



Universidade do Minho
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Lígia Portovedo **Investir em Pessoas Compensa?**

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Investir em Pessoas Compensa?

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e do
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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

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ABSTRACT

Investing in People Pays Off?

This work intends to contribute to a better understanding of the impact of psychological variables on organizational performance and to point out new sources of information that can contribute to deepening HR Analytics in companies. Concretely, we study the variation in organizational performance when companies invest in employees and when companies do not invest, in order to answer the question “Investing in people pays off?”. We also analyze the relationship between context and performance, taking the organization as a unit of analysis.

With this goal, we present one study on the effects of investment in human capital and another one the effects of job insecurity on organizational performance.

We conclude that:

1. 1% increase in Investment in Human Capital produces an increase of 0,63% in Gross Value Added in the same year, and 0,65%, if the increase is consistent for 2 years. We also conclude that the organizational context, in which behaviours occur, has a positive impact on performance, especially when the Investment in Human Capital is made in decline context of firm;
2. for every 1% of Qualitative Job Insecurity, Gross Value Added decreases 5,4% and Net Sales decreases 5,3% in small firms. We also conclude that in the organizational context of shake-out, for every 1% of cases of Qualitative Job Insecurity, Gross Value Added decreases by 8.5% and Net Sales 4.8%. No related effect for Quantitative Job Insecurity was found.

Finally, we present and discuss a proposal for an integrative theoretical model. The model is based on our reflections upon the two previous studies and also on theoretical models that allowed us to understand the relationship between a psychological variable (e.g. job insecurity) and organizational performance.

We propose an aggregating theoretical model, anchored on the Conservation of Resources Theory, Social Exchange Theory and Trust to understand the results of empirical studies on mediation and moderation between Job Insecurity and Organizational Performance, published between 2000 and 2020.

Keywords *Investment in Human Capital, Job Insecurity, Organizational Performance, Trust*

RESUMO

Investir em Pessoas Compensa?

Este trabalho pretende contribuir para uma melhor compreensão do impacto das variáveis psicológicas no desempenho organizacional e apontar novas fontes de informação que possam contribuir para o aprofundamento da análise dos dados de recursos humanos, nas empresas. Concretamente, estudamos a variação no desempenho organizacional quando as empresas investem nos funcionários e quando as empresas não investem, a fim de responder à pergunta “Investir nas pessoas compensa?”. Analisamos também a relação entre contexto e desempenho, tomando a organização como unidade de análise.

Com esse objetivo, apresentamos um estudo sobre os efeitos do investimento em capital humano e outro sobre os efeitos da Insegurança no Emprego no Desempenho Organizacional. Concluimos que:

1. O aumento de 1% no Investimento em Capital Humano produz um aumento de 0,63% no Valor Acrescentado Bruto, no mesmo ano, e de 0,65%, se o aumento for consistente por 2 anos. Concluimos também que o contexto organizacional, no qual ocorrem os comportamentos, tem impacto positivo no desempenho, principalmente quando o Investimento em Capital Humano é feito no contexto de declínio da empresa;
2. para cada 1% de Insegurança Qualitativa no Trabalho, o Valor Acrescentado Bruto diminui 5,4% e o Volume de Negócios diminui 5,3% nas pequenas empresas. Concluimos também que no contexto organizacional de reestruturação, para cada 1% de casos de Insegurança Qualitativa no Emprego, o Valor Acrescentado Bruto diminui 8,5% e o Volume de Negócios 4,8%. Não foi encontrado nenhum efeito de Insegurança Quantitativa no Emprego.

Por fim, apresentamos e discutimos uma proposta de modelo teórico integrativo. O modelo baseia-se nas nossas reflexões sobre os dois estudos anteriores e também em modelos teóricos que nos permitiram compreender a relação entre uma variável psicológica (insegurança no emprego) e o desempenho organizacional.

Propomos um modelo teórico agregador, ancorado na Confiança, na Teoria da Conservação de Recursos e na Teoria das Trocas Sociais, para compreender os resultados dos estudos empíricos sobre mediação e moderação entre Insegurança no Trabalho e Desempenho Organizacional, publicados entre 2000 e 2020.

Palavras-chave

*Confiança, Desempenho Organizacional, Insegurança no Emprego,
Investimento em Capital Humano*

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Abbreviations

COR	Conservation of Resources	OFC	Operational Cash-flow
CT	Contract Type	OLS	Ordinary Least Squares
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization	OP	Organizational Performance
FE	Fixed Effects	PCT	Psychological Contract Theory
FINCF	Financial Cash-flow	QLJI	Qualitative Job Insecurity
GRATE	Gross Rate of Return on Capital	QP	Quadros de Pessoal
GS	Google Scholar	QTJI	Quantitative Job Insecurity
GVA	Gross Value Added	RBV	Ressource Based View
HC	Human Capital	ROA	Return on Assets
HR	Human Resources	ROE	Return on Equity
HRD	Human Resources Department	ROI	Return on Investment
HRM	Human Resources Management	ROS	Return on Sales
IFRS	International Financial Standards	SCIE	Sistema de Contas Integradas das Empresas
IHC	Investment in Human Capital	SDT	Self-determination Theory
INVCF	Investment Cash-flow	SET	Social Exchange Theory
JI	Job Insecurity	SIT	Social Identity Theory
KSAO	Knowledge, Skills, Abilities and Other Characteristics	SNC	System of Account Normalization
NS	Net Sales	TEN	Tenure
		UMT	Uncertainty Management Theory

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Introduction

This work intends to answer the question “Investing in people pays off?”, studying the variation in performance when companies invest in employees and when companies do not invest. Analyzes the relationship between context and performance, taking the organization as a unit of analysis.

We present two studies for this objective:

- A first study on the organizational performance of portuguese companies that spend more money on employees, in salaries, bonuses, training, recruitment and benefits, framed in the theory of human capital;
- A second study on the organizational performance of companies that fire or lower salaries and benefits, framed in the theoretical body of job insecurity.

It is our intention to integrate all portuguese companies with more than 100 employees, accessed through official national databases. We believe that a 100 employees is a sufficient size for the existence of a complex internal network of interpersonal relationships that can be translated on formal and/or informal human resource management policies and practices, where we believe we will be able to capture the impact of investing (or not) in people.

We use dependent variables and measures of performance at the organizational level, within a longitudinal model, inferring employee behaviors through changes in context and time. According to the literature, the context explains more behavioral variability than dispositional variables, (Hobfoll, Halbesleben, Neveu, & Westman, 2018), so the loss of depth at the individual level is, in our view, compensated by the analysis of all portuguese organizations with more than 100 workers between 2010-2018, which would prove impracticable if the methodological option followed the individual as a unit of analysis.

We assume, according to the literature, that employees observe organizational behavior, i.e. the management actions concerning people management, and anthropomorphize the organization, attributing intentions and motivations to it (King, Felin, & Whetten, 2010). We also assume that 1) there is an interpersonal crossover process in companies by which experiences, emotions, and resources are transferred within dyads, teams, and organizations (Hobfoll et al., 2018); and 2) the employment relationship is built around the norm of reciprocity, specifically if the organization gives priority to the well-being of employees, they will improve the various performance indicators (Guest, 2017).

As a final part of this work, we present and discuss a proposal for an integrative theoretical model. The model is based on our reflections upon the two previous studies and also on theoretical models that allowed us to understand the relationship between a psychological variable (e. g. job insecurity) and organizational performance.

1. Current Relevance of the Topic

“People are the most valuable assets” is a phrase that we hear frequently in organizations, and read in their reports and statements to the media. Of those who know the organizations from the inside, there are few who do not recognize the insincerity of this phrase, identifying the difference between this statement and the experiences of employees.

In the last few decades, labor relations have undergone profound changes. The widespread practice of downsizing as a mean to increase corporate profits (Greenhalgh & Rosenblatt, 2010; Hirsch & De Soucey, 2006) and the deregulation and precariousness of the labor market led to the creation of new jobs with characteristics of unconventional work, such as part-time, fixed-term contracts and independent work (Kalleberg & Vallas, 2017). From a formal point of view, the connection between companies and employees has suffered a drop in the level of commitment that companies are willing to establish with employees.

Gig economy, judgmental culture, performance pressure, real-time scheduling that disrespects personal commitments and long working hours are the new requirements to keep a job and a source of income. In the USA alone, the estimate of unemployment deaths for financial stress and job insecurity is 64,000 people a year (Pfeffer, 2018).

Factory blue-collar workers have been replaced by service white-collar workers, but this does not mean an improvement for workers because their new jobs are precarious forms of employment; at the same time, technology allowed greater job demands and less control by the employee over his own role. As these are the aspects that reduce physical and psychological well-being, stress has become the biggest cause of absenteeism (Grote & Guest, 2017).

Our own practice in human resources management also highlights the difficulty in obtaining approval for spending money on people or budget for activities, hiring experienced professionals, training and fringe benefits.

Human resources managers also remain apart from organizations' board of directors, often reporting to the chief financial officer (Mayo, 2020).

It was this slogan “people are the most valuable assets” and the different reality of business experiences that led us to work on the theme “investing in people, pays off?”.

If people are the greatest asset of organizations, why spend the least on them? What happens when organizations behave differently?

2. Relevance of the Theme to Literature

Psychological research on the relationship between Human Resources Management (HRM) and performance has been distancing itself from an employee-centered focus (e.g. studying optimism or commitment) , formerly understood in a passive role and to be moldable towards employer's interests by HR systems (Hobfoll, 2002; Troth & Guest, 2020). Currently, complex variables such as the context have gained preponderance over the dispositional ones (Hobfoll, 2002; Van de Voorde & Boxall, 2014). Although much has been written that context is fundamental to understanding behavior, contextual variables (such as organizational climate) are poorly studied, and there is not even a classification developed like for dispositional variables, that allows us to frame the context in a taxonomy (Johns, 2006). This dissertation is a work focused on the context - which reports longitudinal studies, current trend in HRM (Jiang & Messersmith, 2018)- on the impact of organizational contextual variables (organizational behavior, sector of activity, size of the organization and stage of the company's life cycle) on organizational performance, to understand the behavior of employees, in the light of the applicable theoretical frameworks.

In terms of research design, we use objective measures for the variables, stable third factors controlled (e.g. sector, size) and a *quasi-longitudinal design*, which allowed the inclusion of evaluations on various temporal occasions and the possibility of doing reverse analysis, which we also performed (Wall & Wood, 2005).

We intend to follow the current suggestion of the literature to “move outside disciplinary silos” (Troth & Guest, 2020, p. 42), to investigate good/decent/healthy work, with gains for both employer and employee, weighing economic costs and benefits, focusing on the importance of the context in which it occurs and the change in the nature of labor relations (Troth & Guest, 2020).

We adopted the organization as a unit of analysis (Kenny, Kashy, & Bolger, 1998), moving away from a unitarian (person-centered) psychological approach to favor a pluralist approach (which analyzes competing interests and behaviors of different stakeholders), as is typical of research on broad economic and institutional contexts (Troth & Guest, 2020). However, our work follows the managerialistic

perspective, which has been criticized as dominant in the investigation of work and organizational psychology on HRM, specifically for being useful to management and anti-unionist (Troth & Guest, 2020). In fact, we believe that our theme and the work we present here, while adopting the employer's point of view, is both useful to employers and employees, as it contributes to better understanding the effects of investment on people working in organizations and, consequently, contribute to its valorization.

We also intend to address the question of the organization's context, both from the point of view of its sector of activity, and from the point of view of the stage of development of the organization and to understand the effects on organizational performance, an aspect that has deserved criticism for being absent from HRM literature (Kaufman, 2014), but that has been valued lately (Gomes, Rodrigues, & Veloso, 2015; Johns, 2006; Lübke & Erlinghagen, 2014; Van de Voorde & Boxall, 2014).

Research confirms that HRM has a positive effect on the operational performance and on the financial performance of organizations, by increasing motivation and building human capital (Jiang, Lepak, Hu, & Baer, 2012), both psychological variables. Based on human capital and job insecurity (job security is included in the dimension *motivation-enhancing HR practices* (Jiang et al., 2012)) we work on the effects of investing in people and not investing in people, to conclude whether or not there are benefits that result from this investment.

According to Guest's *Employee Well-being Analytical Framework* (Guest, 2017), our work addresses two categories, which are antecedents of well-being, enhancing individual and organization performance:

- *Investing in Employees*, that includes *recruitment and selection, training and development, mentoring and career support*;
- *Positive Social and Psysical Environment*, we address only the categories *fair collective rewards/high basic pay* and *employment security/employability*.

Guest's categorization is based on research on *Quality of Working Life*, which included eight HR practices without category differences (Guest, 2017). Our work, in the light of *Quality of Working Life*, addresses *growth and security* and *adequate and fair compensation* practices.

Our goal, more than finding answers, is to contribute with a psychological perspective to understand the effects of HRM on the economic and financial performance of organizations, following the suggestion of the literature (Troth & Guest, 2020) and the empirical results achieved (Huselid, 1995; Huselid, Jackson, & Schuler, 1997; Jackson, Schuler, & Jiang, 2014; Jiang et al., 2012).

3. *The Theme in Organizational Psychology and Economic Psychology*

This work project fits the theoretical range of the contributions of *organization psychology* to Human Resources Management. However, considering the scope and methodological aspects, this work can also be analysed according the lens of economic psychology. Let us begin by revisiting the purpose definitions of the two branches of psychology:

- “*Organizational psychology* is the study of how individuals are recruited, selected and socialized into organizations; how they are rewarded and motivated; how organizations are structured formally and informally into groups, sections and teams; and how leaders emerge and behave. It also examines how the organization influences the thoughts, feelings and behaviour of all employees by the actual, imagined or implied behaviour of others in their organization. Organizational psychology is the study of the individual in the organization, but it is also concerned with small and large groups and the organization as a whole as it impacts on the individual.” (Furnham, 2005, p. 2).

- *Economic psychology* studies behavior in an economic environment, related to the use of scarce resources such as money, time and effort (Van Raaij, 1999). “The economic environment is the environment of the firm or the environment of the department, division, or profit center within the firm, including the type and size of the organization.” (Van Raaij, 1999, p. 14).

The aim of the two branches of psychology shows an overlap in the study of behavior in economic environment, since the organization, providing work in exchange for remuneration, already implies exchanging scarce resources: time and effort for money, in the case of the employee; money for time and effort, in the case of the employer. In this regard, Van Raaij considered “Organizational psychology is in fact part of economic psychology [...]” (Van Raaij, 1999, p. 14), suggesting that organizational psychology falls within the broader field of economic psychology, which also studies individual or aggregate economic behavior.

As for methodology, economic behavior can be studied from direct observation or through inferences from environmental changes, that is using objective data as proxies for subjective phenomena. Methods used are adapted to the level of analysis that is intended to be carried out, from the individual behavior to the behavior of countries (Azar & Fetchenhauer, 2012; Van Raaij, W. F., Van Veldhoven, & Wärneryd, 1988).

4. *Originality*

We study psychological variables through official databases (*SCIE – Sistema das Contas Integradas das Empresas* and *Quadros de Pessoal*), not yet explored for this purpose, and measure organizational performance through economic and financial measures. This suggestion of integrating concepts of strategy and economics, as well as the diversification of data sources, was already registered in the literature as a guide for future research in HRM (Wright & Ulrich, 2017), although we are not aware that it has been applied to work in the domain of organizational psychology.

Organizational financial accounts are gathered in the database *SCIE – Sistema das Contas Integradas das Empresas* (INE, 2020) and the official employment survey *Quadros de Pessoal* (MTSS, 2020) are reported once a year in Portugal. These data, which integrate all organizations in the private sector, allow the study of the context in which employees work and the respective changes in organizational performance.

We intend to contribute to explore a wealth of information that, although difficult to handle, is available for investigation and can be used by HRM professionals, when it will become fully supported by scientific and technical knowledge.

Relying on psychological theories that use the context as the main vector for modeling behaviors, and working on the referred databases, we propose to describe and discuss the effects of investing or not investing in employees and their consequences on organizational performance.

5. *The Indirect Study of Psychological Variables*

The organization is a social actor, recognized as capable of producing its own decisions, endowed with volition, capable of acting and accountable for their behaviors (King et al., 2010). Literature about the relation between HRM and organizational performance tends to include employee attribution on employer/managers' behaviour (Bowen & Ostroff, 2004; Nishii, Lepak, & Schneider, 2008; Van de Voorde & Boxall, 2014) and HRM practices are described as communications between employer-employee (Bowen & Ostroff, 2004). The organization has a unique identity and although not all individuals in the organization have the same perception of their identity, it is certain that the literature describes it as a collective phenomenon (Brown, Dacin, Pratt, & Whetten, 2006).

In this context, we can say that the organization is for employees simultaneously a social actor, with whom they interact, and a context in which they interact with others.

There are, of course, individual differences in performance, which vary according to the complexity of the function: for highly complex functions (e.g. sales) the value of 47.5% difference was found for the standard deviation of the distribution, between the lowest and the highest performances (Hunter, Schmidt, & Judiesch, 1990). As the complexity of the job increases, it becomes more difficult to specify all the exact procedures to fulfill the function requirements and the level of performance becomes more dependent on the employee's skills and motivation. This means that investment in recruitment can have, among these employees, an appreciable impact on performance, if candidates selected are high performers (Cascio & Boudreau, 2010).

Understaffing, for example, defined as the decrease in the cost of wages and bonuses per hour of work, is forced by management pressure but decreases profits of organizations (Ton, 2009). Work is understood as a cost that needs to be controlled because organizations do not produce the necessary analyzes to understand that, often, , increasing the headcount or benefits, pays off in profits obtained (Angrave, Charlwood, Kirkpatrick, Lawrence, & Stuart, 2016).

Literature suggests new methods for analyses of employees performance using *Big Data* (Guzzo, Fink, King, Tonidandel, & Landis, 2015) and *Cost-Accounting Employee Performance*, that proposes cash valuation of the variation in the performance of employees, based on accounting data (Birnberg, Luft, & Shields, 2007; Hall, 2016).

However, low expectations of adherence to these new methods are recognized, due to the primacy that research in psychology gives to individual phenomena compared to social phenomena, and to the resistance of HRM professionals, who are suspicious that these kind of methods reduce people to numbers, have lack of adequate skills and a peripheric organizational position. All of this could leave psychology out of the exploration of Big Data and other HR Analytics (Angrave et al., 2016). In addition, there is another obstacle for HRM professionals: the exploration of how people create value for the organization must be carried out through longitudinal multivariate modeling, which consulting firms are also not prepared to do, limiting themselves to implementing best practices which ignore organization's conditions and strategy (Angrave et al., 2016).

However, secondary data have already been used in psychological studies linking HRM to performance: historical data (Simonton, 2003), Big Data (van Thiel & van Raaij, 2019), accounting data (Shields, 1997). According to what we have explained, the sources used in our work have a history of research in psychology and correspond to a recommended trend.

Money, our measure for some variables, has a complex psychological value, as a useful resource, as a symbol of power and can satisfy basic psychological needs such as autonomy, competence and

relatedness. Money has a relative psychological value that is appreciated against a standard and not its absolute worth. Prospects Theory describes the usefulness of money in comparison to the amount of wealth that the final state produces, after gaining or losing money. Concretely, as an individual earns money, the same amount will be evaluated as more useful if his wealth is less and less useful if his wealth is greater, describing a concave function between axes of quantity and usefulness (Bijleveld & Aarts, 2014).

Data sources in economic psychology include secondary data:

“The focus of interest is naturally on what the human actors perceive, expect and value. Such subjective phenomena can be studied through inferences from environmental changes - which means using objective data as proxies for subjective phenomena - or through questioning or observing the actors concerned.”(Van Raaij, W. F. et al., 1988, p. 36).

Organization-level studies comprising work practices and organizational performance often include financial measures, but the results are not significant, as the data are restricted to one sector of activity and are not very extensive over time (Cappelli & Neumark, 2013). Many are based on samples of convenience or have a cross-sectional design, which prevents the inference of causality and the generalization of the relationships found. To overcome the methodological problems of studies at the organizational level, the literature proposes to observe three principles:

1. Sample must be representative of the population of employers that you intend to study;
2. The outcome variables must include associated costs to its implementation and not only productivity;
3. Data and research design must make it possible to infer causality, including the variables in which companies may be different; assemble a panel data that allows addressing causality/heterogeneity (Cappelli & Neumark, 2013).

In our work, the first two recommendations are satisfied: we include all Portuguese organizations, from all sectors of activity, with more than 100 workers (registered in the national and official databases); for organizational performance, financial and economic measures that include the costs of work practices (such as EBITDA) were used. The third recommendation is partially satisfied: we set up a panel data that links the economic and financial performance (INE, 2020) to the work practices described in Quadros de Pessoaal (MTSS, 2020) such as wages and we used control variables (e.g. sector and organization size) that the literature describes as having an impact on organizational performance, to address the problem

of heterogeneity; in relation to causality, we used reverse statistics to discover the most likely direction of the relationship between variables, time dummies and delta variables to obtain results closer to causality. However, as we do not have organizational performance data prior to the adoption of the work practices, the causal relationship cannot be reliably declared.

A study carried out with longitudinal data from a United States of America national survey (Cappelli & Neumark, 2013) was performed on panel data and fixed effects analysis, as our work is, and shows the gains of work practices without neglecting the costs of those work practices. However, Cappelli and Neumark (2013) study has the advantage of including data on the moment before the adoption of the work practices, which our study does not guarantee – in our work the effects found may be underestimated and do not allow establishing a causal relationship, although make possible to establish an unequivocal relationship.

We use archival data, combining employment and accounting figures, which has the advantage of allowing all organizations to be studied simultaneously, using longitudinal data (from 2010 to 2018) and not causing reactivity to participants at the time of collection. However, it has the disadvantage that non-existent data cannot be added and the research design has to adapt to them (Furnham, 2005).

On the following chapters we will present two studies: the first one works on the the effect on organizational performance of the investment in human capital; the second one, on the relation of job insecurity and organizational performance.

In the end, we will discuss the theoretical frameworks found in literature to explain the relation between job insecurity and performance and we expect to contribute with a more comprehensive model to frame the subject.

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Investment in Human Capital and Organizational Performance

Abstract

Human Capital is a construct that encompasses all behaviour that has current and potential value to achieve organization's economic goals.

With a longitudinal approach and an organizational scope of the phenomenon, we explored the possible relationship between Investment in Human Capital (IHC) and Organizational Performance (OP), in Portuguese companies with more than 100 workers, between 2010 and 2016. Investment in Human Capital provides us with a measure of the effort that the company puts in the acquisition and development of that value that people carry.

We conclude that 1% increase in IHC produces an increase of 0.63% in Gross Value Added (GVA) in the same year, and 0.65%, if the increase is consistent for 2 years. We also conclude that the organizational context, in which behaviours occur, represented by the variable Life Cycle Stage (STAGE), has a positive impact on performance, especially when the investment in HC is made in STAGE 4- Decline.

Keywords *Investment in Human Capital, Organizational Performance, Life Cycle Stage*

Introduction

It is usual to hear that people are the greatest asset of companies. In spite of that, whenever an organization is in crisis, employee dismissal decisions are quickly made known. Are they, then, truly an asset? Do the values invested in people provide results for the company?

The value of people as an asset is at the heart of the concept of human capital and is what distinguishes it from the concept of human resources. Each person has a different combination of current and potential human capital. While the management of human resources refers to the management of people, the concept of human capital management points to the management of the value that they carry and that can be transformed into wealth, in an organization (Boon, Eckardt, Lepak, & Boselie, 2017; Mayo, 2001). Human capital also has an instrumental value, for it describes the behaviour of the individual, from the perspective of knowledge, skills and attitudes that can be useful to the economy.

To this capital, when selected for investment (whether it is in acquisition, development, education, health, etc.), a return is expected just like to any other investment (G. Becker, 1994; T. Schultz, 1993; T. W. Schultz, 1989). The difference lies in the fact that the acquisition of human capital does not determine the unconditional ownership of the asset, as employees are free to leave the organization and cancel the competitive advantage that their human capital has provided (Huffman, 2009).

Employees, who carry a unique combination of human capital (Mayo, 2001), are resources that improve with usage, in contrast to physical resources, which, although completely owned by the company, deteriorate with usage (Pike, Fernström, & Roos, 2005).

People's behaviour has a valuable importance in an economic context because it allows for material resources and financial capital to be transformed into added value, which never occurs before human behaviour is applied to them (Fitz-enz, 2009).

In the domain of organizations, economic decisions, such as investment in human capital, are made by managers or entrepreneurs, motivated by economic factors, such as profit, or non-economic factors, such as prestige or power (van Raaij, 1981).

These economic decisions are behaviours that result from individual or shared motivations, and derive from the cognitive and emotionally elaborated perception of the context.

The concept of human capital is, therefore, relevant to psychology because it involves behaviour in an economic context, in two different perspectives:

1. Employee behaviour – which results from their learning and experience and has current and potential value for the organization's economic goals;
2. Decision-makers behaviour—who act on human capital, guiding its development and expression in the direction of the organization's economic objectives.

Human Capital has been studied in Economic Psychology research field, which was mainly developed by the psychologists Pierre-Louis Reynaud, Paul Albou and George Katona. It uses psychological concepts to explain behaviour which economic theory by itself is unable to understand.

Economic Psychology involves behaviour in economic context, consumption and work, so including organizational psychology. It focuses on behaviour can be developed from direct observation or through inferences from environmental changes, that is using objective data as proxies for subjective phenomena. Methods used are adapted to the level of analysis that is intended to be carried out, from the individual behaviour to the behaviour of countries (Azar & Fetchenhauer, 2012; Van Raaij, W. F. et al., 1988).

The objective of this paper is to test the predictive capacity of the *investment in human capital* (IHC), in the *organizational performance* (OP). To achieve this, we will work with annual report staff expenses as independent variable and economic results of companies as dependent variable.

We know that human behaviour is determined by dispositional and situational variables, and that the latter have been less worked on in the psychology of organizations. To test the possibility of a situational variable moderating this relationship between IHC and OP, we will use the *firm life cycle stage* as a dummy variable (STAGE).

1 - Human Capital

In an effort to clarify the concept of human capital, we conducted a systematic review of the literature, according to the method proposed by Webster and Watson (Webster & Watson, 2002). The authors propose a systematic review of the literature focused on the concepts, and not on the authors, according to the following steps:

1. Identification of 2 or 3 central articles on the targeted concepts;
2. Go back in the literature, identifying the articles cited in 1;
3. Advance in the literature, looking for works that cite the articles identified in 1;
4. Define a matrix of concepts related to the targeted concept;
5. If necessary, divide the concepts into sub-concepts.

Webster & Watson suggest that the identification of articles should be done on the Web of Science (WoS). In 2002, WoS was the most powerful academic search engine, but since then, two others emerged supported by technological changes: Scopus and Google Scholar (GS).

A recent systematic comparison of the performance of the 3 academic search engines (Martín-Martín et al., 2018), which analysed 2.5 million documents, in 252 research areas, concluded that GS is a kind of superset of WoS and Scopus.

Nearly all citations found by WoS (95%) and Scopus (92%) were also found by GS, and in Social Sciences, Business, Economics & Management, unique GS citations surpass 50% of all citations in the area (Martín-Martín et al., 2018), which makes GS the adequate academic search engine to use in this work-

We carried out a systematic review of the literature of the last 5 years, adapting Webster and Watson's model:

1. We identified 3 central articles on the target concept of Human Capital:
 - a. (T. W. Schultz, 1989)
 - b. (Bontis & Fitz-enz, 2002)
 - c. (McCarthy & Sheehan, 2014)
2. We have advanced in the literature, looking for works that cite the articles identified in 1, published between 2015 and 2019;
3. We defined a matrix of all concepts appearing as variables in the abstract text;
4. We established as acceptance criteria:
 - a. Published articles only, which guarantee they were subject to peer review;
 - b. In English, French, Spanish or Portuguese;
5. We defined the Procedure - reading and classification of the abstract;
6. The Academic Search Engine chosen was Google Scholar.

The research was carried out on February 10 and 11, 2020, having found 426 articles. After eliminating articles duplicates and applied the acceptance and exclusion criteria defined in 4-a and 4-b, 142 articles were selected.

First, we analyzed the abstracts of the 142 articles. We looked for conceptual domain and level of analysis used to define HC and the related variables used to analyse the impact or to evaluate HC.

This work resulted in 292 concepts, aggregated by disciplinary domain and level of analysis, as shown in Table 1:

Table 1 – Concepts Domain and Level of Analysis - Resume

Domain/Level of Analysis	Ocurrences
Economic	88
Macro	34
Micro	54
Psychological	55
Individual	39
Organizational	16
Management	137
General	3
HR	134
Other	12
Total Geral	292

It results that the concept of human capital is a concept treated in the literature mainly in economy at the micro level, in psychology at the individual level and in management at the level of human resources. In each of these main categories-domain and level of analysis, we looked for the first five concepts which were related with HC, and that we present in order of frequency. In two of the categories (Economic/Macro and Management/General) we present the total of the concepts found and that are less than five Table 2.

Table 2 – Concepts by Domain and Level of Analysis

Domain/Level of Analysis	Concepts
Economic/Micro	Organizational Performance Productivity Economic Value Added Intangible Assets Activity-Based-Costing
Economic/Macro	Education Income Economic Development
Psychological/Individual	

	Employee Performance
	Stress
	Commitment
	Leadership
	Motivation
Psychological/Organizational	
	Psychological Capital
	Distributive Justice
	Employer Brand Perception
	Wellness Culture
	Equality of Opportunity
Management/HR	
	Human Capital
	HRM
	Intellectual Capital
	Turnover
	HR Analytics
Management/General	
	Innovation
	<u>Management Strategy</u>

As a result of the abstract analysis, we found 19 studies that used our main variables - HC and OP. We analysed carefully these studies. First, we found that our variables were crossed with others such as Intellectual capital, Knowledge Management, HR Analytics, Economic Value Added and HRM.

We summarize these occurrences in Table 3:

Table 3 – Related Variables in the Studies

	Organizational Performance	HRM	Intellectual Capital	Education	Economic Value Added	Commitment	Knowledge Management	HR Analytics	Leadership
Human Capital	19	2		2	2	2	2	2	
Organizational Performance		8	8	2		1	2	4	2

We also looked for some methodological characteristics: the design of the study, which variables were used and the scientific approach. Our results are described in Table 4:

Table 4 – Articles: Methodological Characteristics

Paper	Human Capital		Organizational Performance	Scientific Approach
	Definition	Measure	Mesure	
(Dewi, Alhabsyi, Arifin, & Abdillah, 2019)	The spirit on how company is managed by creating systems, procedure, mechanism, structure and organization process.	Survey	Survey	Empirical
(Onyekwelu, Uche, Okoh, Johnson, & lyidiobi, 2017)	Encompasses tacit and explicit knowledge of employees. It also includes employees' competencies and capabilities in terms of structuring and applying knowledge and skills to perform certain activities.	Total salary and wages.	ROA	Empirical
(Fareed, Noor, Isa, Shahzad, & Laeeq, 2016)	Knowledge, skills, abilities and other characteristics (KSAOs) of individual employees. Traits an individual brings to the job, which are; intelligence, positive attitude, reliability and commitment, fulfilling work energy, ability to learn and imagination with creativity.	Survey	Survey	Empirical
(Hay, Ragab, & Hegazy, 2019)	Group of employee knowledge, know-how, innovation, competencies, creativity, skills, experiences, expertise of the entire employees of the company and managers, in addition to training, education and relations.	HC Disclosure (Content Analysis)	ROA	Empirical
(Ienciu, Ienciu, & Mihuo, 2016)	Development, efficiency and stability.			Theoretical
(Kucharčíková & Mičiak, 2018)	Represents the sum of abilities, skills, knowledge, experience and talent that people have at their disposal and that they use when performing the job tasks	HC Metrics related to firm activities		Case Study

leading to the fulfilment of enterprise's goals.

(Kucharčíková, Mičiak, & Hitka, 2018)	It represents the sum of abilities, skills, knowledge, experience, and talent that people have at their disposal and that they use to perform the job tasks leading to the fulfilment of an enterprise's objectives.	HC Investment (HCROI, NPV, TIV, Payback Period, NPV)		Case Study
(Maley, 2019)	A form of capital embedded in the knowledge and skills that people acquire through education and training and is a product of deliberate investment that yields returns.	Behavioural competencies	NPV, P&L, Cash Flow	Empirical
(Muscalu & Blaga, 2015)	No definition			Theoretical
(Niculescu, 2016)	Efficiency is defined as being "the ratio of outputs to inputs", (2) quality is "the number of proportion of outputs that meet a quality standard", and (3) effectiveness becomes "the ratio of outcomes to inputs".			Theoretical
(Ofurum & Aliyu, 2018)	Human ability for problem solving.	HCEI calculated from Annual Report	Revenue Growth, ROI	Empirical
(Ricci & Scafarto, 2015)	The bundle of knowledge, attributes and capacities that can be learned by workers.			Theoretical
(Rompho, 2017)	Is composed of organizational members internal assets.	Employee related costs/Number of Employees, Survey	Price-to-book ratio, ROE	Empirical
(Rzepka, 2017)	Human capital consists of competence, skills, experience and applied approaches in management practice.	Survey	Survey	Empirical

(Rzepka, Szara, Sowa, & Slusarczyk, 2017)	Is indispensably linked to a human being, and it includes knowledge, skills, experience and competence of employees. Human capital is defined as the ability of an employee to perform tasks, solve problems emerging in the company, but it is also the ability to create relationships which are based on understanding and trust.	Survey	Survey	Empirical
(Soubjaki, 2017)	Knowledge, skills and innovations that the employees or persons in an organization bring on board.			Theoretical
(Thuda, Sari, & Maharani, 2019)	No definition	Survey	Survey	Empirical
(Venkatesh, 2017)	No definition			Theoretical
(Miranda & Guerreiro, 2017)	The capacity, experience and knowledge of people	Goodwill	GVA	Empirical

The articles obtained by systematic literature review can conclude that, in the last 5 years, the definition of Human Capital shows a wide scope, which can be described as:

- a construct that encompasses all behaviour that has current and potential value to achieve organization's economic goals. This includes Knowledge, skills, abilities and other characteristics, such as personality traits, intelligence, positive attitude, reliability and commitment, fulfilling work energy, ability to learn and imagination with creativity.

Direct observation measures for Human Capital (survey, content analysis, behavioural competences) and indirect for Organizational Performance predominate (ROA, ROI, ROE, GVA). Human Capital is also measured directly by staff expenses or other indexes based on the annual report, and Organizational Performance is also measured through a survey.

As the objective of this contribution is to test the predictive capacity of the *investment in human capital* (IHC) in the *organizational performance* (OP) and the moderating effect of the context (firm life cycle – STAGE), we have chosen annual report staff expenses as independent variable, and firm life cycle as an explanatory variable (STAGE).

2 – The Theory of Human Capital and Human Resources Management

The Theory of Human Capital, which explains the relationship between investment and performance, begins with the works of Mincer, Friedman, Shultz and Rosen, at the University of Chicago (G. Becker, 1994), in response to the observation of income inequality between workers. Education, the most important investment in human capital (G. Becker, 1994) operated a growing and differentiating trend in wages, especially when comparing incomes of high educated workers with those who had only attended high school level education. Training, both formal and informal, also resulted in the same effect on the value of wages, not only when workers remained in the same company but also when they changed employers (G. Becker, 1994).

It is understood, therefore, that the Theory of Human Capital is based on the rise of wages as a consequence of the increase of knowledge, through formal education and training, and that this investment is similar to investing in another type of capital, generating wealth for the worker and the employer. A study by Edward Denison of 1985 (G. Becker, 1994) analysed the increase in schooling of Americans between 1929 and 1982 and concluded that a quarter of the economic growth *per capita* was due precisely to this cause.

The distribution of labour income in the model proposed by Mincer (Mincer, 1970) takes into account the length of schooling which, by increasing worker productivity, provides, after an initial investment, a time-delayed return on labour income (Portela, 2007).

Schultz, a Nobel laureate in economics for his work on human capital, is perhaps the most visible face of this revolution in economic thinking, which has put investment in HC at the centre of modern economy (T. W. Schultz, 1989). This concept of human capital as the result of the accumulation of knowledge, skills and attitudes in a human being, of which he is the sole possessor (Huffman, 2009), takes several investors to intervene in the formation of this capital, including the family and the country. In Schultz's words, "Thus, investment in the human capital can be classified into investment in (1) schooling and higher education, (2) post-school training and learning, (3) preschool learning activities, (4) migration, (5) health, (6) information, and (7) investment in children (population). " (T. W. Schultz, 1972, p. 4).

Schultz emphasized the concept of capital from the beginning (T. W. Schultz, 1972), refocusing it on knowledge and specialization (T. W. Schultz, 1989), and away from the concept of workforce and human resources. At the same time, he summarizes several lessons learned from the work of other researchers, namely that human capital increases labour productivity and economic capital and that people are more productive in a high human capital environment than in a low human capital environment, a situation unparalleled in economic capital (Schultz, 1989). That is, people who work with others whose knowledge

is high (high human capital) perform better than in a context of lower human capital (less knowledgeable people).

In other words, human capital embodies the knowledge, talent and experience of employees (Bontis & Fitz-enz, 2002), describes the aggregation of individuals within the firm (Wright, Coff, & Moliterno, 2014) and builds a unit-level resource that is created from the emergence of individuals' knowledge, skills, abilities and other characteristics (Ployhart & Moliterno, 2011).

Investment in human capital comprises three measures: development ratio, investment in training and cost of training (Bontis & Fitz-enz, 2002), the first being defined by the proportion of workers involved, the second by the amount of money spent in training per employee and the third represents the expenditure for each worker.

However, Human Resources Management (HRM), which involves systems deployed to recruit, select, remunerate and engage employees (Wright et al., 2014), as well as other initiatives to drive attitudes and desired behaviours (Boon et al., 2017), has been the instrument to enhance the value of human capital and make this resource inimitable and irreplaceable in generating competitive advantages in the company (Barney, Ketchen, & Wright, 2011; Shaw, Park, & Kim, 2013).

Furthermore, there is empirical evidence that HRM expenditures produce higher productivity (Bassey, Bassey Eyo., Tapang, 2012; Jackson et al., 2014) and better financial results (Huselid et al., 1997; Jackson et al., 2014).

The fact that the investment in HC appeared in the literature on human capital as mostly restricted to the amounts spent in education and training rose some doubts towards researchers that we follow (Flamholtz & Lacey, 1981; Jackson & Schuler, 1995) and discuss further:

1. Since human capital is a concept that encompasses everything an employee takes from the company when he or she leaves, that is, their knowledge, talent and experience (Bontis & Fitz-enz, 2002), is it legitimate to assume that hiring, motivating and retaining human capital is also investment in human capital;
2. Hiring employees with greater knowledge, talent or experience is, as we know, more expensive than hiring them with lower levels of development, because their market value will be higher. In doing so, we consider that the company is investing in human capital already formed, anticipating the investment in its training, but also avoiding waiting for the time needed to realize its full productivity potential;

3. On the other hand, the cost of recruitment services to attract and select the best talent or the most adaptable to the specific tasks they are intended to deliver, is a cost to acquire employees who need less investment in training, since they already receive them more developed, and to prevent acquisition errors that can have an impact on productivity;
4. Finally, expenditures on talent retention programs, team building and all those that are designed to build or develop affective ties with the team or company are a way to avoid the depletion of human capital and consequent need to reinvest in training.

We therefore argue that the investment in HC involves all the amounts spent on, or in favour of the employees, since they are destined to invest in the acquisition, development and retention of human capital, or to prevent new investment from becoming necessary, as a consequence of the depletion of human capital caused by demotivation, discomfort, dissatisfaction or turnover. On the other hand, the amounts entered in the official accounts give us an approximate indication of their market price and a guarantee of stability of value, along the lines suggested by Stein: "This performance potential of a company therefore consists at least of the existing employees, priced with market salaries, of their equipment with up-to-date knowledge as well as of their motivational situation which is mainly influenced by HRM" (Stein, 2007, p. 306).

In recent years the popularization of the concept of human capital has turned it more comprehensive. For example, Yildiz, (Yildiz, 2018) includes in the concept of human capital the attitudes or even the organizational climate and lists 44 indicators among the most used.

Following the latest literature, we consider that investment in human capital involves all the amounts spent with the team. This is also supported by other studies we presented above that consider all staff expenses as investment in human capital (Kucharčíková et al., 2018; Ofurum & Aliyu, 2018; Onyekwelu et al., 2017; Rompho, 2017).

3 – Organizational Performance

According to one of the most prominent theory of management, the Resource Based View (RBV), an organization's ability to outpace its competitors lies in the holding of unique and inimitable resources that give it an advantage in the specific market in which it operates. One such resource is Human Capital (K. Jiang, Takeuchi, & Lepak, 2013).

In the literature, it is agreed that investment in training has a positive impact on organizational performance. However, financial performance is not always consistent with this assumption, due to the influence of many variables (Aragon & Valle, 2013) and the fact that it is subject to appropriation of the profits created by human capital holders or their managers (Crook, Todd, Combs, Woehr, & Ketchen, 2011).

Nevertheless, Huselid, Aragon and Valle concluded that the increase on HC influences the company's financial performance (Aragon & Valle, 2013; Huselid, 1995b). Two meta-analyses found a relationship between human capital and company performance: Newbert, that analysed 33 papers, where 33% showed a relation between human capital and performance (Newbert, 2008); Crook, working on 66 studies, found a strong relationship between human capital and organizational performance mediated by operational performance (Crook et al., 2011).

McCarthy and Sheehan studied HRD expenditures in a number of countries following the post-2008 financial crisis and concluded that there was an evident decrease in the amount spent / invested in the function, followed by a decrease in complexity (McCarthy & Sheehan, 2014). The authors argue that divestment in HRD undermines organizational sustainability and may result from the prioritization of a short-term financial performance strategy. Jackson and Schuler had already warned that the merging of HRM practices with the strategy chosen for the company is critical to success (Schuler & Jackson, 1987).

Hypothesis 1: Investing in HC is positively related to OP of the company.

4 – The Context – Life-Cycle Stage

The relationship between HC and OP can be influenced by the context in which employees behave. Working at a start-up is not the same as working at a company with solid experience and profit. Working in an endangered company will also be different. Once we used an analysis at the organizational level, we decided to explore the situational context, in an attempt to better understand the phenomenon.

The context provides several variables that can determine or moderate organizational behaviour (Clitheroe, Stokols, & Zmuidzinas, 1998; Gomes et al., 2015) and influence emotions and attitudes (Valdivia & Mart, 2020), with an impact on the conclusions of an investigation (Johns, 2006).

In this article, we will explore a context variable that can be calculated from the databases we use: firm life cycle stage.

Life Cycle Theory (LCT) is based on the premise that an organization is similar to a living being, which goes through different stages of development, between birth and death (Liu & Chou, 2016). Generally, five stages are defined - Introduction, Growth, Mature, Shake Out and Decline - (Dickinson, 2011; Habib & Hasan, 2017; Jackson & Schuler, 1995; Yan & Zhao, 2010), and their evaluation has lately been based on 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 in the pattern of net cash flow (Dickinson, 2011; Habib & Hasan, 2017), which we adopt.

The organizational environment where the behaviours of employees and managers are carried out is characterized by higher profitability in STAGES 2, 3 and 5 (especially in stage 3), and lower in STAGES 1 and 4. In STAGES 1 and 2, investment is high and in STAGE 5 the companies sell assets to pay debts. Debt is higher in STAGES 1 and 2, following investment, and decreases in STAGE 3. In this phase, companies distribute more dividends to shareholders or invest in unprofitable projects, to decrease profits and lower taxes (Dickinson, 2011).

The lowest risk of insolvency is found in STAGE 3 (Domingo Terreno, Sattler, & Pérez, 2017) and the remuneration of CEO's has higher fixed values in STAGES 3 and 5, while in STAGES 1 and 2 pay-for-performance predominates (Liu & Chou, 2016).

Hypothesis 2: The stage of the company's life cycle predicts the relationship between the Investment in HC and Organizational Performance.

Method

Companies operating in Portugal present their annual report based on the current regulation for the European Union, denominated *Sistema de Normalização de Contas* (SNC) (Guerreiro, Rodrigues, & Craig, 2014), since 2010. These reports are gathered in a database named SCIE (Sistema de Contas Integradas das Empresas) (INE, 2020).

Although the temporal spectrum covered by the database is much wider, the codes have undergone a profound change, which makes it difficult to harmonize statistical production. Since 2010, the accounting system used has remained constant. We started our sample in 2011 and finished in the last available year, 2016.

Accessing this database allowed the development of a 6-year longitudinal study and an approach at the organization level.

The variables we needed to work on, like the variable of interest (OP) and the explanatory variable (IHC), are directly accessible in the database, as well as the control variables (SECTOR and SIZE). Dummy variable STAGE was calculated from the data in the annual report, according to the model we followed (Dickinson, 2011).

1 – Sample

The companies operating in Portugal present their balance sheet based on the International Financial Standards (IFRS), called the *Sistema de Normalização de Contas* (SNC) (Guerreiro et al., 2014).

The company's official balance is produced according to the classification's rules included in the SNC. Official balances prior to 2010 are difficult to compare as a purely national classification model was used. The database we used for our study includes a vast set of annual information for statistical, fiscal and accountability purposes. Business identities are unavailable in the database.

From the database, which includes all the companies operating in Portugal in the private sector, we selected companies with 100 or more employees, where we believed we could better identify the phenomenon under study and where labour economic researchers usually make the cut-off point to distinguish large firms from small firms (Centeno & Novo, 2012; Winter-Ebmer & Cardoso, 2010). Of these, we considered only the companies that remained active throughout the considered period (2010-2016). We obtained 1566 companies, which composed our sample.

The companies included are distributed by the relevant variables (STAGE, SIZE and SECTOR) as summarized in Table 5:

Table 5 – Variables Description

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
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, dressing, leather	183	184	184	183	183	181
Wood, cork, paper, no furniture	52	52	53	53	52	52
Manufacture of non-metallic products	119	118	117	117	116	116
Manufacture of metals products	176	173	177	177	175	176
Manufacturing of furniture, and manuf.	27	27	27	27	27	27
Electricity, gas	21	21	21	21	22	22
Construction	85	83	81	82	81	80
Wholesale and retail trade; repair of veic., motorcycles	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
Post and telecommunications	9	9	9	9	9	9
Real estate, renting and business active	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 service activities	51	51	51	50	48	48
Residual	19	19	21	19	19	19
	1566	1566	1566	1566	1566	1 566

Note: Size variable was obtained dividing the sample in 5 quintiles

(Source: own computations using SCIE)

2 – Variables

Independent Variable: Investment in Human Capital (IHC)

The official balance accounts of the companies reflect the decisions of the managers who have the power to act on their behalf and is a reliable source of the options taken in the exercise of an annual activity. Through them, it is possible to observe the nature of the expenses that were favoured and disfavoured, that is to say, as financial resources are finite, we can know the priorities that managers have followed, just by comparing the amounts they reserved for each type of expenses.

The literature recognizes that personnel expenses are a good measure of investment in human capital including the literature collected in our systematic review (Bontis & Fitz-enz, 2002; Firer & Mitchell Williams, 2003; Fitz-enz, 2009; Kucharčíková & Mičiak, 2018; Ofurum & Aliyu, 2018; Onyekwelu et al., 2017; Rompho, 2017; Stein, 2007), although other measures coexist in the literature, both from the same Resource Based View perspective as from the Market Based View perspective (Stein, 2007).

Then, for this variable we selected the total amount of personnel expenses, except for the board of directors that, in Portugal, normally decides its own remuneration.

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). About measures of objective financial performance, we have as most commonly used the net income divided by net sales (profit margin, Return on Sales or 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 or ROI), net income divided by common equity (Return on Equity or ROE) (Delery & Doty, 1996; Shrader, Blackburn, & Iles, 1997) and Gross Rate of Return on Capital, GRATE (Huselid, 1995b), calculated by dividing cash flow by gross capital stock (Huselid et al., 1997).

With our work centred on company balance data, which can be obtained without additional collection effort, we will prioritize the objective financial performance, as a dependent variable.

However, a recent meta-analysis on HRM practices and organizational performance found no direct relationship between HRM and financial results. Instead, it was found an indirect relationship as HRM impacts on operating results which have an effect on financial results (K. Jiang et al., 2012). In fact, it is rarely possible to find direct effects on financial results due to manipulation of accounting measures, undervaluation of assets, creation of distortions through inventory policies, asset depreciation and classification of income and expenses (Dalton & Daily, 1998). In addition, employees who hold strategic human capital for the organization and who are responsible for a part of value creation are able to negotiate pay increases and appropriate part of that increment, reducing financial results (Boon et al., 2017).

Nonetheless, we have continued with our intention to test financial performance as a dependent variable. Considering the above constraints, we decided to add measures, in case we face the same problems reported by other researchers.

Our option was to use ROA, ROE and ROS, among the most used financial indicators in 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).

We decided to use Net Sales (NS), Gross Value Added (GVA) and Earnings before Interest, Taxes, Depreciation, and Amortization (EBITDA), once they are among the most used indicators in the technical evaluation of investments and firm performance (McPhee & Woodley, 2014; Soute, Martins, Schvirck, & Machado, 2008). These numbers can be obtained directly from the companies' balance and are available in our database.

Control Variables

In this study, we used the company size (SIZE) as the number of employees, and the sector of activity (SECTOR) as control variables, since they alone explain part of the relationship between HRM and organizational performance (Balkin & Gomez-Mejia, 2010; Gerhart & Milkovich, 1990), besides they present significantly different wage patterns (Ferreira, Cerejeira, Portela, & Sousa, 2015). These two variables also represent different types of organizations, since the level of automation and the size of the company imply management models adapted to complexity. These do not mean options of greater or lesser investment in HC, but simply a reaction to the size or technical specificity of the context in which they operate.

The SIZE variable was obtained from the number of employees, dividing the sample into quintiles, corresponding to five categories. The variable SECTOR was collected from the ISIC code (International Standard Industrial Classification) available in SCIE.

Dummy Variable: Firm Life-Cycle Stage

We rated companies by the stage of their life-cycle and created the dummy variable 'STAGE'.

Following Dickinson's model (Dickinson, 2011) and Habib and Hasan's operationalization (Habib & Hasan, 2017, p. 477), we used the following net cash flow grid to serve as a basis for our ranking:

-
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 $FINCF < \text{or } \geq 0$;
 5. Shake-out: all other firm years.
-

OCF – Cash flows from operating activities; INVCF – Cash flows from investing activities; FINCF – Cash flows from financing activities (Dickinson, 2011; Habib & Hasan, 2017).

Results

The sample underwent a linear regression to model dependent variable Organizational Performance (OP) as a function of independent variables (OP, STAGE) and control variables (SECTOR, SIZE). The procedure was repeated for each of the indicators chosen to measure OP (NS, GVA, EBITDA, ROA, ROE and ROS).

The regression was conducted using two estimation models: Ordinary Least Squares (OLS) and Fixed Effects (FE). These two techniques differ in the addition of the variable parameter (μ_i) that represents firm's unobserved heterogeneity. It stands for all those characteristics that are specific to each firm and stable over time, but that cannot be identified in variables available in the data. It can be organization culture, expertise of top management, or any other aspect that is inherent to the firm and could explain, if it had been measured, part of the effect that we are trying to module.

Although OLS returned more expressive results, we decided to present FE results because it is a more rigorous estimation model that can capture the specific effect of the variables of interest.

Therefore, the results presented were obtained using the following equation:

Equation 1

$$\ln OP_{it} = \beta_0 + \beta_1 \ln IHC_{it} + \beta_2 STAGE_{it} + \beta_3 SECTOR_{it} + \beta_4 SIZE_{it} + \mu_i + \varepsilon_{it}$$

being i the number of observations of the explanatory variable at time t , which corresponds to the reference year, OP_{it} corresponds to the response variable of observation i at time t , here tested for NS, GVA, EBITDA, ROA, ROE and ROS, μ_i is firm's unobserved heterogeneity, $\beta_0, \beta_1, \beta_2, \beta_3$, are the parameters of the model estimated to describe the effect of the explanatory variable in OP, when all other explanatory variables remain constant and ε_{it} represents errors that are assumed to be uncorrelated with the explanatory variables included in the model, and no serially correlated.

Additionally, we tested our model in order to capture the effect of variations in firm behaviour over time, adding to the model $\Delta \ln IHC_{it}$, which corresponds to the difference between t year's IHC and $t-1$ year's IHC . The entire model is expressed in the following equation:

Equation 2

$$\ln OP_{it} = \beta_0 + \beta_1 \ln IHC_{it} + \beta_2 \Delta \ln IHC_{it} + \beta_3 STAGE_{it} + \beta_4 SECTOR_{it} + \beta_5 SIZE_{it} + \mu_i + \varepsilon_{it}$$

Since the *investment in human capital* (IHC) that we find in firm balances relates to the course of a year and that the investment maybe doesn't produce immediate effects, we also tested the possibility that the operational performance of year t is due to the investment in years t and $t-1$, according to the following equation:

Equation 3

$$\ln OP_{it} = \beta_0 + \beta_1 \ln IHC_{it-1} + \beta_2 \Delta \ln IHC_{it-1} + \beta_3 STAGE_{it} + \beta_4 SECTOR_{it} + \beta_5 SIZE_{it} + \mu_i + \varepsilon_{it}$$

Additionally, we calculated the inverse regression, that is, we modelled the IHC in function of the organizational performance (OP), using equation 4 and 5, respectively for years t and $t-1$:

Equation 4

$$\ln OP_{it} = \beta_0 + \beta_1 \ln IHC_{it} + \beta_2 \Delta \ln IHC_{it} + \beta_3 STAGE_{it} + \beta_4 SECTOR_{it} + \beta_5 SIZE_{it} + \mu_i + \varepsilon_{it}$$

Equation 5

$$\ln IHC_{it} = \beta_0 + \beta_1 \ln OP_{it-1} + \beta_2 \Delta \ln OP_{it-1} + \beta_3 STAGE_{it} + \beta_4 SECTOR_{it} + \beta_5 SIZE_{it} + \mu_i + \varepsilon_{it}$$

1 – Descriptive Statistics

The data show a great dispersion in the variables ROE, IHC and SIZE, which results from a large difference in the size of the companies that make up the database (Table 6).

Table 6 – Means and Standard Deviations

Year		ROA	ROE	ROS	GVA	NS	EBITDA	IHC	SIZE
2011	mean	0,049	87,322	0,017	15,921	17,153	14,602	10,470	478,729
	sd	0,118	3 018,323	0,116	1,059	1,234	1,478	24,580	1 217,153
2016	mean	0,056	0,260	0,032	16,059	17,241	14,801	11,248	531,796
	sd	0,115	5,494	0,106	1,025	1,214	1,500	25,948	1 430,999

(Source: own computations using SCIE)

The high correlations of the economic variables of OP (EBITDA with NS and GVA) stand out in Table 7. The IHC variable also grows positively with the size of the company (SIZE), confirming that the investment is greater in larger companies.

Table 7 - Correlations

2011	IHC	NS	GVA	EBITDA	ROA	ROE	ROS	SIZE
IHC	1,0000							
NS	0,4899	1,0000						
GVA	0,5943	0,8348	1,0000					
EBITDA	0,3909	0,7790	0,7957	1,0000				
ROA	0,0095	0,0685	0,1820	0,3161	1,0000			
ROE	-0,0061	-0,0125	-0,0190	-0,0069	0,0021	1,0000		
ROS	0,0056	0,0798	0,2235	0,4171	0,6238	-0,0031	1,0000	
SIZE	0,7789	0,3585	0,4532	0,2341	-0,0020	-0,0050	-0,0143	1,0000
2012	IHC	NS	GVA	EBITDA	ROA	ROE	ROS	SIZE
IHC	1,0000							
NS	0,4899	1,0000						
GVA	0,5943	0,8348	1,0000					
EBITDA	0,3909	0,7790	0,7957	1,0000				
ROA	0,0095	0,0685	0,1820	0,3161	1,0000			
ROE	-0,0061	-0,0125	-0,0190	-0,0069	0,0021	1,0000		
ROS	0,0056	0,0798	0,2235	0,4171	0,6238	-0,0031	1,0000	
SIZE	0,7789	0,3585	0,4532	0,2341	-0,0020	-0,0050	-0,0143	1,0000
2013	IHC	NS	GVA	EBITDA	ROA	ROE	ROS	SIZE
IHC	1,0000							
NS	0,4899	1,0000						
GVA	0,5943	0,8348	1,0000					
EBITDA	0,3909	0,7790	0,7957	1,0000				
ROA	0,0095	0,0685	0,1820	0,3161	1,0000			
ROE	-0,0061	-0,0125	-0,0190	-0,0069	0,0021	1,0000		
ROS	0,0056	0,0798	0,2235	0,4171	0,6238	-0,0031	1,0000	
SIZE	0,7789	0,3585	0,4532	0,2341	-0,0020	-0,0050	-0,0143	1,0000
2014	IHC	NS	GVA	EBITDA	ROA	ROE	ROS	SIZE
IHC	1,0000							
NS	0,4899	1,0000						

GVA	0,5943	0,8348	1,0000					
EBITDA	0,3909	0,7790	0,7957	1,0000				
ROA	0,0095	0,0685	0,1820	0,3161	1,0000			
ROE	-0,0061	-0,0125	-0,0190	-0,0069	0,0021	1,0000		
ROS	0,0056	0,0798	0,2235	0,4171	0,6238	-0,0031	1,0000	
SIZE	0,7789	0,3585	0,4532	0,2341	-0,0020	-0,0050	-0,0143	1,0000
2015	IHC	NS	GVA	EBITDA	ROA	ROE	ROS	SIZE
IHC	1,0000							
NS	0,4899	1,0000						
GVA	0,5943	0,8348	1,0000					
EBITDA	0,3909	0,7790	0,7957	1,0000				
ROA	0,0095	0,0685	0,1820	0,3161	1,0000			
ROE	-0,0061	-0,0125	-0,0190	-0,0069	0,0021	1,0000		
ROS	0,0056	0,0798	0,2235	0,4171	0,6238	-0,0031	1,0000	
SIZE	0,7789	0,3585	0,4532	0,2341	-0,0020	-0,0050	-0,0143	1,0000
2016	IHC	NS	GVA	EBITDA	ROA	ROE	ROS	SIZE
IHC	1,0000							
NS	0,4899	1,0000						
GVA	0,5943	0,8348	1,0000					
EBITDA	0,3909	0,7790	0,7957	1,0000				
ROA	0,0095	0,0685	0,1820	0,3161	1,0000			
ROE	-0,0061	-0,0125	-0,0190	-0,0069	0,0021	1,0000		
ROS	0,0056	0,0798	0,2235	0,4171	0,6238	-0,0031	1,0000	
SIZE	0,7789	0,3585	0,4532	0,2341	-0,0020	-0,0050	-0,0143	1,0000

(Source: own computations using SCIE)

2 – Regression Results

The results in Table 8 show that the IHC has a positive and significant relationship with firm performance when measured through the economic variables NS, GVA and EBITDA, but not with the financial variables ROA, ROE and ROS.

In fact, the model tested presents a good overall adjustment for NS and GVA variables, with $R^2 > 0,3$ but lower for the EBITDA, with $R^2 = 0,17$, for equations 1 ($OPT = f(IHC_t)$) and 2 ($OPT = f(IHC_t + \Delta IHC_{t-1})$).

When considering equation 3 ($OP_t = f(IHC_{t-1})$), the model fit is lower, probably showing that, as time passes, other variables we haven't consider have gained strength.

Considering that the model contains categorical variables, SIZE, SECTOR and STAGE, and a large number of observations, R^2 is comparable to the one presented in the literature.

The effect of IHC on OP shows that a rise of 1% in IHC, in one year, produces an increase of 0,49% on NS, 0,63% on GVA and 0,37% on EBITDA, of the same year. If the rise is consistent in the course of two years NS can rise 0,51%, GVA 0,65% and EBITDA maintains a value of 0,37%.

When considering equation 3 ($OP_t = f(IHC_{t-1})$), the effect fades away (0,15% for NS, 0,13% for GVA and 0,12% for EBITDA), which means that investing in HC is effective to leverage performance immediately and not later, as we thought.

Table 8 – 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	9 395	7 828	6 261	9 320	7 766	6 215	8 600	7 164	5 776
	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	2 815,24	3 083,28	2 446,39	0,07	0,06	0,06
N	9 395	7 828	6 261	9 395	7 828	6 261	9 395	7 828	6 261

The header shows Equations 1, 2 and 3, modelled in function of OP. The results show the effect on NS, GVA, EBITDA, ROA, ROE and ROS.

*Significance levels: 1%, ***, 5%, **, 10%, **

(Source: own computations using SCIE)

In addition, we calculated the inverse regression in Table 9, that is, we modelled the IHC in function of the organizational performance (OP) (see Equations 4 and 5), to explore the possibility of our results being due to a mere conjuncture of financial resources abundance.

We have verified that organizational performance modelling based on IHC produces more expressive results than its opposite, which reinforces the evidence that a causal relation between IHC and OP is more likely than between OP and IHC. This is the case for GVA and EBITDA, but not for NS. NS maintains equivalent effect for both models, GVA and EBITDA show a high difference, suggesting that these two OP measures are more able to capture the effect of the investment in HC that we seek to understand.

Table 9 – Reverse Regression Results

NS	OP = f (IHC)			IHC = f (OP)		
	OPt = f (IHCt)	OPt = f (IHCt + Δ IHCt-1)	OPt = f (IHCt-1)	IHCt = f (OPt)	IHCt = f (IHCt + Δ OPt-1)	IHCt = f (OPt-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	7 828	6 261	9 395	7 828	6 261
GVA	OP = f (IHC)			IHC = f (OP)		
	OPt = f (IHCt)	OPt = f (IHCt + Δ IHCt-1)	OPt = f (IHCt-1)	IHCt = f (OPt)	IHCt = f (IHCt + Δ OPt-1)	IHCt = f (OPt-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	9 320	7 766	6 215	9 320	7 743	6 190
EBITDA	OP = f (IHC)			IHC = f (OP)		
	OPt = f (IHCt)	OPt = f (IHCt + Δ IHCt-1)	OPt = f (IHCt-1)	IHCt = f (OPt)	IHCt = f (IHCt + Δ OPt-1)	IHCt = f (OPt-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	8 600	7 164	5 776	8 600	6 828	5 439

The header shows Equations 1, 2 and 3, modelled in function of IHC or OP. The results show the effect on NS, GVA and EBITDA.

*Significance levels: 1%, ***, 5%, **, 10%, **

(Source: own computations using SCIE)

The regression with the same variables for the sample of each STAGE (Table 10) demonstrates that EBITDA has a very poor overall fit, ranging between 0,05 and 0,14 for R^2 , on STAGES 1 and 2. For STAGES 3 and 4, the results are not significant.

Table 10 – Results by STAGE

STAGE 1				
	GVAt = f (IHCt)	GVAt = f (IHCt + Δ IHCt-1)	EBITDA _t = f (IHCt)	EBITDA _t = f (IHCt + Δ IHCt-1)
	0,52***	0,52***	0,43***	0,38***
Error	(0,11)	(0,10)	(0,13)	(0,14)
R ²	0,22	0,19	0,05	0,05
RMSE	0,19	0,18	0,46	0,41
N	3 144	2 546	2 758	2 229
STAGE 2				
	GVAt = f (IHCt)	GVAt = f (IHCt + Δ IHCt-1)	EBITDA _t = f (IHCt)	EBITDA _t = f (IHCt + Δ IHCt-1)
	0,52***	0,78***	0,37***	0,68***
Error	(0,11)	(0,08)	(0,12)	(0,13)
R ²	0,44	0,55	0,09	0,14
RMSE	0,11	0,09	0,25	0,22
N	1 636	1 373	1 637	1 373
STAGE 3				
	GVAt = f (IHCt)	GVAt = f (IHCt + Δ IHCt-1)	EBITDA _t = f (IHCt)	EBITDA _t = f (IHCt + Δ IHCt-1)
	0,39***	0,47***	0,31**	0,33**
Error	(0,11)	(0,10)	(0,13)	(0,16)
R ²	0,42	0,41	0,19	0,18
RMSE	0,10	0,09	0,20	0,18
N	1 110	980	1 109	979
STAGE 4				

	GVAt = f (IHCt)	GVAt = f (IHCt + Δ IHCt-1)	EBITDA _t = f (IHCt)	EBITDA _t = f (IHCt + Δ IHCt-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

The header shows Equations 1 and 2 modelled in function of OP. Results show effect on GVA and EBITDA, in each STAGE.

*Significance levels: 1%, ***, 5%, **, 10%, **

(Source: own computations using SCIE)

We tested the variables NS, GVA, EBITDA, ROA, ROE and ROS for OP measurements. We verified that:

1. ROA, ROE and ROS produce non-significant results in our model;
2. NS, when modelled as a function of IHC, or when used as response variable, produces an identical effect. This fact does not allow us to draw any conclusions about causality in the relationship between performance and investment in HC;
3. EBITDA produces significant results in STAGE 1, marginally significant in STAGE 2 and not significant in STAGE 3 and 4. The explanatory capacity of the model is low and the Error high (STAGE 4);
4. GVA is the only response variable that maintains consistency in the tests we performed: it produces different results when modelled as response variable or as explanatory variable, returns positive and significant results, behaves differently in STAGE modelling samples and shows an acceptable overall fit.

The objective of this paper was to test the predictive capacity of the *investment in human capital* (IHC), in the *organizational performance* (OP). To achieve this, we have worked with annual report staff expenses as independent variable and economic results of companies as dependent variable.

To test the possibility of a situational variable moderating this relationship between IHC and OP, we have used the *firm life cycle stage* as a dummy variable (STAGE).

At the same time, it was intended to use only open access data, which did not require an increased effort to obtain it, thereby strengthening the diagnostic and intervention capacity of human resource managers.

The analysis of the literature that combines these objectives allows us to assert with some confidence that:

1. Human Capital is a construct that encompasses all behaviour that has current and potential value to achieve organization's economic goals. This includes knowledge, skills, abilities and other characteristics (KSAOs) of individual employees. Traits an individual brings to the job, such as intelligence, positive attitude, reliability and commitment, fulfilling work energy, ability to learn and imagination with creativity.
2. The Human Capital Theory establishes that the *investment in HC* is capable of producing financial return for the investor, although it differs from other investments because the capital remains in the possession of the employee and depends on the action of the latter to be put to the service of the employer (Aragon & Valle, 2013; Crook et al., 2011; Huffman, 2009; Newbert, 2008).
3. The concept of investment was formerly limited to education, training, health and experience (Schultz, 1972). Afterwards, it was extended to an HRM result and valued as an inimitable resource (Barney et al., 2011; Boon et al., 2017; Shaw et al., 2013; Wright et al., 2014) and nowadays contains indicators such as the organizational climate (Yildiz, 2018). We argue that keeping the concept true to its definition should extend the investment on it to all the amounts spent on employees registered on the balance sheet, following recent literature (Kucharčíková et al., 2018; Ofurum & Aliyu, 2018; Onyekwelu et al., 2017; Rompho, 2017).
4. HRM expenditures produce higher productivity (Bassey, Bassey Eyo., Tapang, 2012; Jackson et al., 2014; Van De Voorde & Beijer, 2015) and better financial results (Huselid et al., 1997; Jackson et al., 2014).

From the analyses carried out on the balance sheets of Portuguese firms with more than 100 employees, in the years 2010-2016, we summarize our results:

1. The costs/investments registered in staff expenses, for Portuguese companies with more than 100 employees, which we have designated as *investment in human capital* (IHC), have the potential to predict the variation of company's performance, measured in Gross Value Added (GVA). NS turned out to be inconsistent in revealing causality, as it performs equal effect magnitude as an explanatory variable or as a response variable. This is consistent with economic researchers that use GVA, arguing that it is more reliable than profits because of firms discretionary power on reporting them in balance sheets (Guiso et al., 2016, p. 1065). Our results with financial indicators (EBITDA, ROA, ROE and ROS) match the authors' alert for the low success rate with these type of variables (Boon et al., 2017; Dalton & Daily, 1998).

2. The hypothesis of OP explaining IHC variation was tested, revealing a less significant impact than the opposite regression. It is confirmed, therefore, that the availability of financial means induces investment in HC, but the explanation of the variation of OP through IHC suggests a causal relationship.
3. The relevance of the context (life cycle Stage) is confirmed in our results and reaches its maximum in STAGE 4 – Decline. At this stage, the 1% increase in investment results in a 0.98% gain in GVA, in the same year. We hypothesize that this result is due to the attribution of meaning to the behaviour of the company that, having an argument not to do it from an adverse context, decides to invest in human capital.

Discussion

Our results for Portuguese companies confirm that investment in human capital affects the company's performance and is consistent with the literature (Bontis & Fitz-enz, 2002; Dewi et al., 2019; Ofurum & Aliyu, 2018; Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011; Shaw et al., 2013).

We hypothesise that organizational performance derives from employees' perceptions that lead to employees' reactions (Van de Voorde & Boxall, 2014). In other words, if HRM practices are perceived as intended to improve workers' well-being, this may trigger reciprocity and model employee behaviour, according to the Social Exchange Theory (SET) (Van De Voorde & Beijer, 2015).

However, the research still seeks to answer the 'why' of the influence of HR practices on performance, which was conventionally called 'black box'. An invaluable contribution was made by Nishii and colleagues (Nishii et al., 2008), with an empirical work concluding that employees elaborate attributions about HR practices and that these attributions originate attitudes and shape performance. In a working group, if attributions on each of the HR practices are different, then attitudes and performances will also be different (Nishii et al., 2008).

Hewett (Hewett, Shantz, Mundy, & Alfes, 2017), also looking for answers to the 'black box' between HRM and performance, identified two currents of thought, HR System Strength (Bowen & Ostroff, 2004) and HR Attribution (Nishii et al., 2008); although evolved autonomously, both are based on the Attribution Theory, which means that researchers tend to agree on the implication of it to explain the 'black box'.

The attribution of meaning to the employer behaviour of spending/investing more or less with employees could be a possible explanation, requiring further investigation, as our results suggest. As we obtained a positive and significant relation when regressing our model by each stage of the life-cycle, using GVA, and

the greatest impact occurs in Stage 4 – Decline, reinforces this possibility. This follows the conclusions of several authors that point out attitudinal variables in the relationship between HRM and performance (Messersmith, Patel, Lepak, & Gould-Williams, 2011; Nishii et al., 2008; Van de Voorde & Boxall, 2014; Veloso, 2007).

Limitations of this Work and Implications for Future Research

This study included only companies with more than 100 employees operating in Portugal, so their conclusions cannot directly apply to smaller companies or other countries where culture, labour or tax legislation, among other constraints, can determine different employer or employee behaviour.

The period considered takes place exclusively in the post-crisis period of 2008, so it cannot be generalized directly to previous moments, without studying the behaviours revealed by the data. The fact that this time period shows that more investment in human capital produces better organizational performance may derive from a behaviour change induced by the experience of the recent crisis and not from an effect consistent with any context outside the organization.

In the systematic review of the literature, the selection of the 3 main articles determines the literature found with the method of Webster and Watson. In order to minimize the possible bias, we selected 3 articles published with great time spacing, to obtain a wider range of trends in the definition of human capital. In any case, although it is our intention to capture only the current definition of the construct, we admit that, with another set of articles, we could have had a different result.

Routes in the field of attitudinal variables should be explored, since our results point to a greater effect on the GVA when the company's behaviour is consistent over the course of two years, in any stage of the firm's life cycle, or immediately in STAGE 4. Human resource managers and entrepreneurs should, in view of the results obtained, give preference to investing in human capital to improve their businesses, instead of divesting to lower costs.

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Job Insecurity and Organizational Performance

Abstract

Job Insecurity is employee's subjective perception and anticipation about the future of his job. This perception involves powerlessness to keep threatened job situation, in which concerns tenure (Quantitative Job Insecurity) or status (Qualitative Job Insecurity).

With a longitudinal approach and an organizational scope of the phenomenon, we explored the possible relationship between Qualitative Job Insecurity (QLJI), Quantitative Job Insecurity (QTJI) and Organizational Performance (OP), in portuguese companies with more than 100 workers, between 2010 and 2018.

We conclude that for every 1% of employees exposed to QLJI, Gross Value Added (GVA) decreases 5,4% and Net Sales (NS) decreases 5,3% in small firms. In large firms, QLJI has no related effect.

We also conclude that in Life-Cycle Stage 5 (the organizational context of shake-out), for every 1% of cases of QLJI, GVA decreases by 8.5% and NS 4.8%.

No related effect for QTJI was found.

Based on Conservation of Resources theory (Hobfoll, 1989, 2001), we discuss results and extract consequences.

Keywords *Quantitative Job Insecurity, Qualitative Job Insecurity, Organizational Performance, Firm Life-Cycle*

Introduction

In recent decades, layoff has been common practice in companies. Mergers, acquisitions and company restructurings have led to the elimination of surplus jobs, automation has made some functions obsolete, and the search for quick profits has institutionalized the model of cutting personnel expenses (Greenhalgh & Rosenblatt, 2010; Hirsch & De Soucey, 2006). Although in recent years the practice of downsizing has been less publicized, it continues to exist in a “stealth layoff” model, avoiding damaging the brand with negative press, but with the same effect of distrust in the psychosocial environment of work contexts (Gandolfi & Littler, 2012).

Job loss is considered a major stressor and the simple threat of job loss can trigger coping reactions similar to job loss itself (Vander Elst, De Cuyper, Baillien, Niesen, & De Witte, 2016). In fact, any loss of resources is more salient than the gain of resources, to induce negative outcomes such as psychological distress, burnout and depression, leading to reduced productivity, alienation from others and emotional exhaustion (Hobfoll, 2001).

The literature on economic losses and other consequences of job insecurity associated with worker insecurity has received greater attention in recent decades (Cheng & Chan, 2008), while the labor market undergoes great deregulation and precariousness: dismissals have become easier and the new jobs created have characteristics of unconventional work, such as part-time, fixed term and independent work (Kalleberg & Vallas, 2017).

Job Insecurity is, therefore, an issue with current relevance, whose impact is becoming known, but which generally requires a great effort of analysis. In this work, we intend to study the hypothesis of evaluating the economic impact of Job Insecurity, without additional effort, based on official company reports.

1 - The Concept of Job Insecurity

Job Insecurity (JI) is defined as a “the perceived powerlessness to maintain the desired continuity in a threatened job situation”(Rosenblatt & Greenhalgh, 1984, p. 438), “subjectively experienced anticipation of a fundamental and involuntary event related to job loss” (Sverke, Hellgren, & Näswall, 2002, p. 243) or “worker’s perception or concern about potential involuntary job loss” (De Cuyper et al., 2012, p. 770). All definitions place emphasis on the employee's subjective perception, which may not correspond to an objective threat and an external event, over which he or she has no control. It

means insecurity is about employee's future that he feels powerless to avoid (Rosenblatt & Greenhalgh, 1984).

The concept of JI was divided into two dimensions that, in this work, we will follow:

- Quantitative Job Insecurity (Hellgren, Sverke, & Isaksson, 1999) or Job Tenure Insecurity (Gallie, Felstead, Green, & Inanc, 2017), meaning the perception of the possibility of losing one's job;
- Qualitative Job Insecurity (Hellgren et al., 1999) or Job Status Insecurity (Gallie et al., 2017), meaning the anticipation of the deterioration of employment conditions and career opportunities. Concretely, this dimension addresses the perception of insecurity about loss of current job features, such as reduced pay, reduced working hours, loss of status, loss of remuneration value compared to the sector of activity, lack of career opportunities.

2 - Antecedents of Job Insecurity

Job Insecurity is a subjective perception of job continuity. The psychological concept involves concern about the future of the job the employee wants to keep, and is based on interpretations he makes about situations that occur in the company (Sverke et al., 2002) and in the economic context and social protection of his country (economic prosperity, welfare state protection) (Mau, Mewes, & Schöneck, 2012).

The formation of the perception of Job Insecurity arises concretely from the individual's interpretation of the various aspects of their context (Chung & Mau, 2014):

- At country level, welfare state institutions and socioeconomic context (employment protection legislation, unemployment benefit, active labour market policies, unemployment rate, wealth of the country, changes in economic conditions);
- At individual level, personal and workplace characteristics (social class, gender, age, education, migrant status, health, family structure as existing children and partner's employment, union membership, company sector, company size, type of contract).

Most employees with a temporary contract fear for the future of their job (De Witte & Näswall, 2003), which shows their proper perception of objective conditions. Individuals seem to be good evaluators of their context, as part of those who feel Job Insecurity lose their jobs or see their salary reduced (Campbell, Carruth, Dickerson, & Green, 2007).

A downsizing practice in the organization or in the worker's personal history has a strong relationship with the perception of job insecurity (Gallie et al., 2017; Kinnunen, Mauno, Nätti, & Happonen, 2000; Rosenblatt & Greenhalgh, 1984), which shows the importance of the context in the worker's assessment of the danger of job loss. Older employees (over 40 years old), with less seniority in the job and less education are more concerned about job maintenance (Erlinghagen, 2008), their employability (Silva, Veloso, & Soares Silva, 2017) and employees with more routine roles are more insecure about maintaining job status (Gallie et al., 2017; Mau et al., 2012). Technologically more advanced companies also have workers more concerned with keeping their jobs, because they fear being replaced by technology (Gallie et al., 2017).

In a study that included 17 European countries, Portugal appears in 8th place for the perception of Job Insecurity, in 2004 (Erlinghagen, 2008) and in 5th place, in a total of 19 countries, in 2010 (Lübke & Erlinghagen, 2014). In 2012, in the midst of the economic crisis and with intervention by external authorities, among 19 countries in Europe, 31% of portuguese respondents reported fear of losing their job and 44% said they fear not having the financial means to cover domestic expenses (Mau et al., 2012).

Perception of Job Insecurity remain relatively stable over time for layoff survivors (Hellgren et al., 1999; Kinnunen et al., 2000), like a traumatic event. This mechanism is considered adaptive and protects the individual and his group from future loss of resources (Hobfoll, 2001).

3 - Consequences of Job Insecurity – Organizational Performance

Job Insecurity is stressful because it decreases the experience of control (Elst, De Cuyper, & De Witte, 2011), results in psychological contract breach (Vander Elst et al., 2016) and corresponds to a threat on valuable resources (Hobfoll, Halbesleben, Neveu, & Westman, 2018).

Job insecurity negatively affects mental and phisycal health (Hellgren et al., 1999; Sverke et al., 2002), well-being (Ogbonnaya, Gahan, & Eib, 2019; Selenko, Mäkikangas, & Stride, 2017; Silla, de Cuyper, Gracia, Peiró, & de Witte, 2009; Van Dick, Ullrich, & Tissington, 2006), social identity (Selenko et al., 2017) and is related to financial stress (Choi, Heo, Cho, & Lee, 2020).

Consequences on attitudes include decreased job satisfaction (De Cuyper & De Witte, 2006, 2007; De Witte & Näswall, 2003; Hellgren et al., 1999; Sverke et al., 2002; Van Dick et al., 2006), increased turnover intention, decreased job involvement and organizational commitment, decreased trust (Sverke et al., 2002) and motivation (De Witte & Näswall, 2003; Suifan, 2019).

A peculiarity of Job Insecurity effects is that these effects remain relatively stable over time, for layoff survivors, even when they no longer report high job insecurity values (Hellgren et al., 1999).

Job Insecurity has a negative impact on performance (Sverke et al., 2002; Sverke, Låstad, Hellgren, Richter, & Näswall, 2019), measured by scale (Chirumbolo, Callea, & Urbini, 2020; Darvishmotevali & Ali, 2020; Gallie et al., 2017; Niesen, Van Hootegem, Handaja, Battistelli, & De Witte, 2018; Piccoli, De Witte, & Reisel, 2017; Probst, Jiang, & López Bohle, 2019; Selenko et al., 2017; Tentama & Rosandy, 2019; D. Wang et al., 2020; H. J. Wang, Lu, & Siu, 2015), self-rated (De Cuyper & De Witte, 2006, 2007; Rosenblatt, Talmud, & Ruvio, 1999) or rated by supervisor (H. J. Wang et al., 2015). Other aspects of performance are also hampered by JI as innovation (Niesen et al., 2018) and organizational citizenship behaviors (Probst, Gailey, Jiang, & Bohle, 2017; Van Dick et al., 2006). Counterproductive work behaviour is enhanced by JI (Shoss, 2017) as well as turnover (Richter, Vander Elst, & De Witte, 2020) and turnover intentions (Elst et al., 2011).

The effect of Job Insecurity on performance is not linear, a U-line can be observed, respectively for low, moderate and high levels of Job Insecurity (Probst et al., 2017; Selenko et al., 2017). According to Social Exchange Theory (SET) (Blau, 1964), the principle of reciprocity encourages an obligation to return to others identical behaviour to that received. In this sense, a moderate Job Insecurity index will correspond to a lower performance than a low index. However, when a high Job Insecurity index corresponds to a high level of performance, it cannot be explained in the light of SET; the authors interpret it as an effect of the performance of employees who decided to stay in the organization (Probst et al., 2017; Selenko et al., 2017), although perhaps it needs further deepening.

In an organization, the dissemination of job stress or psychological strain is explained by an interpersonal process called crossover that affects other people in the same social environment. At crossover there is a transmission of psychological states, resources and experiences between pairs of individuals, teams and organizations (Hobfoll et al., 2018). This process is also applied to job insecurity, since it is a major source of stress (Vander Elst et al., 2016).

In this work, we intend to verify if Job Insecurity context has an impact on Organizational Performance (OP); this expectation is based on the crossover dissemination of the stress caused by the JI situation and on the coping strategy with the stressor, characterized by psychological withdrawal and deviation of resources towards the regulation of emotions (Hobfoll, 2001).

Hypothesis 1: JI is negatively related to OP.

4- Mechanisms Underlying Job Insecurity and Its Consequences

Previous studies report the negative effects of job insecurity (Cheng & Chan, 2008; Sverke et al., 2002, 2019), but the mechanism by which Job insecurity influences well-being, behaviors and attitudes of employees remains to be determined.

The proposals present in the literature include *perceived control* and *psychological contract breach* (De Cuyper & De Witte, 2007; Elst et al., 2011; Vander Elst et al., 2016), *organizational trust* (Richter & Näswall, 2019), *rumination* (Richter et al., 2020), *job satisfaction* (Shoss, Brummel, Probst, & Jiang, 2020), *social identity* (Selenko et al., 2017) and *psychological capital* (Probst et al., 2017).

Psychological Contract Breach was found to mediate the relation between Job Insecurity and job satisfaction, and partially mediate the relationship between organizational commitment, life satisfaction (De Cuyper & De Witte, 2007), self-rated performance (Vander Elst et al., 2016) and innovative work behaviour (Niesen et al., 2018; Vander Elst et al., 2016).

Perceived Control was found to partially mediate the relationship between Job Insecurity and job satisfaction, organizational commitment, psychological distress and turnover intentions (Elst et al., 2011), self-rated performance and innovative work behaviour (Vander Elst et al., 2016). However, since the mediations of *perceived control* and *psychological contract breach* are only partial, it is possible to find other mediating variables, which have already been proposed like *unpredictability of the stressor* and *frustration of important functions fulfilled by work* (De Witte, 2005). Literature also confirms the partial mediation between JI and *job satisfaction* and *mental health* variables, through the decrease of *organizational trust* (Richter & Näswall, 2019). This line of investigation follows the Conservation Of Resources Theory (COR) (Hobfoll, 2001; Hobfoll et al., 2018) and Appraisal Theory (Lazarus & Folkman, 1984) to explain the consequences of Job Insecurity on negative outcome; specifically, the struggle for the acquisition and conservation of resources generates negative outputs due to greater loss salience (COR Theory) or when it exceeds its own capabilities (Appraisal Theory), generating stress, strain, withdrawal and burnout (Taris, Schreurs, & Van Iersel-Van Silfhout, 2001).

JI also influences another aspect of performance, *counterproductive work behavior*, through *job satisfaction* (Shoss et al., 2020).

It is curious to see that Job Insecurity, when there is a low level of *organizational justice*, is negatively related to job performance, but if the level of organizational justice is high, they are not related (H. J. Wang et al., 2015). The negative relationship of job insecurity with job performance is mediated by *work engagement*, when organizational justice is low.

From a dispositional perspective, *psychological capital*, consisted of relationships of hope, self-efficacy, resilience, and optimism moderates the relation between job insecurity and performance (Probst et al., 2017).

It is uncertain whether Job Insecurity is related to *psychological contract breach*, as the same effect was found on job satisfaction, life satisfaction, organizational commitment and self-rated performance for permanent and temporary employees (De Cuyper & De Witte, 2006), but more negative effects on *well-being* were found for permanent workers than non-permanent workers (Ogbonnaya et al., 2019).

Social protection as a moderator provided evidence of less negative reaction to job insecurity in terms of task performance, counterproductive work behaviours and much less in safety performance (Sverke et al., 2019).

Over the last 20 years (see Chapter 3), most empirical studies that try to explain how the effect between JI and its outcomes is processed have interpreted the results based on two main theories:

- Conservation Of Resources theory (COR) (Hobfoll, 2001; Hobfoll et al., 2018), (Probst et al., 2017; Richter et al., 2020; Schreurs, Emmerik, Gunter, & Germeys, 2012; Schumacher, Schreurs, De Cuyper, & Grosemans, 2020; Shoss et al., 2020) and
- Social Exchange Theory (Blau, 1964) (Bohle, Chambel, Medina, & Da Cunha, 2018; Kim & Kim, 2020; Niesen et al., 2018; Piccoli, Setti, Filippi, Argentero, & Bellotto, 2013).

The broad spectrum of these theories (COR and SET), which allow us to explain a large part of the psychosocial phenomena, alerts us to the complexity of the effects of job insecurity on performance and also the depth and breadth of its impact on the employee, as research has confirmed on well-being (Van Dick et al., 2006), trust (Sverke et al., 2002) and motivation (De Witte & Näswall, 2003).

5 – The Context – Life Cycle Stage

The relationship between JI and OP can be influenced by the context in which employees behave, as mentioned in the literature about organizational declining and downsizing (Rosenblatt & Greenhalgh, 1984). Working at a start-up is not the same as working at a company with solid experience and profit, in which concerns job maintenance threat. Working in an endangered company turns more likely to anticipate the possibility of layoffs (Gallie et al., 2017; Kinnunen et al., 2000; Rosenblatt & Greenhalgh, 1984).

The context provides several variables that can determine or moderate organizational behaviour (Clitheroe, Stokols, & Zmuidzinas, 1998; Gomes, Rodrigues, & Veloso, 2015) that influence emotions

and attitudes (Valdivia & Mart, 2020), with an impact on the conclusions of the investigation (Johns, 2006). In this article, we will explore a context variable that can be calculated from the databases we use: *firm life-cycle stage*.

Life Cycle Theory (LCT) is based on the premise that an organization is similar to a living being, going through different stages of development, between birth to death (Liu & Chou, 2016).

Firm life-cycle goes through five stages - Introduction, Growth, Mature, Shake Out and Decline (Dickinson, 2011; Habib & Hasan, 2017; Jackson & Schuler, 1995; Yan & Zhao, 2010) - according to 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). Lately, a model was developed based on the pattern of net cash-flow (Dickinson, 2011), which we adopt in this research

The organizational environment is characterized by higher profitability in stages 2, 3 and 5 (especially in stage 3), than in stages 1 and 4. In stages 1 and 2 investment is high and in stage 5 the companies sell assets to pay debts. Debt is higher in stages 1 and 2 and decreases in stage 3, when companies distribute more dividends to shareholders or invest in unprofitable projects, to decrease profits and lower taxes (Dickinson, 2011).

The lowest risk of insolvency is found in stage 3 (Domingo Terreno, Sattler, & Pérez, 2017). Remuneration of CEO's has higher fixed values in stages 3 and 5, while in stages 1 and 2 pay-for-performance predominates (Liu & Chou, 2016). As the context is different throughout the firm life-cycle, it is likely that it determines different patterns of investment in human capital and that these variations are related to different organizational performance patterns.

Hypothesis 2: The stage of the firm's life-cycle predicts the relationship between JI and OP.

Method

According to literature on JI, a downsizing practice in the organization has a strong correlation with the perception of JI (Gallie et al., 2017; Kinnunen et al., 2000; Rosenblatt & Greenhalgh, 1984) and the consequences of exposure remain relatively stable over time for layoff survivors, even when they no longer report high job insecurity values (Hellgren et al., 1999).

On the other hand, crossover phenomenon allows predicting the dissemination of job stress or psychological strain in teams and organizations (Hobfoll et al., 2018) and the consequent psychological withdrawal and deviation of resources towards the regulation of emotions (Hobfoll, 2001).

The method designed is based on this theoretical line to define a proxy for JI: the exposure of survivors to layoff and to the loss of job features.

1 – Sample

Companies operating in Portugal present annual financial reports of their activity based on the current regulation for the European Union, denominated System of Account Normalization (SNC) (Guerreiro, Rodrigues, & Craig, 2014), since 2010. These data are gathered in longitudinal SCIE database (Sistema de Contas Integradas das Empresas) (INE, 2020), protecting companies identity by the assignment of a unique code for the entire dataset. In 2017, the SCIE database had 394,967 firms, containing firm-level administrative data and yearly accounting information for the population of firms in the private sector, like assets and liabilities and income and expenses.

Quadros de Pessoal (MTSS, 2020) is a longitudinal matched employer-employee dataset created from the administrative information collected on an annual basis by the Portuguese Ministry of Labor, Solidarity and Social Security (MTSS - Ministério do Trabalho e da Segurança Social) covering all Portuguese firms with at least a single wage-earner. Quadros de Pessoal (QP) dataset does not cover organizations employing civil servants, non-permanent rural workers nor domestic workers. In 2017, the QP database had 290,409 firms and 2,973,246 workers.

Each firm and each worker entering the database are assigned a unique identifying number. Using this identifier it is possible to pinpoint all firms and workers that have entered and exited activity. For workers it is possible to follow them along their career through several firms. Company data and employee data are aggregated in employer-employee pairs. The identity of companies and employees is protected by the assignment of the code that identifies them and remains unchanged throughout the dataset.

Both sources of information have been combined to assemble a Linked Employer-Employee panel dataset. The analysis with QP and SCIE is conducted for the period 2010 to 2018, the latest year available.

Although the temporal spectrum covered by the datasets began in 1982, the codes of the professions, activity sector and accounting system have undergone profound changes, which makes it difficult or even impossible to harmonize statistical production. Since 2010, the accounting system in use has remained constant, as have the other classification systems that we are interested in working on, so we started our sample in 2010 and finished in the last available year, i.e. 2018.

From the dataset, we selected firms with 100 or more employees, where we thought we could better study the phenomenon, which is where labour economic researchers usually make the cut-off point to separate large firms from small firms (Centeno & Novo, 2012; Winter-Ebmer & Cardoso, 2010). Of these, we considered only those that remained active throughout the entire period (2010-2018). By using this strategy we aimed at minimizing the impact on our analysis of firm survival issues. We obtained 1.095 firms, registering 6.537 observations, which compose our sample.

2 – Variables

Independent Variable of interest: Job Insecurity (JI)

As far as we can find out, literature only presents JI measures per scale (Chirumbolo et al., 2020; Darvishmotevali & Ali, 2020; Gallie et al., 2017; Niesen et al., 2018; Piccoli et al., 2017; Probst et al., 2019; Tentama & Rosandy, 2019; D. Wang et al., 2020; H. J. Wang et al., 2015). As we intend to study this variable from official company data, we used a proxy for JI, based on exposure to the context of job loss and job feature loss, operationalized as quantitative JI and qualitative JI, as follows:

- Quantitative Job Insecurity (QuanJI)

Our database does not include information on whether employees who leave the company do so on their own initiative or on the employer's initiative. As we intend to identify only those employees who were laidoff and not those who left the company on their own initiative, we created a temporary variable that takes on the value:

- 1, if the employee has no connection to any company in year t , but worked for one company in year $t-1$; if the employee has a connection, at year t , to a different company he had at year $t-1$, but receiving a lower salary than he did;
- 0, if he remains connected, at year t , to the same company he did at year $t-1$.

The temporary variable created with this classification was divided by the total number of employees in the company, to determine the proportion of employees made redundant and thus determine the magnitude of exposure of lay-off survivors to the quantitative JI environment. With this method, the year

2018 cannot be included in panel data, because the database does not include 2019, which prevents us from drawing conclusions about which workers were laidoff in 2018.

We are aware that this conservative method may ignore employees who have been fired at the company's initiative but who have found a new job within a year and are already linked to a new company in the next annual survey, with the same salary or higher. However, in the absence of information on the date and reason for an employee's departure, it seems more prudent to identify with more certainty those employees who have been absent from the labor market for more than a year, or who had to accept wages lower than they had previously, than to identify all the workers who changed companies, among which there would certainly be several who did so on their own initiative. This method leads, we are sure, to identify a smaller effect than what is likely to exist from JI in OP, but it will allow us to assert it with more confidence.

- *Qualitative Job Insecurity (QLJI)*

Within the same constraints reported above, the wage growth rate between $t-1$ and t was calculated and compared to the profession's average wage growth rate (using the 2-digit profession database code). Without information about the year 2009 to calculate the difference between 2010 and 2009, we excluded the year 2010 from the panel data.

A temporary variable (QLJI1) was created, which takes the values:

- 1, if the individual's salary growth rate is less than the average for his profession;
- 0, if the growth rate is equal to or greater than profession's average.

The difference between the values of yearly working hours between year t and year $t+1$ was calculated to determine whether there was a loss in the number of hours contracted with the employee.

This difference gave rise to another temporary variable (QLJI2), which takes the values:

- 1, if the difference is negative;
- 0, if the difference is equal to or greater than zero.

The average of QLJI1 and QLJI2 per company and per year was calculated and the result was recorded as the value of QLJI variable. The data underlying the empirical analysis is organized at the firm/year level. Employees' data is aggregated within firms and year.

Dependent Variable: Organizational Performance

The relationship between JI and performance has been studied by measuring performance by scale (Chirumbolo et al., 2020; Niesen et al., 2018; Probst et al., 2019) self-rated (De Cuyper & De Witte, 2006, 2007; Rosenblatt et al., 1999) or rated by supervisor (H. J. Wang et al., 2015).

In the strategic management literature, measures of objective financial performance, subjective financial performance and subjective non-financial performance are used (Newbert, 2008). With our work centered on company balance data, which can be obtained with no additional collection effort, we have chosen three measures of objective financial performance, which are calculated as described (Delery & Doty, 1996):

- ROA, Return On Assets - net income divided by total assets;
- ROE, Return On Equity - net income divided by common equity;
- ROS, Return On Sales or profit margin - net income divided by net sales.

These measures (and also the ROI, Return On Investment) are the most used in studies that relate Human Resources Management (HRM) to financial performance (Aragon & Valle, 2013; Becker & Gerhart, 1996; Shrader, Blackburn, & Iles, 1997; Veloso, 2007; Zhai, 2018), reason why we considered them. However, literature warns that relationships are rarely found with these measures, and the results may be inconclusive or insignificant due to frequent manipulation of accounting measures, undervaluation of assets, creation of distortions through inventory policies, asset depreciation and asset classification (Dalton & Daily, 1998), or because of the ability to profit from strategic human capital holders (Boon, Eckardt, Lepak, & Boselie, 2017).

Aware of this risk, we decided to combine three economic measures commonly used to evaluate companies or investments (McPhee & Woodley, 2014; Soute, Martins, Schvirck, & Machado, 2008):

- NS - Net Sales;
- GVA - Gross Value Added;
- EBITDA - Earnings before Interest, Taxes, Depreciation, and Amortization.

These indicators are obtained directly from balance accounts and are included in the variables of the SCIE database described above.

Firm Life-Cycle Stage

We rated companies by the stage of their life-cycle and created the categorical variable 'STAGE'. This variable will be introduced in the empirical econometric model as a set of dummy variables, which assume the value 1 for each category of 'Stage', 0 otherwise.

Following Dickinson's model (Dickinson, 2011) and Habib and Hasan's operationalization (Habib & Hasan, 2017, p. 477), we used the following net cash flow grid to serve as a basis for our ranking:

-
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 $FINCF < \text{or } \geq 0$;
 5. Shake-out: all other firm years.
-

OCF – Cash flows from operating activities; INVCF – Cash flows from investing activities; FINCF – Cash flows from financing activities (Dickinson, 2011; Habib & Hasan, 2017).

Control Variables

The company size (SIZE), measured by the number of workers, and the sector of activity (SECTOR) were used as control variables. As these variables correspond to different job insecurity patterns (Erlinghagen, 2008; Lübke & Erlinghagen, 2014) we controlled them to prevent them from contaminating results.

The SIZE variable was obtained from the number of employees, dividing the sample into quintiles, corresponding to five categories.

The variable SECTOR was collected from the ISIC code (International Standard Industrial Classification) available in SCIE.

We also used as control variables the Contract Type (CT) and Job Tenure (TEN), since the literature indicates these variables tend to be highly correlated with the subjective perception of Job Insecurity (De Witte & Näswall, 2003; Lübke & Erlinghagen, 2014). Our goal is to better isolate the effects of our main explanatory variable (JI).

CT was calculated as the percentage of open-ended contracts for each company in each year; TEN was defined as the average length of service of employees in each company, for each year.

Results

In a first phase, descriptive statistics of all variables considered in this study were performed. Then, we performed a multiple regression analysis of the explanatory variables $QLJI$, QTI and the context variable STAGE. The variables SIZE, SECTOR, TEN and CT were controlled for, so that they did not bias the results. We then expanded the econometric strategy by using Fixed Effects regression. We have done so to address possible contamination of our estimates from unobservable firm heterogeneity.

1 – Descriptive Statistics

Firms included in our sample as summarized in Table 11 and Table 12 according to SIZE and STAGE:

Table 11 - Sample description by SIZE

	2011			2017		
	Small	Large	Full	Small	Large	Full
N. of Firms	616	479	1 095	549	546	1 095
% in Sample	56%	44%	100%	50%	50%	100%

SIZE: Small - more than 100 employees and less than 250; Large - more than 100 employees; Full – entire sample

STAGE: 1 - Introduction; 2 – Growth; 3 – Mature; 4 - Decline; 5 – Shake-Out

(Source: own computations using SCIE and QP)

Table 12 - Sample description by STAGE

	2011					2017				
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
N. of Firms	417	191	98	59	330	303	256	167	57	312
% in Sample	38%	17%	9%	5%	30%	28%	23%	15%	5%	28%

STAGE: 1 - Introduction; 2 – Growth; 3 – Mature; 4 - Decline; 5 – Shake-Out

(Source: own computations using SCIE and QP)

The distribution by SIZE shows a balance in our sample between small and large firms in 2017. This is a change when compared with 2011, in which small-sized firms represented 56% of the firms. This indicates that, on average, firms increased their size over the sample period.

Regarding STAGE reveals that, between 2011 and 2017, 10% of companies evolved from the introduction stage to growth and mature.

Table 13 and Table 14 show the distribution of small and large firms by STAGE:

Table 13 - Sample description by SIZE and STAGE (year 2011)

	2011									
	Small					Large				
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Nº de Empresas	237	95	49	42	193	180	96	49	17	137
% da Amostra	22%	9%	4%	4%	18%	16%	9%	4%	2%	13%

STAGE: 1 - Introduction; 2 – Growth; 3 – Mature; 4 - Decline; 5 – Shake-Out

(Source: own computations using SCIE and QP)

Table 14 - Sample description by SIZE and STAGE (year 2017)

	2017									
	Small					Large				
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Nº de Empresas	150	118	81	25	175	153	138	86	32	137
% da Amostra	14%	11%	7%	2%	16%	14%	13%	8%	3%	13%

SIZE: Small - more than 100 employees and less than 250; Large - more than 100 employees; Full – entire sample

STAGE: 1 - Introduction; 2 – Growth; 3 – Mature; 4 - Decline; 5 – Shake-Out

(Source: own computations using SCIE and QP)

The distribution of companies by STAGE, in each SIZE category, reveals that it was mainly the small firms that evolved from the Introduction stage to Growth and Mature, although the same evolution was also verified in the large firms, it was smaller in the sample.

Table 15 - Variables description

	2011				2017			
	Mean	Sd	Min	Max	Mean	Sd	Min	Max
ROA	-3,00	0,98	-7,78	0,54	-2,88	0,99	-8,36	-0,41
ROE	-2,39	1,57	-18,59	3,81	-2,14	1,56	-14,31	4,81
ROS	-3,76	1,53	-16,42	-0,01	-3,39	1,38	-11,57	-0,55
VAB	15,95	1,05	11,08	20,76	16,14	1,06	12,11	20,73
VN	17,20	1,23	12,82	22,81	17,35	1,22	13,76	22,69
EBITDA	14,64	1,48	9,61	20,58	14,91	1,50	8,99	20,39
QLJI	3,74	0,53	1,56	4,61	3,78	0,44	1,80	4,60
QTJI	2,25	0,78	-0,89	4,37	2,44	0,76	-0,50	4,61
SIZE	495	1 265	101	23 275	586	1 579	100	25 891
TEN	9,48	5,17	0,05	28,11	10,59	5,05	0,09	27,48
TC	76,10	21,91	0,00	99,82	72,83	19,86	0,00	99,83

(Source: own computations using SCIE and QP)

The data show a great dispersion in the variables ROE, ROS, SIZE, TEN and TC, which may result from the large difference in the size of the companies that compound our database.

Table 16 - Variables description (by JI dimension)

	QLJI				QTJI			
	2011		2017		2011		2017	
	Mean	Sd	Mean	Sd	Mean	Sd	Mean	Sd
Small	3,72	0,52	3,76	0,46	2,16	0,75	2,37	0,81
Large	3,76	0,55	3,81	0,42	2,37	0,80	2,51	0,71
Full	3,74	0,53	3,78	0,44	2,25	0,78	2,44	0,76
Stage1	3,76	0,54	3,76	0,45	2,27	0,78	2,42	0,78
Stage2	3,68	0,59	3,74	0,44	2,18	0,80	2,41	0,68
Stage3	3,69	0,54	3,79	0,39	2,21	0,77	2,43	0,78
Stage4	3,76	0,45	3,92	0,45	2,23	0,81	2,71	0,88

Stage5	3,75	0,50	3,80	0,45	2,30	0,77	2,44	0,78
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SIZE: Small - more than 100 employees and less than 250; Large - more than 100 employees; Full – entire sample

STAGE: 1 - Introduction; 2 – Growth; 3 – Mature; 4 - Decline; 5 – Shake-Out

(Source: own computations using SCIE and QP)

QLJI and QTJI means and standard deviations are relatively similar for small and large firms, which proportionally means a greater number of occurrences per total employees in small firms than in large firms, where SIZE variable is widely dispersed, reaching a maximum of 23,275 (2011) and 25,891 (2017) (cf. Table 5).

The sample of small firms also contains proportionately more companies in STAGE 5 than the sample of large firms (Table 3 and Table 4).

2 – Regression Results

The regression model we will use to test the hypothesis defined above is defined by the following equation:

$$\ln OP_{it} = \beta_0 + \beta_1 \ln QLJI_{it-1} + \beta_2 \Delta \ln QLJI_{it-1} + \beta_3 \ln QTJI_{it-1} + \beta_4 \Delta \ln QTJI_{it-1} + \beta_5 STAGE_{it} + \beta_6 SIZE_{it} + \beta_7 TEN_{it} + \beta_8 CT_{it} + \beta_9 SECTOR_{it} + \mu_i + \varepsilon_{it}$$

where i stands for the firm and t for time. The dependent variable is *Organizational Performance* (OP). In the empirical implementation of the model this variable will be operationalized by the log of NS, GVA, EBITDA, ROA, ROE and ROS. The explanatory variables of interest are *QLJI* (Qualitative Job Insecurity) and *QTJI* (Quantitative Job Insecurity). Δ represents the variation of the variable between two consecutive periods, $t-1$ to t . The model includes the variables $\ln QLJI$ and $\ln QTJI$ in its lag form. By using this formulation we account for possible delay in the effects between these variables and the dependent variable.

STAGE is a context explanatory variable and SIZE, TEN, CT and SECTOR are control variables that literature points relevant not to contaminate results.

$\beta_0, \beta_1, \beta_3, \beta_5, \beta_6, \beta_7, \beta_8$ and β_9 are the parameters of the model estimated to describe the effect of the explanatory variables in OP. Finally, μ_i is the effect of non-observed variables, or unobserved heterogeneity, while ε_{it} represents errors that are assumed to be uncorrelated with the explanatory variables included in the model, as well as with μ_i , and not serially correlated.

The model was estimated by Fixed Effects (FE). Although we have estimated the model by Ordinary Least Squares (OLS) to use it as a benchmark, we only report the estimates for the FE model. The results from the OLS were not stable across different specifications, and frequently in disagreement with the standard results in the literature. This does not come as a surprise given the most likely bias of this estimator when applied to the analysis of firms performance and when we use longitudinal data, as is our case. The FE estimator is conceptually the correct solution given the likelihood of firms' unobserved characteristics that may affect simultaneously the dependent variable and most of the explanatory variables, while it addressed adequately the implications for the residuals of using panel data. A final note, the FE is a more demanding regression method, which typically reveals lower magnitude effects and fewer significant results. The results are presented below in Table 17, Table 18 and Table 19.

OP, when measured by financial indicators ROE, ROA and ROS did not reveal statistically significant results, which is not surprising, given that literature describes situations in which this happens as rare. In addition to these measures, we also did not find statistically significant results using EBITDA. For this reason, we decided to present only GVA and NS measures of OP.

We tested the model with and without a dummy year variable, with no differences in results. We intended to verify whether the differences in the explanatory variables QLJI and QTJI, verified over time, were or were not related to variations in OP. Concluding that there were no differences in the results, we chose to keep the year dummy, as usual in analyzes with panel data.

The results were produced by SECTOR, SIZE and STAGE. For the variable SECTOR, no significant results were found, so we chose not to present this summary table.

With regard to SIZE variable, which we had divided into quintiles in our model, we aggregated the quintiles into only 3 categories of analysis:

- Small – with more than 100 employees and less than 250;
- Large – with more than 250 workers;
- Full – our entire sample.

Table 17 – Regression Results for GVA and NS, gathered by SIZE.

	SIZE					
	GVA Full	GVA Small	GVA Large	NS Full	NS Small	NS Large
<i>lnQLJI</i>	-0,035**	-0,054***	0,0008	-0,034***	-0,053***	0,003
	(0,014)	(0,019)	(0,021)	(0,010)	(0,013)	(0,014)

<i>ln</i> ΔQLJI	0,006 (0,007)	0,009 (0,008)	-0,004 (0,012)	0,009* (0,005)	0,016** (0,007)	-0,001 (0,007)
<i>ln</i> QTJI	-0,015 (0,013)	-0,035** (0,015)	-0,008 (0,022)	-0,006 (0,011)	-0,018 (0,012)	-0,0002 (0,018)
<i>ln</i> ΔQTJI	0,013* (0,008)	0,002 (0,009)	0,009 (0,015)	0,015** (0,006)	0,003 (0,007)	0,011 (0,010)
N	6 499	3 496	3 003	6 537	3 529	3 008

Robust standard errors in parenthesis. *Significance levels: 1%, ***, 5%, **, 10%, **

SIZE: Small - more than 100 employees and less than 250; Large - more than 100 employees; Full – entire sample

(Source: own computations using QP and SCIE)

Table 18 – Regression results for GVA, gathered by STAGE.

	STAGE				
	GVA Stage 1	GVA Stage 2	GVA Stage 3	GVA Stage 4	GVA Stage 5
<i>ln</i> QLJI	-0,008 (0,037)	-0,035* (0,021)	0,029 (0,025)	-0,112* (0,059)	-0,085*** (0,021)
<i>ln</i> ΔQLJI	-0,010 (0,021)	0,010 (0,012)	-0,017 (0,015)	0,032 (0,034)	0,027** (0,012)
<i>ln</i> QTJI	-0,025 (0,033)	0,010 (0,022)	-0,0002 (0,031)	0,038 (0,067)	-0,028 (0,023)
<i>ln</i> ΔQTJI	0,033* (0,019)	0,003 (0,013)	-0,033* (0,017)	-0,036 (0,044)	0,018 (0,015)
N	2 089	1 263	902	383	1 862

Robust standard errors in parenthesis. *Significance levels: 1%, ***, 5%, **, 10%, **

STAGE: 1 - Introduction; 2 – Growth; 3 – Mature; 4 - Decline; 5 – Shake-Out

(Source: own computations using QP and SCIE)

Table 19 – Regression results for NS, gathered by STAGE.

	STAGE				
	NS Stage 1	NS Stage 2	NS Stage 3	NS Stage 4	NS Stage 5
$\ln QLJI$	-0,030* (0,018)	-0,030 (0,019)	0,017 (0,022)	-0,036 (0,048)	-0,048*** (0,019)
$\ln \Delta QLJI$	0,010 (0,010)	0,015 (0,010)	-0,008 (0,013)	-0,023 (0,037)	0,019* (0,010)
$\ln QTJI$	-0,009 (0,020)	-0,002 (0,025)	0,006 (0,024)	-0,037 (0,061)	0,002 (0,020)
$\ln \Delta QTJI$	0,027** (0,011)	0,021 (0,014)	0,006 (0,013)	0,027 (0,041)	-0,007 (0,012)
N	2 113	1 263	903	386	1 872

Robust standard errors in parenthesis. Significance levels: 1%, ***, 5%, **, 10%, *

STAGE: 1 - Introduction; 2 – Growth; 3 – Mature; 4 - Decline; 5 – Shake-Out

(Source: own computations using QP and SCIE)

We verified that for every 1% increase in qualitative job insecurity, the GVA (Gross Value Added) decreases 5,4% and NS (Net Sales) decreases 5,3% in small firms (Table 17, cols. 2 and 5), maintaining all other variables constant. In large firms, QLJI (Qualitative Job Insecurity) has no statistically relevant effect.

We also found a marginally significant negative relationship with QLJI if we consider the entire sample, that may be due to the effect identified for small firms, because it is of smaller magnitude (-0,035 using GVA and -0,034 using NS).

Hypothesis 1 is, therefore, partially verified. We hypothesized that JI (QLJI and QTJI) would be negatively related to OP (Organizational Performance), but our results reveal that it only happens in small firms. Besides that, the negative relation was found in part of JI (QLJI) and not in QTJI (Quantitative Job Insecurity). QTJI reveals only a marginally significant negative relationship with OP, when using GVA, in the group of small firms (-0,035). Other groups reveal no relationship.

About the relation between OP and QLJI that exists in small firms, it should be remembered that QLJI has almost the same value in small firms (100 to 250 employees) as in large firms (more than 250 employees), as described in Table 16, which proportionally means a greater number of occurrences per total employees in small firms than in large firms (cf. Table 15).

The sample of small firms also contains proportionately more companies in STAGE 5 than the sample of large firms (Table 13 and Table 14), stage where we have significant results for the relationship between QLJI and OP, which does not exist in any other Stage. Therefore, we have some sample content reasons that allow us to notice the lack of results in large firms. In fact, JI seems less common in large firms than it is in small ones.

In STAGE 5 (shake-out), for every 1% increase of QLJI, GVA decreases by 8.5% (Table 18, col. 5) and NS 4.8% (Table 19, col. 5). In all other stages, QLJI has no effect.

Hypothesis 2 is also partially verified. We hypothesized that firm's life-cycle stage would predict the relationship between JI and OP but our results only confirm that the STAGE variable predicts this relationship in the STAGE 5 (Shake-Out) category. This Stage holds about 30% of our sample, which makes this result significant in our entire sample. However, STAGE can predict the relationship between QLJI and OP, but not between QTJI and OP. So, only a part of JI variable can be predicted in its relationship with OP by STAGE variable.

The relationship of OP with QTJI is not entirely verified.

It should be noted that the QTJI variable was obtained through a proxy, with very conservative criteria, which may indicate that we were not really able to overcome the lack of the exact variable in our database. In fact, the "reason for leaving" field, which would allow us to measure with more certainty the level of exposure to quantitative job insecurity to which employees were subjected, exists in the QP (MTSS, 2020) survey, but this field has not been distributed for investigation.

Thus, the results obtained do not allow us to draw conclusions about the relationship between QTJI and OP.

Discussion

It was our purpose to study the relationship between JI (Job Insecurity) and OP (Organizational Performance), based on official accounts report and employment surveys, to look for effects already known in psychology literature, but studied directly with employees. Anchored in well known relationship between exposure to layoffs and subjective perception of JI (Gallie et al., 2017; Kinnunen et al., 2000; Reicherta & Tauchmann, 2017; Rosenblatt & Greenhalgh, 1984).

Our results are consistent with meta-analyses that conclude a negative influence of JI on various aspects of performance (task performance, contextual performance, counterproductive work behavior, creativity, and safety performance) (Cheng & Chan, 2008; Gilboa, Shirom, Fried, & Cooper, 2013; Jiang & Lavaysse, 2018; Sverke et al., 2019).

Literature that counters this trend of negative impact of Job Insecurity on performance is scarce and presents the particularity that performance is often self-rated (De Cuyper & De Witte, 2006, 2007; Qian, Yuan, Niu, & Liu, 2019; Rosenblatt et al., 1999; Sverke et al., 2002; Vander Elst et al., 2016), which can inflate results, according to the limitations that the authors assume to exist (De Cuyper & De Witte, 2006; Qian et al., 2019; Sverke et al., 2002).

However, the positive relationship between JI and performance can happen during situations of company restructuring, in which increased performance is used as a strategy to preserve employment (Koen, Low, & Van Vianen, 2020; Piccoli, Reisel, & Witte, 2019). In this case, our results contradict these authors, revealing a negative and significant relationship between QLJI (Qualitative Job Insecurity) and OP (Organizational Performance) in STAGE 5 (Shake-Out). However, as our results refer to organizational performance and not individual performance, this conclusion does not rule out the possibility that, among the workforce, there are employees who improve their individual performance.

When the variables QLJI and QTJI (Quantitative Job Insecurity) are analyzed simultaneously, the impact of QTJI is low or non-existent on performance, because QTJI only has an effect through the mediator variable QLJI (Chirumbolo et al., 2020; Fischmann, Sulea, Kovacs, Iliescu, & De Witte, 2015); the same happens with the effect of QTJI on employees' well-being, also mediated by QLJI (Callea, Lo Presti, Mauno, & Urbini, 2019; Nawrocka, De Witte, Brondino, & Pasini, 2021). Thus, the fact that we did not obtain a significant QTJI effect, having analyzed the variable together with QLJI, is in line with the results obtained in other works and is justified by being a variable with an indirect effect on performance.

Another conclusion of our work is that the negative relationship between QLJI and OP only exists in small firms and not in large firms. Although our small firms are defined between 100 and 250 employees, as we have not analyzed companies with less than 100 employees, we can see that the occurrence of QLJI is equivalent in both categories. Taking into account the crossover phenomenon of resources and emotions, described by Hobfoll (Hobfoll et al., 2018), this result is expected, since the crossover takes place in close interpersonal relationships. Hence, in order to have a significant crossover, large firms would have to proportionally present as many QLJI cases as small firms, which is not the case. In these

small firms, there is more possibility of interaction with all or a great part of the employees than in large firms, with more than 250 employees and some of them with thousands of employees.

Relying on COR theory (Hobfoll, 1989, 2001), we can understand results found in this study: the loss of job features (QLJI) is more salient than any gain in resources that, temporally, may coincide with these losses; individual resources mobilized to counter the losses and regulate emotions cause resource depletion; these emotional states are transferred to other employees with close relationships through a crossover phenomenon, causing the same mobilization and depletion of resources; individual performance decreases and, reaching several employees, organizational performance decreases, which depends on the sum of individual performances.

Insecure employees also reciprocate to unfair exchange by entering in psychological withdrawal (Taris et al., 2001) and by lowering their efforts in generating new ideas, in which depends organisation's ability to adjust, compete, and survive (Niesen et al., 2018).

Another important aspect is the fact that only STAGE 5 shows a significant negative relationship between QLJI and OP, following the COR theory in valuing the context (restructuring) to the detriment of individual differences to predict behaviour.

This study has contributed to this field of research by using secondary and open access data to analyse the relation between Job Insecurity and Organizational Performance.

Although JI is a subjective phenomenon, it was possible to identify, through the result of employee behaviors, a significant relationship, although of reduced magnitude, between QLJI and OP. These results require further investigation to look for the possibility of a causal relationship, but indicate that the data included in official employment surveys (in Portugal, QP) have potential use to predict the effect of psychological variables on organizational performance, requiring no effort. and cost of assessment and avoiding psychological reactivity to the measurement process.

This study presents a novelty in the approach to research in the field of organizational psychology, as it works with psychological variables based on official data, which reflect behaviors in different contexts. For this, we have followed literature which highlights the importance of context over dispositional variables in explaining variability in behavior (Hobfoll, 2001; Hobfoll et al., 2018; Probst, Jiang, & Benson, 2014). The same context tends to be evaluated in the same way by different people; the variability of behavior is much more dependent on the context than on their individual differences, such as in the case of loss or threat of job loss, which is an important resource that ensures economic security and skills development (Hobfoll et al., 2018).

Our conclusions can be applied at the level of human resources management, which must implement strategies to reduce job insecurity, in order to contribute to a better organizational performance. They can also be applied in terms of policies for the labor market in Portugal and similar studies should be carried out for other countries, in order to verify whether the conclusions we present about the negative impact of job insecurity are or not transversal to other cultures and legal frameworks, as COR theory suggests (Hobfoll et al., 2018). In Portugal, our results suggest that policies that promote greater job security will be beneficial to firm performance.

Limitations of this Work and Research Suggestions

The data included in this study refer partly to a period of severe economic crisis in the country (2011-2015), so the conclusions may be less significant than in other periods.

In fact, data corresponds to the period in which the country was under external financial intervention, and in which the state cut wages and pensions, in what was followed by private companies on the amounts that companies could legally act.

For this reason, it is essential, in order to strengthen the conclusions, that the same work be repeated for previous years and for subsequent years as soon as more information becomes available.

This work refers only to the companies that operated in Portugal during the considered period of time and which fulfilled the legal obligation to report to the portuguese state. As is well known, the portuguese business fabric is mostly made up of small and medium-sized companies, a reality that is not present in our sample, as we have analysed firms with more than 100 employees; we do not know whether the relation we have described can be replicated to small firms, or to other countries with more fertile economies.

A more relevant limitation of this study resides in the variable QTJI (Quantitative Job Insecurity), obtained by proxy, given the lack of a field not included in the database (motive of dismissal). The fact that the relationship between QTJI and OP (Organizational Performance) is not verified may be due to its status of mediation variable or to the measure chosen to overcome the lack of information; that is why the study should be repeated if and when access to the database field is authorized.

Although we have obtained significant results only with GVA (Gross Value Added) and NS (Net Sales), we think it would be worth studying portuguese data for the next few years and data from other countries and cultures to understand whether QLJI (Qualitative Job Insecurity) and even QTJI (for which we did not

obtain results), measured by official report data, could serve as an effective reference in human resource management for employers and company appraisers.

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Contributions for an Integrative Theoretical Framework

Abstract

Based on published literature between 2000 and 2020 and applying a systematic review, we reflect on the theoretical bases that describe the effects of the psychological moderating and mediating variables in the relationship between Job Insecurity and Performance.

We propose an aggregating theoretical model, anchored on the Conservation of Resources Theory, Social Exchange Theory and Trust.

Keywords *Job Insecurity, Performance, Trust, COR theory, Social Exchange Theory*

Introduction

It is true that psychological variables influence performance in the organizational context, for which there is an extensive volume of literature discussing the subject, impossible to describe exhaustively (Colquitt, Scott, & LePine, 2007; Elst, De Cuyper, & De Witte, 2011; Huselid, 1995; Richter, Vander Elst, & De Witte, 2020; Van de Voorde & Boxall, 2014; Veloso, 2007). These psychological variables that literature claims to have an impact on performance are also diverse. For example, *organizational commitment* (Colquitt, LePine, Piccolo, Zapata, & Rich, 2012; Riketta, 2002), *trust* (Colquitt et al., 2007; Davis, Schoorman, Mayer, & Tan, 2000; Richter & Näswall, 2019; Vanhala & Dietz, 2019), *psychological capital* (Gao, Wu, Wang, & Zhao, 2020; Probst, Gailey, Jiang, & Bohle, 2017) and *uncertainty* (Colquitt et al., 2012).

Although there are several theories that describe the effects of psychological variables on performance, the need for an integration of these theories remains unattended, in order to allow a more complete understanding of the phenomenon.

The scientific literature has produced studies that describe mediating and moderating variables, using several theoretical models for their understanding. For example, the relationship between *job insecurity (JI)* and *performance*, whose effect is consensual (Cheng & Chan, 2008; Jiang & Lavaysse, 2018; Sverke, Hellgren, & Näswall, 2002) (LigiaAnaMiguel2), is explained by the authors using different theories, according to the mediating or moderating variables that they test: Niesen reads the mediation of the variable *psychological contract breach* through the Social Exchange Theory (SET) (Niesen, Van Hootegem, Handaja, Battistelli, & De Witte, 2018), Probst uses Conservation of Resources (COR) Theory and SET to understand the moderation of *psychological capital* (Probst et al., 2017) and Wang uses Uncertainty Management Theory (UMT) to frame the results of the *work engagement* mediation (H. J. Wang, Lu, & Siu, 2015). As all of these works test different intermediate variables for the same relationship between *JI* and *performance*, can there be a theoretical framework that integrates the different explanations of the phenomenon?

It is our purpose to identify empirical literature on the topic and revisiting theoretical frameworks used to understand the results. We will limit the scope to literature that explains how the effect of *JI* on *performance* occurs, developing a reflection on the possibility that the theoretical body of trust allows us to integrate the joint understanding of results.

How is the Effect of Job Insecurity Processed on Performance and How Theory Explains It?

Job Insecurity is “the perceived powerlessness to maintain desired continuity in a threatened job situation” (Rosenblatt & Greenhalgh, 1984, p. 438) or the concern about the continued existence of the job in the future (Cheng & Chan, 2008; Sverke et al., 2002).

From studies that explain the process according to which *Jl* causes effects on *performance*, using psychological variables with moderation or mediation effects, we have carried out a synthesis of these variables and also of the theoretical frameworks used for its framing.

We have chosen Google Scholar platform to do this research because recent systematic comparison of the performance of 3 academic search engines, Google Scholar (GS), Web of Science (WoS) and Scopus (Martín-Martín et al., 2018), analysing 2.5 million documents, in 252 research areas, concluded that GS is a kind of superset of WoS and Scopus.

Nearly all citations found by WoS (95%) and Scopus (92%) were also found by GS, and in Social Sciences, Business, Economics & Management, unique GS citations surpass 50% of all citations in the area (Martín-Martín et al., 2018), which makes GS the adequate academic search engine to use in this work.

Our search was executed in GS platform, with the following conditions:

- Expression: “Job Insecurity” AND Performance, in the title of the article;
- Empirical articles subject to peer-review, published between 2000 and 2020;
- Written in English, French, Spanish or Portuguese.

We obtained 95 results. We had eliminated duplicates and other works that did not meet our predefined conditions mentioned above, which resulted in 31 articles presented in Table 20.

We read the articles in full and identified the variables that were studied, the type of relationship between the variables (mediation or moderation) and the theoretical frameworks used to understand the results.

We organized the variables found into 3 subgroups, with the intention of looking for patterns of investigation and use of explanatory theories. One of the defined subgroups is that of performance behaviors, a variable with which job insecurity is related, but which takes on various aspects of performance. The other 2 subgroups, which are the moderation or mediation variables, seek to illustrate antecedents more or less close to performance behaviors. In these two background subgroups, we added:

1. Personality Traits and Perceptions

- a. **Personality Traits**, that are “internal psychological structures or properties that relate to regularities in behaviour” (Nicholson, 1998, p. 420) and that can predict the development of attitudes (Nicholson, 1998);
- b. **Perceptions**, that are “the result” (VandenBos, 2007, p. 775) of “active cognitive process of selecting, organizing and interpreting the multitude of stimuli that are received” (Nicholson, 1998, p. 409) and that are influenced by internal factors, including personality (Nicholson, 1998), permitting the person “to act in a coordinated manner” (VandenBos, 2007, p. 775).

2. Attitudes and States

- a. **Attitudes**, that are “a relatively enduring and general evaluation of an object, person, group, issue, or concept” (VandenBos, 2007, p. 88), comprising a “behavioural tendency directed toward specific individuals, groups of individuals, ideas, philosophies, issues or objects” (Nicholson, 1998, p. 20);
- b. **States**, that are “the condition or status of an entity or system at a particular time that is characterized by relative stability of its basic components or elements” (VandenBos, 2007, p. 1026). Job satisfaction, a very present variable in our set of studies, is an attitude (Nicholson, 1998, p. 20; VandenBos, 2007, p. 572) or an affective state (Nicholson, 1998, p. 273), so we decided to add this category.

Table 20 - Articles, Variables and Theories

Article	Type of Relation between variables	Mediation or Moderation Variables			
		Personality Traits and Perceptions	Attitudes and States	Performance Behaviours	Theoretical Framework
(Chirumbolo & Areni, 2005)	Moderation		Job Satisfaction Organizational Commitment	Job Performance	Appraisal Theory
(Chirumbolo & Areni, 2010)	Moderation		Need for Closure	Job Performance	No Theory
(König, Debus, Häusler, Lendenmann, & Kleinmann, 2010)	Moderation		Job Satisfaction Organizational Commitment	Job Performance	COR Theory

(Elst et al., 2011)	Mediation	Perceived Control	Psychological Distress	Appraisal Theory
		Perceived Control	Organizational Commitment	
		Perceived Control	Job Satisfaction	
		Perceived Control	Turnover Intentions	
(Schreurs, Emmerik, Gunter, & Germeys, 2012)	Moderation	Supervisor and Coworker Support	Job Performance	Psychological Contract Theory, COR theory
(Piccoli, Setti, Filippi, Argentero, & Bellotto, 2013)	Mediation		Job Satisfaction	SET
			Organizational Commitment	
(Roll, Siu, & Y.W. Li, 2015)	Moderation	Uncertainty Avoidance	Job Performance	No Theory
(H. J. Wang et al., 2015)	Moderation	Organizational Justice	Job Performance	Uncertainty Management Theory
	Mediation			
(Callea, Urbini, & Chirumbolo, 2016)	Mediation		Organizational Identification	Social Identity Theory, SET
(Vander Elst, De Cuyper, Baillien, Niesen, & De Witte, 2016)	Mediation	Perceived Control	Job Performance	Appraisal Theory
		Psychological Contract Breach		
		Perceived Control		
			Innovative Work Behaviour	
		Psychological Contract Breach	Emotional Health Complaints	
		Psychological Contract Breach	Physical Health Complaints	
		Psychological Contract Breach	General Strain	
		Psychological Contract Breach	Job Satisfaction	
		Psychological Contract Breach	Organizational Commitment	
		Perceived Control	Job Satisfaction	

		Perceived Control	Organizational Commitment		
			Negative Affect		
(Mäder & Niessen, 2017)	Mediation		Negative Work Reflections	Job Performance	COR theory
		Psychological Contract Breach		Counterproductive Work Behaviour	
		Psychological Contract Breach		Organizational Citizenship Behaviour	Psychological
(Piccoli, De Witte, & Reisel, 2017)	Mediation	Organizational Justice		Counterproductive Work Behaviour	Contract Theory, SET
		Organizational Justice		Organizational Citizenship Behaviour	
(Probst et al., 2017)	Moderation	Psychological Capital		Job Performance	COR theory, SET
(Selenko, Mäkilängas, & Stride, 2017)	Mediation	Social Identity	Well-being		Social
		Social Identity		Job Performance	Identity Theory
(Bohle, Chambel, Medina, & Da Cunha, 2018)	Mediation		Organizational Commitment	Job Performance	SET
	Moderation		Organizational Support		
		Organizational Support		Job Performance	
(Khan & Ghufuran, 2018)	Mediation			Organizational Citizenship Behaviour	SET
(Niesen et al., 2018)	Mediation	Psychological Contract Breach		Innovative Work Behaviour	SET
(Tufail, Sultan, Khalil, & Sahibzada, 2018)	Mediation		Job Satisfaction	Job Performance	Psychological Contract Theory
(Asif, Fiaz, Khaliq, & Nisar, 2019)	Mediation		Organizational Identification	Job Performance	Social Identity Theory

(Guo, Liu, Chu, Ye, & Zhang, 2019)	Moderation	Supervisor and Coworker Support		Safety Performance	COR theory
(Piccoli, Reisel, & Witte, 2019)	Mediation		Job Satisfaction Organizational Commitment	Job Performance	Appraisal Theory
(Shaikh, Mangi, & Bukhari, 2019)	Mediation	Emotional Intelligence		Job Performance	No Theory
(Shin, Hur, Moon, & Lee, 2019)	Mediation		Intrinsic Motivation Intrinsic Motivation	Job Performance Organizational Citizenship Behaviour	Self-Determination Theory
(Adewale, Dahiru, MukhtarShehu, & Kofar-Mata, 2020)	Mediation Moderation	Self-Efficacy Emotional Intelligence		Job Performance	COR Theory
(Bibi, 2020)	Mediation Moderation		Work Engagement Organizational Justice	Job Performance	No Theory
(Darvishmotevali & Ali, 2020)	Moderation	Psychological Capital	Well-being	Job Performance	Appraisal Theory
(Kim & Kim, 2020)	Mediation Moderation		Job stress Organizational Commitment Ethical Leadership	Job Performance	SET
(Naru & Rehman, 2020)	Mediation		Stress	Job Performance	Person-Environment Fit theory
(Richter et al., 2020)	Mediation		Rumination	Turnover	COR Theory
(Schumacher, Schreurs, De Cuyper, & Grosemans, 2020)	Moderation	Informational Justice		Job Performance	COR Theory
(Shoss, Brummel, Probst, & Jiang, 2020)	Moderation		Job Satisfaction Job Satisfaction	Counterproductive Work Behaviour Turnover Intentions	COR Theory

We found that some of the variables included in the studies belong to one and the same concept. For example, *well-being* integrates *mental health*. Thus, we looked for the definitions of each of the variables to integrate convergent variables in a single concept.

The definitions of the variables were sought in the studies that refer to them, except for *organizational commitment* and *psychological distress*, which were not described and for which we looked for other sources, as mentioned in Table 20.

We present these definitions in Table 21 **Erro! A origem da referência não foi encontrada.:**

Table 21 - Variables Definitions

Variables	Definition
Counterproductive Work Behaviour	Behaviours that have the potential to be harmful to organizations. (Shoss et al., 2020, p. 304)
Emotional Intelligence	The competency of a person to understand, aware of, and control own emotions in order to understand and recognize the emotions of others. (Shaikh et al., 2019, p. 178)
Ethical Leadership	The demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making. (Kim & Kim, 2020, p. 3)
General Strain	Well-being - mental and physical health complaints. (Vander Elst et al., 2016, p. 107)
Informational Justice	Employees' perceptions of whether the organisation communicated in an adequate and timely fashion. (Schumacher et al., 2020, p. 2)
Innovative Work Behaviour	The intentional introduction and application within a role, group or organisation of ideas, processes or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organisation or wider society. (Niesen et al., 2018, p. 1)
Intrinsic Motivation	Encompasses cognitive (i.e., challenge seeking) and affective (i.e., task enjoyment) components. (Shin et al., 2019, p. 2)
Job Insecurity	Perceived threat of job loss. (Elst et al., 2011, p. 216)
Job Performance	Task performance, contextual performance, counterproductive work behaviour, creativity, and safety compliance. (Sverke, Låstad, Hellgren, Richter, & Näswall, 2019, p. 2)
Job Satisfaction	Internal evaluation of the favourability of one's job (Shoss, 2017, p. 300); work-related well-being (Richter & Näswall, 2019, p. 23).
Need for Closure	Motivated need for certainty, intolerance of ambiguity and preference for predictability. (Chirumbolo & Areni, 2010, p. 195)
Negative Affect	Feeling upset or unpleasantly aroused. (Mäder & Niessen, 2017, p. 234)
Negative Work Reflection	Negative thinking about job-related issues, failures, or negative events at work. (Mäder & Niessen, 2017, p. 235)

Organizational Citizenship Behaviour	The behaviour that helps the organization but not directly in the organization's formal reward system. (Khan & Ghufuran, 2018, p. 2)
Organizational Commitment	(a) a desire (affective commitment), (b) a need (continuance commitment), and (c) an obligation (normative commitment) to maintain employment in an organization. (Meyer & Allen, 1991, p. 61)
Organizational Identification	A strategy in which employees feel personal attachments and identity with their organizations. (Asif et al., 2019, p. 178)
Organizational Justice	Organizational justice is concerned with employees' perceptions of how fairly they are treated by the organization. (H. J. Wang et al., 2015, p. 2)
Organizational Support	The dimension in which people believe that their organization considers their contributions and is concerned about their well-being. (Bohle et al., 2018, p. 396)
Perceived Control	The employees' situational appraisal of his or her ability to control the job insecure situation. (Elst et al., 2011, p. 216)
Psychological Capital	A multifaceted construct that consists of four positive personality strengths: self-efficacy, hope, resilience, and optimism. (Probst et al., 2017, p. 2)
Psychological Contract Breach	Contributions of the employee in terms of time, effort, and work attitude, versus promised benefits on the part of the employer, such as salary, appreciation, challenging work, or prospects for promotion. Psychological contract breach occurs when one party perceives another to have broken their promise. (Niesen et al., 2018, p. 3)
Psychological Distress	Opposite to psychological well-being. (Witte, 1999, p. 165)
Rumination	The act of repetitively thinking about and dwelling on the insecure future of the job. By studying the relationship between job insecurity and rumination about job insecurity, we highlight the process of stress experiences. (Richter et al., 2020, p. 2)
Safety Performance	Work behaviours that are conducted in accordance with security and safety regulations within the organization. (Sverke et al., 2019, p. 5)
Self-Efficacy	The confidence that individual employee's exhibits in handling organisational related tasks and situations. (Adewale et al., 2020, p. 23)
Social Identity	Define the individual's place in society (...) and also guide their behaviour and evaluations. (Selenko et al., 2017, p. 858)
Social Protection	Social welfare regime and union density. (Sverke et al., 2019, p. 2)
Stress	The insight of an inconsistency between stressors and individual capabilities to fulfil these demands in the job environment. (Naru & Rehman, 2020, p. 310)
Supervisor and Coworker Support	Refer to all behaviours that superiors and colleagues perform to promote employee development. (Guo et al., 2019, p. 292)
Turnover	Changed to a job at another organization during the last year. (Richter et al., 2020, p. 4)
Turnover Intentions	Attitude, intention to quit. (Shoss et al., 2020, p. 298)

Uncertainty Avoidance	The level of stress and anxiety experienced by individuals in response to uncertain situation. (Roll et al., 2015, p. 167)
Well-being	Job satisfaction and mental health (Richter & Näswall, 2019, p. 25); a state of happiness and contentment, with low levels of distress, overall good physical and mental health and outlook, or good quality of life (VandenBos, 2007, p. 1155).
Work Engagement	Work engagement is defined as a persistent, positive, affective motivational state of fulfilment that is characterized by vigour, dedication, and absorption. Vigour refers to working highly energetically. Dedication refers to being strongly involved in work and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Absorption refers to being fully concentrated and happily engrossed in work. Highly engaged employees find their work interesting, meaningful, and energizing and experience positive affect, including happiness, joy, and enthusiasm. Hence, work engagement can be viewed as an active state where an employee experiences positive work-related affect and heightened motivation (H. J. Wang et al., 2015, p. 3).

According to the definition contents, it is possible to aggregate some variables into a single concept, as follows:

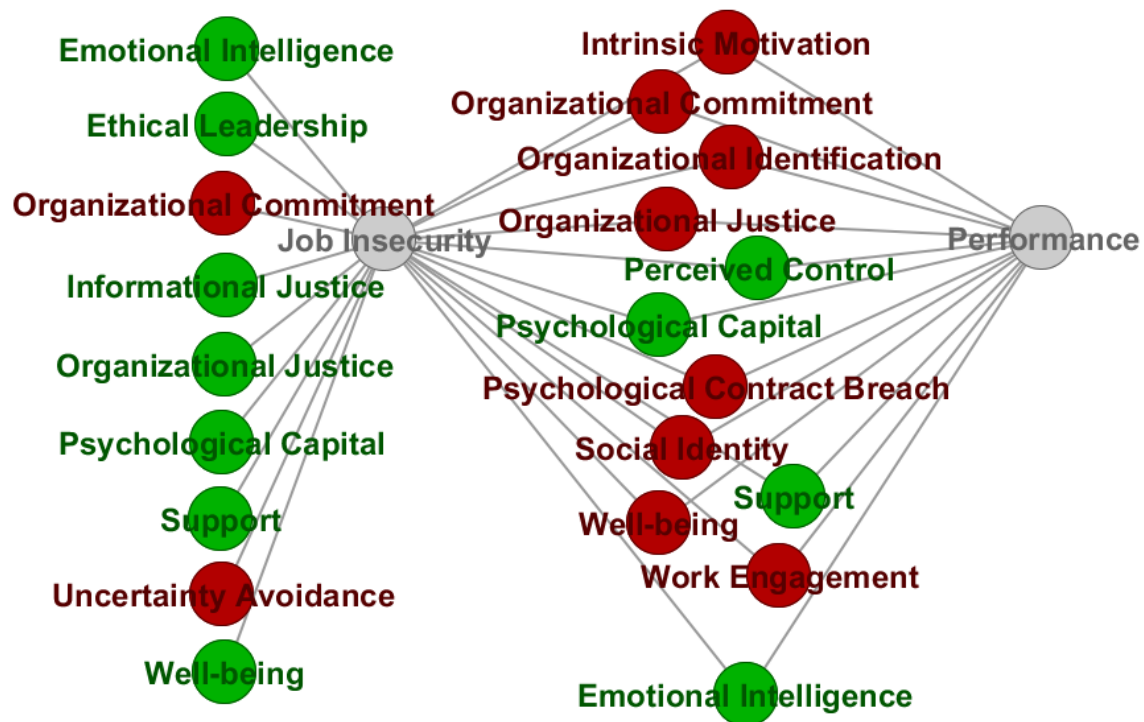
- Job satisfaction, general strain, psychological distress, negative affect, negative work relations, stress, job stress, emotional health complaints, physical health complaints and rumination, in the concept of *well-being*;
- Self-efficacy in the concept of *psychological capital*;
- Supervisor and coworker support and organizational support in the concept of *support*;
- Need for closure and uncertainty avoidance in the concept of *uncertainty avoidance*;
- Job performance, innovative work behaviour, counterproductive work behaviour, organizational citizenship behaviour and safety performance in the concept of *performance*; we opted to add the variables turnover and turnover intentions, since they mean the minimum level of performance.

Aggregating the concepts as described, we obtain the following final variables (Table 22), ordered by type of mediator / moderator relationship, which we will use from now on:

Table 22 - Type of Relation

Variables	Type of Relation
Intrinsic Motivation	Mediation
Organizational Commitment	Mediation
Organizational Identification	Mediation
Organizational Justice	Mediation
Perceived Control	Mediation
Psychological Capital	Mediation
Psychological Contract Breach	Mediation
Social Identity	Mediation
Support	Mediation
Well-being	Mediation
Work Engagement	Mediation
Organizational Commitment	Moderation
Emotional Intelligence	Moderation
Ethical Leadership	Moderation
Informational Justice	Moderation
Organizational Justice	Moderation
Psychological Capital	Moderation
Support	Moderation
Uncertainty Avoidance	Moderation
Well-being	Moderation

We can illustrate the type of relation within the theoretical body analyzed using Graph 1 representation. Our option for designing moderation variables in the left lies on recent literature pointing out temporal precedence for moderation (Karazsia & Berlin, 2018; Kraemer, Kiernan, Essex, & Kupfer, 2008). In fact, authors argue that when moderation variables moderate an event, they were present before the event occurs and that this time precedence is crucial to distinguish moderation from mediation variables.



Graph 1 - Variables Effect

In this Graph 1, variables having a negative effect on performance were represented in red. Those that have a positive effect were represented in green.

The variables are aggregated in two sets, representing the moderating variables, on the left, and the mediating variables, positioned between *Jl* and *performance*. This positioning intends to map the statistical foundation of the relationship of moderation and mediation. Moderation relationship describes the influence of a variable on the relationship between two others, but it is temporally antecedent to that relationship; in the case of mediation, the mediating variable has an effect temporally after the explanatory variable and it is through it that the effect on the variable of interest is produced (Karazsia & Berlin, 2018). According to Graph 1, in the last twenty years, literature has mainly described moderating variables with a positive effect on *performance* (such as *emotional intelligence* and *ethical leadership*) and mediating variables with a negative effect (for instance *intrinsic motivation* and *organizational commitment*).

To understand these relationships, we identified in the articles, as presented on Table 20, the use of eight theoretical models, for which we list the variables included in the respective studies

Table 23):

Table 23 - Theories

Appraisal Theory	COR Theory	Person-Environment Fit Theory	Psychological Contract Theory
Organizational Commitment	Emotional Intelligence	Well-being	Organizational Justice Psychological Contract
Perceived Control	Informational Justice		Breach
Psychological Capital	Psychological Capital		Support
Psychological Contract			
Breach	Support		Well-being
Well-being	Well-being		
Self-Determination Theory	Social Exchange Theory	Social Identity Theory	Uncertainty Management Theory
		Organizational	
Intrinsic Motivation	Ethical Leadership	Identification	Organizational Justice
	Organizational Commitment	Social Identity	Work Engagement
	Organizational Identification	Well-being	
	Psychological Capital		
	Psychological Contract		
	Breach		
	Support		
	Well-being		

Most of the moderating and mediating variables explored to explain the relationship between *J/* and *performance* are framed with the following theories: Appraisal Theory, Conservation of Resources (COR) Theory, Psychological Contract Theory and Social Exchange Theory (table 4). The conceptual scope and the consequent explanatory power of these four theories make them more suitable to explain the complex relationship between the two main variables (*job insecurity* and *performance*), which, as we will see below, is less feasible with the other four theories used, Person-Environment Fit Theory, Self-Determination Theory, Social Identity Theory and Uncertainty Management Theory.

Theoretical Frameworks

We now revisit theories that frame the interpretation that the authors of the aforementioned studies used in their conclusions. We add the theoretical body of Trust, which seems to us to have an integrating potential, since all theories resort, in some way, to this concept.

It is our goal to evidence how these different theories explain the effects on job performance of employees behaviours and attitudes. All of them use at least a concept that is common to Trust, as we will further argue.

Conservation of Resources Theory (COR), Appraisal Theory (AT) and Person-Environment Fit Theory (P-E Fit)

Conservation of Resources Theory (Hobfoll, 2002) it is a theory that argues that individuals are motivated by the acquisition of new resources and the protection and retention of resources they already have. Resources are defined as “anything perceived by the individual to help attain his or her goals” (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014, p. 5) and can be *objects* (physical resources with utilitarian or status function), *conditions* (like marriage, tenure, seniority), *personal characteristics* (orientation towards the world that increases stress resistance) and *energies* (like money, time and knowledge, that help getting other resources) (Hobfoll, 1989).

The loss or threat of loss of resources induces stress that is more salient than the gain of resources, producing a much greater negative emotional impact than the acquisition of resources produces a positive impact.

To acquire resources or to prevent the loss of resources the individual needs to invest resources, hence it is more likely to gain resources for those who already have more resources, and the investment can lead to resource depletion, causing strain and stress, for those who have less resources. For this reason, and also because the resources are organized in groups (caravans), the loss of resources generates a spiral of loss, just as the gain of resources generates a spiral of gains. In fact, if the individual loses his job, he will lose part of the interpersonal relationships that are related to his job, as well as his salary and other benefits. In the same way, getting a job after being unemployed will also bring in several resources at the same time.

An extension of COR Theory states that trust is not a resource, because it is also under the control of another person, but it is used as a sign that the investment of resources will succeed in meeting the goal of obtaining more resources (Halbesleben & Wheeler, 2015).

A competing theory to explain both stress and motivation is Appraisal Theory (Lazarus & Folkman, 1984) which essentially differs from COR theory in that it first understands stress as a result of individual perception and, only secondly, as a result of the requirement of the situation. In fact, Hobfoll points out the importance of the individual's interpretation of the amount of resources he has to face resources gain and retain efforts, but argues that the requirement of the situation, by itself, is directly responsible for the stress response that presents little individual variability and even between cultures (Hobfoll, Halbesleben, Neveu, & Westman, 2018). These arguments make COR theory more suited to the organizational context, than Appraisal Theory (Taris, Schreurs, & Van Iersel-Van Silfhout, 2001), so we follow it in this work.

Person-Environment Fit theory explains stress as a lack of correspondence between the person's characteristics and the demands of the context. More specifically, the theory is divided into two parts: one that focuses on the correspondence between the resources of the context and the motivations, objectives and personal values; another that concerns the correspondence between the requirements of the context and the personal skills and abilities. The subjective evaluation of misfit produces tension and stress (Edwards, Caplan, & Harrison, 1998). The concept of P-E fit was, however, positioned as a resource, with integration in COR theory (Wheeler & Halbesleben, 2009), so we follow COR theory in this theoretical spectrum.

Psychological Contract Theory (PCT)

Psychological Contracts are individual beliefs in a reciprocal obligation between the individual and the organization (Rousseau, 1989, p. 121). It is not about expectations on one's job beyond what is perceived as agreed on topics as work environment or decoration of physical workplace, but specifically about what you will receive in return for complying with obligations (Robinson, 1996). It is the individual's belief that there is an obligation of reciprocity that guides their behavior, but this belief does not affect the behavior of the other party, because it is an individual belief. However, the more explicit and public the contract and the longer the individual's contribution and the organization's reciprocity lasts, the stronger the individual's belief that there is a psychological contract that requires reciprocity (Rousseau, 1989).

Literature distinguishes between transactional and relational psychological contract: the first refers to responsibilities and roles at work and focuses on economic and performance factors; the second refers

to long-term relationship and achieves non-economic exchanges. One of the expectations included in the relational contract is job security, in exchange for employee loyalty (Niesen et al., 2018; Richter & Näswall, 2019).

Psychological contract breach is the perception that the other party has failed to fulfill the obligations of the psychological contract (Rousseau, 1989). It is a subjective experience that has negative effects on job satisfaction, organizational commitment and job performance (De Cuyper & De Witte, 2007; Vander Elst et al., 2016).

Trust in the organisation is understood as a prerequisite for a stable psychological contract (Richter & Näswall, 2019).

Social Exchange Theory (SET)

According to Social Exchange Theory (SET) (Blau, 1964), people build relationships at work that are based on material or emotional exchanges and it is these exchanges that are the basis of attitudes such as commitment (Cropanzano & Mitchell, 2005; Cropanzano, Rupp, & Byrne, 2003). These exchange relationships are framed by rules established between those involved, or to which those involved adhere, and with time and repeated favorable exchanges, these relationships evolve towards trust (Cropanzano & Mitchell, 2005; Dirks & Ferrin, 2002).

Social exchanges involve favors that create obligations of reciprocity, which must be fulfilled, although it is not clearly established what obligation is to be fulfilled. The success of several reciprocal exchanges, develops trust. This consequence is faster in reciprocal exchange relations, in which no obligation is defined, than in negotiated exchange relations, typical of contracts or businesses, in which is defined what is to be received. The risk and uncertainty are lower in negotiated exchange ratios, but the development of trust is slower, or may never happen, depending on the reliability of the social actors involved (Molm, Takahashi, & Peterson, 2000).

It should be noted that the greater the inequality of exchanges (the more power of one of the players over the other) or the lower the risk of the relationship (more details of the relationship negotiated and defined), the lower the trust generated (Molm et al., 2000). Trust needs a risk factor, in which taking the first step with no guarantee of reciprocity is assessed as proof of good intentions. The negotiated exchange does not create an obligation to reciprocate, and closes the relationship in the deal.

An employment contract is a case of a negotiated exchange relationship, in which to time and execution of tasks corresponds a remuneration, among other possible counterparts. However, this relationship

corresponds frequently to unequal exchanges, derived from the power that employer has over the employee, and the fact that the employer is less dependent on the employee (he has other employees as an alternative) than the employee is on the employer. Thus, an employment relationship is a situation in which there is a high probability of generating low trust, but this can be increased with a reciprocal exchange relationship, not defined in the employment contract, but performed spontaneously (Molm, 2010).

If predictability of obtaining a reciprocal response is high, that is, if behavior is consistent and allows us to successfully anticipate that a reciprocal response will occur, the greater the trust created (Molm, Schaefer, Collett, Mouvt, & Schfl, 2007).

Normative commitment, induced by social exchange, and uncertainty reduction explains the increased performance that the organizational trust produces (Colquitt et al., 2012).

Trust is, therefore, closely related to social exchanges and consistent and predictable reciprocity.

Social Identity Theory (SIT)

Based on social categorization, Social Identity Theory (SIT) argues that social groups we belong to form a significant part of our self-concept (Van Dick, Ullrich, & Tissington, 2006) and that people strive to maintain or enhance their self-esteem and a positive social identity, which makes them join groups that have positive value connotation; if social identity turns out to be unsatisfactory by individuals' evaluation, they leave the group to a more positive one, or try to change their group, acting inside to turn it into a more positively distinct one (Tajfel & Turner, 1986).

Job insecurity also threatens social identity because the group of employees is more socially valued than the unemployed group. This threat has effects on well-being, due to the marginalization the individual anticipates, and on performance, due to the reduction of efforts that exceed the expected (Selenko et al., 2017). In addition to the need of identification with the group of employees, the need for affiliation that organization satisfies also has an impact on well-being, which is deeper the greater the identification with the organization (Van Dick et al., 2006).

The identification of the employee with the work team, with the department, with the job he performs or only with a leader, tends to be generalized to other levels, being able to encompass the entire organization (Ashforth & Johnson, 2001). Identification with the organization is one of the components of the *benevolence* dimension of Trust, as we will see below and was defined in isolation in two multidimensional models (Lewicki & Bunker, 1995; Shapiro, Sheppard, & Cheraskin, 1992).

Uncertainty Management Theory (UMT)

Uncertainty Management Theory (UMT) (Lind & van den Bos, 2002) argues that fairness judgments become more salient in an uncertainty context, with fairness decreasing negative affect or increasing positive affect (van den Bos, 2001) and that in situations of job insecurity when information about the organization's trustworthiness is missing, people use data on fairness treatment to form impressions about the organization (Lind & van den Bos, 2002). This means that in an uncertainty environment people are more focused on fairness information and use it to rule emotions, attitudes and behaviors, reacting particularly well to fair treatment and particularly badly to unfair treatment under uncertainty conditions. Uncertainty is present in the perception of job insecurity, with effects on well-being (Witte, 1999), in attitudes and performance (Piccoli et al., 2017).

Fairness is one of the components of the *integrity* dimension of trustworthiness (Mayer, Davis, & Schoorman, 1995), which reinforces the suggestion that trust may be the aggregating concept of the interpretation of the effects of job insecurity on attitudes and behaviors, namely job performance.

Self-determination Theory (SDT)

SDT is a theory of motivation, personality development and well-being, centered on three types of psychological needs: autonomy, competence and relatedness (Deci & Ryan, 2008).

Autonomy refers to the need to control one's own choices and to have psychological freedom over how to carry out his activities; Competence indicates the need to experience efficiency and expertise in knowledge; Relatedness refers to connecting with significant people and being accepted as a member of a group.

The theory distinguishes two types of motivation:

- *autonomous motivation*, which includes the intrinsic motivation and the motivation associated with the value of the function, being mainly generated internally;
- *controlled motivation* is regulated externally by incentives and punishments, although part of this regulation of action has been internalized.

The two types of motivation lead to action, but to different experiences: autonomous motivation leads to *volition* and transferring responsibility to oneself; controlled motivation leads to pressure to think and act in a particular way, which is induced by feelings of shame, avoidance and contingent self-esteem.

Literature shows that autonomous motivation is linked to organizational trust (Deci, Olafsen, & Ryan, 2017; Gagné & Deci, 2005; W. T. Wang, 2016) and behavioral trust interacts with basic motivational needs (autonomy, competence and relatedness) to impact work engagement (Heyns & Rothmann, 2018).

Untill now, we have highlihted commom aspects/concepts of these different theories with Trust theory. Summarizing:

- Conservation of Resources Theory states that trust is used as a sign that the investment of resources will succeed in meeting the goal of obtaining more resources;
- Psychological Contract Theory establishes that trust in the organization is understood as a prerequisite for a stable psychological contract;
- Social Exchange Theory is based on predictability of reciprocal exchange, being predictibility a core trust concept;
- Social Identity Theory states that our self-concept includes social groups we belong to and trust encompasses the identification concept;
- Uncertainty Management Theory highlights fairness as a salient feature to deal with uncertainty environments, concept that also included in trust;
- Self-determination Theory links basic psychological needs to trust.

Trust – The Integrating Concept?

As we have seen so far, there are several theories presented by the authors to understand the results of empirical studies that relate *job insecurity* with *performance*, through mediating variables, or in the presence of moderating variables. All these theories are related to trust, which is why we decided to study the topic, with a view to testing it as an integrative concept.

Trust being a concept that:

- emerges from adaptive behaviors and skills in the course of evolution, common to several species of animals (referred to as cooperation) and developed for the survival of individuals (Bateson, 1988);
- that human being is able to decide facial trustworthiness, competence and aggressiveness in 100 milliseconds (Willis & Todorov, 2006) and that decisions of trustworthiness are unconsciously and automatically made in the amygdala brain region (Engell, Haxby, & Todorov, 2007), a part of the brain older than the cortex;

- that research shows the Organizational Trust's connection to various behaviours and attitudes, such as Affective Commitment (Hopkins & Weathington, 2006), Normative Commitment (Colquitt et al., 2012), job satisfaction (Hopkins & Weathington, 2006), Risk Taking (Colquitt et al., 2007), organizational citizenship behaviour (Colquitt et al., 2007), Turnover Intentions (Hopkins & Weathington, 2006), Uncertainty (Colquitt et al., 2012);
- that, in addition to explaining variations in the teams' performance (DeJong, 2016) and organizations (Davis et al., 2000), it explains variations in the Gross Domestic Product (GDP) of countries (Zak & Knack, 2001),

it has the potential to constitute the integrating element of the effect of psychological factors on performance, in an organizational context. As we can see, trust is an ancient phenomenon in the development of the human species and the concept is used in sciences for different purposes.

Human behavior presents details that contributed to individual survival and the evolution of the species. One is the ability to predict the behavior of other individuals, allowing a quicker and more effective reaction to a threat.

Organizational psychology has developed several concepts that are based on this ability to predict the behaviour of others and adapt the response: trust, psychological security, involvement, psychological contract, empowerment. A recent meta-analysis (Frazier, Fainshmidt, Klinger, Pezeshkan, & Vracheva, 2017) on psychological security explains the difference between trust and other of these concepts (psychological security, empowerment and involvement) as the desire to be vulnerable to the behavior of others, in the case of trust, and to give the benefit of the doubt, in the case of the other concepts. The dichotomous organization of the concepts leads us to the possibility of a gradation between them, where trust would be the next level to the confirmation of characteristics to which, first, we give the benefit of the doubt. In the same sense, literature has pointed out that trust is not a resource but a signal that investment of resources will have success in achieving the individual goals (Halbesleben & Wheeler, 2015) and that perceptions of justice (one of the dimensions of trustworthiness, as we will see further) serve as signal that resource investment is worthy. Justice, determined by attribution processes, influences the level of perceived support from the organization and reduces psychological withdrawal and job burnout (Campbell, Perry, Maertz, Allen, & Griffeth, 2013).

Trust has been defined as willingness to be vulnerable to another person based on the expectation that the other person will act positively (Mayer et al., 1995; Rousseau, Sitkin, Burt, & Camerer, 1998), the expectation that costs and benefits, knowledge of the other, degree of shared values and identity have positive reciprocation (Lewicki, Tomlinson, & Gillespie, 2006) or one's expectations, assumptions, or

beliefs about the likelihood that another's future actions will be beneficial, favorable, or at least not detrimental to one's interests (Robinson, 1996, p. 576). Trust needs a history of reciprocity in the social exchange so employees feel the obligation to exchange resources (Kramer, 1999) and evolves in time positively or negatively with upcoming exchanges (Lewicki et al., 2006). Trust evolves also in organization level: the leader's trustful behavior creates trust in the leader, and that trust in the leader predicts trust in the organization (Legood, Thomas, & Sacramento, 2016).

In a trust relation three parts intervene: the characteristics of a truster, the properties of a trustee and a context in which the relation develops (Hardin, 1996). The characteristics of the truster gave rise to several works and generically analyze the individual propensity to trust. The properties of the trustee, trustworthiness, are the qualities of those who deserve trust (Mayer et al., 1995). Both are necessary to create trust (Mayer et al., 1995), but literature clear support that the best device for creating trust is to establish and support trustworthiness (Hardin, 1996).

In this work, we will only address the qualities of the trustee, which the literature calls trustworthiness.

Trust Theory

Trust is described in literature as a multidimensional concept, which includes cognitive, affective and intentional elements (Lewicki et al., 2006), although several authors point out different dimensions to it. We identified models that point dimensions for the trustworthiness of a trustee, and it was possible to find ten different models. Models do not have the same number of dimensions and the designations assigned to each dimension are also different.

In the table below, we present the models with each of the dimensions identified by the authors and the description given them respectively. In each of the lines can be found the complete model, and the arrangement in columns that we think best illustrate the coincidence of the contents, supported in the designation attributed by the author and/or in the description that the author gave to it.

Although the model of Clark and Payne is the same as that used by Butler and Cantrell, we decided to consider it in this work, since they tested the possibility of including a new dimension, Respect Shown, that came to verify to be included in the dimensions Consistency, Loyalty and Opensess (Clark, Payne, Journal, & May, 1997). Thus, although the resulting model is the same model of departure, the work of Clark and Payne contributed to confirm the previous model (Butler & Cantrell, 1984), as it had been presented.

It has been consensual for authors that the construction of a trust relationship evolves from a more cognitive stage to a more affective one (Costa, Fulmer, & Anderson, 2017). Shapiro proposes an evolution of deterrence-based trust, knowledge-based trust and identification-based trust (Shapiro et al., 1992); Lewicki and Bunker suggest the same types of trust as Shapiro, but substitute deterrence-based trust for calculus-based trust, following Deutsch (1973) and his argument for calculating the likelihood of consequences that will arise from trust breach or benefits for maintaining expected behaviour (Lewicki & Bunker, 1995); McAllister restricts evolution to cognitive-based trust and affective-based trust (McAllister, 1995).

A less consensual aspect is the distinction between the concepts of trust and distrust (Costa et al., 2017): there are authors who understand that distrust is not only the absence of trust, but the probability of an unpleasant situation occur, predisposing the individual to adopt defensive behaviours (Lewicki, McAllister, & Bies, 1998); others, more recently, understand trust and distrust as the opposite poles of a single scale, with mistrust corresponding to low trust (Pugh, Skarlicki, & Passell, 2003; Schoorman, Mayer, & Davis, 2007).

Some authors point to several dimensions for trustworthiness of a trustee, resulting in several types of trust, capable of existing separately (Clark et al., 1997; Kasperson, Golding, & Tuler, 1992; Mayer et al., 1995; McAllister, 1995; Shapiro et al., 1992; Whitener & Werner, 1998). Relying on someone's competence to perform a task does not mean trusting that the same person will not take advantage of our frailty when it is possible or will always seek to benefit us.

In the following

Table 24, we summarize the dimensions found:

Table 24 - Trustworthiness Dimensions

Trustworthiness					
Models			<i>Trustworthiness Dimensions</i>		
(Butler & Cantrell, 1984, p. 19)	Consistency	Integrity	Openness	Loyalty	Competence

	Reliability, predictability and good judgement in handling situations.	Honesty and Truthfulness	Mental accessibility, a willingness to share ideas and information freely.	Benevolent motives, willingness to protect and save face for a person.	Technical and interpersonal knowledge and skills required to do one's job.
(Kasperson et al., 1992, p. 170)	Commitment	Predictability		Caring	Competence
	Uncompromised commitment to a mission or goal; Objectivity and fairness in decision processes and the provision of accurate information.	Expectations fulfillment.		Act in a way that shows concern for and beneficence to trusting individuals.	Technical competency in their mandated area of responsibility.
(Shapiro et al., 1992, pp. 366, 369, 371)	Knowledge-Based Trust	Deterrance-Based Trust		Identification-Based Trust	
	Behaviour predictability based on knowledge and understanding.	Consistency of behaviour; Reliability.		Full internalization of the other's preferences.	
(Lewicki & Bunker, 1995, p. 149,151,153)	Knowledge-Based Trust	Calculus-Based Trust		Identification-Based Trust	
	Grounded on predictability of behaviour	Founded on consistency and on deterrence		Full internalization of the other's desires and intentions	
(McAllister, 1995, pp. 25–26)				Cognitive Trust	Affective Trust

				Reliability, Dependability and Emotional Security	Competence and Responsibility
(Mayer et al., 1995, pp. 717– 719)		Integrity		Benevolence	Ability
		Fairness, Justice, Consistency, and Promise fulfilment		Loyalty, Openness, Caring or Supportiveness	Knowledge and Skills
(Mishra, 1996, pp. 6–9)	Reliability		Openness	Concern	Competence
	Expectations about consistent or reliable behaviour		Honesty	One party believes that it will not be taken unfair advantage of by another	Technical expertise
(Clark et al., 1997, p. 208)	Consistent Behavior	Integrity	Openness	Loyalty	Competence
	Consistency, Fairness, Predictability, Discretion and Good Judgement	Sincerity, Honesty, Truthfulness and Promises' fulfilment	Mental accessibility and availability; A willingness to share ideas and information freely and accurately	Benevolent motives associated with intentions, motives, shared values and goals; Commitment to and willingness to protect and save face for a person	The technical, interpersonal knowledge and skills required to do one's job, decision making and role performance.
(Whitener & Werner, 1998, pp. 516–517)	Behavioural Consistency	Behavioural Integrity	Sharing and Delegation of Control	Communication	Demonstration of Concern for Employees Needs

(Dietz & Den Hartog, 2006, p. 560)	Reliability and Predictability	Telling the truth; Keeping promises	Employees participate in decision; Managers share control	Accurate information; Explanations for decisions; Openness	Consideration and sensitivity for employees needs and interests; Acting in a way that protects employees' interests; Refraining from exploiting others for the benefit of one 's own interests
	Predictability	Integrity		Benevolence	Competence
	Relates specifically to consistency and regularity of behaviour	Involves adherence to a set of principles acceptable to the other party, encompassing honesty and fair treatment, and the avoidance of hypocrisy		Reflects benign motives and a personal degree of kindness toward the other party, and a genuine concern for their welfare	Refers to the other party's capabilities to carry out her/his obligations (in terms of skills and knowledge)

We wanted to summarize all the different dimensions identified by the authors, so we decided to compare the descriptions looking for common elements that allowed us to isolate unique concepts.

From the authors' proposals (titles and description), we were able to report on six different dimensions, although none of the authors used more than five dimensions to describe trust. We attribute the identification and description that seemed to best illustrate the content of each dimension.

In the following Table 25, we summarize the model that results from this work:

Table 25 - Trustworthiness Dimensions Resume

Trustworthiness Dimensions					
Predictability	Integrity	Delegation	Openness	Benevolence	Competence
Relates specifically to consistency and regularity of behaviour	Involves adherence to a set of principles acceptable to the other party, encompassing honesty and fair treatment, and the avoidance of hypocrisy	Employees participate in decision; Managers share control	Accurate information; Explanations for decisions; Mental accessibility and availability	Reflects benign motives and a personal degree of kindness toward the other party, and a genuine concern for their welfare	Refers to the other party's capabilities to carry out her/his obligations (in terms of skills and knowledge)

One of the dimensions, *competence*, refers only to the prediction of skills and knowledge to perform a task or fulfill a responsibility successfully. All other dimensions refer to the character of the trustee, which allows to predict its general behavior (Colquitt et al., 2007).

The Relation Between Job Insecurity, Performance and Trust

Job Insecurity undermines employer trust building (Pfeffer, 2007) because *J* is perceived to be included in the traditional psychological contract, in exchange for employee loyalty (Niesen et al., 2018; Richter & Näswall, 2019). In *J*, as we saw earlier, the employee's perceptions about downsizing contexts are included, but also about the loss of job quality and the failure to keep promises. Psychological contract breach also appears in the literature as a mediator between trust and performance (Robinson, 1996) and the employer's own behaviour, when it reveals distrust in its employees, generates distrust in them, through reciprocity.

J has a negative association with trust (Ashford, Lee, & Bobko, 1989; Cheng & Chan, 2008; Richter & Näswall, 2019; Sverke et al., 2002) and trust relates positively to performance (Davis et al., 2000; Mayer & Gavin, 2005; Vanhala & Dietz, 2019; Verbarg et al., 2018). Job insecurity has a negative effect on performance via work engagement, but when organizational justice (one of the dimensions of trustworthiness) is low (H. J. Wang et al., 2015). The perception of justice is also generated by the

collective distribution of rewards (Pfeffer, 2007), which is higher in private companies than in public ones, and that the authors suggest derives from compensation for greater job insecurity (Monteiro, Portela, & Straume, 2011).

To our knowledge, only a meta-analysis on job insecurity found no significant relationship between trust and performance (Sverke et al., 2002), but this fact was interpreted by the authors as being due to the difficulty in evaluating performance and the consequent use of self-report measures, where respondents tend to overestimate their own performance.

Discussion

Resuming the analysis of the variables that we presented at the beginning of this work (Graph 1) we propose in this section to discuss all the relations found simultaneously between variables (intrinsic motivation; psychological contract breach; organizational commitment; organizational justice, etc) both with a mediation and/or moderation effect in performance, using/in the light of the theories that we referred to previously (COR, PCT, SET, SIT, UMT and SDT theories). We will point out as we intent to analyse JI-Performance relation, the minor coverage or some lack of scope of these theories when we look for a more comprehensive theoretical frame on this particular subject.

Finally, we will use *Trust Theory* for this interpretation, as we propose the recognition of Trust as an integrative and useful concept to understand the influence of employees in performance, in particular JI-Performance relation.

Using Conservation of Resources Theory (COR Theory)

In a *JI* context, there is a need to invest resources to prevent job loss. Those who have more resources, such as *emotional intelligence*, *psychological capital*, *well-being*, *organizational justice*, *support* and *ethical leadership*, are better positioned to gain or retain resources. This is the case with these variables as moderators, which reduce the impact of *JI* on *performance*.

Organizational commitment is not a resource, so it cannot be understood as a moderating variable, in the light of this theory. As a mediating variable, it can be understood as a state that corresponds to a change in resources and that has an impact on performance. The same reasoning is valid for the variables *intrinsic motivation*, *organizational identification*, *work engagement* and even to *well-being*, that is simultaneously a state and a resource (Hobfoll et al., 2018).

Psychological capital, *social identity* and *emotional intelligence* are resources that, in the function of mediating variables are depleted, generating defensive withdrawal for resource conservation.

Organizational justice, *perceived control* and *support*, as part of trust dimensions, may serve as signals that resource loss will not be severe. On the other hand, *psychological contract breach* can be a sign that the loss of resources could be significant, inducing conservation of resources.

Using Psychological Contract Theory

The effect of *psychological contract breach* on *well-being* and performance is immediately understandable through the breach in the expectation of receiving security, in exchange for employee loyalty. The fact that the most serious effects of *J/* on *well-being* are felt by permanent employees can be explained by having more expectations than temporary employees (Cheng & Chan, 2008; De Cuyper & De Witte, 2007; Richter & Näswall, 2019).

The remaining variables do not fit this theory.

Using Social Exchange Theory (SET)

According to SET, the norm of reciprocity encourages a sense of obligation of reciprocity appropriate to the individual's perception of the other's behavior. In the context of *Job Insecurity*, it is expected that employees will lower their efforts and performance will be affected according to this perception of unfair exchange on the part of the organization.

SET was used to interpret variables that are based on perceptions about employer behaviour, such as ethical leadership and *support*, or attitudinal variables, such as *organizational commitment* or *organizational identification*. In the case of personality traits, they are already difficult to explain in light of this theory because they are variables that do not result from organization's behavior, so it is not expected that they will impact performance through the reciprocity mechanism.

However, some researchers reporting the moderation of *psychological capital* (Probst et al., 2017) uses SET to discuss the results, but only the impact of *Job Insecurity* on *Performance*. *Psychological capital* intervenes in the relationship between these two variables with a moderating role and this moderation is interpreted using COR Theory.

Using Social Identity Theory

Job Insecurity affects the *social identity* of the individual by the threat of marginalization in the group of employees, which has more social value than the group of unemployed. Feeling marginalized from a valuable group, the employee is likely to feel less identified with the group of employees and lessen their effort at work. This theory was used to describe the effect of variables such as *social identity* and

organizational identification (Asif et al., 2019; Selenko et al., 2017), but it doesn't suit personality traits variables like *psychological capital* or *emotional intelligence*.

Using Uncertainty Management Theory (UMT)

This theory allows us to understand the impact of *uncertainty avoidance* on *well-being* (van den Bos, 2001; Witte, 1999), through the moderation of *fairness*, which when present reduces affective expression (concerns about the possibility of job loss). Here, it was used to interpret the moderating effect of *organizational justice* on the relationship between JI and performance and also the mediating effect of *work engagement* (H. J. Wang et al., 2015). For the same variable, *organizational justice*, Piccoli (Piccoli et al., 2017) uses both SET and Psychological Contract Theory to explain mediation.

Being a theory that requires the presence of *fairness* to be applicable, it does not adapt to the remaining relationships of variables.

Using Self-determination Theory (SDT)

Being a theory of motivation, development and well-being, it is possible to understand the mediating and moderating effect of the variables *intrinsic motivation* and *work engagement* (need for autonomy) *psychological capital* and *emotional intelligence* (need for competence) in *well-being* and *performance*. Yet the variables, *organizational commitment*, *organizational identification* and *social identity*, can fit into the concept of *autonomous motivation*. However, the effects of *ethical leadership*, *informational justice*, *organizational justice*, *support*, *uncertainty avoidance*, *perceived control* and *psychological contract breach* are not explainable.

What if We Use Trust?

Resuming the analysis of the variables that moderate or mediate the relation between JI and performance, aggregated and represented in Graph 1, we found that some of them correspond to the description of trustworthiness dimensions that resulted from our work (Table 25). Specifically, we compared the variables found in the studies whose description corresponds to the description of the dimensions (see Table 20), concluding that they can be included in the concept of trustworthiness (Table 26).

All other variables remain classified in the types defined above (personality traits and perceptions; attitudes and states), following in our study.

Table 26 - Integrating Variables in Trustworthiness Dimensions

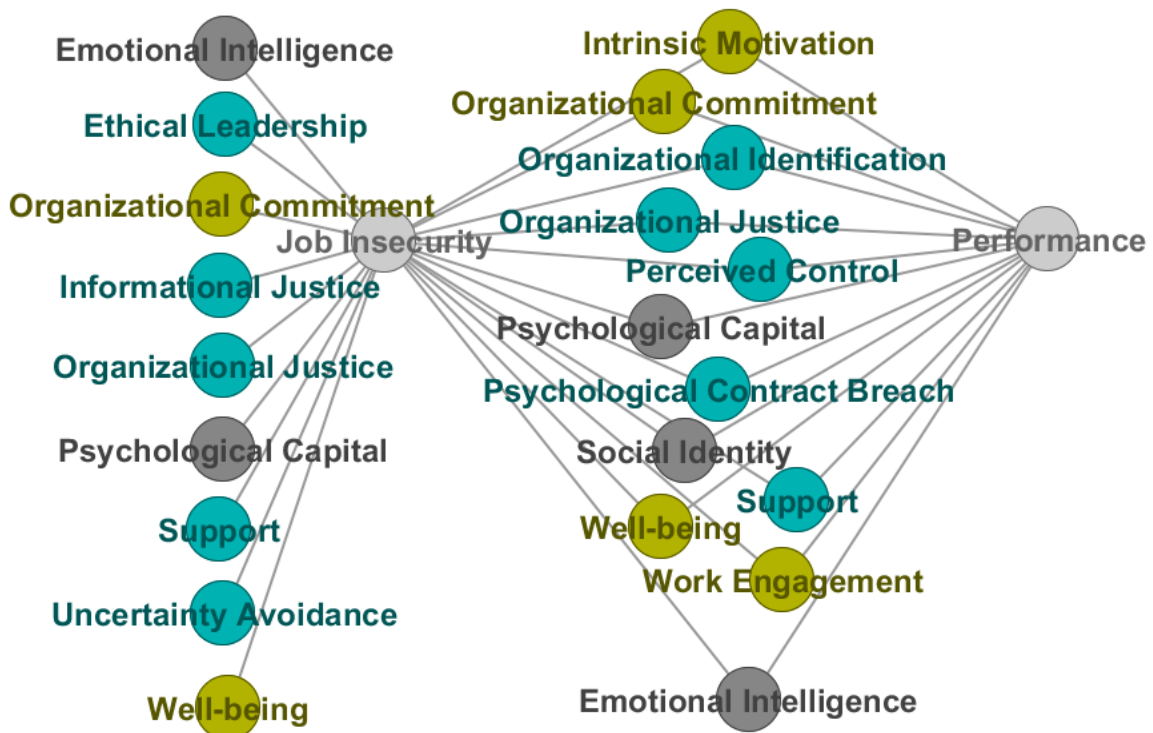
<i>Trustworthiness Dimensions</i>					
Predictability	Integrity	Delegation	Openness	Benevolence	Competence
Relates specifically to consistency and regularity of behaviour	Involves adherence to a set of principles acceptable to the other party, encompassing honesty and fair treatment, and the avoidance of hypocrisy	Employees participate in decision; Managers share control	Accurate information; Explanations for decisions; Mental accessibility and availability	Reflects benign motives and a personal degree of kindness toward the other party, and a genuine concern for their welfare	Refers to the other party's capabilities to carry out her/his obligations (in terms of skills and knowledge)
Uncertainty	Organizational		Informational		
Avoidance	Justice		Justice	Support	
	Ethical Leadership			Psychological Contract	
				Breach	
				Organizational Identification	
				Perceived Control	

It should be noted that the dimensions of trust that represent the largest number of the above variables

Table 26) are *integrity* and *benevolence*, precisely those that are considered to be the most relevant for employees to develop trust in leaders and in the organization (Krot & Lewicka, 2012; Pirson & Malhotra, 2011).

The remaining variables that didn't fit *Trustworthiness Dimensions* are: *emotional intelligence*, *organizational commitment*, *psychological capital*, *well being*, *social identity* and *work engagement*, i.e., Personality Traits type and States type (see Table 20).

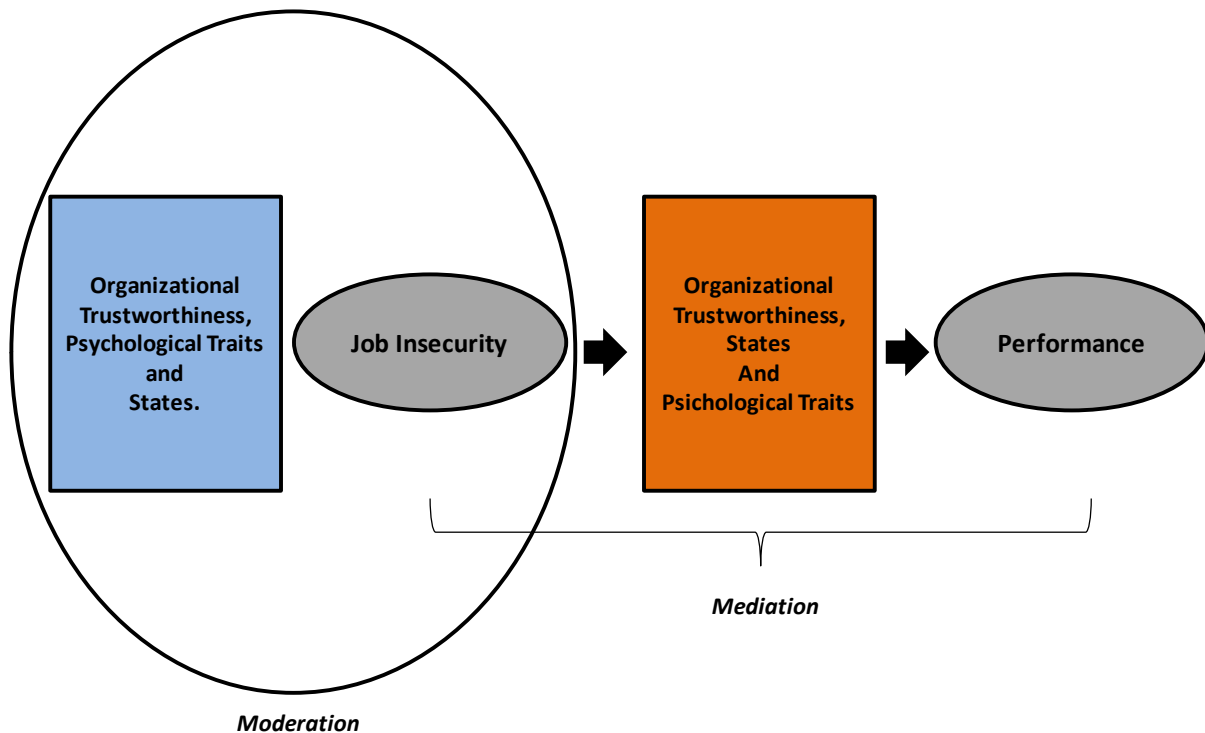
Now, representing the variables by type, we reach the following summary (Graph 2):



Graph 2- Type of Variables

Keeping the mediating and moderating variables in the position we explained above, we can see that the moderators are mainly of Trustworthiness-type (marked in blue) and Personality Traits-type (in gray); most of the mediating variables are again of Trustworthiness type (in blue) and now also of State-type (in yellow). When we try to interpret the entire set of variables with the theoretical body of trust, we are immediately faced with moderation variables of personality traits type (such as *emotional intelligence*, *psychological capital*, etc.), which refer to the employee, and its effect cannot be understood through trust that, to a large extent, is under the control of the trustee. State-type variables (such as *work engagement*, *organizational commitment*, etc.) as moderators, are also not interpretable, although we can understand them as mediators and as variables of interest, some of them described in literature, like *well-being*, for example (Campbell et al., 2013; Hopkins & Weathington, 2006).

Summarizing the main types of variables, we will have:



Graph 3 - Relations between Main Types of Variables

Our option for designing moderation variables in the left lies on recent literature pointing out temporal precedence for moderation (Karazsia & Berlin, 2018; Kraemer, Kiernan, Essex, & Kupfer, 2008), as explained above.

In Graph 3 we find the main types of variables used throughout the analyzed empirical set. We found that the variables that belong to the dimensions of trustworthiness appear as moderators and mediators, which is congruent with the complexity of the concept:

- As a moderator, it works as a signal that allows us to foresee the possibility of success in investing resources to achieve goals (Halbesleben & Wheeler, 2015), a guideline that influences the interpretations of social behaviors (Robinson, 1996) and the expectation of positive reciprocal exchanges (Lewicki et al., 2006) or at least not unfavorable (Robinson, 1996);
- As a mediator, it adapts to reciprocity of social exchanges (Kramer, 1999) and evolves positively or negatively with them (Lewicki et al., 2006), spreading through the various organizational levels (Legood et al., 2016).

This set (Graph 3) can be interpreted as follows:

- Moderation - In the presence of trust (deduced from the trustworthiness dimensions that create trust) and in the presence of personality traits and states, the negative impact of JI on performance will be smaller;

- JI reduces employee trust and employee States and these reduce or worsen performance.

In Graph 2 still appear variables included in personality traits and states among moderating variables included in states, also as mediators. If we retrieve the information from

Table 23, we find that the most used theory to explain the effects of personality traits is COR Theory and for States is SET.

Now analysing the interpretation of all moderating variables in Graph 2 with these two theories, together with the theoretical body of Trust, we will have:

- *Emotional intelligence, psychological capital and well-being* resources (personal resources type) function as moderators of the relationship between JI and performance, according to COR theory, reducing the impact on stress due to the abundance of resources to invest in process of avoiding job loss or gaining an alternative resource.

- *Ethical leadership, organizational justice, informational justice and support* (Trust theory), as moderators, can serve as signals that the investment of resources (COR theory) and the expected exchanges will benefit the employee, or at least, will not harm him (SET);

- *Uncertainty Avoidance*, as a moderator, may mean a sign of imminent trust breach in the employer's predictability of benefiting the employee, or not harming him (SET); it can also be understood as a negative passageway, predictor of a negative spiral, with consequences of work exhaustion (COR theory) (Hobfoll et al., 2018);

- *Organizational commitment*, as a moderator, can be understood as a previous disinvestment of resources in the continuation of employment, making the impact of JI on performance weaker, due to less recruitment of resources to counteract it (COR theory); the only study that works this variable as a moderator (Chirumbolo & Areni, 2005) confirms that the moderating effect only occurs when organizational commitment is low, an effect that disappears when organizational commitment is high.

Such exercise with the mediating variables, results in:

- *Intrinsic motivation, organizational commitment, and work engagement* can be understood as the negative effect on States, which results from the perception of JI as unfair in exchange for employee loyalty (SET); simultaneously, they will correspond to the effect of conservation of resources and prevention of loss spirals, divesting in the work relationship/employment (COR theory);

- *Psychological capital, social identity, emotional intelligence* and *well-being* (personal resources type), correspond to the depletion of resources that occurs in an attempt to preserve employment and seek alternatives for earning resources corresponding to the employee's objectives (COR theory);
- *Organizational justice, organizational identification, perceived control, psychological contract breach* and *support* result from the adaptation of these perceptions to the reciprocity of social exchanges (Trust theory, SET), evolving positively or negatively, according to these exchanges (Trust theory, SET).

Conclusion

The relationship between *Jl* and *performance* has received the attention of researchers and the phenomenon can be considered well documented (Cheng & Chan, 2008; Jiang & Lavaysse, 2018; Sverke et al., 2002, 2019). In recent years, efforts to clarify the process by which *Jl* has an effect on *employee performance* have produced interesting analyses of the effect of mediating and moderating variables, but its full understanding remains to be determined. Concretely, the way in which *Jl* influences *performance* has found partial explanations in several studies, through mediating and moderating variables.

The objective of this work was to revisit theories that frame the evidence found in literature on *Jl* and *performance*, comprising literature that tests moderating and mediating variables to explain how the effect is produced. Using a systematic review of published literature between 2000 and 2020, we have identified 31 studies that meet our research criteria and summarized the studied variables, explained by the eight theories chosen by the authors of the researches to explain the effect.

The second objective was to reflect on the theoretical framework of Trust as a possibility to aggregate the interpretations that have been based on different theories, to understand the results obtained in each work.

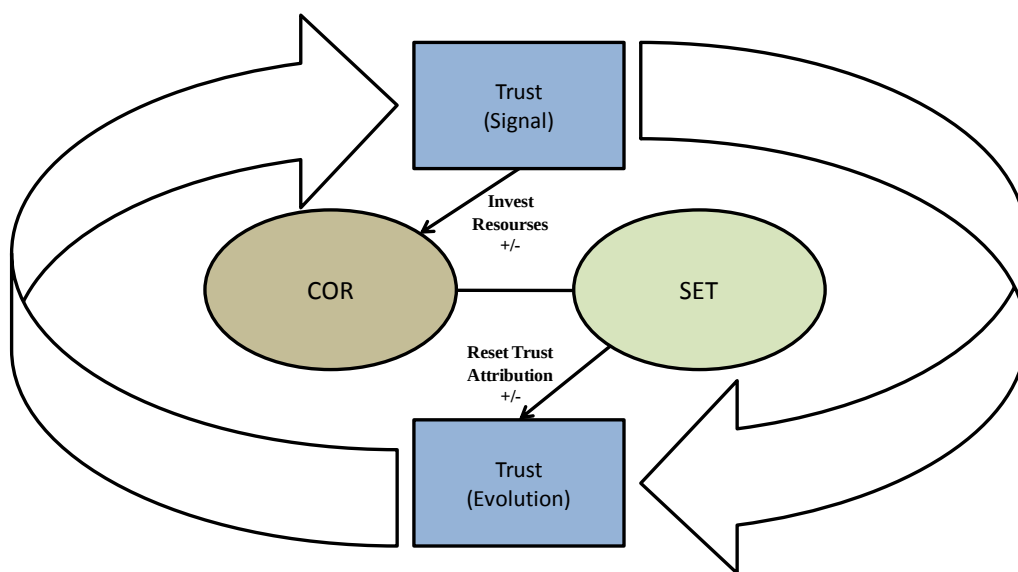
We conclude that the interpretation of all the works cited, including all the variables used, is not feasible with any of the theories in isolation, nor with the theoretical body of Trust. However, by adding COR and SET theories to Trust, we were able to analyze the results of all variables simultaneously.

The explanatory capacity of these theories together (COR theory and SET) extends to the entire empirical set, allowing the elimination of other theoretical frameworks, as long as the theoretical body of trust is also added to explain the relationship between *Jl* and *performance*. This COR-SET alliance, where resources and social exchanges have well-established explanatory rules, seems to occur under the Trust framework, which serves as a signal (Halbesleben & Wheeler, 2015) that allows to foresee the possibility

of success in investing resources to achieve goals, inhibiting or disinhibiting resource exchanges, and adapts itself as a signal, after integrate information on social exchanges.

The need to repeat the interaction or observe the behavior of the trustee to create and consolidate trust (Molm, Takahashi, & Peterson, 2003), its role as a marker of expectations (Halbesleben & Wheeler, 2015) and its evolution with experience (Lewicki et al., 2006), suggest the existence of a circuit, which is built and rebuilt.

In schematic representation, the framework for explaining how *J* impacts *performance* through mediating variables and in the presence of moderating variables, could be described as follows (Graph 4):



Graph 4 - Integrative Theoretical Framework

According to the literature, trust that can be originated in an exchange relationship stems from the attribution of causality by the truster to the behavior of the trustee and the evaluation that truster makes of trustee's dispositional characteristics, that is, on its trustworthiness (Molm et al., 2003).

Trust attribution seems to work in this relationship between *J* and Performance, as has been described in other relationships (Halbesleben & Wheeler, 2015), as a signal to invest or not to invest resources in order to acquire or protect resources, a signal that is confirmed or adapted (in an attribution reset) after verifying exchange fairness. The link between COR and SET has been used in literature, either directly (Probst et al., 2017), either through Psychological Contract Theory, derived from SET (Taris et al., 2001), which may suggest the concentration of future research on the theoretical bases identified in the Integrative Theoretical Framework presented in Graph 4, as we present and argue in this text.

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Conclusion

This work intended to contribute to a better understanding of the impact of psychological variables on organizational performance and to point out new sources of information that can contribute to deepening HR Analytics in companies. In fact, there is a different approach to the HR function that is deemed necessary to make it a true value creation engine and that will need to generate strategic information on how to contribute to business success – Big Data and HR Analytics provide a good opportunity for this change (Angrave, Charlwood, Kirkpatrick, Lawrence, & Stuart, 2016).

This work also constitutes one more contribution to the response to the criticisms put forward by some authors of Human Resources Management about the individual approach, centered on the manager's and anti-union interests of research in Organizational Psychology (Troth & Guest, 2020): we explored context variables, from an analysis at the organizational level, framed in Social Exchange Theory (SET) (Blau, 1964) and in Conservation of Resources Theory (COR) (Hobfoll, 2001). COR theory relativizes individual differences in the explanation of behaviors, based on the perspective that the event has a cognitive reading and a very close emotional reaction, within the same culture (Hobfoll, Halbesleben, Neveu, & Westman, 2018).

The method used in this research in Organizational Psychology, also criticized as excessively quantitative and based on unit analysis (Troth & Guest, 2020), added another contribution to the study of behavioral variables from data aggregated by organization, available but not yet used for research in Organizational Psychology in Portugal, which reinforces Troth & Gest's argument about the wide variety of methods that can be used in this discipline.

Finally, our work also fulfills the objective of showing the usefulness of framing research in Organizational Psychology in the broader domain of Economic Psychology (Van Raaij, W. F., Van Veldhoven, & Wärneryd, 1988), where the perception and behavior of people are key variables for creating wealth.

1. Contributions to Literature

Organizational performance derives from employees' perceptions that lead to employees' reactions (Van de Voorde & Boxall, 2014), triggering reciprocity and modeling employee behaviour, according to the Social Exchange Theory (SET) (Van De Voorde & Beijer, 2015).

In line with these assumptions, we conclude that:

3. 1% increase in Investement in Human Capital (IHC)produces an increase of 0,63% in Gross Value Added (GVA) in the same year, and 0,65%, if the increase is consistent for 2 years. We also conclude that the organizational context, in which behaviours occur, represented by the variable Life Cycle Stage (STAGE), has a positive impact on performance, especially when the investment in Human Capital is made in STAGE 4- Decline.
4. for every 1% of Qualitative Job Insecurity (QLJI), Gross Value Added (GVA) decreases 5,4% and Net Sales (NS) decreases 5,3% in small firms. In large firms, QLJI has no related effect. We also conclude that in Life-Cycle Stage 5 (the organizational context of shake-out), for every 1% of cases of QLJI, GVA decreases by 8.5% and NS 4.8%. No related effect for QTJI was found.

These two studies concluded that investing in people has a positive effect on organizational performance. This effect is verified when companies invest directly in their employees (as in the first study), but also when companies avoid divestment in a stable employment relationship (the case of the second study).

5. We propose an aggregating theoretical model, anchored on the *Conservation of Resources Theory*, *Social Exchange Theory* and *Trust* to understand the results of empirical studies on mediation and moderation between Job Insecurity (JI)and Organizational Performance (OP), published between 2000 and 2020.

Our empirical works contribute to the literature in two main aspects:

1. Reinforcing the importance of context in behavior modeling, as proposed by COR theory (Hobfoll, 2001), perspective that has been less worked in HRM literature (Kaufman, 2014), but which is considered more relevant than individual variables to explain behavior (Hobfoll et al., 2018);
2. Identifying identical effects of psychological variables, through the study of secondary sources, to those found in studies that directly observe the behavior of subjects (Bontis & Fitz-enz, 2002; Cheng & Chan, 2008; Shaw, Park, & Kim, 2013; Sverke, Låstad, Hellgren,

Richter, & Näswall, 2019); this contribution is part of the suggestion to explore new sources of information for the study of HRM (Wright & Ulrich, 2017), namely big data (Angrave et al., 2016).

A final contribution of this work is the proposal of an integrative theoretical model for understanding the impact of JI on OP. We revisited 31 articles that explain the relationship between the two variables, through mediation or moderation, and identified the theories used to understand the results obtained. We propose the integration of 3 theories, which alone allow us to explain the results of all analyzed articles.

2. Contributions to Organizational Psychologists and Human Resources Managers

Our studies lead to conclusions applicable to the activity of professionals in organizational psychology and human resources management:

1. Spending money on employees should be seen as an investment with an impact on wealth creation and not as a cost. The consistency of company's behavior for at least two years, allows for even more improved results;
2. Job security, at least as regards a consistent evolution of remuneration with that verified in the labor market of the employee's profession, as well as the maintenance of the hours contracted with the employee, must be followed.

According to our results, organizational psychologists and the human resources managers that observe these practices will be contributing to improve companies' economic results.

3. Suggestions for Research

Suggestions for scientific deepening stem from the limitations that we assume exist in the works presented. As explained earlier:

1. these studies included only firms with more than 100 employees operating in Portugal, so their conclusions cannot directly apply to smaller companies or other countries where culture, labor

or tax legislation, among other constraints, determine different employer or employee behaviour;

2. part of the period considered takes place in the post-crisis period of 2008, so it cannot be generalized directly to other moments, without studying the behaviors revealed by the data.

In order to strengthen conclusions, the same work should be repeated for previous years and for subsequent years as soon as more information becomes available. Furthermore, analyzing data from other countries would allow us to understand whether the effects we identified are only restricted to Portugal, or if they can be observed in other cultures and legal contexts.

The empirical results suggest the potential for developing performance markers that allow the identification of risks of diminishing economic results, based on HRM indicators, and act on their prevention.

Similar to health markers, whose literature consistently links two or more variables, and which serve as a warning sign for possible problems to analyze in depth, HRM would benefit from being able to count on indicators that serve as a guide to the adequacy of intervention models that can have an impact on organizational performance and are based on the disciplinary domain of organizational psychology.

However, it seems to us that more studies that relate investment in human capital and organizational performance, as well as job insecurity and organizational performance, especially those whose object is a single company, may consolidate these conclusions or point out new paths for interpretation. It would also be useful to develop work with longitudinal design, using measures before and after the implementation of changes, relating perception of investment or disinvestment in human capital, in order to extract unequivocal causal relationships.

With regard to theoretical integration model we are proposing, the suggestion for deepening would involve exploring the centrality of the theoretical body of trust in the relationship between COR (Hobfoll, 2001) and SET (Blau, 1964) models, in situations where trust is or is not present. It would also be useful to explore the role of trust attribution as a trigger of COR-SET system, as already suggested by linking COR to Trust (Halbesleben & Wheeler, 2015) and Trust to SET (Molm, Takahashi, & Peterson, 2003).

4. A Personal Note

Personally, this work corresponded to a development process whose scope I could not immediately anticipate.

After more than twenty years of working in human resources management, the conviction that I knew some things that could not be doubted was quickly called into question. I resisted as long as I could to make the change.

The question of investigation was, throughout this process, the first and most permanent problem I faced. Learning to ask questions requires a detachment that can only be achieved with training and with an attitude of permanent doubt about the certainties acquired in the past. Because of this difficulty in thinking scientifically, I worked hard in the wrong directions, skipping unconstructed steps and wanting to dive into impossible immediate conclusions. I went back many times, deleted long texts, gave up on ideas, statistical essays without theoretical support, and literature reviews, after they were almost finished. None of this was, although it may seem, work in vain – it allowed me to follow what now seems to be the fundamental path of doctoral program: learning to think.

This adventure in science resulted in an intense experience of humility. Nothing we take for granted is certain before evidences pile up in the same direction, bringing solidity and confidence to knowledge. Life lesson that this doctoral program provided me, and of which I am most proud, is that science, being a demanding, laborious and time-consuming activity, is absolutely enthralling and from which I will no more want to be apart.

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