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FUNDAMENTALS OF HUMAN CAPITAL AND EDUCATION ELEMENTS OF THE ENTREPRENEURSHIP ECOSYSTEM

Review
Article

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Abstract

This work presents a literature review on the Human Capital (HC) factor as part of the Entrepreneurship Ecosystem. The research mainly is focused on a detailed investigation of the theories and concepts of HC, based on education as the main focus of the HC. This work explores the research of Gary Becker (1962), one of the main influencers in the fields of HC and Education. His work has been mapped by observing its connectedness with the literature review, created with a beta tool using the “similarity metric” method which gives results with the Co-citation and Bibliographic Coupling using the Semantic Scholar databases. The first part is the introductory overview of the HC theories, significant researchers, and interconnectedness, the second part describes the relations of HC and education, while the third part includes a subtopic about entrepreneurial HC, an introduction developed for further research interests and the results and findings provides the summary of components for value creation in the HC.

INTRODUCTION

In the classical economic theory, three production factors are mentioned: land, capital, and labor. Over the years the concept of capital has been used to define the acquisition of assets and machinery, it is only in the last 70 years since it has been accepted and considered as important as the so-called intangible assets or human capital.

The first classic economist to talk about human capital as a concept was Adam Smith in 1776, in his work 'The Wealth of Nations' he proposes the existence of a similarity between the workforce and productive machines (Smith, 1776). More than a century passed to raise the attention of other authors considering the concept implemented by Smith. It was never developed within a framework of a solid theoretical structure, at least until the middle of the 20th century, thanks to the research made by Mincer (1958), Schultz (1960), and Becker (1964). In their works it is marked, that capitalization in education, training, and development skills was as important in economic growth as investing in infrastructure and equipment. With this, the concept of Human Capital (HC) was born, and the expression 'human resources' was conceived.

The so-called 'theory of HC' gives the idea that we are trying to highlight, insists on the incomes, social and private, that result from the investment in 'human capital'. After minimal investment in the basic necessities - food and health - the focus goes to education resulting in an increase in opportunities, experience, work productivity, and income.

This article aims to analyze the theoretical and empirical foundations of human capital theories and concepts, through a search in electronic libraries such as Semantic Scholar and Google Scholar. Creating a semantic map, including the work of Becker (1964) as one of the most influential on the topic. This exploratory research expects to contribute and give a better understanding of the topic from the theories of the HC leading to education, and the Entrepreneurial HC as part of future research within the frame of the entrepreneurship ecosystem.

This research consists of three parts, first is an introductory overview of HC and its literature review with visual connectedness, second HC and education, and third the introduction to a subtopic of entrepreneurial human capital fundament to further study.

Human Capital overview

Since the last century governments began to work on the development of their societies not only from the point of view of the industrial revolution, technological advances, or the increase of capital economic but also from the point of human capital. The concept of HC was outlined in the middle of the

last century from the sociological study on human development and carried out by Gary Becker. According to the work, much of the economic growth of societies could explain if a variable called human capital was introduced, correlated with the level of specialized training that the economic agents or individuals of society had. Currently, this training is part of public policies. Gary Becker (2002) says that human capital is an "investment in giving knowledge, training, and information to people, this investment allows people to give a higher return and productivity in the modern economy and take advantage of people's talent". There is a debate on whether new definitions or concepts of human capital are necessary starting from the so-called knowledge era, this need can be seen as important to follow as the study of this line of research. Due to this, it is considered that as we enter more into the development of knowledge and technology, the concept of human capital is becoming much more broad and complex.

Currently, there are other great challenges that the different economies have to face. The new labor reforms, the need to increase business productivity, the recovery of jobs, finding new niches and ways of businesses, new responsibilities facing the economic model that is to be implemented to get out of the economic crisis, the information and communication technologies, the globalization process, the increasing competition in the markets, and the surge of emerging markets can be very serious threats to regions and countries, especially for those economically less developed. Facing these new ways of living, when trying to find solutions, in the business system of SMEs it has placed feasible hopes of becoming a pillar of the new economic model and of labor relations that is wanted to establish in a country. That is why the scientific and research movement seeks to generate and promote initiatives is important for creative people to come on stage and join existing entrepreneurs with a sense of belonging to the self-employment sector, in addition to being committed to the professionalization of their company in the area that performs more productively.

The new entrepreneur would act as an instrument to stimulate economies and promote the flexibility of the productive fabric through creativity, innovation, etc., and together with other economic strengthening policies would generate a structural change in the local, regional and national economy.

Human Capital and Education.

The theory of human capital that is based on education is one of the important arguments that explain the growth and development of people as it increases wages and quality of life and countries fighting poverty, driving technological development and productivity.

Education is an essential part of the development of the economic situation of the country, because of the link between education and economic progress. Theoretical evidence of this reflection is also expressed by Becker (1986) who considers that "the growing importance of HC can be seen from the experiences of workers in modern economies, who lack sufficient education and training in the job".

According to Becker (1964), there are general and specific forms of education. General training raises the marginal productivity of trainees to the same extent to which companies provide it. However, it is clear that certain types of training increase productivity to a greater extent in companies that provide it than in those that do not offer it. Specific education raises productivity in the companies that supply it and is called totally specific training when affects the productivity of trained people only within the companies that provided the training (Becker, 1983).

Adam Smith strongly believed in the power of education and learning (Smith, 2000). Regarding the debate, which is still ongoing, on the role of "nature" and "education" nurture. Smith was a determined supporter of education, as befits his deep trust in improving human capabilities: "the difference in natural talents between men is actually a lot less than we thought; and the very different special abilities that seem to distinguish men from different careers when they arrive at maturity, most of the time they are not the cause but the effect of the division of labor" (Smith, 1776).

The expansion of the educational system is an undoubted utility in creating the values and capabilities that are indispensable for the present. We are not speaking only about increasing it, but also the content of education must also be expanded. The academia must be prepared with quality programs that enhance and develop the human capital of the region where they are established.

Entrepreneurial Human Capital

Entrepreneurial HC includes a variety of competencies, like the ability to create ideas, find solutions, the capacity to deal with complex situations, work at risk, etc. (Kantis, Federico, and García, 2014). It also includes intellectual capabilities, personality, behavioral tendencies, or attitudes (Gartner & Carter, 2003). But the Entrepreneurial human capital goes beyond the behavioral and cognitive constructs described before. It involves putting those aspects into action; applying them in an organization to generate value and create a sustainable advantage.

This approach, despite being applied to the entrepreneur, neglects their individuality, characteristics, and personal competencies and puts them in the context of an organization (existing or potential), as well as opens the possibility that the entrepreneur can invest to acquire them. It is a

valuable key resource for the organization to achieve sustainable benefits that allow better performances (Amit & Shoemaker, 1993; Prahalad, Hamel, and June, 1990). The ability of the company to implement the strategies necessary for effective management of all resources also depends on entrepreneurial HC.

Entrepreneurial HC encourages not only the conception of good ideas but also their consolidation, as well as finding solutions that allow facing the challenges once the company establishes its operability. And, even more, the HC must fight to survive and conquer a place in the world to achieve success through growth (Kantis et al., 2014). But if we consider that each region is different, it is logical to think that the productivity of the entrepreneurial HC from one region, when moved to another, is also affected. Acknowledging, that the individuals with certain characteristics that thrive in one ecosystem probably will not succeed in different conditions.

Environmental and contextual factors have an influence on performance and entrepreneurial behavior (Shane & Venkataraman, 2007; Ucbasaran, Westhead, and Wright, 2001). The research in entrepreneurship is mostly based on characteristics or behaviors that distinguish entrepreneurial individuals from others who are not. They propose that the possession of certain attributes and/or personal characteristics predisposes entrepreneurial behavior (Acs & Audretsch, 2005).

As Isenberg (2010) mentioned, entrepreneurship often is encouraged when the existing insufficiency of resources requires people to be more creative. He remarks on when so-called resource-poor "islands" such as Taiwan, Iceland, Ireland, and New Zealand were created, ecosystems based primarily on HC. A similar phenomenon was observed in Israel in the decades of the 70s and 80s when its exceptional ecosystem grew haphazardly out of a combination of factors, including spillover from large military R&D efforts, strong diaspora connections to capital and customers, a culture that prized frugality and education.

Consequently, the ideal entrepreneurial HC would be prepared to design, operate and develop an entrepreneurial project in a defined ecosystem. It must be associated with relevant characteristics for specific regions or industries, hence, should not be considered working in other ecosystems.

METHODOLOGY OF RESEARCH

This paper is a literature review, an exploratory study of the classical theories of HC, conducted with the help of the Semantic Scholar project. Table 1 and Figure 1 were created with a beta tool using the "similarity metric" method which gives results based on the concepts of Co-

citation and Bibliographic Coupling using the Semantic Scholar databases.

For preparing Table 1, due to the nature of the article, with the valuable theoretical and empirical bases, there is an opportunity to use the virtual tool to have a visual graph based on the same work, and the 10 most similar theoretical articles. After, those papers were used for mapping the connectedness of HC education.

Figure 1 shows how each node (circle) being an academic paper is related to the original paper of Becker (1962). Papers are arranged according to their similarity percentage, and it is worth mentioning that this is not a citation tree, the size of the node is the number of citations that has each paper related to the paper analyzed.

Finalizing this section, the research focused on Education as one of the key components of the HC, and as a sub-topic, the Entrepreneurial HC being part of the continuity of the main research of the author filling the gap of the literature review for the Entrepreneurship Ecosystem.

RESULTS AND DISCUSSION

In Table 1 we can appreciate the connectedness of the paper *"Investment in Human Capital: A Theoretical Analysis"* by Becker (1962) one of the main authors in conceptualizing HC. The table and visual map are helping to measure the percentage of similarity, that two or more papers have in common according to this measure. Two papers that have highly overlapping citations and references are presumed to have a higher chance of being related to the same topic.

As a result of this literature review, HC has been conceptualized as a value creator and an initiator of innovation in a firm. According to Bontis (1998), it is where the ideas of the firm pledge, and it is a source of innovation and strategic renewal. In a few words, capital is the mindset of a person, that is expected to generate value for the firm.

Semantic research is helpful to discover and analyze other research works from other authors. In this case, it was based on the work of Becker (1964), one of the pioneers in this field and one of the most cited researchers in Google Academic in the HC field. Figure 1 depicts a visual map created to show the connectedness, where each node is an academic paper related to the original article (Becker, 1962). The papers are arranged according to their similarity, it is worth mentioning that this is not a citation tree, the size of the node correlates to the number of citations that each paper has.

The next Figure 2 describes the components that enhance the value creation of the HC, Skills, Talent, Leadership, Knowledge & Know-how Attitudes, behaviors, motivation participative and proactive (Roos, Edvinsson, and Dragonetti, 1997; Becker,

1964). They generate value for an organization to the understanding that new knowledge or findings are applied in a way that allows converting ideas into products and services.

The empirical research could confirm the predictions and stands out the importance of education at the historical level and the consolidation of HC theory within the economic analysis, highlighting works from authors such as Theodore W. Schultz (1961), Gary Becker (1962,1964), and Jacob Mincer (1974), who considered that the center of this theory is the education.

It is important to note that the people who invest in HC are encouraged by the quality of life in the future and are willing to pay the cost-opportunity in the present. As a reflection, education should be the fundamental pillar and crucial determinant to explain economic growth. An important empirical finding is the relevance of the job experience, not the scholar degree. The qualified Entrepreneurial HC, needs, according to employers, constant preparation, openness to learning, creativity in solving problems, creation of tools to improve their own competitiveness, and involvement in the Entrepreneurship Ecosystem.

CONCLUSIONS

The reckless innovations in almost all areas, for example, industry, communication, and computing science are changing the nature of the way a person acquires knowledge, skills, and talent. Consequently, firms working in today's globalized world require a different type of employee, with skills, attitudes, and logical thinking that allow a critical and holistic way of thinking within a technological environment (Bontis & Fitz-Enz, 2002).

As part of the research, the importance of the Entrepreneurial HC was analyzed. It is considered the next focus of study for the scholars that attempt to write about HC. Adding a variant to the classic theories with the approach to consider the individual not as a number to increase productivity based on courses and degrees, but as an asset with fears, emotions, and skills. As we are living in the XXI century, it is important to keep in mind the creation of value, the solving problems to develop wellness for ourselves and/or for the ecosystem that surrounds us.

Biographical sketch

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REFERENCE LIST

- [1] Acemoglu, D., & Pischke, J.-S. (1998). Why Do Firms Train? Theory and Evidence. *The Quarterly Journal of Economics*, 113(1), 79–119.
- [2] Acs, Z. J., & Audretsch, D. B. (2005). *Handbook of Entrepreneurship Research*. Boston: Springer Editors, Ed.
- [3] Amit, R., & Shoemaker, P. J. H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(August 1992), 33–46.
- [4] Becker, G. S. (2002). Human capital. *The concise encyclopedia of economics*, 2.
- [5] Becker, G. S. (1962). Investment in Human Capital: A Theoretical Analysis. *Journal of Political Economy*, 70(5, Part 2), 9–49.
- [6] Becker, G. S. (1964). Human capital: a theoretical and empirical analysis, with special reference to education, *National Bureau of Economic Research*, London.
- [7] Bontis, N. (1998). Intellectual capital: an exploratory study that develops measures and models. *Management Decision*, 36, (2), pp. 63–73
- [8] Bontis, N.; Fitz-Enz, J. (2002). Intellectual Capital ROI: a casual map of human capital antecedents and consequents. *Journal of Intellectual Capital*, 3, (3), pp. 223–247.
- [9] Gartner, W. B., & Carter, N. M. (2003). Entrepreneurial behavior and firm organizing processes. *Handbook of entrepreneurship research* (pp. 195–221). Boston, MA: Springer.
- [10] Hashimoto, M. (1981). Firm-Specific Human Capital as a Shared Investment. *The American Economic Review*, 71(3), 475–482.
- [11] Isenberg, D.J. (2010). The big idea: how to start an entrepreneurial revolution. *Harvard Business Review*, 88 (6), pp.40–50. 10 Cambridge, MA: Harvard Business School Publishing Corporation.
- [12] Kiker, B. F. (Ed.). (1971). *Investment in human capital*. University of South Carolina Press.
- [13] Kislev, Y., Peterson W. A. (1980). Prices, Technology, and Farm Size. *Journal of Political Economy*, 90 (3)
- [14] Mincer, J. (1958). Investment in human capital and personal income distribution. *Journal of Political Economy*, 66 (4), University Chicago Press, Chicago, pp. 281–302.
- [15] Mincer, J. (1962). On-the-Job Training: Costs, Returns, and Some Implications. *Journal of Political Economy*, 70(5), 50–79.
- [16] Mincer, J. (1974). Schooling, Experience, and Earnings, *National Bureau of Economic Research, Inc.*
- [17] Moroney, J. R., & Allen, B. T. (1969). Monopoly Power and the Relative Share of Labor. *ILR Review*, 22(2), 167–178.
- [18] Prahalad, C., Hamel, G., & June, M. (1990). The Core Competence of the Corporation. *Harvard Business Review*, 68(3), 79–91.
- [19] Roos, J., Edvinsson, L., & Dragonetti, N. C. (1997). Intellectual capital: Navigating the new business landscape. Springer.
- [20] Schultz, T. W. (1960). Capital formation by Education. *Journal of Political Economy*, 68 (6), The University Chicago Press, Chicago, pp. 571–583.
- [21] Schultz, T. W. (1961). Investment in Human Capital. *The American Economic Review* 51(1) 1–17.
- [22] Schultz, T. W. (1972). Investment in Human Capital, *The Economic Journal*, 82 (326), pp. 787–78.
- [23] Shane, S., & Venkataraman, S. (2007). The promise of entrepreneurship as a field of research. *Entrepreneurship: Concepts, Theory and Perspective* (pp. 171–184).
- [24] Smith, A., 1723–1790. (2000). The wealth of nations / Adam Smith; introduction by Robert Reich; edited, with notes, marginal summary, and enlarged index by Edwin Cannan. New York: Modern Library.
- [25] Smith, A. (1776). An inquiry into the nature and causes of the wealth of nations: Volume One. London: printed for W. Strahan; and T. Cadell, 1776.

- [26] Ucbasaran, D., Westhead, P., & Wright, M. (2001). The focus of entrepreneurial research: contextual and process issues. *Entrepreneurship theory and practice*, 25(4), 57-80.

Emprendimiento Dinámico [Index of Systemic Conditions for Dynamic Entrepreneurship] *Rafaela: Mercosur*, 1-160. p. 162.

Non-English reference

- [27] Kantis, H., Federico, J., & García, S. I. (2014). Índice de Condiciones Sistémicas para el

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Table 1.
Human Capital conceptual theories interconnected

Title	Authors	Year	Similarity to origin
Investment in Human Capital: A Theoretical Analysis	G. Becker	1962	100
Investment in Human Capital and Personal Income Distribution	J. Mincer	1958	11.8
Investment in Human Capital	T. Schultz	1972	10.8
Monopoly Power and the Relative Share of Labor	J. Moroney, B. T. Allen	1969	8
Relative Prices, Technology, And Farm Size	Y.Kislev, W. Peterson	1980	8
On-the-Job Training: Costs, Returns, and Some Implications	J. A. Mincer	1962	7.6
Investment in human capital	B. F. Kiker	1971	7.4
Schooling, Experience, and Earnings	J. A. Mincer	1974	7.4
Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education	G. S. Becker	1964	7.2
Firm-Specific Human Capital as a Shared Investment	M. Hashimoto	1981	6.8
Why Do Firms Train? Theory and Evidence	D.Acemoglu, J. Pischke	1998	6.6

Source: own creation with Semantic Scholar data retrieved in January 2021.

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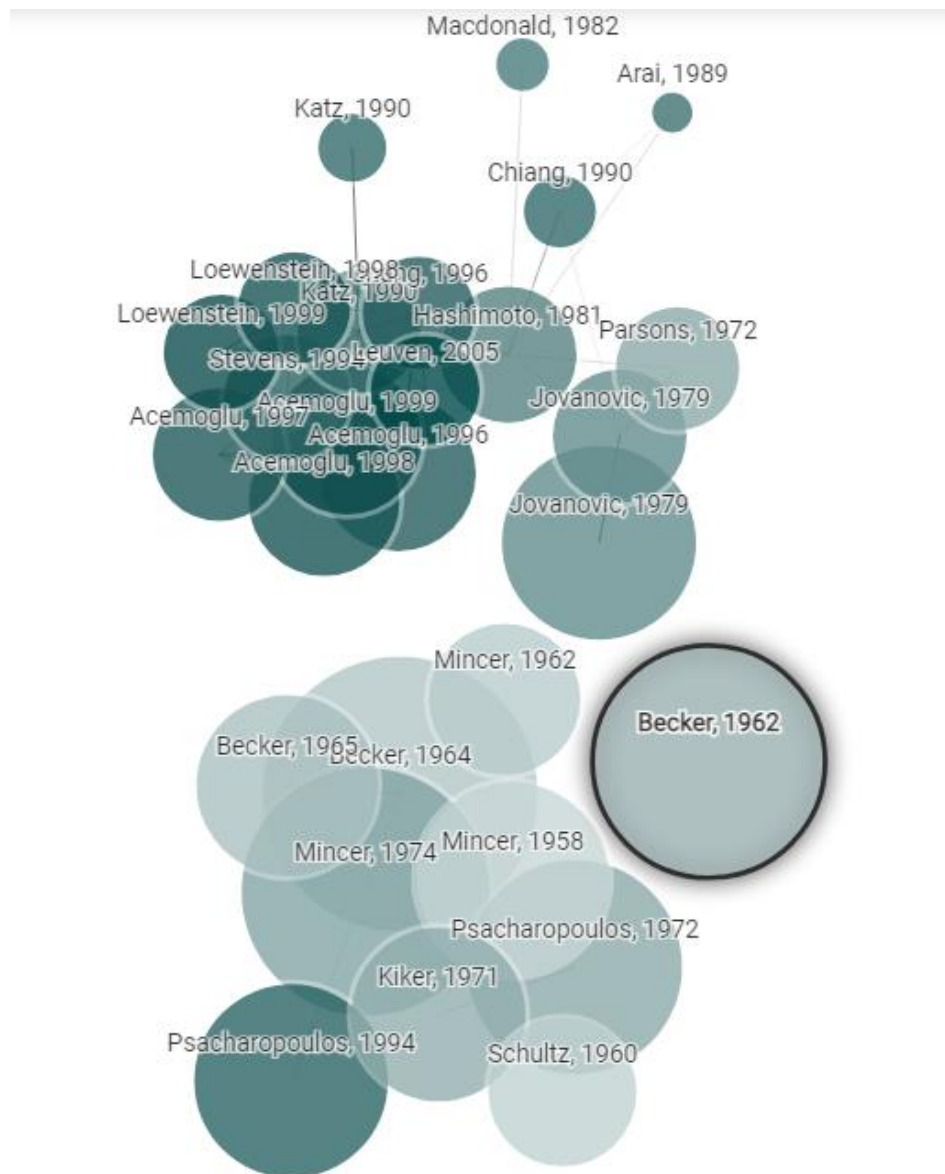


Figure 1.
Mapping the connectedness of Becker (1962): “Investment in Human Capital: A Theoretical Analysis”
Source: own creation with the use of the online tool for mapping semantical connectedness from the databases of Semantic Scholar.

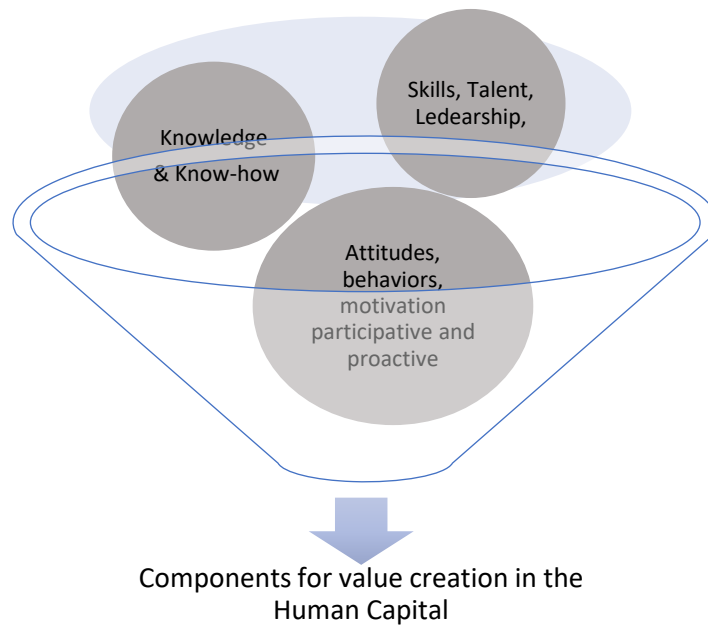


Figure 2.

Components for value creation in the Human Capital

Source: own creation based on the work of Roos et al., (1997) and Becker (1964).