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Articles

You Get What You Pay For: Human Capital Impact on Organizational Performance in Portugal

Consegues o que pagas: impacto do capital humano no rendemento organizativo en Portugal

Ligia Protovedo[1,a], Ana Veloso[1,b], Miguel Portela[1,c]
[1] School of Psychology. University of Minho, Campus de Gualtar, Braga, Portugal

[a]ligia.portovedo@gmail.com

[b]alveloso@psi.uminho.pt

[c]miguel.portela@eeg.uminho.pt

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Abstract

The neoliberal trend in human resource management has been to increase corporate profits by cutting personnel expenses. Mean while, corporate leaders continue to give official speeches clamming that people are their greatest asset. By applying a longitudinal approach to the organizational scope of the phenomenon, we explored the possible relationship between investment in human capital and organizational performance in Portuguese companies from 2010 to 2016. Our findings indicated that a 1% increment in investment in human capital increased gross value added by 0.63% the same year, and by 0.65% if the increase remained consistent over 2 years. The organizational context in which behaviours occurred, represented by the life cycle stage variable, also positively impacted performance, especially when investment in human capital was made in stage 4- decline. Our findings led us to conclude that cutting personnel expenses is detrimental to company performance and contributes to poorer business results.

Keywords: Human capital theory; Investment in human capital; Organizational context; Organizational performance; Strategic HRM.

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Resumo

A tendencia neoliberal na xestión dos recursos humanos fixo aumentar os beneficios das empresas recortando os gastos de persoal. Mentres tanto, os líderes empresariais seguen pronunciando discursos oficiais nos que afirman que as persoas son o seu maior activo. Aplicando un enfoque lonxitudinal ao ámbito organizativo do fenómeno, exploramos a posible relación entre o investimento en capital humano e o desempeño organizativo en empresas portuguesas de 2010 a 2016. Os nosos resultados indicaron que un incremento do 1% no investimento en capital humano aumentaba o valor engadido bruto nun 0,63% o mesmo ano, e nun 0,65% se o aumento se mantiña constante durante 2 anos. O contexto organizativo no que se produciron os comportamentos, representado pola variable etapa do ciclo de vida, tamén influíu positivamente no rendemento, especialmente cando o Investimento en capital Humano realizouse na etapa 4- declive. Os nosos resultados lévannos a concluír que reducir os gastos de persoal é prexudicial para o rendemento da empresa e contribúe a empeorar os resultados empresariais.

Palabras chave: Teoría do capital humano; Investimento en capital humano; Contexto organizativo; Rendemento organizativo; Xestión estratéxica de RRHH.

JEL: M12; M54; O15; O41; P16.

1. INTRODUCTION

Company management has undergone major changes in recent decades. While their public statements remain positive towards employees, company-employee ties have become more fragile or disappeared. The labour market has suffered from strong deregulation and precariousness while new jobs have less conventional features such as part-time, fixed-term contracts, temporary work and self-employment (Cappelli & Keller, 2013; Kalleberg & Vallas, 2017). In the 'gig economy' where service is organized through a digital platform between the worker and the customer (such as Uber, Airbnb and Amazon Mechanical Turk), the worker has no contract, no established work schedule and no right to vacation or work tools (Kost et al., 2020). All forms of gig work share a lack of commitment to long-term labour relationships, flexible working hours, project-based work, and piece-rate payments (Duggan et al., 2020).

Nonetheless, these fragile forms of work are presented as having an advantage of autonomy, which does not really exist in the gig economy or other forms of contingent work. Instead, greater control is exercised through 'algorithmic management', more supervisors, and the workers' economic needs (Duggan et al., 2020; Fleming, 2017; Kleinknecht et al., 2016). Control is also exercised more subtly by shaping the context in which workers operate, while 'empowering' them to conduct themselves in ways that improve their human capital as free economic agents (Moisander et al., 2018).

As mergers, acquisitions and company restructurings have accelerated, layoffs have become common management practice: to eliminate excess jobs, make them obsolete through automation or make a quick profit by cutting personnel expenses (Greenhalgh & Rosenblatt, 2010; Hirsch & De Soucey, 2006). The job insecurity of unconventional jobs, also known as contingent work, has spread to conventional jobs due to constant corporate restructuring, increasing automation (Fleming, 2017) and the unpaid 'shadow work' that clients themselves perform (Lambert, 2015).

Atomization of the workforce occurs as each employee is transformed into a 'capitalist' of their own human capital, which they own and are responsible for developing. As a result, more contracts are negotiated with self-employed individual businesspersons (Fleming, 2017) who work 'on-demand' (Tirapani & Willmott, 2021).

These forms of labour management stem from the expansion of neoliberalism, which is dogmatically rooted in market rationality and limitless individual freedom. It places the economy at the centre of social relations and dogmatically delegitimizes alternative visions (Tirapani & Willmott, 2021). Within this growing trend, however, work organization in capitalist systems still vary among countries. Portugal is a mixed system, with characteristics of European continental neoliberal capitalism accompanied by greater wage and gender inequality lower investment in skills development and higher job insecurity (Schotter et al., 2021).

Curiously, while companies habitually claim that people are their greatest asset, they are quick to announce employee dismissals and personnel expense cuts when economic turbulence hits (Maley, 2019). Are workers truly an asset, then? Do corporate values associated with investing in people provide results for the company?

The objective of this research was to test the predictive capacity of investment in human capital (IHC) on organizational performance (OP) and contribute to research on the sustainability of business models that seek to increase profits by cutting labour costs (Tirapani & Willmott, 2021).

This study used annual reported staff expenses as the independent variable and the economic results of companies as the dependent variable, both of which will be explained in greater detail.

2. THEORETICAL FOUNDATIONS

2.1. The Theory of Human Capital and Human Resource Management

The Theory of Human Capital explains the relationship between investment and performance. It began with the works of Mincer, Friedman, Shultz and Rosen at the University of Chicago (G. Becker, 1994), in response to observed income inequality among workers. Labour income distribution in the model proposed by Mincer (Mincer, 1970) took length of schooling into account, because after an initial investment it would provide a time-delayed return on labour income by increasing worker productivity (Portela, 2007).

In the concept of human capital as the result of the accumulated knowledge, skills and attitudes in a human being, who is the sole possessor of these attributes (Huffman, 2009), several investors (including family and country) must intervene in the formation of this capital. Human capital thus embodies the knowledge, talent and experience of individual employees' (Bontis & Fitz-enz, 2002), describes the aggregate of individuals within the firm (Wright et al., 2014) and builds a unit-level resource from the emergence of individuals' knowledge, skills, abilities and other characteristics (Ployhart & Moliterno, 2011).

Valuing people as an asset is at the heart of the concept of human capital. It argues that each person has a different combination of current and potential human capital, which through management can be transformed into wealth (Boon et al., 2017; Mayo, 2001) and generate a return like any other investment (G. Becker, 1994; Schultz, 1993, 1989). Behaviour thus has significant value because unlike physical resources, it improves with use (Pike et al., 2005) and allows material resources and financial capital to be transformed into added value: something that never occurs before human behaviour is applied to them (Fitz-enz, 2009). Human resource management (HRM) involves systems deployed to recruit, select, remunerate and engage employees (Wright et al., 2014), along with other initiatives to drive attitudes and desired behaviours (Boon et al., 2017). It enhances the value of human capital, making it both inimitable and irreplaceable in generating competitive advantages for the company (Barney et al., 2011; Shaw et al., 2013). Accordingly, scholars tend to consider all staff expenses as investment in human capital (Ofurum & Aliyu, 2018; Onyekwelu et al., 2017; Rompho, 2017). They provide empirical evidence that HRM expenditures increase productivity (Bassey & Tapang, 2012; Jackson et al., 2014) and improve financial results (Huselid et al., 1997; Jackson et al., 2014).

However, the acquisition of human capital does not imply unconditional ownership of the asset, as employees are free to leave the organization and cancel out the competitive advantage that their human capital has provided (Huffman, 2009). So, the question inevitably arises: should companies invest in human capital?

Human Capital Theory has been blamed for reducing corporate investment in human capital on the grounds that the employee, as owner and beneficiary of that capital, has the obligation to develop it (Fleming, 2017). This lower investment is supported by unconventional forms of work that make workers similar to entrepreneurs: they pay for all their instruments and tools and accrue no rights to vacation or sick pay, leave, work-hour restrictions, or participation in retirement plans. Contracts such as these and the huge number of candidates

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who now expect to get work hours 'on-demand' have contributed to lower wages for conventional contracts. In addition, the excessive focus on results, regardless of the labour effort required, puts employees in positions of having to work extra hours without remuneration (Fleming, 2017). Not surprisingly, labour markets in the neoliberal or mixed regimes of southern Europe feature high unemployment and low wages (Schotter et al., 2021).

While this restructuring of capitalist production relations seems economically rational, it can actually contribute to lower organizational performance, which would make it economically irrational (Fleming, 2017). It also favours the emergence of extreme right-wing movements rooted in the unhappiness caused by the deterioration of wages, benefits, and working conditions (Cumming et al., 2020). This could provide fuel for recurrent political crises and decrease corporate productivity (Cumming et al., 2020).

2.2. Human Capital and Organizational Performance

One of the most prominent theories of management is the Resource Based View (RBV). This theory argues that for an organization to outpace its competitors, it must possess unique and inimitable resources that give it an advantage in its specific market. Human capital (HC) is one such resource (Jiang et al., 2013).

In the literature, there is broad agreement that investment in training has a positive impact on organizational performance. However, financial performance – an outcome influenced by many variables (Aragon & Valle, 2013) and subject to appropriation of profits by human capital holders or their managers (Crook et al., 2011) – is not always consistent with this assumption.

Increasing human capital influences a company's financial performance (Aragon & Valle, 2013; Crook et al., 2011; Huselid, 1995; Newbert, 2008), while divestment of human resource development (HRD) undermines organizational sustainability (McCarthy & Sheehan, 2014).

In the relationship between human capital and performance, RBV separates the constructs of human capital and behaviour (Ployhart, 2021), based on the idea that human capital cannot contribute to performance if it is not used. In fact, human capital that does align with resources usable by the company and transformable into economic performance is *not* human capital. Ployhart (2021) adds to this line of argument by incorporating behaviour – a combination of psychology, economics, strategic management and human resource management – to the relationship between human capital and performance. Other works have also helped unite multi-level, multi-disciplinary research around RBV theory constructs and terminology (Call & Ployhart, 2021; Delery & Roumpi, 2017; Ployhart & Moliterno, 2011).

With recent developments, this RBV-based construct has become known as Human Capital Resource (HCR), defined as 'a unit-level resource that is created from the emergence of individuals' knowledge, skills, abilities, and other characteristics (KSAOs)' (Ployhart & Moliterno, 2011, p. 128). The definition was later changed to 'individual or unit-level capacities based on individual KSAOs that are accessible for unit-relevant purposes' (Ployhart et al., 2014, p. 374). Although the second definition no longer includes the term, the construct is based on the *emergence* of a resource from KSAOs. This goes beyond a simple aggregation of individual KSAOs that are then amplified and transformed through intra-organizational dynamics. Instead, it provides a competitive advantage because it is valuable, rare and inimitable by the competition (Ployhart & Moliterno, 2011). *Emergence* is thus understood to result from the interaction of various behaviours (Moliterno & Nyberg, 2019). While HCR, as currently defined, impacts organizational performance and goes beyond individual KSAOs, the lack of clarity about aspects that emerge from them has led scholars to apply various measures of KSAOs, work activities and attitudes at the individual level, in an effort to capture the phenomenon.

However, a recent meta-analysis led Zhang et al., (2023) to conclude that standardization is still a long way off. In that work, the authors considered personnel expenses to be measures of financial resources and not HCR, although they corresponded to amounts spent on hiring and training employees, HRM systems and workforce salaries. Assuming that the company will only pay a salary corresponding to human capital – the salary that compensates the contribution of relevant KSAOs to organizational performance (and not other KSAOs the employee may have) – and implements the HRM systems that it considers will enhance an individual's KSAOs, personnel expenses seem to us an adequate proxy to capture HCI.

2.3. The Context: Life Cycle Stage

The relationship between IHC and OP can be influenced by the context in which employees behave. The context provides several variables that can determine or moderate organizational behaviour (Clitheroe et al., 1998; Gomes et al., 2015), influence emotions and attitudes (Valdivia & Mart, 2020), and impact research outcomes (Johns, 2006).

This article explores the life cycle stage of the company as a context variable that can be calculated from the SCIE database.

Life Cycle Theory (LCT) starts with the premise that organizations are similar to living beings that pass through different stages of development from birth to death (Liu & Chou, 2016). Generally, five stages are identified: Introduction, Growth, Mature, Decline and Shake-out (Dickinson, 2011; Habib & Hasan, 2017; Jackson & Schuler, 1995; Yan & Zhao, 2010). Lately, they have been assessed on the basis of a descriptive composition of four items (annual dividends scaled by income, percentage of sales growth, capital expenditure as a proportion of a firm's value, and the age of the firm) (Liu & Chou, 2016), or the net cash-flow pattern, which was used in this study (Dickinson, 2011; Habib & Hasan, 2017).

In the organizational environment in which the behaviours of employees and managers occur, profitability tends to be higher in Stage 2, 3 and 5 (especially Stage 3), and lower in Stages 1 and 4. Investment is high in Stages 1 and 2, while in Stage 5 companies sell assets to pay debts. Debt is also higher in Stages 1 and 2, following investment, and decreases in Stage 3, when companies distribute more shareholder dividends or invest in unprofitable projects to decrease profits and lower taxes (Dickinson, 2011).

Stage 3 has the lowest risk of insolvency (Domingo Terreno et al., 2017) and CEO remuneration has higher fixed values in Stages 3 and 5, while pay-for-performance predominantly occurs in Stages 1 and 2 (Liu & Chou, 2016).

3. HYPOTHESES

Based on Human Capital Theory (G. Becker, 1994) and RBV (Barney, 1991), which underpin the multidisciplinary, multilevel theoretical corpus currently being used to understand the concept of Human Capital Resource (Ray et al., 2023), we hypothesized that investment in human capital, as a proxy for its aggregated value and the emerging value enhanced by HRM systems, is positively related to organizational performance. We did not distinguish the individual aggregate value of human capital from the value of the emerging resource or their impact on company performance.

Hypothesis 1: Investment in human capital is positively related to the organizational performance of the company.

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Drawing from Social Exchange Theory (Blau, 1964), we also hypothesized that the likely relationship between investment in human capital and organizational performance is moderated by employee reciprocity to HRM practices (investing in their human capital), which are perceived as being intended to improve workers' well-being and shape employee behaviour (Van De Voorde & Beijer, 2015)

Hypothesis 2: A company's life cycle stage will predict the relationship between investment in human capital and organizational performance.

4. DATA AND METHODS

Since 2010, companies operating in Portugal have been presenting annual reports in compliance with current European Union Accounting Standardization System regulations, known in Portuguese as the *Sistema de Normalização de Contas* (SNC) (Guerreiro et al., 2014). These reports are gathered in the database of the *Sistema de Contas Integradas das Empresas* (SCIE) (INE, 2020).

Although the database covers a much broader temporal spectrum than the years selected for analysis here, the codes have changed a great deal, making it difficult to harmonize statistical production. However, the accounting system has remained constant since 2010, so our sample range starts that year and ends in 2016, the last year available at the time of this research.

This database allowed us to develop a 6-year longitudinal study at the organization-level.

The variables used, organizational performance (OP) and the explanatory variable of investment in human capital (IHC), were directly accessible in the database, as were the control variables (Sector and Size). The dummy variable, Stage, was calculated from company annual report data (see Dickinson, 2011).

4.1. Variables

Independent Variable: Investment in Human Capital (IHC)

The official balance sheets of companies reliably reflect the decisions taken in the annual exercise of activity by managers who have the power to act on behalf of those companies. Management priorities can be observed by comparing the amounts dedicated to expenses that were favoured and disfavoured in light of finite financial resources.

Existing research generally recognizes personnel expenses as a measure of investment in human capital (Bontis & Fitz-enz, 2002; Firer & Mitchell Williams, 2003; Fitz-enz, 2009; Ofurum & Aliyu, 2018; Onyekwelu et al., 2017; Rompho, 2017; Stein, 2007) though other measures can be used (Stein, 2007). For this variable, we selected total personnel expenses but did not include the board of directors, which normally decides its own remuneration in Portugal.

Dependent Variable: Organizational Performance

In strategic management literature, three types of measures are used for organizational performance: objective financial performance, subjective financial performance and subjective non-financial performance (Newbert, 2008). The most commonly used measures of objective financial performance are net income divided by net sales (profit margin, Return on Sales (ROS)), net income divided by total assets (commonly referred to as Return on Assets or ROA)

(Delery & Doty, 1996), net income divided by invested capital (Return on Income, ROI), net income divided by common equity (Return on Equity, ROE) (Delery & Doty, 1996; Shrader et al., 1997) and cash flow divided by gross capital stock (Huselid et al., 1997), known as Gross Rate of Return on Capital or GRATE (Huselid, 1995). Since this study was built around company balance sheet data, objective financial performance was pas a dependent variable.

Finding direct effects on financial results is rare (Jiang et al., 2012) due to manipulation of accounting measures, asset undervaluation, inventory policies that create distortions, asset depreciation and income and expense classifications (Dalton & Daily, 1998). Additionally, employees who hold strategic human capital for the organization and are responsible for value creation can negotiate pay increases and appropriate part of that increment, thereby reducing financial results (Boon et al., 2017). In light of these constraints, we decided to add other measures to test financial performance as a dependent variable while avoiding problems reported in prior research.

The options included ROA, ROE and ROS, some of the most widely used financial indicators for describing the relationship between HRM and organizational performance (Aragon & Valle, 2013; B. Becker & Gerhart, 1996; Delery & Doty, 1996; Shrader et al., 1997; Veloso, 2007; Zhai, 2018). In the end, however, we decided to use Net Sales (NS), Gross Value Added (GVA) and Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA). These are frequently used as indicators in the technical evaluation of investments and company performance (McPhee & Woodley, 2014; Soute et al., 2008) and were directly obtainable from the company balance sheets available in the SCIE database. Operationally, they can be described as follows:

EBITDA	"Can be used to analyse and compare profitability among companies and industries because it eliminates the effects of financing and accounting decisions" (Costa & Costa, 2019, p. 31).
GVA	"Measures the productive contribution of the company, or what it actuallycreated through its production" (Costa & Costa, 2019, p. 31).
NS	"The dollar [euro] value of sales made during an accounting period, minuscustomer returns, discounts and other reductions from the original selling priceof the goods" (Mooney, 2008, p. 373).
ROA	"A measure of profitability that combines the asset turnover ratio and the profit-margin-on-sales ratio" (Mooney, 2008, p. 475).
ROE	"A financial analysis tool that measures how well a company generates earningscompared to the amount of capital shareholders have invested in the firm" (Mooney, 2008, p. 475).
ROS	"Profit before tax and interest as a percentage of sales revenue" (Grant & Jammine, 1988, p. 336).

Control Variables

In this study, company size (Size) and sector of activity (Sector) were used as control variables, as they alone explain part of the relationship between HRM and organizational performance (Balkin & Gomez-Mejia, 2010; Gerhart & Milkovich, 1990). They present significantly different wage patterns (Ferreira et al., 2015) and represent different types of organizations, since company size and automation levels imply management models adapted to complexity. These are simply a reaction to the size or technical specificity of the context in which they operate and do not imply choices of greater or lesser investment in HC.

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The Size variable was obtained from the number of employees. The sample was divided into quintiles, corresponding to five categories. The Sector variable was collected from company ISIC codes (International Standard Industrial Classification) found in the SCIE.

Dummy Variable: Company Life Cycle Stage

Companies were categorized according to their life cycle stage and the Stage dummy variable was created.

Drawing from Dickinson's model (Dickinson, 2011) and Habib and Hasan's operationalization criteria (Habib & Hasan, 2017), the following net cash flow grid was used as a basis for ranking[1]:

1. Introduction: if OCF < 0, INVCF < 0 and FINCF > 0;
2. Growth: if OCF > 0, INVCF < 0 and FINCF > 0;
3. Mature: if OCF > 0, INVCF < 0 and FINCF < 0;
4. Decline: if OCF < 0, INVCF > 0 and FINCF < or ≥ 0;
5. Shake Out: all other firm years.

4.2. Sample

The database included official balance sheet data from all companies operating in the private sector inPortugal, comprising a vast set of annual information for statistical, fiscal and accounting purposes.

The companies selected had 100 or more employees, based on the conventional cut-off point betweenlarge and small firms in labour economics research (Centeno & Novo, 2012; Winter-Ebmer & Cardoso, 2010) and the assumption that the phenomenon would be identifiable at that level. Onlycompanies that remained active throughout the study period (2010–2016) were included. From thisselective process we obtained a sample of 1566 companies, distributed according to their relevantStage, Size and Sector variables, as summarized in Table 1:

Table 1. Variables

STAGE	2011	2012	2013	2014	2015	2016
1. Introduction	601	571	546	515	492	453
2. Growth	264	211	249	293	276	346
3. Mature	130	165	169	189	246	213
4. Decline	82	112	97	88	98	92
5. Shake Out	489	507	505	481	454	462

[1] OCF – Operating cash flows; INVCF – Investing cash flows; FINCF – Financing cash flows (Dickinson, 2011; Habib & Hasan, 2017).

SIZE	2011	2012	2013	2014	2015	2016
1	941	951	958	924	904	878
2	368	361	353	370	373	386
3	109	100	101	116	123	132
4	42	42	42	37	49	47
5	92	100	100	108	104	108
SECTOR	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Food, beverages and tobacco	106	107	106	108	109	110
Textiles, clothing and leather	183	184	184	183	183	181
Wood, cork, paper, no furniture	52	52	53	53	52	52
Non-metal manufacturing	119	118	117	117	116	116
Metal manufacturing	176	173	177	177	175	176
Furniture manufacturing	27	27	27	27	27	27
Electricity, gas	21	21	21	21	22	22
Construction	85	83	81	82	81	80
Wholesale and retail	247	249	246	246	249	250
Hotels and restaurants	79	82	82	82	82	82
Transport, storage, and communications	106	105	105	106	106	107
Postal and telecommunications	9	9	9	9	9	9
Real estate	224	225	224	223	225	224
Education	27	26	26	27	27	27
Health and social work	35	35	36	36	36	36
Other community, social and personal services	51	51	51	50	48	48
Residual	19	19	21	19	19	19
	1566	*1566*	*1566*	*1566*	*1566*	*1566*

Note: The size variable was obtained by dividing the sample into 5 quintiles.

Source: Author's own computations using SCIE data.

4.3. Statistical Analysis

Linear regression was applied to the sample, to model the dependent variable of organizationalperformance (OP) as a function of the independent (IHC, Stage) and control (Sector, Size) variables.

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The procedure was repeated for each of the indicators chosen to measure OP (NS, GVA, EBITDA,ROA, ROE and ROS).

Two estimation models were used for the regression: Ordinary Least Squares (OLS) and Fixed Effects(FE).

Although OLS rendered more expressive results, only FE results are presented because this morerigorous estimation model captured the specific effect of the variables of interest.

The results presented here were obtained from the following equation:

$$lnOP_{it} = \beta_0 + \beta_1 lnIHC_{it} + \beta_2 STAGE_{it} + \beta_3 SECTOR_{it} + \beta_4 SIZE_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

where *i* is the number of observations of the explanatory variable at time *t*, which corresponds to thereference year; OP_{it} corresponds to the response variable of observation *i* at time *t*, tested here for NS, GVA, EBITDA, ROA, ROE and ROS; μ_i is the firm's unobserved heterogeneity; β0, β1, β2, β3 are the parameters of the model estimated to describe the effect of the explanatory variable on OP when allother explanatory variables remain constant; and ε_{it} represents errors assumed not to be correlated withthe explanatory variables included in the model, and not serially correlated.

The model was tested to capture the effect of variations in company behaviour over time. Accordingly, $\Delta_{ln}IHC_{it}$ were added to the model and corresponded to the difference between *IHC* for year *t* and *IHC* for year *t-1*. The entire model is expressed in the following equation:

$$lnOP_{it} = \beta_0 + \beta_1 lnIHC_{it} + \beta_2 \Delta lnIHC_{it} + \beta_3 STAGE_{it} + \beta_4 SECTOR_{it} + \beta_5 SIZE_{it} + \mu_i + \varepsilon_{it} \quad (2)$$

Since investment in human capital (IHC) on company balance sheets relates to the course of a yearbut might not produce immediate effects, the possibility that the operational performance of year *t* isdue to the investment in years *t* and *t-1* was also tested using the following equation:

$$lnOP_{it} = \beta_0 + \beta_1 lnIHC_{it\_1} + \beta_2 \Delta_l lnIHC_{it\_1} + \beta_3 STAGE_{it} + \beta_4 SECTOR_{it} + \beta_5 SIZE_{it} + \mu_i + \varepsilon_{it} \quad (3)$$

The inverse regression was also calculated: IHC was modelled as a function of organizationalperformance (OP), using equations 4 and 5 for years *t* and *t-1*, respectively:

$$lnOP_{it} = \beta_0 + \beta_1 lnIHC_{it} + \beta_2 \Delta lnIHC_{it} + \beta_3 STAGE_{it} + \beta_4 SECTOR_{it} + \beta_5 SIZE_{it} + \mu_i + \varepsilon_{it} \quad (4)$$

$$lnIHC_{it} = \beta_0 + \beta_1 lnOP_{it\_1} + \beta_2 \Delta_l lnOP_{it\_1} + \beta_3 STAGE_{it} + \beta_4 SECTOR_{it} + \beta_5 SIZE_{it} + \mu_i + \varepsilon_{it} \quad (5)$$

5. RESULTS

5.1. Descriptive Statistics

The data show very disperse ROE, IHC and Size variables resulting from the considerable size differences of the companies that comprise the database (Table 2).

Table 2. Means and Standard Deviations

Year		ROA	ROE	ROS	GVA	NS	EBITDA	IHC	SIZE
2011	mean	0.05	87.32	0.02	15.92	17.15	14.60	10.47	478.73
	sd	0.12	3018.32	0.12	1.06	1.23	1.48	24.58	1 217.15
2016	mean	0.06	0.26	0.03	16.06	17.24	14.80	11.25	531.80
	sd	0.12	5.49	0.11	1.03	1.21	1.50	25.95	1431

Source: Author's own computations using SCIE data.

5.2. Regression Results

The results presented in Table 3 show a positive and significant relationship between companyperformance and IHC when measured with the economic variables NS, GVA and EBITDA, but notwith the financial variables ROA, ROE and ROS.

Table 3. Regression Results

	NS			GVA			EBITDA		
	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$
	0.49* **	**0.51*** **	**0.15*** **	**0.63*** **	**0.65*** **	**0.13*** **	**0.37*** **	**0.37*** **	**0.12** **
Error	(0.05)	(0.06)	(0.04)	(0.06)	(0.05)	(0.04)	(0.06)	(0.07)	(0.06)
R2	0.39	0.36	0.20	0.35	0.31	0.17	0.17	0.17	0.15
RMSE	0.15	0.14	0.13	0.20	0.19	0.18	0.48	0.45	0.42
N	9395	7828	6261	9 320	7766	6215	8 600	7164	5776
	ROA			**ROE**			**ROS**		
	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$
	-0.03*	**-0.03***	**-0.03***	**-291.41**	**-432.67**	**190.73**	**-0.007**	**-0.004**	**0.00**
Error	(0.02)	(0.009)	(0.01)	(291.60)	(431.47)	(187.46)	(0.01)	(0.01)	(0.01)
R2	0.12	0.11	0.10	0.00	0.00	0.00	0.09	0.09	0.08
RMSE	0.07	0.07	0.06	2815.24	3083.28	2446.39	0.07	0.06	0.06
N	9395	7828	6261	9395	7828	6261	9395	7828	6261

Note: The headers show equations 1, 2 and 3, modelled as a function of OP. The results show the effects on NS, GVA, EBITDA, ROA, ROE and ROS. Significance levels ***1 % **5 % *10 %

Source: Author's own computations using SCIE data.

The overall adjustment of the model tested was good for NS and GVA variables, with R^2>0,3 but weaker for EBITDA, with R^2=0,17, for equations 1 (OPt = f(IHCt)) and 2 (OPt = f(IHCt + ΔIHCt-1)). The model fit was lower for Equation 3 (OPt = f(IHCt-1)), probably indicating that variables notconsidered in the study gained strength as time passed.

Since the model contains categorical variables for Size, Sector, Stage, and a large number ofobservations, R^2 is comparable to findings in the existing literature.

Results for the effect of IHC on OP indicated that a 1% increment in IHC in one year

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produced anincrease of 0,49% on NS, 0,63% on GVA and 0,37% on EBITDA the same year. If the rise isconsistent over two years NS could rise by 0,51%, GVA by 0,65% and EBITDA would remain at 0,37%.

With Equation 3 (OPt = f(IHCt-1)) the effect faded (0,15% for NS, 0,13% for GVA and 0,12% for EBITDA). This means that investing in HC was effective for leveraging performance immediately and not later, as we had thought.

Table 4 shows the results of the inverse regression calculations, where IHC was modelled as afunction of OP (see equations 4 and 5). This was done to explore the possibility that the results obtained in the earlier regressions might simply be due to the abundance of financial resources.

The findings verified that organizational performance modelling based on IHC produces more expressive results than its opposite. This evidence suggests that a causal relationship between IHC and OP is more likely than between OP and IHC, as was the case for GVA and EBITDA but not NS, which had the same effect in both models. Mean while GVA and EBITDA showed a great difference, suggesting that these two OP measures better capture what we seek to understand: the effect of investment on HC.

Table 4. Reverse Regression Results

NS	OP = f (IHC)			IHC = f (OP)		
	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$	$IHC_t = f(OP_t)$	$IHC_t = f(IHC_t + \Delta OP_{t-1})$	$IHC_t = f(OP_{t-1})$
	0,49* **	**0,51*** **	**0,15*** **	**0,48*** **	**0,50*** **	**0,25*** **
Error	(0,05)	(0,06)	(0,04)	(0,03)	(0,03)	(0,03)
R2	0,39	0,36	0,20	0,42	0,39	0,28
RMSE	0,15	0,14	0,13	0,15	0,13	0,12
N	9 395	7828	6261	9395	7828	6261
GVA	OP = f (IHC)			IHC = f (OP)		
	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$	$IHC_t = f(OP_t)$	$IHC_t = f(IHC_t + \Delta OP_{t-1})$	$IHC_t = f(OP_{t-1})$
	0,63* **	**0,65*** **	**0,13*** **	**0,33*** **	**0,37*** **	**0,15*** **
Error	(0,06)	(0,05)	(0,04)	(0,03)	(0,03)	(0,03)
R2	0,35	0,31	0,17	0,40	0,37	0,26
RMSE	0,20	0,19	0,18	0,15	0,13	0,12
N	9320	7766	6215	9320	7743	6190
EBITDA	OP = f (IHC)			IHC = f (OP)		
	$OP_t = f(IHC_t)$	$OP_t = f(IHC_t + \Delta IHC_{t-1})$	$OP_t = f(IHC_{t-1})$	$IHC_t = f(OP_t)$	$IHC_t = f(IHC_t + \Delta OP_{t-1})$	$IHC_t = f(OP_{t-1})$
	0,37* **	**0,37*** **	0,12**	**0,04*** **	**0,06*** **	**0,05*** **
Error	(0,06)	(0,07)	(0,06)	(0,01)	(0,01)	(0,01)
R2	0,17	0,17	0,15	0,26	0,26	0,26
RMSE	0,48	0,45	0,42	0,16	0,14	0,11
N	8600	7164	5776	8600	6828	5439

Note: The header shows equations 1, 2 and 3, modelled as a function of IHC or OP. The results show the effect on NS, GVA and EBITDA. Significance levels ***1 % **5 % *10 %.

Source: Author's own computations using SCIE data

Regressions with the same variables for each Stage (Table 5) demonstrated a very poor overall fit for EBITDA (ranging between 0.05 and 0.14 for R^2 in Stages 1 and 2). The results were not significant for Stages 3 and 4.

Table 5. Results by Life Cycle State

	STAGE 1			
	$GVA_t = f(IHC_t)$	$GVA_t = f(IHC_t + \Delta IHC_{t-1})$	$EBITDA_t = f(IHC_t)$	$EBITDA_t = f(IHC_t + \Delta IHC_{t-1})$
	0,52* **	**0,52*** **	**0,43*** **	**0,38*** **
Error	(0,11)	(0,10)	(0,13)	(0,14)
R2	0,22	0,19	0,05	0,05
RMSE	0,19	0,18	0,46	0,41
N	3144	2546	2758	2229
	STAGE 2			
	$GVA_t = f(IHC_t)$	$GVA_t = f(IHC_t + \Delta IHC_{t-1})$	$EBITDA_t = f(IHC_t)$	$EBITDA_t = f(IHC_t + \Delta IHC_{t-1})$
	0,52* **	**0,78*** **	**0,37*** **	**0,68*** **
Error	(0,11)	(0,08)	(0,12)	(0,13)
R2	0,44	0,55	0,09	0,14
RMSE	0,11	0,09	0,25	0,22
N	1636	1373	1637	1373
	STAGE 3			
	$GVAt = f(IHC_t)$	$GVA_t = f(IHC_t + \Delta IHC_{t-1})$	$EBITDA_t = f(IHC_t)$	$EBITDA_t = f(IHC_t + \Delta IHC_{t-1})$
	0,39* **	**0,47*** **	**0,31** **	**0,33** **
Error	(0,11)	(0,10)	(0,13)	(0,16)
R2	0,42	0,41	0,19	0,18
RMSE	0,10	0,09	0,20	0,18
N	1110	980	1109	979
	STAGE 4			
	$GVA_t = f(IHC_t)$	$GVA_t = f(IHC_t + \Delta IHC_{t-1})$	$EBITDAt = f(IHC_t)$	$EBITDA_t = f(IHC_t + \Delta IHC_{t-1})$
	0,98* **	**0,84*** **	0,64	-0,04
Error	(0,29)	(0,23)	(0,58)	(1,43)
R2	0,21	0,21	0,11	0,13
RMSE	0,16	0,13	0,23	0,23
N	562	481	436	369

NoteThe headers show equations 1 and 2 modelled as a function of OP. The results show the effects on GVA and EBITDA in each Stage. Significance levels: ***1 % **5 % *10 %

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Source: Author's own computations using SCIE data.

In summary, the variables NS, GVA, EBITDA, ROA, ROE and ROS were tested to measure OP and verify that:

1. ROA, ROE and ROS produced non-significant results in our model.
2. NS produced the same effect when modelled as a function of IHC and when used as the response variable, preventing us from reaching any conclusions about causality between OP and IHC.
3. EBITDA results were significant in Stage 1, marginally significant in Stage 2 and not significant in Stage 3 or 4. The explanatory capacity of the model was low and the error high in Stage 4.
4. GVA was the only response variable that remained consistent in all tests: the results differed when modelled as the response variable vs the explanatory variable; the results were positive and significant, behaviour varied in Stage modelling samples and overall fit was acceptable.

6. DISCUSSION

Our results for Portuguese companies confirm that investment in human capital affects company performance. This result is consistent with existing literature (Bontis & Fitz-enz, 2002; Dewi et al., 2019; Ofurum & Aliyu, 2018; Phusavat et al., 2011; Shaw et al., 2013).

One explanatory hypothesis that can be derived from these results is that organizational performance stems from employee perceptions, which lead to employee reactions (Van de Voorde & Boxall, 2014). In other words, HRM practices perceived as intended to improve workers' well-being (investing in their human capital) may trigger reciprocity and foster model employee behaviour, according to the Social Exchange Theory (Van De Voorde & Beijer, 2015). Researchers are still trying to discover the 'black box' that explains why HR practices influence performance. Current explanatory trends look to attributes of HR practices that give rise to attitudes and shape performance (Bowen & Ostroff, 2004; Hewett et al., 2017; Nishii et al., 2008).

Attributing meaning to the employer's behaviour of spending/investing more or less on employees could be an explanation. As our results suggest, this requires further investigation. The possibility is reinforced by the significant positive relationship obtained from the model regression for each stage of the life cycle using GVA and the fact that the greatest impact occurred in Stage 4 – Decline. This agrees with the conclusions of several authors who point to attitudinal variables in the relationship between HRM and performance (Messersmith et al., 2011; Nishii et al., 2008; Van de Voorde & Boxall, 2014; Veloso, 2007). It also aligns with the concept of Human Capital Resource as the *emergence* of a resource – one that has economic value (Ployhart & Moliterno, 2011) and requires behaviour to emerge (Ployhart, 2021) – as the result of intra-organizational dynamics and not merely aggregated KSAOs.

Limitations of this Work and Implications for Future Research

This study included only companies with more than 100 employees operating in Portugal, so the conclusions cannot be directly applied to smaller companies or other countries where culture, labour and tax laws or other constraints may generate different employer or employee behaviour.

The period considered only includes years following the 2008 economic crisis, so the results cannot be directly generalized to previous moments without studying the behaviours revealed by the data.

However, research suggests the performance advantages of investing in human capital during periods of economic turbulence (Maley, 2019).

Pathways in the field of attitudinal variables should be explored, since our results point to a greater effect on GVA when company behaviour is consistent over two years in any life cycle stage, and immediate effects in Stage 4 – Decline.

7. CONCLUSION

The objective of this study was to test the predictive capacity of investment in human capital (IHC) on organizational performance (OP) and contribute to research on the sustainability of business models that seek to boost profits by cutting labour costs (Tirapani & Willmott, 2021). We also tested the hypothesis that this relationship is moderated by variables related to the context in which behaviours occur while also contributing to a better understanding of the relation between HRM and performance.

Our findings indicate that ICH and OP have a positive, possibly causal relationship that is affected by the company's life cycle stage. This is possibility stemming from employee reciprocity for company investment in their well-being.

The results of this study lead us to conclude that decreasing investment in human capital is detrimental to company performance and contributes to poorer business results. In other words, investing less in human capital is not a rational option for human resource management but an irrational one that harms companies and employees.

In terms of work organization policy, human capital should be considered a public good to which companies are called upon to contribute, since their performance benefits from its increase. Paradoxically, while the current neoliberal trend advocates cutting personnel expenses to increase profits, our study shows that corporate economic results improve by increasing labour costs.

Changing management and economic policies accordingly will improve economic performance and contribute to a more humanized work experience.

Author Contributions

Conceptualization, L.P., A.V. and M.P.; Methodology, L.P., A.V. and M.P.; Software, L.P., A.V. and M.P.; Validation, L.P., A.V. and M.P.; Formal Analysis, L.P., A.V. and M.P.; Data Curation, L.P., A.V. and M.P.; Writing - Original Draft Preparation, L.P., A.V. and M.P.; Writing - Review & Editing, L.P., A.V. and M.P. All authors have read and agreed to the published version of the manuscript.

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