

Investment in training as a determinant of intangible value: human resources sustainability model

LIDIA GARCÍA-ZAMBRANO

Facultad de Economía y Empresa. Universidad del País Vasco UPV/EHU, Bilbao, Spain

Departamentos de Políticas Públicas e Historia Económica

lidia.garcia@ehu.eus

Abstract. Human capital refers to the set of skills, competencies, knowledge, and experience that generate value within the business framework. This form of capital can also lend a competitive advantage for many companies and is often their most valuable resource. Accordingly, training is one of the critical factors determining an organization's effectiveness. The success of any human resources strategy, incorporating training activities should be measured by what it contributes to the achievement of the organization's stakeholders. Therefore, the analysis and management of these dimensions necessary and important to increase company value. The main objective of this paper is to propose a model that analyzes the influence that accumulated investment in employee training has on the total value of company intangibles. A simple linear regression model is applied to Spanish IBEX 35-listed companies, and results show that a significant investment in human resources is reflected in improved and more sustainable results in the company's future market value.

Keywords: intellectual capital, human capital, stock market value, investment, sustainability

La inversión en formación como determinante del valor intangible: modelo de sostenibilidad de los recursos humanos

Resumen. El capital humano se refiere al conjunto de habilidades, competencias, conocimientos y experiencia que generan valor dentro del marco empresarial. Esta forma de capital también puede representar una ventaja competitiva para muchas empresas y, a menudo, constituye su recurso más valioso. En este sentido, la formación es uno de los factores clave que determinan la eficacia de una organización. El éxito de cualquier estrategia

de recursos humanos que incluya actividades de formación debe medirse por su contribución al logro de los objetivos de los grupos de interés de la organización. Por tanto, el análisis y la gestión de estas dimensiones son necesarios e importantes para aumentar el valor de la empresa. El objetivo principal de este artículo es proponer un modelo que analice la influencia que tiene la inversión acumulada en formación de empleados sobre el valor total de los intangibles empresariales. Se aplica un modelo de regresión lineal simple a empresas españolas cotizadas en el IBEX 35, y los resultados muestran que una inversión significativa en recursos humanos se refleja en una mejora y sostenibilidad de los resultados en el valor de mercado futuro de la empresa.

Palabras clave: capital intelectual, capital humano, valor bursátil, inversión, sostenibilidad

1. Introduction

The growing concern about intangible resources, in the business world and academia, is unquestionable. Although these resources have always existed in organizations, companies did not begin to worry about their importance until the mid-1990s. The process of economic globalization is leading to a society of constant change in which the weight of knowledge is always growing. In a knowledge-based society, intellectual capital or intangible resources constitute the key resources for organizations. The ever-expanding knowledge economy requires the constant creation of knowledge products and services. Thus, it is understandable that many companies are being compelled to change their approach for mere survival. This has led to intangible resources being the main drivers of an economy in constant progress and dynamism. Factors that have contributed to increasing the importance of organizational intangibles include the increase in business competition motivated by market globalization; and the advent of information technologies, the clearest exponent of which is the internet. Other important changes brought about by the current economy are the deregulation of key economic sectors, the need for differentiation, the preponderance of service companies over production companies, the geographical dispersion of organizations, and the strengthening of intellectual property regimes (Cole, 1998; Teece, 1998; Hansen et al., 1999; Lev, 2001; Lev et al, 2005). In the knowledge economy, a key to success is a company's ability to improve its economic performance. Therefore, a current trend among businesses is to focus more on intangible resources, especially those based on knowledge, or intellectual capital—defined as the set of knowledge-based intangible resources that could increase a company's value.

There is a need to distinguish between the three dimensions of intellectual capital: human capital, structural capital, and relational capital. Human capital refers to the set of skills and competencies that generate value within the business framework, which include creativity, experience, know-how, training, motivations, and different abilities. Structural capital refers to the group of intangibles that make up the way a company is organized, such that they remain even when employees decide to leave: information and communication systems, work processes, patents, copyrights, and intellectual properties. Finally, relational capital is comprised of the company's relationships with customers and all other stakeholders that are part of the corporate environment. The growing importance of these intangibles naturally challenges the ways in which organizational behavior and functional models are established. That is, the future of businesses will depend largely on how they manage their intangible resources, greater and better knowledge of which will improve the precision of their management.

Today, the key to competitiveness lies in the executives who direct a company's different fields of action. Therefore, the changing environment in which these employees can develop will condition new demands in terms of their knowledge, skills, and abilities. In this context, human capital is an essential element for the survival of companies, yet this area has the potential for greater efficiency (Becker and Gerhart, 1996; Aragón et al., 2003; Rodríguez-Castellanos et al., 2006; García-Merino et al., 2008; García-Zambrano et al., 2018; Veselinović et al., 2022; Murugan et al., 2023). Companies that prioritize and invest in their employees can achieve a significant competitive advantage. It is important to prioritize talent management and invest in employee development, which can lead in turn to greater innovation and creativity—a key factor in business performance and competitiveness (Kucharčíková et al, 2023).

In this context, the main objective of this research is to analyze the relationship between the proactive management of human competencies and business results in Spanish companies. Specifically, we analyzed the influence that investment in employee training has on business value.

2. Resource-based view: intellectual capital as a source of competitive advantage

The resource-based view has made a decisive contribution to strategic management. With an emphasis on achieving competitive advantage, it emerged in the 1980s and 1990s through the major works published by Wernerfelt (1984). This new perspective followed years of domination by the industrial organization model in which the competitive advantage of companies was thought to be attributed solely to their belonging to specific economic sectors and the position they maintained therein. However, the empirical evidence does not fully support this theory. Different authors (Wernerfelts, 1984; Barney, 1986; Amit and Shoemaker, 1993) have noted that companies possess or control a wide variety of resources and combinations thereof, known as capabilities, that are essential for the company to be able to operate. These resources have intrinsically different levels of efficiency, some of which are superior to others. Therefore, companies endowed with superior resources will have a greater likelihood of performing better, provided that the cost of acquisition is lower than the value obtained as the result of the competitive advantage generated by these resources (Wernerfelt, 1984). There are different names for these resources that are so fundamental, including “critical resources” (Wernerfelt, 1984) and “strategic factors,” (Barney, 1986), among others. This is the basis of the resource-based view.

Barney (1991) proposed a structured approach based on analysis of whether a resource is valuable, rare, and imitable and whether an organization is taking advantage of the resource. Thereafter, Amit and Shoemaker (1993) highlighted five characteristics that differentiate these resources: inimitable, rare, valuable, non-transferable, and non-substitutable. In the present study, we have added durability to the aforementioned characteristics. Teece (1997, p. 516), for his part, thought of these resources in terms of dynamic capabilities:

Dynamic capabilities are the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Dynamic capabilities thus reflect an organization's ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions.

Therefore, we could say intangible resources are those that, lacking a financial or physical form and being constructed by the company over time, more readily combine all these requirements and therefore more frequently become the key factor of business competitiveness (Lev, 2001). This proposal is particularly applicable to intangible resources based on knowledge—that is, to intellectual capital. The information society requires new competitive mechanisms that are fundamentally based on intangible resources. Therefore, intangibles have become an area of huge interest not only to academics but also to managers as elements that guarantee the success of a 21st-century organization and enable a company to build up sustainable competitive advantages. Numerous papers have established that intangibles and investments in intangibles determine economic growth (Bradley, 1997; Corrado et al., 2009; Jovanović et al., 2021) and the profitability of the companies (Lev and Sougiannis, 1999). However, investments in intangibles do not generate immediate returns, but rather an adaptation period is required before those investments are reflected in better performance (Lev & Sougiannis, 1999; Lev et al., 2005; Murugan et al., 2023).

3. Human capital: concept and value creation

Authors such as Marshall (1890) have recognized that knowledge is a powerful resource that can affect an organization's production. In the early 20th century, the concepts of knowledge and intellectual capital began to resonate in the business environment, as one of the main sources for creating sustainable competitive advantage, creating value, and boosting future performance among organizations (Edvinsson, 1997).

Among the dimensions that make up intellectual capital, human capital is considered one of the most important organizational resources (Fernández, et al., 1998; Johanson, 2005; Veselinović et al., 2020; Murugan et al., 2023). Several authors, such as Alama (2008), have defined human capital as the individual knowledge and skills of company employees that enable an increase in productivity and contribute to creating value for the company. Examples include the researcher who invents an innovative medicine, or the plant manager who reduces the production cycle time. Human capital, therefore, is a set of capabilities, skills, knowledge, and competencies that an employee has acquired from the company through experience and training (López & Grandío, 2005).

At the same time, human capital is the most difficult resource to manage since it is constantly evolving. As Gómez-Cedeño et al. (2018, p.31) have observed:

In an organization, it is the human talent, knowledge, experience, attitudes, and behavior contributed by people, the particular way they are related to other human beings, with one's objectives and with the environment, that constitutes the source of competitive advantage in a company and marks out the difference between one company and another.

Without human capital, competitive advantages would be difficult for companies to come by. Although structural and relational resources are also important, people are the key factors for increasing value. A company may possess cutting-edge technological or material elements that add economic value, yet without qualified personnel they will do little to add value (Montoya et al., 2016). Indeed, a lack of adequate human capital will negatively affect the rest of the company's activities that create value. Therefore, companies must be aware of the human resources at their disposal and invest in them sufficiently so that employees can transform and establish their knowledge and, in turn, contribute to positive results for the company (Bontis et al., 2000).

Human capital therefore represents one of the fundamental elements for competitiveness in the organizational field (Johanson, 2005). It is considered by many authors as the most important dimension of intellectual capital for creating value within value for the company (Johanson, 2005; Basterretxea, 2008; Lin et al., 2012; Gil & Moreno, 2013; Veselinović et al., 2020; Veselinović et al., 2022; Štaffenová & Kucharčíková, 2024). The dimension of human capital dimension is considered the main source of value creation for a company, and one that yield especially positive results. Therefore, it is not only individual employees who must show their worth; it is the organization

that plays a fundamental role in the creation of value for each individual, and this can be expressed by investing in human resources (Danvila & Sastre, 2005; Salazar, 2008; García-Zambrano et al., 2018; Veselinović et al., 2022).

4. Training as a representative value of human capital

Human capital is the set of intangible resources through which an organization acquires a “personality” by offering training and experience to develop certain skills and competencies in its employees, keeping in mind the care that must be given to the human factor because it will provide the company sustainable competitive advantages (Fernández et al., 1998).

In today’s business environment, the key to competitiveness lies in people. As competition to attract and retain employees becomes fiercer, companies must evolve their workforce strategies and adopt new tools for prioritizing employees. These actions are an opportunity to create a talent advantage to remain competitive over the long term (CPP Investments, 2023). One of the main strategies for maximizing human talent and retaining employees is investing in them (Alama, 2008; Basterretxea, 2008).

Employee training is essential to increasing value, with several studies having identified this dimension as a key factor of human capital (Bartel, 1994; Holzer et al., 1993; D’Arcimocles, 1997; Davenport & Prusak, 2001; Bassi et al., 2002; Štaffenová & Kucharčíková, 2024). As a concept, training is the education received to be able to acquire general and specific knowledge intended to be put into practice. Therefore, training entails a strategic investment to create synergies between the company and its employees, with a view to improving results and performance efficiency by increasing productivity, strengthening loyalty among stakeholders and employees, and improving the work environment, among other advantages (Pineda, 1998; Aragón et al., 1999).

In general, it is commonly accepted that those companies operating in versatile markets are more profitable, and therefore grow faster. Moreover, the number of jobs they can create in these versatile markets are greater (Turcotte et al., 2003). Therefore, preparing employees through continuous training is a key factor. To deal with all situations, businesses must train all personnel, from the highest to the lowest positions. Given the speed at which the required skills and knowledge change and the consideration of employees as an essential competitive resource to obtain a lasting competitive advantage (Guerrero and Sire, 2001), training is one of the essential factors in determining an organization’s effectiveness.

Several studies (Bartel, 1994; Holzer et al., 1993; D’Arcimocles, 1997; Davenport and Prusak, 2001; Bassi et al., 2002; Danvila and Sastre, 2005)

consider employee training as a critical representative factor of human capital. Training has always been considered an integral part of human learning and development (Danvila and Sastre, 2005). Employee training aims to improve employee performance, which translates into a more efficient use of the resources available, facilitating the achievement of the desired objectives. In a world of increasingly scarce resources, it is not worth continuing to carry out activities that fail to add value. Value becomes an indicator of employee success (Ulrich, 2006). The success of any human resources strategy, such as a training activity, should be measured by what it contributes to the objectives of an organization's stakeholders. It is true that training should not be the ultimate goal but rather a means to improve the competitiveness of organizations. Therefore, it is necessary to consider the relationship between the investments made in employees via training and the results of a company. That is, companies should consider impacts in the near future, but improvements in results will not be immediate (García, et al., 2008). Authors such as Lev et al. (2005) and Yang and Lin (2009) indicate that it is necessary to take into account more than one year in the training variable due to the delayed effect it can have on the value of intangibles; this is why in the present study, training is accumulative.

As we can see, training can have a positive impact on business results. Therefore, our study proposes a model to analyze the impact of investment in employee training on business results. From the perspective of resource-based theory, several authors have noted that correct and full measurement of the impact of investment in training on business results requires information about the type of training provided and the improvements achieved in the skills of workers (Sels, 2002; Mabey & Ramírez, 2005; Úbeda; 2005). Now, given the difficulty in obtaining this type of information, in the present study, as in most previous research (García-Merino et al., 2008 and García-Zambrano et al., 2018, we use the training "amount" or "effort" applied, assuming that "more investment" will yield "greater results."

Given these explanations, we present the following hypothesis:

H1: The accumulated investment in staff training positively influences the future of company intangibles.

5. Research design, population, sample, and variables

As shown, training can have a positive impact on business performance. Therefore, in the present study, we analyze the effects of investment in employee training presented in the business results of Spanish listed companies. Specifically, we selected companies listed on the Spanish Stock Exchange Interconnection System (SIBE), which incorporates the country's

four regional stock exchanges (Barcelona, Bilbao, Madrid, and Valencia). These all form part of the IBEX 35 index, the main reference index of the Spanish stock exchange, published by Bolsas y Mercados Españoles.

In order to test our hypothesis, we carried out the following fieldwork: First, we collected the financial and economic data corresponding to the IBEX-35 listed companies. Then, drawing from the corporate websites of the selected companies as well as the National Securities Market Commission, we obtained data on investment in employee training as the primary variable for investment in human capital (Bukowitz & Petrash, 1997; Koch & McGrath, 1996; Ordiz, 2002), and on market value. We collected the following information: market value in 2024 and the investment in training for 2021, 2022, and 2023, respectively.

Finally, we calculated accumulated investment from the sum of the investment in training for the three periods prior to time t . We calculated the value of intangibles as the difference between the market value of a company's own resources and net equity accounting—the latter calculated as the difference between actual net assets and liabilities or debts. As a measure of the market value of a company's own resources, we used its stock market value.

Because of the necessity of having information about variable investment in employee training displayed on their websites, our sample is limited to 31 companies. We divided the initials of each variable by the net sales figure to mitigate any risk of size bias, as previous studies have proposed (Lev & Sougiannis, 1999).

We performed a simple linear regression to verify the existence or absence of the relationship suggested in the hypothesis. Table 1 shows outlines the details of our research design

Table 1
Research design

Population	35 companies belonging to IBEX-35
Data collection source	National Securities Market Commission and the corporate websites
Sample	31 companies belonging to IBEX- 35
Data	Investment in training, capitalization and value of intangibles
Data analysis techniques	Simple linear regression, correlations
Period	October 2023–February 2024

Source: compiled by authors.

6. Proposed model: relationship between investment in training and intangible value

To check whether investing in capital human actually increases the intangible value of a company, as proposed by Lev et al. (2005), we present a simple linear regression model that relates the influence of human capital through investment in employee training and the value of each organization's intangibles.

The value of intangibles are:

$$Iv = f(\text{Human Capital investment}_{i,t}) + \tilde{\epsilon}_t$$

As mentioned, delayed investment in human capital has an effect on the value of intangibles; that is, the value of a company's intangibles i in time period t will be influenced by the investments made in year $t-1$, but also influence, although in smaller proportion, in the disbursements made in previous k years.

Furthermore, to collect the time lapse between the moment of execution of the investment in training and the results obtained, we compared the investment in year t with that carried out in previous years.

Finally, we consider year t to be 2024, while investment in employee training corresponds to the periods 2021, 2022, and 2023 (based on a three-delay structure).

In our model, the variable X refers to the accumulated investment in training, and the independent variable Y takes the value of intangibles as a reference. Thus, the main objective of our model is to verify whether investing in human capital through employee training really increases a company's intangible value. Likewise, we consider the variable of total assets in the balance sheet item and of net worth in the profit and loss account to avoid size biases among the participating companies. Furthermore, as a representative variable of intellectual capital, we use the difference between a company's market value (stock market value) and its net accounting equity, dividing the result by the assets to avoid size biases. Yang and Lin (2009) have pointed out that investments made in human capital has a delayed effect on the value of intangibles. Therefore, in our model, we have not taken into account investments made in training in year t but rather those made in year $t-1$ and disbursements in previous k years.

Therefore, the model proposed is as follows:

$$VI^*t = f(\sum_{t=0}^n CF_{t-1}) + \tilde{\epsilon}_t \quad (1)$$

Where:

VI^*_t : VI_t / VA_t

VI_t : Intangible value of company at period t .

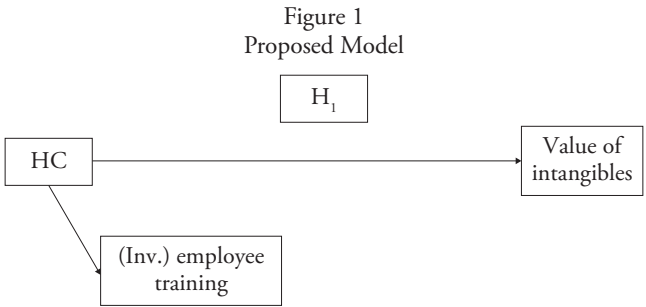
VA_t : Value of actives of the company at period t .

CF_{t-1} : $IFAt-1 / VA_t$

$IFAt-1$: Accumulated investment in employee training during the three k periods.

ε_t : Error in t .

Thus, equation (1) collects the delayed impact of disbursements in employee training investment in the years before t . The equation includes the impact of k years on the future value of the company's intangibles. We represent the model through Figure 1.



Source: compiled by authors.

7. Results of hypothesis testing

Tables 2 and 3 present the results of our testing. G b

Table 2
Influence of investment in training on the future value of intangibles: Results of linear regression

Model	Period	Coef. Non standardized		Coef. Tipifi.	F	Total sig	R2
		B	St.error	Beta			
Invest. training	2021–2024	3,117	0,981	0,508	0,089	0,004	0,258
Dependent variable: Intangibles value/Total assets							
Predictor variables (constant), accumulated investment							

Source: compiled by authors

To continue with the analyzed model, Table 2 shows how the value of the test statistic, $F = 10.089$, is significant since it is different from 1. In addition, the model is statistically significant at 5%, so we reject the null hypothesis and conclude that the linear dependence is statistically significant. Therefore, the model is suitable for application. The analysis gives rise to the following regression:

$$VI^*t = 3,117 + 0,508 \sum_{t=0}^n CF_{t-1} + \tilde{\varepsilon}_t$$

The beta of the model is positive and, furthermore, significant at 5%, meaning that investment in training positively influences the future value of a company's intangible assets. More specifically, the accumulated investment in employee training by Spanish listed companies during the years 2021, 2022, and 2023 positively influences the intangible value of companies in 2024. These results lead to the following conclusion: The Spanish companies that invest in training their employees see their value improve in the market; that is, greater investment in workers turns out to be more valued by the market not investing in human capital. Although the model is significant, as we have previously noted it is necessary to analyze the correlations between the intangible value in 2024 and the investment in training in 2021, 2022, and 2023.

In Table 3, we observe positive correlations between investment in training in the three years and the value of intangibles in 2024. The table also shows that in the three years analyzed the correlations are statistically significant at 5%. It is worth noting how the investment in training in the most recent years, 2023 and 2022, have a greater influence on the value of a company's intangibles.

Table 3
Correlation between the value of intangibles in 2024 and investment in training in 2021, 2022, and 2023

Correlations		Employee investment 2021	Employee investment 2022	Employee investment 2023
IntangValue	Pearson's correlation	0.518	0.519	0.573
	Sig (bilateral)	0.05	0.04	0.01

Source: Compiled by authors.

For validation of the model, it is also important to analyze the independence of errors assumption to ensure that they are independent of each other in the measurement of the explanatory variables. Verifying this aspect is especially important in longitudinal studies, as in this case. Using the Durbin-Watson test statistic, we verified the independence of errors

assumption by obtaining a value of 1.96, within the acceptable range of 1.5 and 2.5.

It is also important to analyze the normalcy of the error distribution to facilitate the interval estimation of the regression model. To do this, we used the Shapiro Wilk test. The results of 0.6512 mean that the hypothesis was accepted and the normality of the errors accepted. Finally, we used Levene's test to check whether there is equality of variances (homoscedasticity) in the sample; we obtained a significance value greater than 0.05, which means that the assumption of homogeneity of variances has been met.

Finally, it is notable that the model covers a period of three consecutive years prior to the base year, for which it is statistically significant. Thus, we can accept the hypothesis posed, and, in turn, stress the importance of the human factor in improving business results as well as the necessity of investing in this dimension: The investment effort made in human capital has a positive and sustained influence in increasing companies' intangible value overall value. The results also show that the more recent the investment in training, the greater the influence it has on the future value of a company's intangibles. Indeed, 2023 and 2022, the most recent years covered, are when the model is strongest and most precise. This reinforces the idea of the delayed effect that investment in training can have on the value of intangibles—an assumption that was corroborated in previous studies (Lev et al., 2005; Yang & Lin, 2009).

8. Conclusions

The importance companies place on intangible resources, including knowledge and its management, is attracting greater academic attention. Here, intellectual capital also plays an important role as it includes all intangibles based on knowledge.

In this study, we proposed a model that measures the importance of investment in training human capital through its influence on intangible future values. To this end, we presented a theoretical framework of the main intangible elements, distinguishing between assets and intangible resources. Previous studies have found that intangible resources based on knowledge and intellectual capital are the most relevant within organizations, and value human capital most highly of all. That is, human resources are the basis for the growth of any organization. Moreover, in our study of human capital in all its nuances, of particular salience was the impossibility of appropriating it. Human resources can leave a company at any time because individuals are under no legal obligation to remain there beyond the terms of their employment contracts, which can be terminated without penalties in the

vast majority of cases. This is why talent retention is especially important, and training is key to maintaining employee interest. One of the variables most used for the representativeness of human capital is employee training. Based on previous studies, we opted for investment in employee training to represent human capital. Likewise, it is important to stress the necessity of focusing on investment in training over several years for the real impact on total intangible value to be discerned.

This research set out to analyze the relationship between investment in human capital training and intangible future value within organizations: specifically, companies listed on the IBEX-35 in Spain. Subsequently, we proposed a linear regression model that links companies' investment in employee training in 2021, 2022 and 2023, and the intangible value of those companies, taking 2024 as the base year.

We considered an upper limit of three years since training depreciates quickly, as we have verified. After that, we established the representative variable of human resources, and we utilized the intellectual capital variable as the difference between the market value (stock market value) and the accounting net worth of a company.

The results reveal a positive and, in turn, statistically significant relationship, with a reliability of 95%, between investment in staff training and the future value of company intangibles. This result shows that investing in human capital—specifically, in employee training—boosts the value of companies. Therefore, as we explained in the theory section, human capital is one of the most important intellectual capital resources and greater investment in it, through employee training, can increase the value of a company's intangibles. At the same time, the greater the investment in employee training, companies will increase their value in the market. Finally, the more recent the investment in training, the greater the influence it has on the value of intangibles, bearing in mind the delay effect mentioned previously. It is of utmost importance to continue investing in people so that there is sufficient renewal of staff in order to meet the needs of the company and its customers to the maximum possible extent. Finally, employees with good training in soft skills will form a more cohesive team, with better interpersonal relationships and, therefore, a closer work environment, which will result in greater productivity and improved customer service, in turn boosting business profits.

Nonetheless, this work has some limitations. the first refers to the sample we work with; some of the information related to training was not available. Moreover, we did not include all possible dimensions of intellectual capital, many of which yield interesting results.

Possible lines of future research are, on the one hand, expanding the selected sample to include listed companies from other European countries; and on the other hand, exploring further the effect of the variables related to structural and relational capital on the market value relevance of the company's intangibles. It would also be enlightening to include IBEX-35-listed companies over more periods.

Acknowledgements

The University of the Basque Country, UPV/EHU (ECISE, GIU21/025) has partially supported this paper financially.

References

- Alama, E.M. (2008). Capital intelectual y resultados empresariales en las empresas de servicios profesionales de España [Doctoral thesis, Universidad Complutense de Madrid]. <file:///C:/Users/bcpgazal/Downloads/Dialnet-LosActivosIntangiblesYElCapitalIntelectual-5109381-1.pdf>
- Amit, R. Schoemaker, P., (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14, 33-46. <https://doi.org/10.1002/smj.4250140105>
- Aragón, A. Barba, M.I. Sanz, R. (1999). Eficacia y resultados de la formación de los recursos humanos en las PYMES. II Workshop Internacional de Recursos Humanos. Universidad de Cádiz y Universidad Pablo de Olavide, Cádiz. https://www.researchgate.net/publication/280563450_Eficacia_y_resultados_de_la_formacion_de_recursos_humanos_en_las_pymes
- Barney, J.B. (1986). Strategic factor markets: expectations, luck and business strategy. *Management Science*, 32(10), 1231-1241. <https://doi.org/10.1287/mnsc.32.10.1231>
- Barney, J.B (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17, 99-120. <https://doi.org/10.1287/mnsc.32.10.1231>
- Bartel, A. (1994). Productivity gains from the implementation of employee training programs. *Industrial Relations*, 33(4), 411- 425. <https://doi.org/10.1111/j.1468-232X.1994.tb00349.x>
- Basterretxea, I. 2008. *La política de formación como fuente de ventaja competitiva en la experiencia Mondragón. Un análisis desde la visión basada en recursos*, Tesis Doctoral, Universidad del País Vasco, Bilbao. <http://hdl.handle.net/10810/13444>
- Bassi, L. J., Ludwig, J., MC Murrer, D. P., & Van Buren, M. (2002). Profiting from learning: firm-level effects of training investments and market implications. *Singapore Management Review*, 24(3), 61-76.
- Becker, G.S. & Gerhart, B. (1996). The impact of human resource management on organizational performance: progress and prospects. *Academy of Management Journal*, 39(4), 779-801. <https://doi.org/10.2307/256712>
- Betcherman, G. Leckie, N. & McMullen, K. E. (1997). *Developing skills in the Canadian workplace: The results of the Ekos Workplace Training Survey*. Ottawa: Canadian Policy Research Networks.
- Bontis, N. Keow, W. & Richardson, S. (2000). Intellectual capital and the nature of business in Malaysia. *Journal of Intellectual Capital*, 1(1), 85-100. <https://doi.org/10.1108/14691930010324188>
- Bradley, K. (1997). Intellectual capital and the new wealth of nations II, *Business Strategy Review*, 8(4), 33-44.
- Bukowitz, W.R., & Petrash, G.P. (1997). Visualizing, measuring, and managing knowledge. *Research-Technology Management*, 40(4), pp. 24-31.
- Cole, R.E. (1998). Introduction, special issue on knowledge and the firm. *California Management Review*, 40(3), 15-21.
- Corrado, C.A., Hulten, C.R., & Sichel, D.E. (2009). Intangible capital and U.S. economic growth, *Review of Income and Wealth*, 55(3), 661-685.
- CPP Investments (2023). The People factor. How investing in employees pays off. Annual Report, Philadelphia. <http://old.iariw.org/kendrickprizepdfs/2008-2009-1-Corrado-Hulten-Sichel.pdf>

- D'Arcimules, C.H. (1997). Human resource policies and company performance: a quantitative approach using panel data. *Organization Studies*, 18(5), 857-874. <https://www.emerald.com/insight/content/doi/10.1108/19348831111121286/full/html>
- Danvila, L., & Sastre, M. A. (2005). Problemas y propuestas de medición de la formación en la empresa. *Cuadernos de Estudios Empresariales*, 15, 27-45.
- Davenport, T.H. & Prusak, L. (2001). *Conocimiento en acción. Cómo las organizaciones manejan lo que saben*. Prentice Hall, Buenos Aires. <https://colectivo.uloysa.es/Record/L77252>
- Edvinsson, L. & Malone, M. S. (1997). *Intellectual capital: Realizing your company's true value by finding its hidden brainpower*. HarperCollins Publishers, New York, NY.
- Fernández, E. Montes, J. Vázquez, C. (1998). Tipología e implicaciones estratégicas de los recursos intangibles. Un enfoque basado en la teoría de los recursos. *Revista Asturiana de Economía*, 11, 159-182. <http://hdl.handle.net/10651/28655>
- García-Merino, D., Rodríguez, A., Arregui, G., & Vallejo, B. (2008). Importancia y valoración de los intangibles: la percepción de los directivos. *Estudios de Economía Aplicada*, 26(3), 27-55. <http://www.revista-eea.net/documentos/26303.pdf>
- García-Zambrano, L., Rodríguez-Castellanos, A., & Garcia-Merino, J.D. (2018). Impact of investments in training and advertising on the market value relevance of a company's intangibles: The effect of the economic crisis in Spain. *European Research on Management and Business Economics*, 24(1), 27-32. <https://doi.org/10.1016/j.iedeen.2017.06.001>
- Gil, M., & Moreno, M. (2013). Driving human resources towards quality and innovation in a highly competitive environment. *International Journal of Manpower*, 34(8), 839-860.
- Gómez-Cedeño, M., Guitart, L., Morantes, S., & Li, Y. (2018): Las personas y la cadena de suministro. *Revista de Economía, Empresa y Sociedad*, 9, 82-93.
- Guerrero, S. Sire, B. (2001). Motivation to train from the workers perspective: example of French companies. *International Journal of Human Resource Management*, 12(6), 988-1004. DOI: 10.1108/IJM-07-2013-0183
- Hansen, M.T. Nohria, N. & Tierney, T. (1999). What's for managing knowledge? *Harvard Business Review*, 77(2), 106-116. <https://hbr.org/1999/03/whats-your-strategy-for-managing-knowledge>
- Holzer H., Block R., Cheatham, M., & Knott, J. (1993). Are training subsidies for firms effective? The Michigan experience. *Industrial & Labor Relations Review*, 46(4), 625-636. <https://doi.org/10.2307/2524308>
- Jovanović, M., Petrović, B., & Janjić, I. (2021). Key determinants of sustainable intellectual capital of enterprises. *Economics of sustainable development*, 5(1), 13-22. DOI: 10.5937/ESD2101013J
- Johanson, U. (2005). A human resource perspective on intellectual capital". In B. Marr, (Ed.), *Perspective on intellectual capital. Multidisciplinary insights into management, measurement and reporting*. (96-105) Oxford: Butterworth Heinemann. <https://doi.org/10.25115/eea.v40i2.5936>
- Koch, M., & McGrath, R. (1996). Improving labor productivity: Human resource management policies do matter. *Strategic Management Journal*, 17, 335-354. [http://dx.doi.org/10.1002/\(SICI\)1097-0266\(199605\)17:5<335::AID-SMJ814>3.0.CO;2-R](http://dx.doi.org/10.1002/(SICI)1097-0266(199605)17:5<335::AID-SMJ814>3.0.CO;2-R)

- Kucharčíková, A., Kucharčíková, M. Kucharčíková, E., & Štaffenová, N. (2023): The investments in human capital within the human capital management and the impact on the enterprise's performance. *Sustainability*, 15(6), 5015. <https://doi.org/10.3390/su15065015>
- Lev, B. (2001). *Intangibles: Management, measurement and reporting*. Brookings Institution Press, Washington D.C. <https://ideas.repec.org/a/eee/account/v36y2001i4p501-503.html>
- Lev, B., Sarath, B., & Sougiannis, T. (2005). R&D reporting biases and their consequences. *Contemporary Accounting Research*, 22(4), 977-1026. <https://doi.org/10.1506/7XMH-QQ74-L6GG-CJRX>
- Lev, B. & Sougiannis, T. (1999), Penetrating the book-to-market black-box: The R&D effect, *Journal of Business Finance and Accounting*, 26(3,4), 419-449. <https://doi.org/10.1111/1468-5957.00262>
- Lin, L., Huang, I., Du, P., & Lin, T. (2012). Human capital disclosure and organizational performance: The moderating effects of knowledge intensity and organizational size. *Management Decision*, 50(10), 1790 – 1799. doi: 10.1108/00251741211279602
- López, M.A. & Grandío, A. (Coords.) (2005). *Capital humano como fuente de ventajas competitivas: algunas reflexiones y experiencias*. Netbiblo: Madrid. <http://hdl.handle.net/2183/11793>
- Mabey, C., & Ramirez, M. (2005). Does management development improve organizational productivity? A six-country analysis of European firms. *International Journal of Human Resource Management*, 16(7), 1067-1082. <https://doi.org/10.1080/09585190500143931>
- Marshall, A. (1890). *Principles of economics*. London: MacMillan. <https://www.econlib.org/library/Marshall/marP.html>
- Montoya, A., Alveiro, C., Saavedra, B., & Ramiro, M. (2016). El recurso humano como elemento fundamental para la gestión de la calidad y la competitividad internacional. *Visión de futuro*, 20(2), 1-20. <https://hdl.handle.net/20.500.12494/1126>
- Murugan, M., Sakthivel-Sujatha, T., & Ganapathy, S. (2023). Empirical study of human capital and its influence on business performance. *Journal of Historical Research*, 53(1), 1-23. <https://ssrn.com/abstract=4439903>
- Ordiz, M. (2002). Prácticas de alto rendimiento en recursos humanos: concepto y factores que motivan su adopción. *Cuadernos de Economía y Dirección de la Empresa*, 12, 247-266. <https://dialnet.unirioja.es/servlet/articulo?codigo=265967>
- Pineda, P. (1998). El reto de evaluar la formación en la empresa: herramientas y soluciones. *Capital humano: revista para la integración y desarrollo de los recursos humanos*, 11(111), 32-36. <https://dialnet.unirioja.es/servlet/articulo?codigo=154804>
- Rodríguez-Castellanos, A., Rangelov, S., & García-Merino, J. D. (2006). Intangible resources and value creation in firms: A review. In B. Kilsberg, C. Mercado (Eds.), *Los límites de la responsabilidad social de la empresa. Responsabilidad social de la empresa, universidad y desarrollo* 489-496. Buenos Aires: Academia Europea de Dirección y Economía de la Empresa, Universidad de Buenos Aires y Universidad Rey Juan Carlos.
- Sels, L. (2002). More is not necessarily better: the relationship between the quantity and quality of training efforts. *International Journal of Human Resource Management*. 13(8), 1279-1298. DOI:10.1080/09585190210149529

- Štaffenová, N., & Kucharčíková, A. (2024). Human capital management – values, competencies, and motivation – concerning Industry 4.0. *Economic Research-Ekonomska Istraživanja*, 37(1), 1-22. <https://doi.org/10.1080/1331677X.2024.2324160>
- Teece, D.J. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18(7), 509-533. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7<509::AID-](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-)
- Teece, D.J. (1998). Capturing Value from knowledge assets: the new economy, markets for know-how, and intangible assets. *California Management Review*, 40(3), 55-79. DOI:10.1142/9789812796929_0002
- Turcotte, J., Leonard, A., & Montmarquette, C. (2003). *New Evidence on the Determinants of Training in Canadian Business Locations*. Ottawa: Statistics Canada and Human Resource Development Canada. <https://catalog.hathitrust.org/Record/009878805>
- Úbeda, M. (2005). Training and business performance: the Spanish case. *International Journal of Human Resource Management*, 16(9), 1691-1710. <https://doi.org/10.1080/09585190500239341>
- Ulrich, D., & Brockbank, W. (2006). *La propuesta de valor de recursos humanos*. Bilbao: Ed. Deusto. <https://es.scribd.com/document/649175676/Ulrich-y-Brockbank-2013-La-propuesta-de-valor-de-Recursos-Humanos-capitulo-1>
- Veselinović, N., Krstić, B., Rađenović, T. (2022). The impact of human capital value on human capital efficiency and business performance. *Economics and Organization*, 19(1), 13-26. <https://doi.org/10.22190/FUEO211118002V>
- Veselinović, N., Krstić, B., & Veselinović, M. (2020). Measuring the efficiency of human capital. *Economics of sustainable development*, 5(2), 1-17. DOI:10.5937/ESD2102001V
- Wernerfelt, A. (1984). A resource based view of the firm. *Strategic Management Journal*, 5(2), 171-180. <https://www.jstor.org/stable/2486175>
- Yang, C. & Lin, C. (2009). Does intellectual capital mediate the relationship between HRM and organizational performance? Perspective of a healthcare industry in Taiwan. *International Journal of Human Resource Management*, 20(9), 1965-1984. <https://doi.org/10.1080/09585190903142415>