

El papel del conocimiento en las organizaciones productivas: Aspectos teóricos y reflexiones

The Role of Knowledge in Productive Organizations: Theoretical Aspects and Reflections

O papel do conhecimento nas organizações produtivas: aspectos teóricos e reflexões

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Resumen

Por ser el conocimiento un medio indispensable para la transformación de la sociedad resulta relevante su abordaje desde diversas perspectivas científicas. La hipótesis que se plantea en este trabajo es que acceder al conocimiento es fundamental para entender el medio en el que se vive y así superar los problemas sociales y económicos. En ese sentido, las naciones y las organizaciones productivas buscan, a partir de dicho conocimiento, desarrollar las bases científicas y tecnológicas indispensables para alcanzar sus metas de competitividad. La presente investigación tiene dos objetivos fundamentales. En primer lugar, analiza el significado que tiene el conocimiento en lo general y en lo específico. En segundo término, se reflexiona respecto al papel decisivo que ha jugado este concepto en las organizaciones productivas a través del lente de la historia de la economía y la educación. El trabajo se estructura de la siguiente forma. La primera sección plantea el marco conceptual y teórico. La segunda destaca el papel del conocimiento, especialmente en los siglos XVIII y XIX. La tercera parte estudia el fenómeno en cuestión desde el siglo XX hasta el presente. La última parte corresponde a las consideraciones finales.

Palabras clave: conocimiento, desarrollo económico y social, organizaciones productivas.

Abstract

Because knowledge is an indispensable means for the transformation of society, its approach from varied perspectives of science is relevant. The hypothesis that arises in this work is that access to knowledge is fundamental to understand the environment in which they live and thus overcome social and economic problems. In this sense, nations and productive organizations seek, from this knowledge, to develop their scientific and technological bases indispensable to achieve their goals of competitiveness. The present investigation has two fundamental objectives. First, it analyzes the meaning of knowledge in the general and in the specific. Secondly, it reflects on the decisive role that it has played in productive organizations through the perspective of the history of the economy and education. The work is structured as follows. The first section presents the conceptual and theoretical framework. The second emphasizes the role of knowledge, especially in the XVIII and XIX centuries. The third part studies the phenomenon in question from the 20th century to the present. The last part corresponds to the final considerations.

Keywords: knowledge, economic and social development, productive organizations.

Resumo

Porque o conhecimento é um meio indispensável para a transformação da sociedade, sua abordagem a partir de diferentes perspectivas científicas é relevante. A hipótese que surge neste trabalho é que o acesso ao conhecimento é fundamental para entender o ambiente em que vivemos e assim superar os problemas sociais e econômicos. Nesse sentido, nações e organizações produtivas buscam, a partir desse conhecimento, desenvolver as bases científicas e tecnológicas indispensáveis para atingir seus objetivos de competitividade. A presente investigação tem dois objetivos fundamentais. Primeiro, analise o significado do conhecimento no geral e no específico. Em segundo lugar, refletimos sobre o papel decisivo que esse conceito tem desempenhado nas organizações produtivas através das lentes da história da economia e da educação. O trabalho é estruturado da seguinte maneira. A primeira seção apresenta o quadro conceitual e teórico. A segunda destaca o papel do conhecimento, especialmente nos séculos XVIII e XIX. A terceira parte estuda o fenômeno em questão desde o século XX até o presente. A última parte corresponde às considerações finais.

Palavras-chave: conhecimento, desenvolvimento econômico e social, organizações produtivas.

Conceptual and theoretical framework

Knowledge is a broad and difficult concept to measure. This paper proposes a review of theories of knowledge in order to reflect on their role in society. This role does not only matter in terms of what can be done in terms of utilities or the goals of profitability of the companies: the knowledge transcends to its measure and scope. In fact, it constitutes a heritage left by the generations that preceded us and, at the same time, a natural endowment with possibilities for expansion and deepening. Ours is a society in which the added value is obtained in terms of wealth and problem solving through the appropriation and investigation of knowledge.

According to the Spanish Dictionary of the Language (s. F.), Knowledge means 'action and effect of knowing', as well as 'understanding, intelligence and natural reason'. Regarding the same concept, the Larousse Dictionary refers that it is the 'action and result of knowing'; like 'the faculties with which they are captured, ideas are related and formed'. It follows, then, that knowledge involves not only the appropriation of conceptions, data, facts and other phenomena observed and experienced, but goes beyond: the individual through this appropriation can live and transform their environment.

As part of the literature consulted in this research, some pioneering works must be cited. Barro (1991) proposed a dynamic model of growth generated called learning by doing, which starts from a growing role of accumulated investment and technological change through history. The institutions □ companies and governments □ benefit from the accumulation of this capital stock, which is reflected in the increase in real income and in terms of welfare.

Pondering the value of knowledge, Harbison (1973) argues that the wealth of countries has to do with the effectiveness of the use of energy, skills and knowledge. According to him, if these do not develop in favor of society, they will not develop other things either. Thurow (1978), for his part, points out that labor can no longer be considered as a homogeneous and fixed article, but rather as something that can be expanded, improved or modified by individual decisions and public policy. Therefore, the idea of the value of knowledge is introduced in the economic analysis to measure and quantify their productive abilities. In that tenor, it is expected that when the value of goods and services rises, so will the value of individuals.

Romer's model (1986) incorporates technological progress in the context of the search for new ideas and, therefore, gains derived from knowledge and research. The role of economic incentives should not be overlooked, because they are at the heart of this process. Technological progress is driven by applied research and development with a view to improving production processes, systems and structures. The use of knowledge and technology is essential to advance the growth of employment, wages and public income, which should reduce poverty and despair.

By Arasa y Miguel (1999), Expenditures on education and work training, as well as their complementary health, food and education, contribute to raise productivity in the active population. Hence, all these expenses can be considered as complementary investments to those made to physical capital.

Normally companies do not recognize the effect of capital accumulation because it is usually small in relation to the size of the economy. Companies do not add capital in order to improve technology, but accumulate capital since it is a useful input for production. However, it turns out that the accumulation of capital provides the rest of the economy with a useful and unexpected benefit: it results in new knowledge (Jones, 2000). Knowledge and technology are the driving forces of labor productivity, and the State and productive organizations play fundamental roles in pursuing this goal: one establishing rules and impulses, and the others investigating and investing in order to achieve profitability goals .

For Mochón (2000), the capital of the people is defined by the education, training and experience they make and makes them more productive. McConnell and Blue (2004) assign a preponderant value to the accumulation of previous investments in education, as well as training, health and other factors that increase productivity. For Miller and Van Hoose (2006) the knowledge and skills of a nation's population in order to procure its development are equally important. For Parkin (2014), the development of skills and knowledge obtained through education, training, work and experience is also fundamental.

On the other hand, and as a result of the application of knowledge, organizations with great market power take advantage of a strategic resource such as the diversification and innovation of their satisfiers. The new products and those that are about to be offered are the result of specialization in fields or branches of the economy that have an attractiveness of present and future growth (Stanton, Etzel and Walker, 2007).

The role of knowledge in organizations of the past

According to Parkin (2014), Adam Smith (1723-1790) provided in his masterpiece *The Wealth of Nations*, a story about the functioning of the economic system that was considered advanced for his time. The productive organizations were small; many of them were relatives, and were restricted by the feudal and monarchical political system that governed. According to this author, the growth of those economies was limited due to the lack of freedom to choose and produce, as well as the scarce distribution, inefficient commercialization and high taxes. In that sense, the gains in productivity were the result of the division of labor and specialization. Despite the adversities described, England was able to successfully move from a feudal society to a commercial and then industrial. The latter was possible thanks to the use of knowledge and, therefore, the development of innumerable artifacts, machines, tools and devices, in such a way that a significant increase in productivity was promoted. Speaking of this time, Parkin (2014) points out the fact that the division of labor became even more productive when applied to the creation of new technologies, as both scientists and engineers with specific training became more productive with regard to the invention. Their skills drove the advance of technology; so, by the 1820s, machines could produce consumer goods faster and more accurately than any manual labor. So by the 1850s the machinery was making previously unthinkable progress.

From the origins of the Industrial Revolution, knowledge and its application have had a strategic value. Thanks to this, progress was made in the deepening of disciplines such as physics, mathematics, biology, astronomy and others. It began to teach and disseminate knowledge in schools and institutes, and thus enhanced the ability to discover, invent, patent, produce and market a large number of artifacts, machines and consumer goods. Teaching was also expanded in the workshops and then in the small companies and other institutions that laid the foundations of the industrial society (Heilbroner and Milberg, 1999). This, subsequently, had a significant impact on the processes of hegemonic consolidation in England, as well as in other European countries and the United States.

The Industrial Revolution introduced technology to produce on a larger scale. In England they began to multiply the mills, the forges, the plants, the furnaces, using the most diverse machinery. According to Heilbroner and Milberg (1999), this transformation has been the beginning of a long process that has been extended until now. Each of the stages of this process is immediately apparent: the first revolution focused on new textile machinery, improved methods of coal production, iron manufacturing, new agricultural techniques and steam power;

the second was associated with a series of industrial inventions such as railroads, steam engines, agricultural machinery and chemical products; the third occurred in the twentieth century and is represented by electricity, automobiles, engines, among others; in the fourth, the relevance of electronics, air travel, among other inventions is considered; finally, the fifth revolution is related to medicine, mass education, computing, telecommunications, robotics and the so-called information economy. All of them have knowledge as their guiding thread. In this continuous process a diversity of inventions was generated, excelling that of the automobile based on the internal combustion engine. This involved the formation of fundamental industries such as steel, zinc, lead, leather, rubber, among others. These inventions and improvements promoted the creation and improvement of the infrastructure of roads, highways, ports and other facilities. Subsequently, new forms of transportation and other industries appeared, accompanied by new jobs, most of them related to the referred sectors. In this type of processes, the creation of schools and institutes dedicated to the preparation of administrators, engineers, technicians and workers, as well as support personnel, has played a fundamental role. This experience clearly illustrates the existence of diffusers associated with knowledge in this sector of the industry and its impact on the economy as a whole.

The role of knowledge in organizations from the 20th century to the present

Already in the twentieth century, just at the end of the Second World War, began to notice a gradual process of convergence in terms of access and dissemination of knowledge among some countries, such as Japan, England and the United States. Another process of convergence is noticed between Korea and Taiwan with respect to Japan and the United States and England in the nineties. The bases on which the various commercial arrangements have been built had to do with the realization of investments in human capital and social infrastructure and in the diffusion of technological progress. In this process, institutions created to ensure compliance with contracts have been fundamental (Williamson, 1996, North, 1990). Technological learning and innovation processes among these commercial powers added to their favor from the hegemonic point of view. Thus, according to the convergent growth approach (Barro and Sala-i-Martin, 1992), a reduction in the gaps between the welfare levels of the population was foreseen.

Knowledge, it is observed, has been a source of power and wealth, and the powerful have known how to appropriate it. Education and the labor market have been and continue to be suitable means for this purpose. Knowledge makes a difference and its diffusion contributes

to the expansion of knowledge frontiers. According to de Gortari, Luna, Santos and Tirado (2001), knowledge involves the interaction between companies, universities and public institutions. Now it is recognized that it is not only of interest to productive organizations, but rather the product of the creation of international networks that seek to benefit from knowledge through the deepening of their relationships.

Regarding knowledge in government hands, according to F. A. Hayek in his work *The use of knowledge in society* (1945), it is never concentrated or integrated, but rather dispersed and incomplete. The author questions the fact that the centralized planning system pretends that it has a monopoly and thus exercises control and achieves the results set. He adds that the theories and economic policies that are based on this type of interpretation have erred and this is because they have set aside the fact that the members of society have vast knowledge resources and with this transform their social and economic status.

According to W. J. Stanton (2007), research and development are knowledge processes that are expressed in different ways, among which are the secret formulas of patents, brand values, innovations, legal rights for commercialization and loyalty. For Castells (1999), the flows of ideas, people and resources between the regions are fundamental in the knowledge society. These transformations have not happened by chance, but rather they are dynamics that have occurred in production processes, with which investment is expanded (Argiris, 2009).

Knowledge in societies has made it possible for each country to write its specific history about how settlements were formed and institutions were created in order to ensure their preservation by being close to strategic natural resources and in relative abundance. Intrinsically, considerations regarding geography, proximity to markets, to the same sources of supply, as well as access to the labor force have been present. Therefore, the development of the regions is positively related, among other factors, to the specialization of knowledge, which is reinforced through the apprenticeship of trades, arts and professions. The developments in science and technology can not be separated from this. According to L. Thurow (1978), there are constantly generated processes tending to the accumulation of human capital.

It is desirable that these processes of knowledge expansion mean greater well-being for all members of society. Unfortunately, in many regions of the world there is a lag or impoverishment in social and economic forms. In the words of Samuelson and Nordhaus (2010), economic theory states that the increase in productivity is positively related to higher

wages, since the demand for continuous training work imposed by changing conditions, for example, technology is real.

Much of the immigration from emerging countries is due to the lack of job opportunities and material resources to perform any kind of productive work in these native regions. In fact, mobility relocates knowledge and its access, and causes a serious deprivation for the most disadvantaged and an expansion of opportunities for those who have more (human) resources within reach. In that sense, the challenge that governments are, in addition to building infrastructure, investing more resources in the formation of human capital considering the productive vocations of the regions in order to reduce inequalities and social injustices.

The processes of training, training and experience training for employment are fundamental, especially in the industrial and modern service economies. Certainly schools have played a crucial role in this field, supporting educational processes with innovative teaching resources and more efficient teaching-learning techniques. For its part, the various work centers constitute an indispensable learning framework, which ensures that the relationship between research and training is reinforced and complemented.

Final considerations

In this work, the value that knowledge has had throughout history in productive organizations has been emphasized. The contribution made by knowledge in the Industrial Revolution and in the XX and XXI centuries has been outlined, in broad strokes. The value of this asset goes beyond contributions of a purely economic nature. Theoretical aspects have been reviewed in this regard and, finally, it is reflected on its scope and potentialities, and the need for socially revalued knowledge holders in productive organizations is underlined.

Knowledge is relevant in society as a training element for differentiated competences and high added value. This is an asset with multiplicative effects, because with more and better satisfiers the organizations become more competitive and in this way society as a whole must benefit. The contribution of knowledge certainly makes a difference based on the quality that is printed, for which conditions are required in order to achieve the virtuous processes of its diffusion, accumulation of experiences, skills and new discoveries and inventions. From the knowledge, organizations have the imperative to innovate, diversify and specialize. Otherwise, these are spoiled and the despair of the population deepens.

In regions and in poor countries there is an undervaluation of human capital in general and of knowledge in particular, which is expressed in the low salaries and poor quality of life of the working population and their families. However, the consideration of knowledge in the framework of productive life has been relevant in countries that have achieved greater development and social welfare. The challenge has to do with the need to value with a sense of justice the contribution of knowledge in the final production. In countries such as Mexico, it is necessary to take better advantage of young human capital, but also of the experienced "as disseminators or mentors," and reward them and assign them a position of greater dignity. Social inclusion policies must become a reality, since discrimination has more social costs than benefits.

In the case of the Latin American economies, it is urgent to move forward in the creation of solid institutions capable of generating confidence and having a positive impact on the national wealth. In countries where economic growth is low and unemployment and underemployment are high, it is essential to work towards the objective of supporting and creating productive organizations based on the specialization of knowledge. The formation of small and new companies is an opportunity to achieve social mobility and develop innate abilities based on innovation and application of technologies and commercial strategies.

In order to achieve social welfare goals in present-day Mexico, it is necessary to generate savings to apply them in technology investments with a national seal, especially in sectors with greater added value, in order to foster virtuous circles such as greater employment opportunities, growth in tax revenues and development of national supplies supply. In order to make these premises a reality, public policies that emphasize the social and economic application of knowledge are required.

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