurement

- ✿ First, on the screening theory, Winkler (1987) surmises that human capital investment rarely influence his/her outcome of it. Rather, the capital-unrelated factors more affect the effectiveness of human capital investment.
- ✿ Second, the conventional measurement of human capital slightly considers the qualitative benefits of human capital such as family health, fertility and child morality (Lewin et al., 1983; Woodhall, 2001).
- ✿ Third, other indicators that can contribute to estimate more accurate concept of human capital are rarely considered.
- ✿ Fourth, the increase of human capital can rarely ensure that of social progress.

New approach of Human...

5.2. New Approach of the Measurement

On the above-mentioned demerits of conventional human capital measurement, new approach of the human capital measurement needs to be considered;

“What are more precise proxies for human capital measurement with the evolving of the human capital?”

New approach of Human...

- ✿ To begin with, the new approach of human capital measurement should partially accept the conceptual framework of Human Development.

(1) United Nations Development Programme (UNDP) has reported Human Development Index (HDI).

- The structure of the index is constituted to health, knowledge, and standard living with many sub-variables such as life expectancy at birth, adult literacy rate, gross enrollment ratio, and GDP per capita.

(2) International Labour Office (ILO) tends to utilize the similar index considering the quality aspects such as the Key Indicators of the Labour Market (KILM)

→ These two measurements are based on the consideration of quality aspects with other economic perspective.

New approach of Human...

- ✿ Second, it is necessary that the advanced measurement of human capital considers the concept of “human development”, assuming that the concept of development includes both of quantitative growth and qualitative progress.
 - it is possible that the network component of social capital contributes to the increase of human capital owing to the characteristics of that: transportable, and shareable.
 - Therefore, the new approach of human capital measurement needs to pay more attention to social capital.

New approach of Human...

- ✿ Finally, a new approach of human capital measurement clarifies what indicators can be considered to precisely measure more accurate human capital.
 - OECD measurement is closely linked to education-related factors as proxies of human capital.
 - However, these proxies have to do with the possibility that human capital takes place.
 - A new approach need to seek indicators that are more strongly related with the possibility and identify how to measure them.

Chapter 6: Implications

New approach of Human...

Based upon the related literature review, some implications can be discussed as follow:

- ✿ First, under the condition that human capital tends to expand toward human development and human capital measurement heavily focused on relatively indirect indicators such as education-related ones and monetary, a new approach to measure needs to include 'non-monetary' and 'humanware' .
- ✿ In the similar context, second, human capital is closely linked to social capital. The networking is the core component of social capital. The degree of knowledge creation and sharing depends on the variety of networks focusing on tie density, strength etc.

New approach of Human...

- ✿ Third, it is necessary to analyze the result of human capital measurement within the socio-cultural framework of a society.
- ✿ Fifth, it needs to be standard practice for official statistical agency to include more accurate human capital in their capital stock measures.

Thank you
