HRM 4 INNOVATION: FROM DETERMINANTS TO PERFORMANCE. ESSAYS FROM THE SPANISH CONTEXT

Alba Manresa Matas

DOCTORAL THESIS

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2018

DOCTORAL PROGRAMME IN LAW, ECONOMICS AND BUSINESS

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A thesis submitted on fulfilment of the requirements for the degree of Doctor by the University of Girona with International Doctor Mention

Girona, 2018

Universitat de Girona

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CERTIFY

that Alba Manresa Matas carried out the dissertation entitled "HRM4innovation: from determinants to performance. Essays from the Spanish context" under our supervision and that it fulfils the requirements for the degree of Doctor by the University of Girona with International Doctor Mention.

Therefore, we sign the present certificate.

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Girona, 2018

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Andrea Bikfalvi (PhD), **Alexandra Simon Villar** (PhD) i **Pilar Marquès Gou** (PhD) com a directores i co-directores de la present tesi doctoral

DECLAREM:

Que el treball titulat "HRM4innovation: from determinants to performance. Essays from the Spanish context", que presenta la senyora **Alba Manresa i Matas** per a l'obtenció del títol de doctora, ha estat realitzat sota la nostra direcció i que compleix els requisits per poder ser presentat amb el format de tesi com a **compendi de publicacions.**

La senyora Alba Manresa i Matas ha contribuït de forma rellevant i específica en l'elaboració d'aquesta tesis i de les publicacions que se'n deriven en diferents aspectes:

- Recopilació i tractament de dades noves.
- Enviament dels articles a diverses revistes
- Elaboració de resultats i estadístics
- Presentació dels resultats a diversos congressos i seminaris.
- Elaboració dels diversos capítols

I, perquè així consti i tingui els efectes oportuns, signo aquest document.

Dra. Andrea Bikfalvi	Dra. Alexandra Simon Villar	Dra. Pilar Marquès Gou
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Girona, 2018

Universitat de Girona

Andrea Bikfalvi (PhD), **Alexandra Simon Villar** (PhD) i **Pilar Marquès Gou** (PhD) com a directores i co-directores de la present tesi doctoral

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I, perquè així consti i tingui els efectes oportuns, signo aquest document.

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Andrea Bikfalvi (PhD) i **Alexandra Simon Villar** (PhD) com a co-autores dels articles següents:

- Manresa, A., Bikfalvi, A., Simon, A. (2018). The use and determinants of Training and Development for Creativity and Innovation practices, presented at the 3rd International Conference on Innovation in Economics and Business in Florence and published *to International Journal of Innovaion Management* (Q2 Scopus).

- Manresa, A., Bikfalvi, A., Simon, A. (2018). The impact of training and development practices on innovation and financial performance, presented at the 31ST Workshop on Strategic Human Resource Management and submitted to *International Journal of Human Resource Management.*

- Manresa, A., Bikfalvi, A., Simon, A. (2018). "Individual or bundle" Human Resource Practices leading to higher firm performance, presented at EDEN Doctoral seminar on theories and research in Human Resource Management and submitted to *Human Resource Management Journal.*

Acceptem que la Sra. **Alba Manresa i Matas** presenti els articles esmentats com a autora principal i com a part de la seva tesi doctoral, i que aquests articles no puguin, per tant, formar part de cap altra tesi doctoral.

I perquè així consti i tingui els efectes oportuns, signem aquest document.

Dr. Andrea Bikfalvi

Supervisor

Alexandra Simon Villar

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Girona, 2018

Doctoral Thesis by compendium of publications

List of publications derived from this thesis

- Manresa, A., Bikfalvi, A., Simon, A. (2018). The use and determinants of Training and Development for Creativity and Innovation practices, **published** to *International Journal of Innovation Management.* **Q2, Scopus**
  DOI: 10.1142/S1363919618500627

- Manresa, A., Bikfalvi, A., Simon, A. (2018). The impact of training and development practices on innovation and financial performance, submitted to *International Journal of Human Resource Management.*

- Manresa, A., Bikfalvi, A., Simon, A. (2018). “Individual or bundle" Human Resource Practices leading to higher firm performance, submitted to *Human Resource Management Journal.*

Intermediate contributions

I would like to highlight that all the work included in the present dissertation contains results that have been presented at international conferences and submitted to indexed international journals included in the Journal Citation Report and/or Scopus, some of which have been published.

- Manresa, A., Bikfalvi, A., Simon, A. (2018). The use and determinants of Training and Development for Creativity and Innovation practices, published to *International Journal of Innovation Management.* **Q2, Scopus**
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- Manresa, A., Bikfalvi, A., Simon, A. (2018). The impact of training and development practices on innovation and financial performance, submitted to *International Journal of Human Resource Management.*

- Manresa, A., Bikfalvi, A., Simon, A. (2018). "Individual or bundle" Human Resource Practices leading to higher firm performance, submitted to *Human Resource Management Journal.*

This dissertation is a part of the project GRHCS068: 'Grup de Recerca Avançada sobre Dinàmica empresarial i Impacte de les Noves Tecnologies a les Organizacions (GRADIENT)', in which the candidate is a researcher.

The realization of this dissertation also allowed for a three-month research visit to Radboud Unviversity in Nijmegen (The Netherlands) with Dr. Paul Ligthart. It has also led to participating in some international conferences and publishing the following diffusion articles:

- 12th International Conference on Industrial Engineering and Industrial Management (ICIEIM) (ES) 2018.
  Presentation: Manresa, A., Bikfalvi, A., Simon, A. Digitalization of manufacturing in the Spanish context: the path and effect.

- European Academy of Management (EURAM) (ICE) 2018.
  Presentation: Manresa, A., Bikfalvi, A., Ligthart, P. Making smart industry smarter, aligning high quality and flexibility organizational process to digitalization in manufacturing firms.

- Spring Servitization Conference 2018: Driving competitiveness through Servitization (DEN) 2018.
  Presentation: Manresa, A., Bikfalvi, A., Ligthart, P. Servitization's effect on innovation and financial performance, p.109 (ISBN: 978-4-85449-448-1).

- I Conference of Pre-doctoral Researchers. Girona (ESP) 2017.
  Presentation: Manresa, A., Bikfalvi, A., Simon, A. Configuration of a High Performance Work System focusing on training practices and their impact on organizational performance in the Spanish, p. 49 (ISBN: 978-84-8458-502-2).

- 10th Biennial International Conference of the Dutch HRM Network. Nijmegen (NLD) 2017.
  Presentation: Manresa, A., Bikfalvi, A., Ligthart, P. Insights on the digitalisation-performance chain: the role of flexibility and quality enhancing organisational concepts.

- 3rd International Conference on Innovation in Economics and Business - ICIEB 2016. Florencia (ITA) 2016.
  Presentation: Manresa, A., Bikfalvi, A., Simon, A. Training and Development for Creativity and Innovation Practices Use and Impact

- 31ST Workshop on Strategic Human Resource Management. Segovia (ESP) 2016.
  Presentation: Manresa, A., Bikfalvi, A., Simon, A. An analysis of training and development for creativity and innovation practices and their impact on firm performance

- EDEN Doctoral seminar on theories and research in Human Resource Management. Vaasa (FIN) 2016.
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I de sobte,

tot comença a encaixar,

tot allò que semblava impossible,

va cobrant sentit i ja tenim a tocar

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realitat aquest somni en especial a la meva família i a ti, cariño.

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Mai hauria pensat en escriure una tesi doctoral, ni tan sols en dedicar-me al món acadèmic. Però, un dia qualsevol, en una de les universitats que més m'ha regalat, el destí em va portar a fer una substitució i trobar el gust a tenir a davant a un grup d'estudiants, entusiasmats per aprendre i divertir-se amb mi. L'últim dia d'aquesta substitució, una de les meves "jefas" em va dir… he vist com gaudies durant aquests mesos, si realment t'agrada aquest món, si vols seguir creant petits grans genis, t'has de plantejar fer un Doctorat... i aquest va ser el primer dia que vaig goglejar "que vol dir fer un doctorat? En què consisteix? Per què serveix?". Era un 21 de Desembre, últims tres dies per poder fer la sol·licitud, i jo com sempre, fent les coses a últim moment. Però aquí no s'acabava tot, necessitava un director o directora per poder matricular-me; i, tot i la llarga llista de professionals que podia escollir vaig apostar totes les cartes a una mateixa persona, sense saber el què em diria, si voldria ser la directora de la meva tesi o si tindria temps i paciència per explicar-me com funcionava aquest món; ni tan sols sabia si em contestaria a temps per poder fer la matricula.

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Abbreviations

B2B	Business to Business
B2C	Business to Costumers
CEO	Chief Executive Officer
CEDEFOP	European Centre for the Development of Vocational Training
CIS	Community Innovation Survey
CNAE	Clasificación Nacional de Actividades Económicas
C&I	Creativity and Innovation
ECS	European Company Survey
EMS	European Manufacturing Survey
EI	Employee Involvement
EU	European Union
EUROSTAT	Statistical office of the Eurpean Union
F&D	Formación y Desarrollo
GRH	Gestión de Recursos Humanos
H	Hypothesis
HPWS	High Performance Work Systems
HR	Human Resources
HRM	Human Resource Management
IMMS	International Manufacturing Strategy Survey
INE	Spanish Statistics Office
ISI	Fraunhofer Institute for Systems and Innovation Research
IT	Information Technology
M€	Millions of Euros
NACE	European Classification of Economic Activities
OECD	Organisation for Economic Cooperation and Development
RRHH	Recursos Humanos

ROS	Return on Sales
SME	Small and Medium Size companies
TQM	Total Quality Management
T&D	Training and Development
TD4CI	Training and Development practices for Creativity and Innovation
US	United States
WT	Working Time

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Abstract

Human resource (HR) practices are possible contributors to a firm's success. There is a pressing need for empirical research that addresses how HR practices contribute to a company's ability to be creative and innovative. In recent years, firms have been implementing different HR practices to maintain their competitive advantage in the market and ensure long-term sustainability. This doctoral thesis focuses on mapping the adoption of training and development practices for creativity and innovation (TD4CI) in Spanish manufacturing firms. It also analyses the most influential determinants of implementing these HR practices. The third objective is then to analyse the impact that training and development (T&D) practices have on a company's innovative and financial performance. Last, the elements which make up high-performance work systems (HPWS) are studied, considering the best combinations for better firm performance.

The empirical evidence is based on the 2012 and 2015 rounds of the Spanish sub-sample of the European Manufacturing Survey.

The first results show that only a third of companies use the selected practices and that this level of implementation is increasing over time in these companies. Therefore, most of the manufacturers (two-thirds) have not implemented these practices and have no intention of doing so in the future. Focusing on the factors influencing the implementation of these training practices, the research shows that companies that have not innovated in the last three years and those that manufacture complex products and employ a value-added strategy are the ones most likely to do so. Furthermore, the results reveal a positive relationship between T&D practices and new-to-the-firm innovation through new products and services but fail to show any relation between T&D practices and new-to-the-market innovation. A positive relationship is found, however, with financial performance. Last, a specific combination of HPWS based on employee training is determined and better security and health conditions are shown to contribute to better firm performance. The value of this thesis lies in its offering recent and relevant figures and data regarding the implementation and diffusion of training and development practices, as well as their relation with firm performance.

Resum

Les pràctiques de recursos humans (RRHH) són possibles contribuïdors a l'èxit d'una empresa. En aquest sentit, hi ha una necessitat de seguir fent recerca empírica per tal de convertir les contribucions de les pràctiques de RRHH en una oportunitat per les empreses de ser més creatives i innovadores. En aquests darrers anys, les empreses han estat implementant diverses pràctiques per tal de mantenir el seu avantatge competitiu i així assegurar la seva sostenibilitat a llarg termini. Aquesta tesi doctoral proposa un estudi basat en la implementació de les pràctiques de RRHH de formació i desenvolupament d'habilitats per la creativitat i la innovació (TD4CI) en el context de les empreses manufactureres espanyoles. També s'han analitzat els factors que més influeixen a les empreses per decidir si implementen aquestes pràctiques o no. El tercer objectiu proposat per aquesta tesi és l'estudi de l'impacte que les pràctiques de TD4CI tenen sobre els rendiments de la innovació i finançament de l'empresa. Finalment, s'han estudiat els elements que formen els anomenats "sistemes de treball d'alt rendiment" (HPWS) i quina és la combinació que més beneficis aporta a l'empresa.

Aquesta tesi doctoral, utilitza una metodologia empírica basada en l'enquesta European Manufacturing Survey usant una sub-mostra enfocada a l'Estat espanyol amb dades recaptades els anys 2012 i 2015.

Els primers resultats mostren que només un terç de les empreses enquestades implementen aquestes pràctiques i tenen intenció d'implementar-ne més amb el pas del temps. Contràriament, dos terços de les empreses enquestades no les implementen ni tenen intenció d'implementar-les en un futur. Centrant-nos en els factors que influeixen la implementació de pràctiques de RRHH, els resultats mostren que les companyies que no han implementat nous productes en els últims tres anys, tenen productes complexes i una estratègia basada en la qualitat, són més propenses a introduir aquestes pràctiques. A més a més, els resultats evidencien una relació positiva entre TD4CI i la innovació de productes i serveis dins la companyia però no presenta cap relació quan la innovació és en el mercat. En la mateixa línia, els resultats proven una relació significant i positiva entre les pràctiques de TD4CI i el rendiment financer. Finalment, es pot concloure que la combinació de pràctiques per aconseguir un sistema de treball d'alt rendiment ha d'incloure entre d'altres pràctiques la formació pel treballador i millores en les condicions de salut i seguretat. El valor d'aquesta tesi doctoral es basa en oferir dades recents i rellevant per la implementació i difusió de pràctiques de recursos humans i la seva relació amb el rendiment de l'empresa.

Resumen

Las prácticas de Recursos humanos (RRHH) son posibles contribuidores al éxito de una empresa. En este sentido, hay una necesidad de seguir haciendo investigación empírica para convertir las contribuciones de las prácticas de RRH en una oportunidad para las empresas de ser más creativas e innovadoras. En estos últimos años, las empresas han ido implementando diferentes prácticas para mantener su ventaja competitiva y así asegurar su sostenibilidad a largo plazo. Esta tesis doctoral propone un estudio basado en la implementación de las prácticas de RRHH de formación y desarrollo de habilidades por la creatividad y la innovación (TD4CI) en el contexto de las empresas manufactureras españolas. También se han analizado los factores que más influyen a las empresas para decidir si implementan estas prácticas de recursos humanos o no. El tercer objetivo que esta tesis propone es el estudio del impacto que las prácticas de TD4CI tienen sobre los rendimientos de la innovación y financiación de la empresa. Finalmente, se ha estudiado los elementos que forman los llamados "sistemas de trabajo de alto rendimiento" (HPWS) y se ha analizado cuál es la combinación que más beneficios aporta a la empresa.

La presente tesis doctoral, utiliza una metodología empírica basada en la encuesta European Manufacturing Survey usando una sub-muestra enfocada en el Estado español con datos recaudados en 2012 y 2015.

Los primeros resultados muestran que sólo un tercio de las empresas encuestadas implementan estas prácticas y tienen intención de implementar más con el paso del tiempo. Contrariamente, dos terceras partes de las empresas encuestadas no las implementan ni tienen intención de implementarlas en un futuro. Centrándonos en los factores que influyen la implementación de prácticas de RRHH, los resultados muestran que las compañías que no han implementado nuevos productos en los últimos tres años, tienen productos complejos y una estrategia basada en la calidad, son más propensas a introducir estas prácticas. Además, los resultados evidencian una relación positiva entre TD4CI y la innovación de productos y servicios dentro de la compañía, pero no presenta ninguna relación cuando la innovación es en el mercado. En la misma línea, los resultados prueban una relación significante y positiva entre las prácticas de TD4CI y el rendimiento financiero. Finalmente, se concluye que la combinación de prácticas para conseguir un sistema de trabajo de alto rendimiento tiene que incluir entre sus prácticas la formación para el trabajador y mejoras en las condiciones de salud y seguridad. El valor de esta tesis doctoral se basa en ofrecer datos recientes y relevantes para la implementación y difusión de prácticas de recursos humanos y su relación con el rendimiento de la empresa.

Chapter 1. Introduction

In a dynamic environment with rapid globalization, there have been many advances in technology and innovation. Due to the demands of rapidly changing products, Human Resource Management (HRM) plays a vital role, providing the speed and flexibility required by new market imperatives at a time when traditional sources of competitive advantage (quality, technology, economies of scale, etc.) have become easier to imitate (Mahdi et al., 2015). In this context, the literature emphasizes that the implementation of HRM practices enhances positive behaviours among employees, increasing organizational performance (Crowley and Bourke, 2017; Weeks and Thomason, 2011). Although conceptually all HRM practices are intended to develop firm performance and competitive advantage, training and development (T&D) remains one of the most important. T&D provides new capacities and skills at work, offering the company new opportunities by creating a learning climate (Falola et al., 2014; Sung and Choi, 2014).

According to Kraiger et al. (2004), successful companies are thought to invest more in training and development than other organizations. Along this line, T&D plays a crucial role in stimulating innovation processes in companies (Li et al., 2006) by encouraging creativity (Jiang et al., 2012) and knowledge sharing (Jiménez-Jiménez and Sanz-Valle, 2011). By developing innovation and creativity in the workplace, employees contribute with new ideas and innovations. This process thus becomes a source of distinct competitive advantage and better firm performance (Boxall and Purcell, 2011; Jiang, et al., 2012 Anderson et al., 2014).

Although many studies have evidenced the importance of T&D as part of HRM practices to enhance innovation (Pratoom and Savatsomboon, 2012; Zhang and Begley, 2011), little is known about the link between T&D at the level of individual practices and their effects on enhancing innovation (Bos-Nehles et al., 2017; Tharenou et al., 2007). There is a simultaneous need for further research that analyses the most influential factors leading companies to implement those practices for eliciting innovation (Huselid, 2014). Furthermore, T&D is often criticised for being too expensive and for not improving the bottom line (Kraiger et al., 2004). Additionally, there is a lack of consensus about the relation between T&D and specific performances, such as innovation performance (Beugelsdijk and Smeets, 2008; Posthuma et al.,2013; Al-Zahrami and Almazari, 2014)

and financial performance (Jiang et al., 2012). For instance, Abdullah (2009) reported that T&D are important factors affecting the financial performance of a company. However, authors such as Al-Zahrami and Almazari (2014) found a negative relation. Similarly, Jiang et al. (2012) found no relationship between T&D and innovation performance. Oppositely, Li et al. (2006) found that T&D had a positive effect on innovation performance.

As a further step, the present dissertation thesis examines to what extent implementing HRM practices separately affect firm performance differently from when the same practices are implemented as a bundle.

This doctoral thesis aims to analyse the HRM practices that contribute to innovation in Spanish manufacturing firms. It also attempts to fill the gap in recent and relevant international research on innovation and creativity processes within firms, with special emphasis on training and development practices carried out for this purpose. Thus, the present study focuses on training and development as one of the most important HRM practices that comprise High Performance Work Systems to enhance firm performance.

1.1 Research objectives

The main objective of this dissertation is to empirically analyse to what extent High Performance Work System (HPWS) that focus on innovative training and development practices affect firm performance in the Spanish context.

To achieve these research objectives, the following sub-objectives are pursued:

The first objective is to map the adoption of training and development practices for creativity and innovation in Spanish manufacturing firms. The most influential determinants of implementing these HR practices are also analysed.

As a second objective, four specific HRM practices focused on training are analysed to determine how and to what extent the adoption of such practices affect firm performance. The research focuses specifically on the impact that training and development practices have on the innovative and financial performance of a firm.

The third and final objective is to study the difference between implementing some HR practices separately and as a bundle and their effect on some specific performance aspects (innovation, productivity, quality and financial performance).

1.2 Research questions and hypotheses development

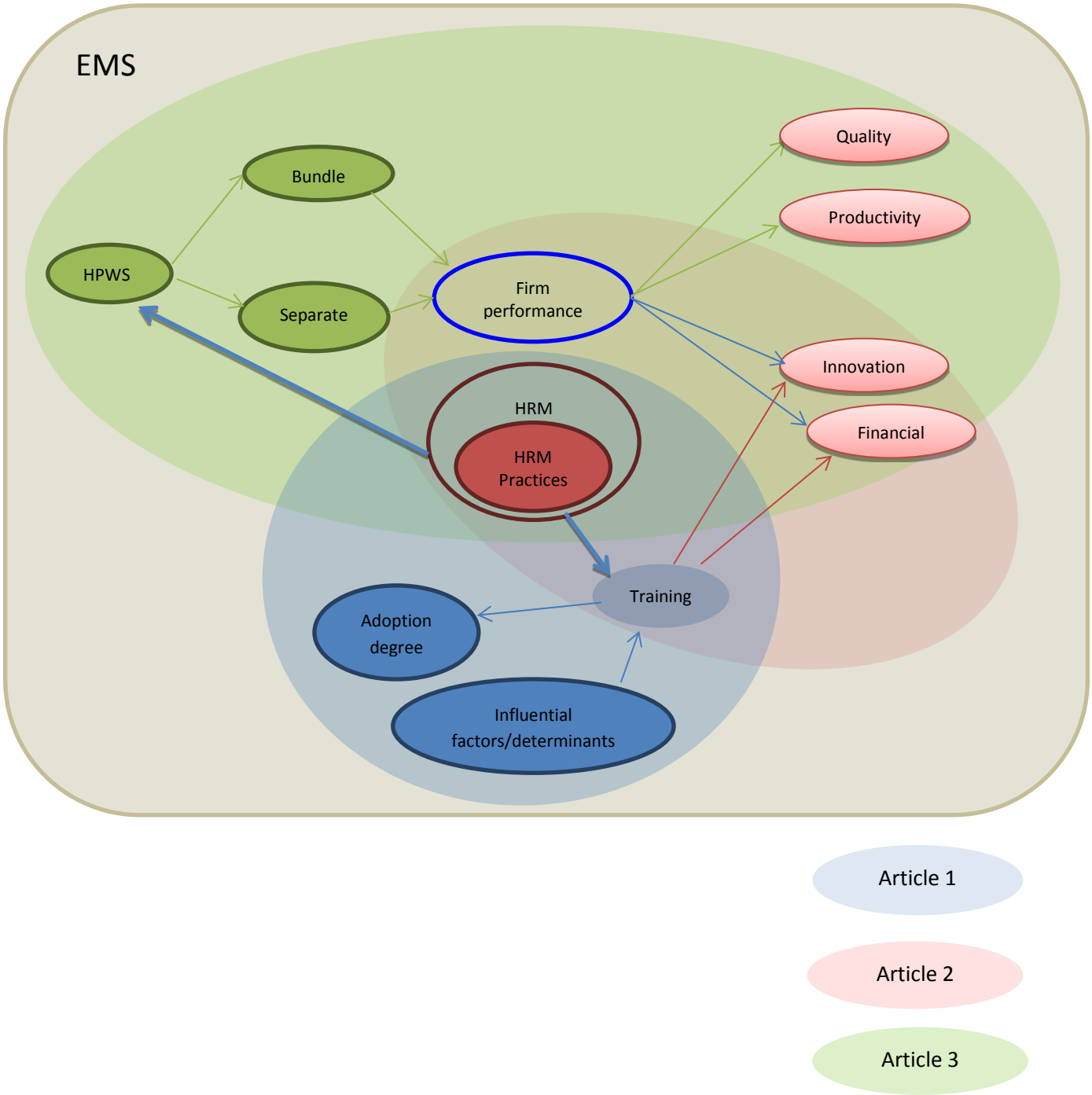
To achieve the above-mentioned objectives, the research questions and hypotheses derived from the literature review are developed. They are presented in table 1.

Table 1: Objectives, research questions and hypotheses development

Paper 1	Manresa, A., Bikfalvi, A., Simon, A. (2018). The use and determinants of TD4CI.	**Objective 1.** The purpose of this study is to map the degree of adoption of TD4CI. As a second objective, this research analyses the main factors influencing the integration of these practices in the Spanish manufacturing firms	**Research Question 1**	What is the adoption degree of TD4CI?
			Research Question 2	What factors influence a company's propensity to implement TD4CI?
Paper 2	Manresa, A., Bikfalvi, A., Simon, A. (2018). The impact of TD4CI practices on innovation and financial performance	**Objective 2.** The main objective of this research is to determine whether and to what extent the adoption of these practices affects firm performance.	**Hypothesis 1**	The implementation of TD4CI has a positive effect on innovation performance.
			Hypothesis 2	The implementation of TD4CI has a positive effect on financial performance.
			Hypothesis 3	Innovative performance is positively associated with a higher level of financial performance.
Paper 3	Manresa, A., Bikfalvi, A., Simon, A. (2018). "Individual or bundle" Human Resource Practices leading to higher firm performance	**Objective 3.** This research involves first, to analyse what type of practice are the most implemented in the Spanish context; second, to study which kind of HR practice leads a higher influence on different performance aspects per separate and as a bundle.	**Research Question 1**	What type of HR practices are the most implemented by Spanish manufacturing firms?
			Research Question 2	What is the implementation degree of HR practice adopted in Spanish manufacturing firms?
			Research Question 3	Which HR practices, per separate, leads higher influence on different performance aspects?
			Research Question 4	Which HR practices, as a bundle, leads a higher influence on different performance aspects?

To summarize the following figure shows the scope of the doctoral thesis presented:

Figure 1: Doctoral Thesis scope.



Chapter 2. Literature review

2.1 Gestión de Recursos Humanos

La gestión de recursos humanos (GRH) se basa en la gestión de personas. Las empresas implementan estos recursos con el objetivo de adquirir una ventaja competitiva; esta se podrá conseguir siempre y cuando las empresas permitan a sus empleados utilizar su experiencia y conocimiento. Autores como Banker et al. (1996); Ichniowski y Prenushi (1997) o Ghebregiorgis y Karsten (2007) concluyen en sus estudios que los recursos humanos (RRHH) son factores indispensables para garantizar el éxito de una empresa.

A pesar de que los recursos humanos se caracterizan por ser un elemento clave para la empresa, su función ha ido cambiando con el paso de los años (Marchington et al., 2008). En un principio la finalidad de la GRH era garantizar el bienestar de los trabajadores y era conocido como "gestión de personal". El departamento de personal debía garantizar que las necesidades como la salud y la seguridad de los empleados, fueran atendidas; así como mantener registros de los empleados, las fechas de empleo, vacaciones, entre otras funciones (Cole, 2002; Pilbeam and Corbridge, 2010). Sin embargo, la función de gestión de personal pasó a ser gestión de recursos humanos debido al aumento de la competencia global. La globalización ha forzado a las empresas a diferenciarse de sus competidores buscando recursos flexibles e inimitables. En consecuencia, siguiendo la teoría de los recursos (RBV por sus siglas en inglés), los recursos únicos e inimitables de los cuales disponen las empresas son las personas (Boxall and Purcell, 2011).

Según Jackson et al. (2017), la gestión eficaz de los recursos humanos se ha vuelto más importante en los últimos tiempos debido a qué: primero, la mayoría de las empresas brindan servicios en lugar de producir bienes. Segundo, la competitividad requiere que una empresa sea eficiente y productiva; esto es difícil a menos que la fuerza de trabajo esté motivada, tenga las habilidades adecuadas y esté bien organizada. Y, tercero, el movimiento hacia una menor cantidad de capas de jerarquía de gestión (estructuras organizacionales más planas) ha puesto mayor énfasis en la delegación y la comunicación. Como resultado, si una empresa quiere tener éxito y alcanzar sus objetivos, entonces necesita administrar sus recursos humanos de manera efectiva (Simmonds et al., 2008). Así pues, la GRH se define como el diseño, la implementación y el mantenimiento de

estrategias para gestionar a las personas para un rendimiento empresarial óptimo (Marchington et al., 2008; McKenna and Beech, 2008).

Para llegar a este rendimiento óptimo y conseguir que los RRHH generen una ventaja competitiva, autores como Delery and Shawn (2001) elaboraron varios modelos de desarrollo de gestión de recursos humanos que enfatizan el vínculo entre las personas que forman la empresa y los objetivos de la organización. Para una empresa es vital que los gerentes de recursos humanos tengan en cuenta los objetivos de la organización en el momento de decidir las políticas de empleo para los trabajadores. De manera similar, la organización siempre debe consultar con el departamento de GRH para saber las políticas que éste implementa en el momento de decidir los objetivos corporativos, a fin de garantizar que sus planes sean factibles desde la perspectiva de los recursos laborales. Para garantizar el éxito de una empresa, se requiere de empleados flexibles y dispuestos a responder a las necesidades cambiantes que la organización requiere.

En los últimos veinte años, se han diseñado varios modelos de GRH para conseguir el perfecto encaje entre las personas y la empresa. El más conocido, distingue entre dos enfoques de gestión de recursos humanos: *soft* HRM y *hard* HRM (Michael, 2015; Rahman et al., 2017).

El *soft* HRM entiende al empleado como el recurso más importante en el negocio y una fuente de ventaja competitiva. Los empleados son tratados como individuos y sus necesidades se planifican en consecuencia. El papel que desarrolla la gestión de recursos humanos es el de concentrarse en las necesidades de los empleados: sus roles, recompensas, motivación, etc.

Por otro lado, el *hard* HRM se caracteriza por tratar a los empleados simplemente como un recurso del negocio (como maquinaria y edificios) y se establece un fuerte vínculo con la planificación comercial corporativa: ¿qué recursos necesitamos, cómo los obtenemos y cuánto costarán? El papel de la gestión de recursos humanos se basa en identificar las necesidades de la fuerza de trabajo de la empresa y reclutar y administrar en consecuencia.

La presente tesis entiende la gestión de recursos humanos desde el enfoque *soft* HRM, en el cuál los empleados juegan un papel fundamental en el desarrollo competitivo de una empresa. Por eso, la GRH debe conseguir involucrar a los empleados con la empresa, así como fomentar su compromiso e identificación con la organización.

Para conseguir estos objetivos, las empresas disponen de herramientas que ayudan a satisfacer las necesidades estratégicas; por ejemplo, planificación de la fuerza de trabajo, reclutamiento y selección, formación y desarrollo, personal motivador, comunicación y una clara estructura organizativa donde se establezcan, claramente, las responsabilidades de cada uno.

2.2 Prácticas de recursos humanos

Cómo se ha comentado anteriormente, la GRH es el activo más valioso de una organización porque su objetivo es llevar a los empleados a alcanzar los objetivos de la empresa (Armstrong-Stassen, 2008). Con este propósito, la GRH implementa prácticas para obtener recursos únicos e inimitables (Florén y Rundquist, 2016; Mutembei et al., 2014). En este sentido, Shipton et al. (2005) concluyó que la implementación de las prácticas de gestión de recursos humanos debe abordarse para desarrollar la innovación y el comportamiento creativo al permitir a los trabajadores crear y compartir sus conocimientos. Del mismo modo, las empresas innovadoras tratan estas prácticas como un factor crucial para incrementar la estrategia de la organización, mejorar las responsabilidades del equipo, la cultura organizacional y generar relaciones con los empleados mediante la participación (Mutembei et al., 2014). Con la implementación de estas prácticas, las empresas mejoran los comportamientos y relaciones entre los empleados (Crowley y Bourke, 2017; Weeks y Thomason, 2011).

Éstas prácticas influyen en cómo se organiza el trabajo; para ello es necesaria una estructura fundamental, que puede variar desde puestos en los cuales los supervisores ejercen un alto nivel de control, hasta trabajos altamente autónomos en los que los individuos se auto supervisan. También incluye todas las actividades asociadas con la resolución de problemas y la gestión de cambios relacionados con la participación en el proceso de trabajo. En función de los objetivos de la compañía, esta deberá implementar unas prácticas u otras.

Sin embargo, debido a su naturaleza dinámica, la implementación de prácticas individuales cambia con el tiempo. Ichniowski y Prenushi (1997) y Mahdi et al. (2015) concluyeron que la GRH debe implementar prácticas innovadoras; con esta implementación las empresas logran niveles de productividad más altos que con las prácticas tradicionales, tales como la supervisión cercana o el pago por hora. En este sentido, algunos autores han intentado identificar cuáles son esas prácticas "nuevas" y cómo han

evolucionado con el paso del tiempo. Por ejemplo, Tannenbaum y Dupuree-Bruno (1994) exploraron la relación entre los factores organizativos y ambientales y el uso de "prácticas innovadoras de gestión de recursos humanos" incluyendo la capacitación, el reclutamiento, la selección y el entorno de los empleados. Del mismo modo, tres años más tarde, Ichniowski y Prenushi (1997) examinaron la productividad de las "prácticas de trabajo innovadoras", incluyendo los incentivos, el reclutamiento y la selección, el trabajo en equipo, la asignación flexible de empleos, la seguridad laboral, la comunicación y la capacitación. En la misma línea, Collins et al. (2005) exploraron las "prácticas estratégicas de recursos humanos", que incluyen capacitación, evaluación del desempeño, recompensas y desempeño firme a partir de un estudio de campo con 73 empresas de alta tecnología. En la misma línea, Chen y Huang (2009) investigaron el efecto de las nuevas prácticas de GRH (que cubren cinco dimensiones: dotación de personal, capacitación, participación, evaluación del desempeño y compensación) en la gestión del conocimiento y el rendimiento de la innovación.

De esta manera, a pesar de la extensa literatura en este tema, se necesita más investigación para detallar cuáles son las mejores prácticas y resolver así las críticas que surgen al respeto. La primera es argumentada por Jackson et al. (2017), los cuales concluyen que hay demasiada diversidad en la lista de mejores prácticas. Del mismo modo, Cole (2002) y Simmonds et al. (2008) entre otros, concluyen que el problema es especificar un conjunto de prácticas de recursos humanos e implementrlo interculturalmente. Una línea de pensamiento más apropiada es aceptar que siempre habrá variaciones socioculturales en la forma en que se organiza la GRH y estudiar los sistemas o configuraciones de prácticas de recursos más comunes. En otras palabras, es posible prever sistemas diseñados para servir a ciertos principios básicos, pero teniendo en cuenta la variedad en las prácticas que se utilizan en diferentes industrias para expresar estos principios.

Algunos autores han intentado definir los macro modelos de las prácticas de RRHH. Por ejemplo, del trabajo de Harvard elaborado por McKenna y Beech (2008) se recopila el grupo de prácticas denominado "gestión de alto compromiso" (HCM). El cuál enfatiza la importancia de que los empleados se comprometan con los objetivos de la organización a través de incentivos positivos identificándose con la cultura de la empresa en lugar de tratar de controlar sus comportamientos a través de

supervisión directa. Otra línea de pensamiento es la propuesta por Leopoldo (2000) denominada "Sistemas de trabajo de alta participación" (HIWSs). En este caso, el énfasis está en rediseñar el trabajo para involucrar más a los empleados en la toma de decisiones y en las habilidades y prácticas de motivación que se necesitan para apoyar este proceso. Un tercer término, el "Sistema de trabajo de alto rendimiento" (HPWS) ha suscitado gran interés en los últimos 10-15 años y ahora es la terminología que muchas personas usan cuando hablan de modelos de "prácticas ideales" para la gestión de recursos humanos. Se entiende comúnmente que los HPWS incluyen reformas en las prácticas de trabajo para aumentar la participación de los empleados en la toma de decisiones, la inversión en sus habilidades y cambios en los incentivos para garantizar que puedan asumir estas responsabilidades (Appelbaum, 2000).

2.3 High Performance Work System

Las empresas a menudo tienen más de un sistema de recursos humanos. Estos sistemas se han ido implementando a lo largo del tiempo para organizar el trabajo y gestionar el empleo de un importante grupo de trabajadores. Estudios previos han tratado de investigar e identificar el conjunto de prácticas que, de manera transversal, aplican la mayoría de empresas. Este conjunto de prácticas se conoce como sistemas de trabajo de alto rendimiento (HPWS).

El primero en definir este concepto fue Nadler (1990), el cual lo explicó cómo la integración de aspectos sociales y técnicos en los principales recursos de las organizaciones. Posteriormente, Arthur (1994) se centró en paquetes de prácticas de recursos humanos. Desde entonces, se han realizado numerosos artículos y estudios empíricos en los cuales se intenta definir HPWS. Sin embargo, debido al uso variado del término, todavía hay una falta de acuerdo sobre su significado (Boxall y Macky, 2009; Boxall y Purcell, 2011). En esta línea, la presente tesis doctoral entiende HPWS cómo lo define Oladapo y Onyeaso (2013, p.73), "un grupo de prácticas de recursos humanos separadas pero interconectadas que juntas reclutan, desarrollan, motivan y retienen empleados para lograr un mejor desempeño organizacional para generar valor para una empresa al reducir costos y aumentar la productividad".

Ampliando esta definición autores cómo Kroon et al. (2013), Saridakis et al. (2017) y Wu et al. (2015) concluyen que hay dos corrientes principales que relacionan HPWS con el

rendimiento y la productividad de la empresa. El primer enfoque se centra en el estudio de la implementación de prácticas de recursos humanos de forma individual y en el análisis de cómo cada una de éstas afecta al rendimiento de la empresa. Por el contrario, el segundo enfoque entiende la implementación de las prácticas de recursos humanos como la implementación de un conjunto que funciona como un sistema y su relación con la productividad de la empresa. Así pues, el problema principal radica en la pregunta de si la implementación de estas prácticas tiene que ser entendida como prácticas individuales o como un sistema de prácticas para que optimice el rendimiento de la empresa (Boselie et al., 2003; Katou y Budhwar, 2010; Katou, 2008).

A pesar de los varios estudios presentes en la literatura, hay pocos resultados concluyentes en este aspecto. El primer problema surge de la dificultad de seleccionar las mejores prácticas para constituir el HPWS. Osterman (2000) definió que su configuración perfecta de prácticas de recursos humanos era aquella formada por las siguientes prácticas: integración, rotación, trabajo en equipo y prácticas para controlar el sistema de calidad de la empresa. En la misma línea que Ostermann, Godard (2004) configuró un sistema implementando prácticas tales como: empowerment, condiciones que garanticen la seguridad del trabajador y un puesto de trabajo que no sea perjudicial para la salud, rotación, prácticas para satisfacer a los empleados en el puesto de trabajo, incentivos económicos, trabajo en equipo, métodos para garantizar la calidad y prácticas de formación y desarrollo. Estudios más recientes cómo Falola et al. (2014) y Wu et al. (2015) entienden que las mejores prácticas para optimizar el rendimiento de la empresa son: condiciones que garanticen la seguridad del trabajador y un puesto de trabajo que no sea perjudicial para la salud, rotación en el trabajo, posibilidad de crecer en la empresa, retención y selección de personal y, finalmente, prácticas de formación y desarrollo de los trabajadores. Como se ha podido ver en los ejemplos anteriores, no hay un listado concreto de prácticas ideales para la mejora del rendimiento de la empresa.

El segundo problema que se presenta y ya se ha identificado al principio de esta sección, es la dualidad de enfoques en la implementación de estas prácticas. Autores como Becker et al. (1998) indicaron que es más relevante estudiar la influencia de cada una de las prácticas de RRHH y su relación con el rendimiento de la organización de forma individual. En la misma línea, Lazim et al. (2015) concluyó en su estudio que la implementación de las prácticas de recursos humanos de forma aislada, aporta

mayores beneficios para la empresa, ya que esta, puede implementar cada una de las prácticas en función de sus necesidades. Por otro lado, autores como Gould-Williams y Gatenby (2010), Gould-Williams (2004) y Regan y Psych (2011) sugirieron que el impacto de las prácticas de recursos humanos en empleados y organizaciones son mayores si se implementan como un paquete de prácticas en lugar de aisladamente. Finalmente, Guest et al. (2012) en su estudio confirmaron la existente relación entre la implementación de recursos humanos y la mejora de rendimiento; sin embargo, no pudieron demostrar si el hecho de implementar las prácticas en conjunto o por separado conducía a un mejor rendimiento en la empresa.

Pese a la disyuntiva presentada en la literatura sobre qué combinación de prácticas constituye la "mejor práctica" y cómo esta debe implementarse; hay una evidencia común entre la mayoría de los autores. Así pues, al implementar estas prácticas las empresas presentan mejoras positivas en el desempeño organizacional, así como en su rendimiento (Huselid y Delaney, 2016). Es en el rendimiento de la empresa dónde surge el tercer problema ya que no hay una conclusión común a la pregunta: ¿qué rendimientos concretos son los beneficiados al implementar estas prácticas? En este sentido, autores como Harley (2007), Macky y Boxall (2007) y Ramsay et al. (2000) encontraron una correlación positiva entre HPWS y diferentes rendimientos de la empresa mientras que otros autores observaron una relación negativa (Guthrie et al., 2009) o ninguna relación (Harley, 2007). En esta misma línea, varios autores han encontrado relación positiva entre la implementación de HPWS y los rendimientos específicos de la empresa. Por ejemplo, Messersmith y Gurthrie (2010) afirmaron una relación positiva entre HPWS y la innovación en la empresa (y relación negativa o cero, en el resto de rendimientos estudiados). En esta misma línea, Richardson (2014) y Wu et al. (2015) concluyeron que la implementación de HPWS aportaba mejoras en el rendimiento financiero (y relación negativa o cero, en el resto de rendimientos estudiados). Así mismo, Chen y Huang (2009), por ejemplo, aportaron que la implementación de estas prácticas mejoraba la productividad de las empresas (y relación negativa o cero, en el resto de rendimientos estudiados). Pese a la presencia de estudios que afirman una relación positiva entre HPWS y rendimientos específicos en la empresa, no existe un acuerdo sobre cuáles son estos.

En resumen, si bien hay un incremento en el número de publicaciones en el campo de HPWS, aún no hay consenso sobre una definición única. En la misma línea, existe

una falta de acuerdo para determinar la composición “ideal” de prácticas y cómo éstas deben implementarse (Kroon et al., 2013). Danford et al. (2008) y Guest (2011) afirman en sus estudios que la relación entre el rendimiento y las prácticas de RRHH aún no se comprende del todo. Teniendo en cuenta el impacto que HPWS tiene en el rendimiento, sería útil entender primero cuáles son estas prácticas.

La siguiente sub-sección se centra en analizar la herramienta estratégica de la formación y el desarrollo ya que es considerada, por muchos autores, como la más importante e influyente en el área de la gestión de recursos humanos (Ghafoor Khan et al., 2011; Saridakis et al., 2017).

2.4 Formación y desarrollo para la creatividad y la innovación

La formación y el desarrollo (F&D) puede definirse como cualquier intento de mejorar el desempeño actual o futuro de los empleados al aumentar la capacidad de un trabajador para desarrollarse a través del aprendizaje, por lo general cambiando la actitud del empleado o aumentando sus habilidades y conocimientos (Boxall y Purcell, 2011; Jackson et al., 2017). Por consiguiente, la implementación de esta práctica tiene como objetivo mejorar el rendimiento actual y futuro de la empresa con la ayuda de las habilidades y el conocimiento de los trabajadores.

Algunos autores como Garavan (1997) y Iles et al. (2010) consideran formación y desarrollo como dos prácticas diferentes. En este sentido, formación se refiere a mejorar las competencias necesarias en el presente o en un futuro muy cercano. Sus principales objetivos son mejorar el rendimiento en un trabajo específico mediante el aumento de las habilidades y el conocimiento de los empleados. En comparación, el desarrollo se refiere a las actividades destinadas a mejorar competencias durante un período de tiempo más largo. El principal objetivo de esta práctica es preparar al trabajador para los roles que pueda tener en el futuro.

Por el contrario, otros autores como Posthuma et al. (2013) consideran F&D como un conjunto único. En la misma línea, Falola et al. (2014) definen F&D como un grupo de técnicas y procesos para transferir habilidades importantes, conocimiento y competencias para lograr un rendimiento efectivo e innovador.

Para el desarrollo de la tesis doctoral se entiende F&D como un conjunto único que proporciona nuevas capacidades y habilidades en el trabajo, ofreciendo nuevas oportunidades a la empresa mediante la creación de un clima de aprendizaje (Falola et al., 2014; Posthuma et al., 2013; Sung y Choi, 2014). Para poder crear nuevas oportunidades, las empresas tienen que dirigir la formación hacia la generación de nuevas ideas incentivando la creatividad y la innovación dentro de la empresa. Así pues, F&D para la innovación y la creatividad se relacionan con la formación de competencias especializadas (Beugelsdijk y Smeets, 2008; Jerez Gómez et al., 2004; Shipton et al., 2005, 2006) contribuyendo a que los empleados adquieran experiencia y comprensión del proceso de innovación, y ampliando las habilidades relacionadas con la generación de ideas, el desarrollo de talentos y la creatividad empresarial (Birdi et al., 2008).

En la literatura estudiada destacan cuatro prácticas de F&D para incentivar la innovación y la creatividad en la empresa (Araújo et al., 2014; Bahemia y Squire, 2010; Byoung et al., 2013; Chesbrough y Garman, 2009; Greco et al., 2015; Johannessen y Skaalsvik, 2015; Van De Vrande et al., 2010).

La primera práctica estudiada es la generación de ideas. Cuando los empleados generan ideas, el sistema cognitivo construye conocimiento y crea nuevas habilidades que hacen que los empleados sean más flexibles y capaces de adaptarse más fácilmente a los objetivos de la empresa (Araújo et al., 2014). La segunda práctica estudiada es el desarrollo del talento. Esta práctica permite a las empresas obtener ventaja en un entorno competitivo al permitir que sus empleados crezcan y desarrollen sus habilidades dentro de la empresa. Sin embargo, no hay una fórmula fija para que la implementación sea exitosa. Con un buen plan de desarrollo de talentos, las empresas pueden ubicar a los empleados en roles específicos y fomentar las habilidades adecuadas para las funciones prioritarias dentro de ese rol, lo que a su vez contribuye a los objetivos de la compañía (Greco et al., 2015). La tercera práctica es la implementación por parte de las empresas de talleres de formación para los empleados para que sean capaces de ser creativos e innovadores. Como ya se ha referenciado anteriormente, la innovación es un factor importante para las empresas y algo que puede estimularse a través de estas iniciativas. La última práctica de formación estudiada en éste documento es el tiempo de trabajo dedicado a la creatividad y la innovación. Las organizaciones exitosas deben dedicar tiempo a ser creativas e innovadoras. Para poder adaptarse a los cambios, las empresas enfocan sus planes de negocios en la innovación,

desarrollando programas de capacitación en el trabajo en sus organizaciones (Johannessen y Skaalsvik, 2015).

Para que estas prácticas de F&D sean efectivas, es necesario que se apliquen no solo a los individuos o a un grupo de trabajadores, sino que, es necesario que se implementen a toda la organización acorde con los objetivos de la empresa. En esta misma línea, Leopoldo (2000) sugirió que la formación tiene que estar presente en tres niveles diferentes de la organización. El primer nivel es el de la empresa: hay conocimientos, habilidades y actitudes que tienen que ser conocidos y aplicados por todos los miembros de la empresa independientemente de su trabajo u ocupación. El segundo nivel es el del trabajo; este nivel hace referencia a los conocimientos que el individuo necesita para entender y desarrollar lo mejor posible su trabajo. Finalmente, el tercer nivel es el del trabajador individual. En este la formación individual surge cuando el trabajador necesita el uso conocimientos y habilidades extras a las que él posee para desarrollar adecuadamente su trabajo.

Por ello, debido a los diferentes niveles de formación que existen en una empresa, también es necesario que esta implemente diferentes tipos de formación acorde con los diferentes niveles. Algunos ejemplos de estos métodos son: formación en el lugar de trabajo, cursos de formación fuera del lugar de trabajo, autogestión del aprendizaje, entre otros.

De las investigaciones anteriormente comentadas se puede concluir que las empresas dedican tiempo y recursos a la implementación de estas prácticas. Esto se debe a que tales esfuerzos motivan a las personas a aprender y permite crear las condiciones para que apliquen lo que han estudiado; fomentar mejoras inmediatas en la efectividad individual y organizacional; y poner en marcha sistemas que ayuden a sostener el aprendizaje.

Dado los beneficios que la implementación de F&D tiene en la empresa, hay varios estudios que intentan identificar el porcentaje de empresas que implementan prácticas de F&D; así como analizar la tendencia de implementación de F&D de la última década. Por ejemplo, en el contexto de EE.UU. Osterman (1994) afirmó que solo el 32% de los trabajadores estadounidenses recibían formación dentro de la empresa. En contraste, veinte años después, Huselid (2014) concluyó que el porcentaje de empresas estadounidenses que implementaron la práctica de F&D era del 88%. En la misma línea, Urbano and Yordanova (2008) concluyeron que más del 30% de las empresas europeas habían

adaptado algunas prácticas de F&D. Sin embargo, pocos estudios de difusión identifican el porcentaje de empresas españolas que implementan F&D en el lugar de trabajo.

En la misma línea de investigación, hay una falta de consenso respecto a los factores que influyen en la implementación de estas prácticas en las empresas manufactureras. Por ejemplo, autores como Budhwar y Baruch (2003) concluyeron que la implementación de esas prácticas estaba asociada con características culturales y organizacionales. En este sentido, Jimenez y Valle (2008) encontraron que los determinantes de mayor influencia fueron los factores internos, como el tamaño y la propiedad, y los factores externos, como el sector, las regiones o las redes. Del mismo modo, Martin y Salanova (2014) sugirieron un modelo en el que los principales factores eran la autonomía, el liderazgo, la colaboración, el entorno innovador y las recompensas.

En el contexto español, la investigación de los factores influyentes se encuentra todavía en un estadio incipiente (Bayo-moriones y Merino-díaz De Cerio, 2003). Por ello, la presente tesis doctoral pretende contribuir en las líneas de investigación propuestas tales como el grado de implementación de F&D en las empresas manufactureras; así como los factores más influyentes en la implementación de estas prácticas para la innovación en las empresas manufactureras españolas.

A pesar del mundo cambiante y la amplia gama de prácticas implantadas, solo la formación y el desarrollo se han implementado transversalmente a lo largo del tiempo (Ghafoor Khan et al., 2011; Saridakis et al., 2017).

Aunque los beneficios que la formación aporta a las empresas son varios, todavía hay muchas compañías que han decidido no implementar estas prácticas debido a diferentes causas. Por ejemplo, EUROSTAT (2018) resalta que algunas de estas razones podrían ser que las empresas creen que la formación es un gasto en lugar de una inversión, otras empresas dudan sobre su necesidad de implementar F&D, y otras simplemente carecen de ideas. Esta baja implementación también puede explicarse por el escaso enfoque previo, se necesita más investigación sobre la capacitación como determinante del nivel de rendimiento de innovación de una empresa y la falta de consenso sobre la relación entre F&D y el rendimiento específico, como el rendimiento de la innovación (Beugelsdijk y Smeets, 2008; Posthuma et al., 2013; Al-Zahrami and Almazari, 2014) y el desempeño financiero (Jiang et al., 2012). En este sentido, Abdullah (2009) informó que las prácticas de F&D son factores

importantes que afectan el desempeño financiero de una empresa. En la misma línea, Ng y Siu (2004) concluyeron que las nuevas prácticas de F&D tenían un efecto positivo en el rendimiento de la empresa. Sin embargo, autores como Al-Zahrami y Almazari (2014) han encontrado una relación negativa. Del mismo modo, Jiang et al. (2012) no encontraron ninguna relación entre F&D y el rendimiento de la innovación. Opuestamente, Li et al. (2006) encontraron que F&D tuvo un efecto positivo en el rendimiento de la innovación.

Debido a la falta de consenso entre la literatura, una de las razones más importantes para analizar más a fondo la relación entre el F&D y los resultados organizacionales es confirmar que la inversión en formación tiene efectos positivos sobre la innovación y el desempeño financiero de la empresa en el marco de la industria manufacturera española (Úbeda-García et al., 2013).

En base a la revisión de la literatura hay que tener en cuenta que aún existen brechas que necesitan ser estudiadas: la primera, es la falta de consenso en las mejores prácticas de recursos humanos; la segunda, responde a cómo estas prácticas afectan al rendimiento de la empresa; la tercera brecha precisa de más investigación sobre si éstas prácticas deberían ser implementadas individualmente dependiendo de la situación y estrategia de la empresa o como un conjunto de prácticas universales para todas las empresas. Y, la cuarta, pone especial interés en la que es denominada como la práctica más importante de recursos humanos, formación y desarrollo. Se precisa investigación más detallada sobre el porcentaje de empresas españolas que lo implementan, así como de sus efectos beneficiosos para la empresa. Así pues, la presente tesis doctoral aporta las siguientes contribuciones.

Primera, se ha realizado un estudio detallado del nivel de implementación de prácticas de formación y desarrollo en el contexto español. Debido al bajo índice de implementación se hace una búsqueda exhaustiva de los principales factores que determinan la implementación de prácticas de recursos humanos.

Segunda, se estudia cómo la formación y el desarrollo afecta a la innovación y en las ventas de la empresa. Una de las principales aportaciones de esta tesis es demostrar que con las práctica de F&D no sólo se desarrolla la creatividad, las habilidades y el

conocimiento de los trabajadores; sino que también, hace que mejore el rendimiento innovador de la empresa, que se transforma en una mejor ventaja competitiva y en una mejora en el rendimiento financiero de la empresa.

Finalmente, la tercera contribución responde empíricamente a la pregunta de 'individual or bundle'. Se ha desarrollado un estudio comparativo de la implementación de las prácticas de recursos humanos aplicándolas todas juntas como grupo o entendidas de forma individual en varios rendimientos concretos de la empresa.

Después de la introducción sobre el tema a investigar (Capítulo 1) y de la revisión de la literatura describiendo los pilares conceptuales más significativos (Capítulo 2), la estructura de la presente tesis doctoral consta de cinco apartados más. El Capítulo 3 delinea el modelo de investigación e incluye el diseño, las variables, la recopilación de datos y el método de análisis. El capítulo 4 se compone por la transcripción de los artículos que configuran los capítulos de la tesis. El siguiente capítulo, el 5, se analiza los resultados empíricos y destaca los hallazgos más significativos y en el Capítulo 6 se presenta la discusión de los resultados principales. Al finalizar, las conclusiones generales de la presente disertación, las limitaciones y recomendaciones para futuras investigaciones se presentan en el Capítulo 7.

Chapter 3. Methodology

The previously presented literature review allows the research objectives to be stated and the corresponding research questions and hypotheses to be formulated. Moreover, the methodology used in this study, which is classified in three sub- sections, is presented in this section.

- Quantitative approaches to innovation
- Data collection
- Data analysis

Regarding the data collection, the methods used will be presented. Further, the authors will develop on the descriptive data analysis, the use of multivariate analysis and models that have been used to test the research questions and hypotheses of this study.

3.1 Quantitative approaches to innovation

Nowadays, the innovation process is considered as a main driving force of economic growth in developed countries, as well as a contributor to social and cultural development (Sciences et al., 2015). This section describes existing quantitative approaches in surveys and discusses their characteristics.

In this context, the Organization for Economic Cooperation and Development (OECD) has developed some useful indicators to integrate technological and innovative questions into political and economic analyses. In 1997, the OECD presented a new methodology, known as the Oslo Manual (1992, 1997 and 2005 editions), to collect and interpret innovation data. This manual covers innovation in the business sector at the firm level. It concentrates on technological products and process innovation, with optional guidelines for other items such as organizational change. Several innovation surveys based on the Oslo Manual (Instituto Nacional de Estadistica, 2016) have appeared.

For instance, in the last edition (2005) the Oslo Manual considered innovative firm to those firms that have product, process, organizational or marketing innovation within the organization. Up to this moment, the statistical office of the European Union (EUROSTAT) collaborating with OECD started several studies in order to collect new and innovative data from all the European countries. All those studies concluded with the presentation of the Community Innovation Survey (CIS).

The CIS is conducted in every European Union (EU) member states and number of ESS member countries to collect data on innovation activities in companies. The survey covers areas such as new or significantly improved goods or services and the introduction of new or significantly improved processes, logistics or distribution methods. It also provides information on the characteristics of innovation activity at the firm level, thereby creating a better understanding of the innovation process and the effects of innovation on the economy. The CIS produces a broad set of indicators on innovation activities. Since 2004, surveys have been carried out every two years by EU member states. Compiling CIS data is voluntary for the countries, which means that in different years' surveys different countries are involved (CIS, 2018). In the last round (2016) all the EU member states except Greece answered the questionnaire. The survey is available on the internet; thus, there are several publications using this data.

As stated above, the CIS is a regular survey with international, broad sector and geographical coverage. However, it has some limitations; for instance, it could be considered as generic and to some extent difficult to implement for research purposes. Furthermore, it has little flexibility to adapt to new concepts such as digitalization. It does focus on innovation processes and products, but it pays less attention to other important aspects such as human resource management, creativity or technology.

Another international survey is the International Manufacturing Strategy Survey (IMSS). The IMSS is a research network of business schools and assembly manufacturing firms, which designs a common database and collects data for the study of manufacturing management strategies and practices on both a global and national scale. The network was originally set up in 1992 and is currently coordinated by Politecnico di Milano (Italy). The survey is collected every 5 years and the aim of the project is to research manufacturing strategies and practices in industrialized nations throughout the world (IMMS, 2018).

This survey presents some limitations. First, it does not cover all the manufacturing industries; second, it has very few entries per country; third, as the IMMS is not available, there are only few publications related to this questionnaire and the only results available are from the 2016 report; and, like in the previous survey, the IMMS does not include specific questions concerning the organizational concepts such as human resource management or creativity.

Last, a pilot survey called The European Manufacturing survey (EMS) was initiated in several European countries in 2001 to provide new and reliable data. At the firm level, the EMS surveys the use of techno-organizational innovations in manufacturing and the thereby achievable performance increases in the manufacturing sector. This survey collects data on the types and extent of innovation activities in the field of technical and non-technical process innovations and on the state of the art in manufacturing. It is carried out every 3 years in more than 12 countries. The aim of the EMS is to utilise a core questionnaire in the respective languages of all the partner countries, thus surveying internationally comparable data that allows for internationally comparative analyses (ISI, 2018).

The EMS covers all the European Union member states, plus Brazil, China and Russia, and it has great geographical and sectorial coverage. The questionnaire is flexible and able to adapt to new manufacturing realities. It covers not only innovative items but also specific organizational concepts. Additionally, there are extended blocks of specific questions regarding human resource management, creativity, training and development, and training for innovation.

To be able to compare all the previous information, table 2 summarises the main characteristics to compere among the surveys.

Table 2: Characteristics of main innovation surveys selected

	Community Innovation Survey	**European Manufacturing Survey**	**International Manufacturing Strategy Survey**
Survey Acronym	CIS	EMS	IMMS
Participation	Voluntary	Voluntary	Voluntary
Survey Coordinator	EUROSTAT	Fraunhofer ISI (Germany)	Politecnico di Milano (Italy)
Survey Conductor	National Statistical Institutes	Universities and research centres	Network of Universities
Since	Pilot 1993 1997/1998	1993 Germany 2003 International	1992
Frequency	2 years since 2004	2 years	5 years
Countries	Europe (except Greece)	Europe, Brazil, China, Russia	22 countries
Dataset	Na	3700 (2009)	931 (2017)
Publicly available questionnaire	√	X Publications	X Publications and report
Do the authors have access to the questionnaire	√	√	Under request
Note: Na- not available			

As the previous table (table 2) shows, some aspects are common to all the surveys analysed. For instance, all the surveys are answered by managers or product managers. Furthermore, they are all focused at the firm level and include all size firms (small, medium and large). These enterprise-based innovation surveys are also all international, so it is important to harmonize their main characteristics as far as possible to facilitate international comparability. Last, following OECD and EUROSTAT recommendations, the increasing importance of innovation for the growth of economies requires more regular, up-to-date data. From this viewpoint, information on innovation activities should ideally be collected continuously. There is general agreement at the international level that innovation surveys should be carried out not less than every two years and for some variables even less often.

However, there are some differences that make one survey more suitable than the others. First, the European Manufacturing Survey divides its questions into individual items; in contrast, in the CIS and IMMS surveys the questions are grouped by different general sections. Second, the CIS and IMMS surveys are considered as very superficial, while oppositely, the EMS survey presents detailed, separate blocks of questions concerning specific organizational items. Third, the IMMS and CIS surveys mainly focus on a very limited number of indicators for measuring product innovation. Process innovations are hardly considered and where they are it is at a very highly aggregated level. The EMS survey, on the other hand, has specific questions regarding innovation outcomes. Fourth, focusing on the questions concerning the industry sector, the IMMS survey only covers the companies from 25 to 30 within the Statistical classification of economic activities in the European Community (name as NACE Code). The EMS and CIS surveys, on the other hand, include all the manufacturing companies (NACE Codes 10-33). Fifth, the EMS survey is the only one that has specific questions on human resource management and creativity.

Table 3 summarizes the most important characteristics of the surveys selected in order to be able to compere among each other and select one of them for the current thesis.

Table 3: Comparative of surveys descriptions

	Variables	Item	Scale
Community Innovation Survey	Improved forms of organization	Organizing work responsibilities and decision making	Dichotomic (Yes/No)
	Invest in future innovation	Training for innovative activities	Dichotomic (Yes/No) Investment in €
	Good or services innovation	New service in the last 3 years	Dichotomic (Yes/No)
		New products in the last 3 years	Dichotomic (Yes/No)
		Product/Services new to the market	Dichotomic (Yes/No)
		Product/Services new to the firm	Dichotomic (Yes/No)
European Manufacturing Survey 2012	Human Resource Management based on training	Training for idea generation Maintain elderly knowledge Working time dedicated to creativity and innovation Talent development programs Employee training for creativity and innovation	Dichotomic (Yes/No) Potential degree (low, medium, high)
	Service innovation	New service in the last 3 years	Dichotomy (Yes/No)
	Product innovation	New products in the last 3 years	Dichotomy (Yes/No)
		Product/Services new to the market	Dichotomy (Yes/No)
		Product/Services new to the firm	Dichotomy (Yes/No)
European Manufacturing Survey 2015	Human Resource Management	Maintain elderly knowledge Promoting and commitment Methods for health or safety conditions Financial participation	Dichotomy (Yes/No) Potential degree (low, medium, high)
	Organization work	Method of 5S Standardization Integration of task	Dichotomy (Yes/No) Potential degree (low, medium, high)
	Training	Training with specific focus Training with interdisciplinary focus IT self-learning On the job-training Information offers Continual quality improvement	Dichotomy (Yes/No) Eligible employees in production (Semiskilled, technicians, graduates)
	Service innovation	New service in the last 3 years	Dichotomy (Yes/No)
	Product innovation	New products in the last 3 years	Dichotomy (Yes/No)
		Product/Services new to the market	Dichotomy (Yes/No)
		Product/Services new to the firm	Dichotomy (Yes/No)
International Manufacturing Strategy Survey	Training	Hours of training	Open answer
		Training using the product	Scale type Likeret 1 to 5 from none to high
		Improve skills in the organization	Scale from 1 to 5
		Delegation and knowledge of your workforce	Scale from 1 to 5
	The business unit's competitive strategy	New product are introduced	Scale from 1 to 5
		Expanding the service offering	Scale from 1 to 5

It is well known that there are other surveys that cover open innovation, such as the ones commented on above (CIS and IMMS); however, to achieve the objectives of this study, the data employed in this dissertation thesis was collected through the European Manufacturing Survey (EMS) as it was considered as the most suitable to achieve the stated objectives, being the only one with a specific dimension of HRM questions as it is summarize in the following table 4.

Table 4: Summary of the concepts, methods and tools of the surveys

	IMMS	CIS	EMS
Survey Level	Company level	Company level	Company level
Size	More than 50	More than 10	More than 20
Industry	25-30	10-37	10-37
Answered by	Director of operations	Manager	Director of operations
Data	Primary	Primary	Primary
Regular survey	✓	✓	✓
International survey	★☆☆☆☆	★★★★★	★★★☆☆
Geographical and sectoral coverage	★☆☆☆☆	★★★★★	★★★☆☆
Extent to technological items	★★★☆☆	★☆☆☆☆	★★★★★
Flexibility of questionnaire to adapt to new topics	★★★★★	★☆☆☆☆	★★★★★
Clear distinction between individual organizational concepts	★★★☆☆	★★★☆☆	★★★★★
Extent of HRM			✓
Extent of enhance creativity			✓
Extent of specific training	✓		✓
Specific publications on HRM using data		★★★☆☆	★★★☆☆
Publications related to this survey	★☆☆☆☆	★★★★★	★★★★★

3.2 Data collection

The EMS is an initiative of the Fraunhofer Institute for Systems and Innovation Research ISI in Germany that started at the beginning of the 1990s (ISI, 2016). The EMS includes different forms of innovation, incorporating new services, products, technical processes and organizational concepts. It is organised by a consortium of research organisations and universities and is carried out on a triennial basis, targeting a stratified sample of manufacturing establishments. The survey is distributed to plant or manufacturing managers, or alternatively to general management, and are electronic surveys in some countries (e.g. Denmark) and postal surveys in others (e.g. Spain). The EMS consortium employs various procedures recommended by the Survey Research Centre (2018) to collect valid data permitting sound international comparisons and to avoid problems arising from different languages and national peculiarities in terminology. Respondents return the completed survey to the coordinating research university or institute in each specific country via postal mail or email. The questions presented in the survey are standardized and measured in all the participating countries. Moreover, countries may add specific questions based on topics of interest. Firms answer questions on their implementation of innovative organizational and technological concepts, manufacturing

strategies and strategies for the off-shoring and back-sourcing of production. Furthermore, data on performance indicators such as productivity, flexibility, quality and returns are collected. The main objectives of this research project are to better understand the use of production and information technologies, new organizational approaches in manufacturing and the implementation of best management practices.

The last round of the survey was in 2015 and was carried out by the EMS in 12 countries (Austria, Croatia, France, Germany, Greece, the Netherlands, Slovenia, Spain, Switzerland, Turkey, the UK and Italy), resulting in approximately 4,000 responses. For the present dissertation, the sample consisted of the Spanish firms and was further restricted to manufacturing enterprises (NACE Code 10-33) and to companies with at least 20 employees. The Spanish National Statistics Institute facilitated the identification of all the manufacturing establishments with these characteristics, as well as the distribution of the survey. Approximately 10% of the population received the EMS survey and the questionnaire was sent out by post to the selected firms in two rounds. The first round was sent out in June 2015, with a follow up in September 2015.

3.3 Data analysis

For the first and second studies, the authors used the data collected in 2012. In this sample, the EMS considers 13 different organizational concepts grouped into five thematic blocks, one of which focused on HRM. This human resource management block of questions surveyed four different concepts: i) employee training for creativity and innovation, ii) formalised sessions for idea generation, iii) on-the-job time dedicated to creativity and innovation, and iv) talent development programs.

A descriptive analysis was provided to analyse the implementation degree of these practices (study 1). Beyond the yes/no answer regarding use, further aspects of both affirmative and negative answer scenarios were addressed. Regarding the first, the degree of use was classified as low for initial use, medium for partial use and high for intensive use. In the case of non-implementation, planned implementation in the upcoming three years was requested. The binomial logistic regression model was proposed to analyse the most influential HR factors. Logit regression is the appropriate regression analysis to perform when the nature of the dependent variables is dichotomous (binary) and the explanatory variables are categorical. This model was implemented as an alternative to a

discriminant analysis when the normal model was not applicable. Logistic regression is used to describe data and to explain the relationship between one dependent binary variable and any combination of continuous and categorical independent variables.

The second study analyses the impact of the previous T&D practices on innovation and financial performance, developed in two different conceptual models. In operational terms, the survey asked manufacturing firms the question, 'Has your factory used some of the following practices?' to which the answer was 'Yes' or 'No'. For the first model (innovation), the question used to identify product innovation was, 'Has your firm introduced new products since 2009 that were completely new to the factory or has it incorporated major technical changes (not just minor modifications)?' As for product-related service innovation, the corresponding question was, 'Since 2009, have you offered new product-related services that are completely new to your factory or are significantly improved (excluding minor modifications)?' To develop the second model (financial performance) the questions asked were, 'What was your company's return on sales for 2011?' The survey offered two possible answers to this question: less than 2% and more than 2%. And the last question was, 'What was your company's turnover (revenues) for 2011?" In this case, it was an open answer. The following variables were used both alternatively and in combination as dependent variables: new-to-the-firm products, new-to-the-market products and service innovation. Product complexity was divided into simple products, medium-complex products and complex products.

For this study, an empirical analysis of the relationship between T&D practices and innovation and financial performance was carried out. First, a descriptive analysis is provided. Moreover, statistical tests to compare the means of the variables, namely the Wilcoxon and McNemar tests, were used to analyse the significant differences. The Wilcoxon test is a nonparametric test that compares two paired groups. It essentially calculates the difference between each set of pairs and analyses the differences. As the nonparametric equivalent of the paired stent's t-test, the Wilcoxon tests can be used as an alternative to the t-test when the population data does not follow a normal distribution. The McNemar test assesses the significance of the difference between two dependent samples when the variable of interest is a dichotomy.

Moreover, to analyse the relations between the dependent variables and the models, logistic regression analyses for both models was performed. Logit regresion for

innovation performance and multiple logistic regresion for financial performance. The objective of the logistic regression is to predict the probability of obtaining a particular value of the nominal variable, given the measurement variable. Simple logistic regression finds the equation that best predicts the value of the Y variable for each value of the X variable. What makes logistic regression different from lineal regression is that the Y variable is not directly measured but is rather the probability of obtaining a particular value of a nominal variable.

The third essay is based on the 2015 EMS sample. This research aimed to study the difference between implementing HR practices separately or as a bundle and their effect on performance aspects. The HR practices studied were selected based on thorough research of the literature. A wide range of articles analysing the most implemented HR practices were reviewed and it was determined which of these practices matched the EMS survey. Once the best HR practices had been selected, three thematic blocks were created and different practices were studied in each group: organization of work (method of 5S, standard work and integration of tasks); promotion and retention (instruments to maintain older employees, methods for promoting staff commitment, standardized methods for health and safety conditions and broad-based employee financial participation schemes); and training (seminars and training opportunities with specific focus, seminars and training opportunities with an interdisciplinary focus, IT-based self-learning programs, on the job training, information offers and measures for continual quality improvement). In operational terms and for the purpose of the present analysis, the question 'Has your factory used 'X' practices?'was asked to the manufacturing firms. Companies had the option to choose between the answers 'Yes'and 'No'.

The most implemented combinations were matched with other variables such as innovation, quality, production and financial outcomes, understood as performance indicators. As the information was provided in different units, the variables were standardised to be able to compare the different performance aspects. Once all the variables were in the same unit, a discriminatory analysis was implemented to detect the practices implemented by more than 50% of the firms studied.

A Wilcoxon test to compare the means of the variables was carried out to detect the impact the individual practices had on the performance studied. As stated above, this test calculates the difference between each set of pairs and analyses these differences. The

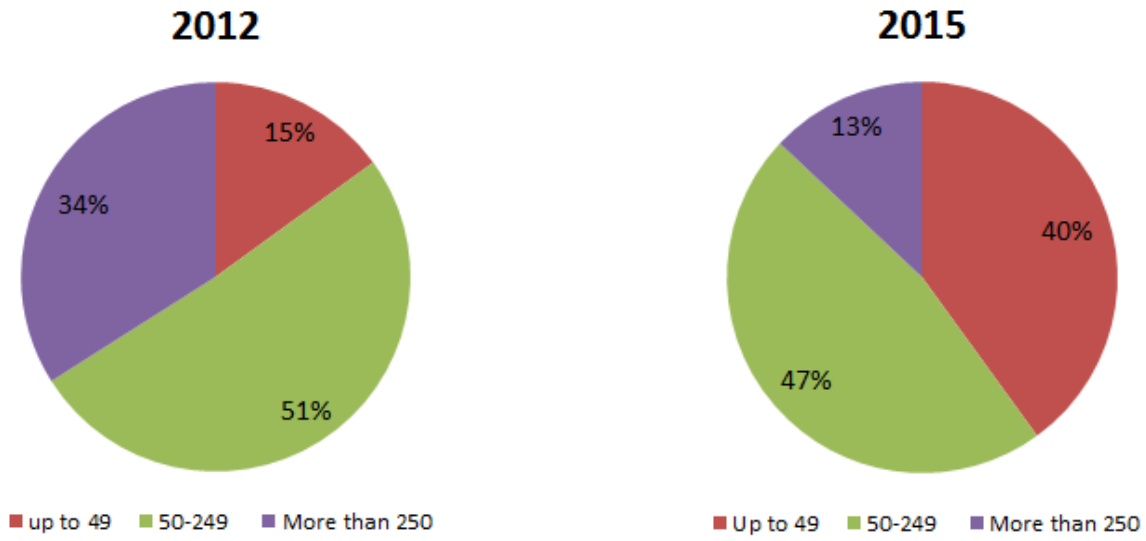
McNemar tests assess the significance of the differences between the variables. Furthermore, a multiple regression analysis was conducted to compare the impact of these practices as a bundle.

3.4 Descriptive analyses of the 2012 and 2015 samples

This section includes the descriptive figures taken from the analysis of the 2012 and 2015 samples. The main characteristics of the firms that took part in the study were described below.

Regarding the size of the companies, the data differentiated between small (less than 49 workers), medium (between 50 to 249 employees) and large companies (with more than 250 employees). As the figures show, in both years almost 50% of the companies were medium-size firms.

Figure 2: Organization's size



Regarding the year they were founded, table 5 shows that most of the manufacturers studied were created in the second half of the nineties, meaning that they are established companies with at least 15 years' experience.

Table 5: Birth year

2012			
1821-1900	1901-1950	1951-2000	2001-2012
4%	8%	63%	11%

2015			
1821-1900	1901-1950	1951-2000	2001-2015
3%	8%	78%	11%

For this thesis, it is also important to know the innovation degree of Spanish manufacturers to implement innovative HR practices. According to Peneder (2010) also used in Dachs et al. (2014), sectors of economic activities can be classified according to their innovation-intensity. *Low innovation intensity* sectors are wearing apparel, leather and leather products and secondary raw materials. *Medium-low innovation intensity* sectors are food products and beverages, tobacco products, printed matter and recorded media. And the sectors with *medium innovation intensity* are wood products, pulp, paper and paper products and furniture. The *medium-high innovation intensive* sectors are petroleum products and nuclear fuels, chemical products and man-made fibres, rubber and plastic products, other non-metallic mineral products, basic metals and motor vehicles and trailers and semi-trailers. Last, the sectors that are considered as having *high innovation intensity* are machinery, office machinery and computers, electrical machinery, radio, television and communication equipment and medical, precision and optical instruments.

Table 6 is a comparison of the innovation intensity of the economic sectors in the EMS samples.

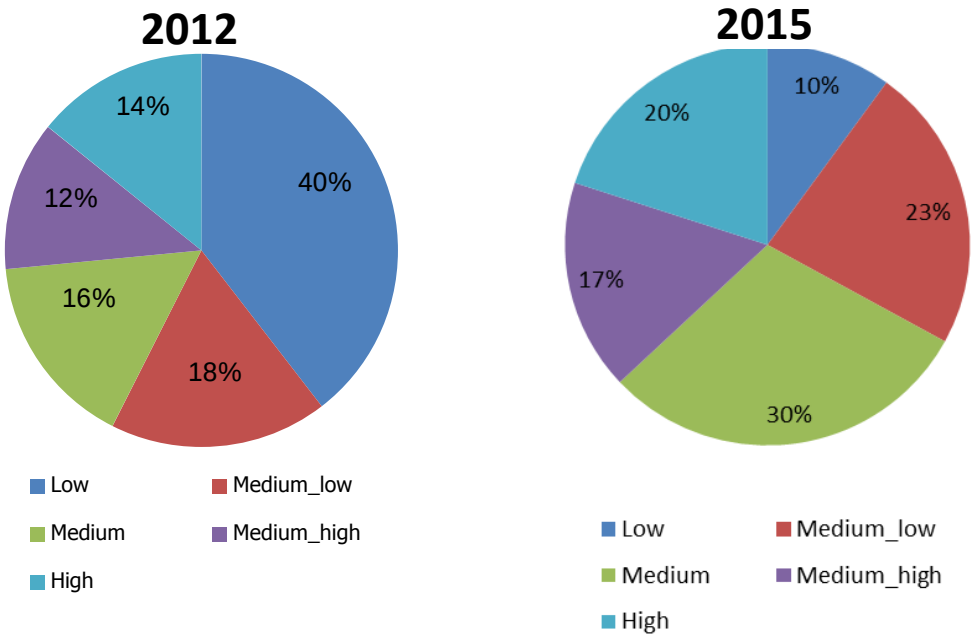
Table 6: Classification of manufacturing sectors according to innovation intensity

NACE Rev. 1.1	Manufacturing industry	Share on total sample (%)	Innovation intensity
15, 16	Food products and beverages, tobacco products	8.4	Medium–low
17	Textiles	1.7	Medium–high
18	Wearing apparel; furs	0.9	Low
19	Leather and leather products	0.7	Low
20	Wood, wood products, and cork	3.5	Medium
21	Pulp, paper, and paper products	2.0	Medium
22	Printed matter and recorded media	3.8	Medium–low
23	Coke, ref. petroleum products and nuclear fuels	0.1	Medium–high
24	Chemicals, chemical products, and man-made fibres	5.0	Medium–high
25	Rubber and plastic products	7.8	Medium–high
26	Other non-metallic mineral products	4.9	Medium–high
27	Basic metals	3.0	Medium–high
28	Fabricated metal products	18.1	Medium
29	Machinery and equipment n.e.c.	17.5	High
30	Office machinery and computers	0.4	High
31	Electrical machinery and apparatus n.e.c.	4.6	High
32	Radio, television, and communication equipment	2.8	High
33	Medical, precision, and optical instrument	6.5	High
34	Motor vehicles, trailers, and semi-trailers	2.1	Medium–high
35	Other transport equipment	1.0	Medium–high
36	Furniture; other manufactured goods n.e.c.	4.9	Medium
37	Secondary raw materials (recycling)	0.2	Low

Source: EMS.
Note: Classification of innovation intensity according to Peneder (2010).

As figure 3 shows, in 2012 the innovation degree of the manufacturers studied falls within the low or medium-low innovation category (almost 60%). In contrast, three years later this low rate decreased and all the rest increased. This change might mean that the economic situation has brought about the need for companies to innovate to be able to create competitive strategy.

Figure 3: Classification of Spanish manufacturing sectors according to innovation intensity



Looking at the level of batch size production, table 7 indicates that the single unit production (18% to 21%) and small/medium size lots (46% to 52%) increased, while the large batch decreased (37% to 28%).

Table 7: Production batch size

2012		
Single unit production	Small/Medium batch	Large batch
18%	46%	37%

2015		
Single unit production	Small/Medium batch	Large batch
21%	52%	28%

Last, regarding the complexity of the companies' production, table 8 shows that most of the firms produce medium complex products. It seems that the tendency of the firms is to produce medium complex products rather than simple or complex products.

Table 8: Product complexity rates

2012		
Simple products	Medium complexity	Complex products
28%	40%	27%

2015		
Simple products	Medium complexity	Complex products
24%	56,%	20%

To summarise, the Spanish manufacturing companies studied are medium-size firms with more than 15 years' experience, meaning that they are consolidated in the market. Regarding the innovation intensity sector, the data shows that the companies were not in a very innovative sector (at least initially); however, comparing both data it seems that there is a positive tendency towards innovative sectors. As shown in figure 3, in 2015 most companies were located in the medium innovation intensity sector. Last, the companies studied produce medium complex products with a small or medium lot size.

Chapter 4. Transcription of the thesis' articles

This thesis is presented as a compendium of the three articles whose reference follow bellows.

Authors: Manresa, A; Bikfalvi, A; Simon, A
Title: The use and determinants of Training and Development for Creativity and Innovation practices
Journal: *International Journal of Innovation Management*
Status: Published
DOI: 10.1142/S1363919618500627 (ISSN: 1363-9196)
Year: 2018
Journal quality index: Journal Impact: 1.55, (Q2, Scopus)

Authors: Manresa, A., Bikfalvi, A., Simon, A.
Title: The impact of training and development practices on innovation and financial performance
Journal: *International Journal of Human Resource Management*
Status: under review
DOI: not available yet
Year, Volume, Page: not available yet
Journal quality index: Journal Impact: 1.650, Q3 (JCR), Q2 (SCOPUS)

Authors: Manresa, A., Bikfalvi, A., Simon, A
Title: "Individual or bundle" Human Resource Practices leading to higher firm performance
Journal: *Human Resource Management Journal*
Status: under review
DOI: not available yet
Year: not available yet
Journal quality index: Journal Impact: 2.147, Q2 (JCR), Q1 (SCOPUS)

International Journal of Innovation Management
(2018) 1850062 (28 pages)

DOI: 10.1142/S1363919618500627

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THE USE AND DETERMINANTS OF TRAINING AND DEVELOPMENT FOR CREATIVITY AND INNOVATION

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Human Resource Management (HRM) practices are considered as a possible contributor to firm success. Further research is needed in this field to address how HRM practices contribute to a firm's ability to be creative and innovative. The first objective of this paper is to map the implementation of training and development practices for creativity and innovation (TD4CI) in manufacturing and the second is to analyse the factors that most influence this implementation. The study, based on the Spanish sub-sample of the European Manufacturing Survey, demonstrates the unexhausted potential of TD4CI as a step prior to innovation. The results show that one third of the companies currently use TD4CI and that this figure is rising. Most of the firms, however, have not put these practices into place and they have no intention of doing so. Regarding the determinants that influence the studied practices, the results show that there are some significant factors, for example new products or services being introduced within the company in the previous three years, that positively affect all the practices. Other determinants are individually significant, for instance the complexity of the product. Some factors, on the other hand, such as size or single unit production, do not appear to influence any of the practices studied so far. The value of this research lies in the up-to-date, relevant figures it provides regarding the implementation and dissemination of TD4CI.

Keywords: Creativity; development; innovation; human resource management; human resource practice; training.

Alba Manresa, Andrea Bikfalvi, Alexandra Simon. " The use and determinants of training and development for creativity and innovation". *International journal of innovation management.* Vol. 22, no. 07, 1850062 (2018)

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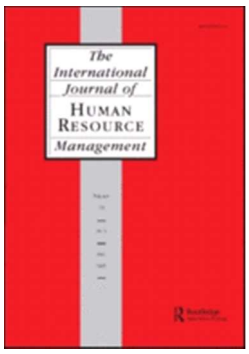
Abstract

Human Resource Management (HRM) practices are considered as a possible contributor to firm success. Further research is needed in this field to address how HRM practices contribute to a firm's ability to be creative and innovative. The first objective of this paper is to map the implementation of training and development practices for creativity and innovation (TD4CI) in manufacturing and the second is to analyse the factors that most influence this implementation. The study, based on the Spanish sub-sample of the European Manufacturing Survey, demonstrates the unexhausted potential of TD4CI as a step prior to innovation. The results show that one third of the companies currently use TD4CI and that this figure is rising. Most of the firms, however, have not put these practices into place and they have no intention of doing so. Regarding the determinants that influence the studied practices, the results show that there are some significant factors, for example new products or services being introduced within the company in the previous three years, that positively affect all the practices. Other determinants are individually significant, for instance the complexity of the product. Some factors, on the other hand, such as size or single unit production, do not appear to influence any of the practices studied so far. The value of this research lies in the up-to-date, relevant figures it provides regarding the implementation and dissemination of TD4CI.

Keywords

- Creativity
- development
- innovation
- human resource management
- human resource practice
- training



The impact of training and development practices on innovation and financial performance

Journal:	*The International Journal of Human Resource Management*
Manuscript ID	RIJH-2018-0375
Manuscript Type:	Original paper
Keywords:	Training and Development, Financial performance, Innovation Performance, HRM, HRM practices, European Manufacturing Survey, Spain

Manresa, A., Bikfalvi, A., Simon, A. “The impact of Training and Development practices on innovation and financial performance”

ABSTRACT

Over recent years firms have been implementing novel human resource (HR) practices. The study attempts to analyse four specific training practices to determine if and up to what extent the adoption of such practices affects innovation and financial performance. With this objective in mind, Spanish subsample of the European Manufacturing Survey (EMS) is used to contain the responses of 162 manufacturing firms. The positive relation between T&D practices and innovative performance was partially accepted, as new-to-the-firm products and new services had a significant relation with these practices. Oppositely, the hypothesis stating that there is a positive relation between a newto-the-market product and the aforementioned T&D practices was rejected. Furthermore, the positive relation between these and financial performance was partially accepted. The value of this research lies in its offering recent and relevant data about implementing novel T&D practices and their relation with firm performance.

Keywords

training and development; financial performance; innovation performance; HRM Practices; European Manufacturing Survey; Spain

Human Resource Management Journal

"INDIVIDUAL OR BUNDLE" HR PRACTICES LEADING TO HIGHER FIRM PERFORMANCE

Journal:	*Human Resource Management Journal*
Manuscript ID	18-HRMJ-04643
Wiley - Manuscript type:	Special Issue
Journal Keywords:	Competitive strategy, Best practice, High performance work systems, Training and development, Organisational performance
Keywords - Methodological:	Regression
Other Keywords:	European Manufacturing Survey, Spain
Abstract:	Nowadays, companies are implementing practices known as High Performance Work Systems designed to enhance firm performance; uncertainty remains, however, about the structures included therein.The aim of this paper is to analyse the difference between implementing HR practices separately or as a bundle and their effect on performance aspects, using the Spanish sub-sample of the European Manufacturing Survey.The results show that these firms' rates of implementation are relatively low compared with the European average, despite more than 50% of the respondents implementing some of the practices studied (individually or as a bundle).The HR practice that leads to greater individual performance is training, while the bundle configuration of HR practices that leads to enhanced firm performance considers training, health and safety conditions and standardization. The value of this research lies in offering empirical contribution bringing recent and relevant data about implementing HPWS and their relation with firm performance in multiple facets.

Manresa, A., Bikfalvi, A., Simon, A. "Individual or bundle" Human Resource Practices leading to higher firm performance". *Human Resource Management Journal*

Abstract

Nowadays, companies are implementing practices known as High Performance Work Systems (HPWS) designed to enhance firm performance; uncertainty remains, however, about the structures included therein. The aim of this paper is to analyse the difference between implementing HR practices separately or as a bundle and their effect on performance aspects, using the Spanish subsample of the European Manufacturing Survey. The results show that these firms' rates of implementation are relatively low compared with the European average, despite more than 50% of the respondents implementing some of the practices studied (individually or as a bundle). The HR practice that leads to greater individual performance is training, while the bundle configuration of HR practices that leads to enhanced firm performance considers training, health and safety conditions and standardization. The value of this research lies in offering empirical contribution bringing recent and relevant data about implementing HPWS and their relation with firm performance in multiple facets.

Keywords

financial performance, innovation performance, quality, productivity, High Performance Work System, HPWS, European Manufacturing Survey, Spain

Chapter 5. Discussion of the main results

The three essays that compile this dissertation explore the implementation of human resource practices in Spanish manufacturing companies. They approach the concept of HRM practices from several perspectives, including the integration of some specific practices such as training and development and their impact on performance, and they also provide a comparison of the implementation of HR practices individually and as a bundle.

The first essay, 'The use and determinants of Training and Development for Creativity and Innovation', has two main objectives. The first is to analyse the degree of implementation of training practices called training and development practices for creativity and innovation (TD4CI). Additionally, the paper aims to study the most influential factors for implementing these practices. The main finding reveals that only one-third of the analysed manufacturers use TD4CI and that this implementation is increasing over time in these firms. However, most of the enterprises had not put these practices into place and had no intention of doing to. Regarding the determinants that influence the studied practices, the results confirm that all the variables related to innovativeness are significant. Factors like size or single unit production have no influence on any of the practices studied so far. Following the literature reviews, it is true that training and development have been thoroughly studied, but this is a dynamic practice that changes constantly. The value of this essay lies in the degree of detail of the different training practices analysed, the recent nature of the data related to their implementation and the link between this implementation and a variety of determinants.

The second essay, 'The impact of training and development practices on innovation and financial performance', aims to study if and to what extent the adoption of TD4CI practices affects innovation and financial performance. The results confirm a positive, significant relationship with the innovative outcomes related to the firm: new-to-the-firm products and new services had a significant relation. The variable new-to-the-market, however, was not significant. In this sense, it is important to specify the objective of the firm. If the company wants to introduce new products to the firm it might implement T&D practices; as the results show, companies that implement T&D practice have higher averages than the others. However, if the objective of the firm is to introduce new-to-the-market products, then T&D practices are not enough. This differentiation between new products for the market and new products for the firm can be explained by TD4CI

practices not being as specific as they should be to introduce a completely new product to the market.

Regarding the second model studied, the financial model, the results show a positive relation between TD4CI practices and turnover, but there is no relation with the return of sales variables. The results show that when the four TD4CI practices were introduced at the same time, financial performance increased. Although not all the practices are significant individually, when they are introduced as a group they have a greater effect.

Finally, the third essay, "Individual or bundle" HR practices leading to higher firm performance' explores the difference between implementing HR practices separately or as a bundle. Additionally, the paper aims to evaluate the impact in both cases on specific performance aspects. The results show that these firms' rates of implementation are relatively low compared with the European average, despite more than 50% of the respondents implementing some of the practices studied (either individually or as a bundle).

This lack of implementation can be explained by the financial crisis that has affected Spain over the last few years, as most of the companies surveyed are SMEs who have been most affected by the crisis. Companies may have been willing to implement these strategies during this time but did not have enough economic resources to allocate part of the budget to training for innovation. Another important aspect may be companies' tendency to still focus on the short term and these practices require time before they generate returns, so the time lag between implementation and impact could be another factor. Last, smaller companies might simply consider these practices as unnecessary.

As a second result, the HR practices that lead to greater individual performance are those related to training. As is well-known in the literature, T&D to enhance employees' requisite skills and potential to learn is perceived to be the most important HRM practice (Dachs et al., 2014). Once employees have undertaken these programs, they are expected to apply the acquired knowledge to the task assigned, leading to increased performance.

The third result studied is the bundle configuration of HR practices that leads to enhanced firm performance. As stated by several authors and following the strategy approach, the bundle that leads to better performance depending on firm strategy is studied and discussed. For instance, the bundle of practices that increase innovation turnover is the one

focused not only on the task and training but also on employees' concerns. Another example is the practices that enhance quality outcomes. In line with the research developed by Beltran-Martin et al. (2008), these HR practices are standardization, training and health and safety conditions. These increases in innovation turnover can be explained by the practices leading to better quality through increasing efficiency and effectiveness by motivating and helping employees to complete tasks successfully (Scotti et al., 2007) and improving quality and employees' attitudes (Pot, 2011). In line with the European Foundation for the Improvement of Living and Working Conditions study (2011), the results show that companies who implement HPWS involving health and safety measures, training and integrated working practices are the ones most commonly associated with increased quality and, to a lesser extent, with reduced complaints due to quality problems (Eurofound, 2011).

In conclusion, the most suitable bundle of practices that leads to enhanced firm performance includes training, health and safety conditions and standardization. Companies should take these three blocks of practices into account when they are considering implementing some HPWS. They are important because training and development brings new capacities and skills to the employees' workplace; health and safety conditions make the worker feel valuable in their job and standardization enhances employees' abilities and makes them specialists in their work.

Chapter 6. General conclusions, limitations and future research

To conclude, the results from this thesis are not an end in themselves. In fact, the results, with their embedded limitations, involve many more implications, possible contributions to theories and practice and future research opportunities. This chapter is dedicated to these aspects: conclusions, implications, limitations and future research directions. In doing so, the researcher's message is that this dissertation is not an end but a starting point for an academic journey.

6.1 Conclusions

Human resource management practice is an old-fashioned topic and there are plenty of empirical international studies that contribute to enlarging the theory about it. However, the practices themselves are continuously changing due to their dynamic conditions. For instance, twenty years ago training and development that focused on using the internet was required, but nowadays this is no longer necessary. Furthermore, despite the large number of international studies that focus on HR practices, there are few quantitative studies that analyse these practices in the Spanish context.

Although the scope of the dissertation relies on a very specific topic, human resources practices focused basically on training and development, it attempts to provide insights into some of the neglected areas of business strategy and performance. The findings can be used to create a theory, such as a recommendation for the management of organizations about their strengths, weaknesses and the process of implementing them.

The primary conclusion of this dissertation is that the degree of implementation of human resource management practices is relatively low compared to the European average. One of the reasons for this moderate implementation could be lack of knowledge, but it is essential that managers and practitioners become aware of the benefits of these HR practices. Thus, one of the main contributions of this dissertation thesis is to highlight both the importance of HR practice for Spanish companies and their low adoption rates.

The second conclusion is that companies should implement one bundle of practices or another depending on their business strategy and company objectives. The results of this study show that HRM should be aligned with the aim of the company, so depending on its objective the firm should implement one or another group of practices.

Another important contribution of these results is that they highlight the fact that despite the low implementation rates, training and development is the practice that leads to better firm performance. Managers should be aware of the benefits of implementing training and development practices. Although the literature is aligned with the present results, there is still a lack of knowledge in this field of study.

Additionally, security and health conditions in the workplace must be highlighted. Despite training being the most implemented practice, security and health conditions are also very important. All the bundles studied that do not include this practice have a negative impact on financial performance; in contrast, the configurations that introduce these methods have positive impacts on this performance aspect.

Last, some methodological contributions must be pointed out. Comparing approaches to measuring organizational innovations in existing surveys by modelling these organizational innovation indicators in the EMS leads to four main implications for measuring organizational innovation.

First, the EMS includes question on the complexity of organizational innovation. It is important to include specific questions regarding different types of organizational innovation such as human resource management, creativity and so on, because questions that only cover general organizational innovation are not sufficient. This is important because different organizational innovation practices might affect performance outcomes differently.

Second, the EMS survey is a combination of various firm outcomes such as innovation, HRM and technology, among others. However, although the data is based on all these topics, it is not an HRM survey, a technology survey or an innovation survey; it is a compendium of organizational concepts. Second, this survey is upgraded in every round. Every two years a group of experts meet and discuss the questionnaire to ensure that the survey is related to the latest organizational and technological topics.

The third contribution is the capacity to show the implementation degree of the studied concepts. It is not sufficient to only ask questions about the ‘implementation’ or ‘non-implementation’ of organizational practices, but the extent to which they have been implemented into manufacturing process must also be identified. The EMS provides data to analyse the extent to which the practices studied are new enough to be implemented by

a sufficient number of companies to be able to generate reliable and valid results; or to determine if they are too old and not representative because all the manufacturers have already implemented them. Additionally, this information can indicate viable estimations of the performance effects of organizational concepts.

6.2 Managerial and scholarly implications

This dissertation reviews an important theoretical model and proposes a framework for analyzing training and development, high performance work systems and firm performance issues. Its main implication is that it will broaden the literature on training and development in organizations. It could also spark debate among managers to come up with strategies to ensure that employees are trained and provided with the skills required to be strategically positioned and able to face any change in the firm environment. Additionally, the results will help managers to understand the need for employee training and development in their organizations. Focusing on innovation outcomes, managers can attempt to improve performance by providing adequate training programs. From a practical perspective, the results also suggest that organizations can enhance their performance by implementing high performance HRM practices. However, managers must be aware of their firm's strategy to select the bundle of practices that most closely align with it.

At this point, it is important to highlight that this dissertation thesis presents some limitations.

One of the major limitations of this empirical study is the focus on a single country, Spain. The results may be difficult to extrapolate to other countries due to differing cultural antecedents. The results could be highly significant for future comparison with other countries.

The second limitation presented is the sample size in both years, 2012 and 2015, with 162 and 101 companies respectively, which could be the reason why some of the results are not significant. Further, the cases analysed only reflect the point of view of the company manager or the production manager who answered the survey and not of other actors involved such as employees.

A third limitation is to do with the questionnaire. As stated above, it is important that the surveys keep being upgraded; however, if the practices are too new and modern, manufacturers will not be ready to implement them and the question will not be representative. Oppositely, if the organizational concept is old-fashioned, all the firms will have implemented it and the results will again not be valuable.

Finally, another limitation is the absence of previous data using the same source (the European Manufacturing Survey). Using the same survey to compare the same data in different periods of time could be valuable to be able to explain the evolution of these practices and their impact on performance.

6.3 Future research

Unfolding and listing all the possibilities for a future research agenda is challenging since so many research opportunities arise from this study. Nonetheless, some of the principal research interests with a possible relevant contribution are described below, in suggestive rather than exhaustive terms.

For future research, the author confirms that her willingness to continue studying human resource management practices is driven by the desire to know more about the topic in general and its impact on business results in particular. Different research lines will thus be pursued:

First, the present thesis is a collection of different results and analyses about training and development practices, their implementation degree and their impact on performance. Nevertheless, to make training and development more effective for manufacturing companies, there is a need of further research to study the extent to which training is associated with organization strategy. Additionally, another line of research could be to analyse new ways to make training and development more effective and successful for organizations.

Second, the results that highlight this thesis show that the four TD4CI practices have some communalities. Following the configurational approach studied by Delery and Doty (1996) interesting further research could be to develop a configuration of HRM process and policy that maximize the horizontal fit and then link these practices to enhance strategic configurations.

Third, further analyses could also underly the process of implementing the T&D practices analysing at employee level. The implementation of these practices might not always have positive outcomes on employees' behaviour. Thus, further research is needed in order to understand the employees' process when firmd implement T&D practices in their workday life.

At the same line, another line of further research could be a deeper research analysing the differences between how these T&D practices are being described and hypothezed in conceptual papers and how differs from their actual use in real manufacturing companies.

Finally, it is well known that companies implement new technologies to be more effective; however, digital practices alone are not enough to achieve better performance. Following Olivia et al. (2013) and based on the socio-technical theory, a firm needs to match technology and employees to achieve better efficiency outcomes. Therefore, little is known about the extent to which human resource management practices have a direct effect on firm outcomes.

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