Systemic and Temporal Analysis of the Relationship between HR Practices, Employee Well-being, and Organisational Performance: a System Dynamics Study

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STATEMENT OF ORIGINALITY

I, Ane Sánchez Zeziaga, as the author of the doctoral thesis titled “Systemic and Temporal Analysis of the Relationship between HR Practices, Employee Well-being, and Organisational Performance: a System Dynamics Study”, hereby declare that the work presented in this thesis is the result of my original research. I affirm that all content in this thesis, including but not limited to text, figures, tables, images, and results, has been created by me unless explicitly stated otherwise and appropriately referenced. I acknowledge and correctly cite all sources used in this thesis, including academic literature, works by other researchers, and any other source of information.

The model developed to perform the simulations was developed entirely by myself.

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Eskerrak zuri ere Unai. Duela 14 urte hasi zen zure ametsik gabe lan hau ez zen posible izango. Zu izan zara SHRM eremuko ateak ireki dizkidanak eta zu zara lan hau guztia aspaldi irudikatu zuena. Orain espero dut, amets horiek elkarrekin garatu ahal izatea.

Nire lankide Alaine, Gentzane, eta Urtziri ere eskerrak. Zuek zarete unibertsitatean nire “kexak” entzun dituzuenak eta noski beti ni laguntzeko prest egon zaretenak. Une txarrenetan, nire lanaren ikuspegia ez galtzen lagundu didazue. Beti da eta izango da plazer bat zuekin kafeak eta bidaiak partekatzea. Alaine, zuri bereziki mila esker. Hemen barruan nire lankidea baino askoz gehiago zara, nire aholkularia izan zara, unibertsitatean nire erreferentea. Zu zara hemen ateak ireki dizkidana eta bidea askoz errazago egin didana. Atsekabeak, zalantzak eta pozak zurekin partekatzea beti da plazer bat. Urte askoan zurekin lan egiten jarraitzea espero dut.

Nire betiko lagunei, koadrilakoei, eskerrik asko borrokan jarraitzen animatzeagatik. Aspalditik ezagutzen nauzue eta bide honetan tinko eusten lagundu didazue. Eskerrik asko elkarbanatutako momentuengatik, barre algara amaiezinengatik eta bidean eskainitako laguntzagatik.

Iñigo, mila-mila esker denbora guzti honetan ni jasateagatik. Batzuetan ibilbide akademiko hau egiteko erabakia ulertu ez arren, nire ongi-izatea bermatu duzu beti. Nire “vía de escape” nagusia zara eta zurekin lortzen ditut pilak 100%-era kargatzea, indarberritzea eta egurra ematea. Zu alboan izatea, izugarrizko altxorra da eta bide lagun izatea plazer galanta.

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RESUMEN

Aunque el campo de gestión estratégica de recursos humanos (SHRM, por sus siglas en inglés) ha demostrado ampliamente la influencia positiva de las prácticas de gestión de personas (HRM) en el rendimiento organizativo (OP) y bienestar de los empleados (WB), es necesario seguir investigando para comprender en detalle cómo se desarrolla esta relación. La literatura sugiere que una de las claves para la exitosa implementación de las prácticas de gestión de personas no reside tanto en el propio contenido de la práctica, sino que en su proceso de implementación.

Para poder analizar el efecto del proceso de implementación de las prácticas de gestión de personas sobre el rendimiento organizativo y el bienestar de los empleados, hemos incorporado la dimensión temporal en el análisis. Adoptando un enfoque sistémico y dinámico, es posible abordar el objetivo principal de este estudio, que consisten en demostrar que los resultados del bienestar de los empleados y el rendimiento organizativo, se ven influenciados por la percepción que tienen los empleados sobre las prácticas implementadas en su entorno laboral. Además, hemos examinado como varía dicha percepción en función del proceso de implementación de las prácticas de recursos humanos (HR). Las cuales vienen determinadas tanto por el enfoque de la toma de decisiones (proactiva o reactiva) como por los recursos organizativos disponibles.

Para cumplir con el objetivo mencionado, se ha desarrollado un modelo de simulación mediante la aplicación de la metodología de dinámica de sistemas (SD). Esta metodología permite estudiar los efectos a corto y largo plazo de la implementación de las prácticas de recursos humanos, así como identificar las consecuencias intencionadas e imprevistas que puedan surgir.

El modelo de simulación ha sido construido combinando datos cualitativos y cuantitativos. Los datos cualitativos provienen, de 41 sesiones de “construcción de modelos en grupo” (GMB) desarrollados en 23 organizaciones industriales del País Vasco (norte de España) entre 2017 y 2020, y estos se han complementado con la literatura relevante para el análisis del sistema HRM-WB-OP. Por otro lado, los datos cuantitativos han sido obtenidos de la base de datos de Bateratzen. De esta manera, el modelo de simulación desarrollado captura y conecta tres subsistemas: (i) el efecto de las prácticas de recursos humanos que se implementan con el objetivo de maximizar los resultados organizativos, (ii) el efecto de las prácticas de recursos humanos que se implementan con el objetivo de maximizar el bienestar de los empleados, y (iii) el efecto de las prácticas que se implementan para mejorar simultáneamente el rendimiento organizativo y el bienestar de los empleados.

Los resultados del estudio demuestran que el proceso de implementación de las prácticas de recursos humanos afecta significativamente en los resultados organizativos y en el bienestar de los empleados. Dependiendo de si la implementación es constante o variable a lo largo del tiempo, el rendimiento organizativo y el bienestar de los empleados se verán afectados. Esto implica que el enfoque de la toma de decisiones por parte de los directivos (priorizar los objetivos organizativos a corto o largo plazo) determina el proceso de implementación de las prácticas de recursos humanos, y consecuentemente afecta al rendimiento organizativo y el bienestar de los empleados.

LABURPENA

Giza baliabideen kudeaketa estrategikoaren eremuak (SHRM, ingelesezko siglengatik) pertsonen kudeaketa-praktikek (HRM) antolakuntzaren errendimenduan (OP) eta langileen ongizatean (WB) eragin positiboa dutela erakutsi duen arren, erlazio hori zehatz-mehatz nola gertatzen den ulertzeko, beharrezkoa da ikertzen jarraitzea. Literaturaren arabera, badirudi pertsonen kudeaketa praktikak arrakastaz ezartzeko gakoetako bat ez dela praktikaren edukia bera, baizik eta bere inplementazio prozesua.

Pertsonen kudeaketa praktikak ezartzeko prozesuak, antolakuntzaren errendimenduan eta langileen ongizatean duen eragina aztertu ahal izateko, denboraren dimentsioa kontsideratu dugu ikerketa honetan. Ikuspegi sistemiko eta dinamikoa hartuta, azterlan honen helburu nagusiari heldu ahal izan diogu. Ikerketa hau, langileen ongizatea eta antolakuntzaren errendimendua, ezarritako praktiken inguruan langileek duten ikuspegiaren araberakoa dela erakustean datza. Gainera, ikuspegi hori praktiken ezarpen prozesuaren arabera nola aldatzen den aztertu dugu. Prozesu hori erabakiak hartzeko ikuspegiaren (proaktiboa edo erreaktiboa) eta antolakuntzak eskura dituen baliabideen araberakoa delarik.

Sistemen dinamikaren (SD) metodologiaz baliatuz, simulazio eredu bat garatu da aipatutako helburua betetze aldera. Metodologia honi esker, pertsonak kudeatzeko praktikak ezartzeko prozesuak epe laburrean eta luzean izango dituen ondorioak azter daitezke, baita ere sor daitezkeen desiratako eta ustekabeko ondorioak identifikatu ere.

Garatutako simulazio ereduak datu kualitatibo eta kuantitatiboak konbinatzen ditu. Datu kualitatiboak, Euskal Autonomia Erkidegoko 23 industria erakundeetan 2017 eta 2020 urteen artean garatutako 41 “taldean eraikitako modelo” (GMB) saioetatik datoz, eta HRM-WB-OP sistema aztertzeko nabarmena den literaturarekin osatu da. Bestalde, datu kuantitatiboak Bateratzen datu-basetik lortu dira. Horrela, garatutako simulazio-ereduak hiru azpisistema jaso eta konektatzen ditu: (i) antolakuntzaren errendimendua maximizatzeko helburuarekin ezartzen diren pertsonak kudeatzeko praktiken eragina, (ii) langileen ongizatea maximizatzeko helburuarekin ezartzen diren pertsonak kudeatzeko praktiken eragina, eta (iii) antolakuntzaren errendimenduan eta langileen ongizatean aldi berean hobetzeko ezartzen diren praktiken eragina.

Ikerketaren emaitzek erakusten dute pertsonen kudeaketako praktiken ezarpen prozesuak eragin nabarmena duela antolakuntzaren errendimenduan eta langileen ongizatean. Denboran zehar inplementazioa konstantea edo aldakorra izatearen eraginez, antolakuntzaren errendimendua eta langileen ongizate maila ezberdina izango da. Horrek esan nahi du, zuzendariek erabakiak hartzeko duten ikuspegiak (epe labur edo luzerako antolakuntzaren helburuen lehenesteak) pertsonen kudeaketako praktikak ezartzeko prozesua zehazten duela, eta ondorioz, antolakuntzaren errendimenduari eta langileen ongizateari eragiten diela.

ABSTRACT

Although the Strategic Human Resource Management (SHRM) field has extensively demonstrated the positive influence of Human Resource Management (HRM) on Organisational Performance (OP) and employee well-being (WB), further research is needed to gain a detailed understanding of how this relationship unfolds. The literature would seem to suggest that successful HR practice implementation lies not only in the practice content itself, but also in the implementation process.

To analyse the effect of Human Resource (HR) practice implementation processes on OP and employee WB, we incorporate the temporal dimension into the analysis. By adopting a systemic and dynamic approach, it is possible to address the primary objective of this study, which is to demonstrate that employee WB and OP are influenced by the perception of employees of the HR practices implemented in their work environment. Furthermore, we examine how this perception varies according to the implementation process of these practices, which is determined by both the decision-making approach (proactive or reactive) and organisational resources.

The achievement of the primary objective is possible through the development of a simulation model based on the system dynamics (SD) methodology. This methodology facilitates the study of both the short-term and long-term effects of HR practice implementation, as well as the identification of intended and unintended consequences that may arise.

The simulation model combines both qualitative and quantitative data. Qualitative information was taken from 41 group model building (GMB) sessions developed in 23 industrial organisations in the Basque Country (Northern Spain) during 2017 and 2020. This was supplemented by insights from seminal literature on the HRM-WB-OP relationship. On the other hand, quantitative data was gathered from the Bateratzen database. The developed simulation model captures and connects three subsystems: (i) the effect of HR practices that are implemented driven by the desire to maximise OP outcomes, (ii) the effect of HR practices that are implemented driven by the desire to maximise employee WB, and (iii) the effect of actions that are implemented to simultaneously improve OP and employee WB.

The results of the study demonstrate that the HR practice implementation process significantly affects OP and employee WB. Depending on whether the implementation is constant or variable over time, OP and employee WB are impacted accordingly. This implies that the decision-making approach taken by managers (prioritising short-term or long-term organisational goals) determines the implementation process and, consequently, the outcomes in terms of OP and employee WB.

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ACRONYM	STAND FOR
B	Balance
CLD	Causal Loop Diagram
GMB	Group Model Building
HIWS	High-Involvement-Work-Systems
HR	Human Resources
HRM	Human Resource Management
OP	Organisational Performance
ORMS	Operational Research and Management Science
PIRK	Power, Information, Rewards, Knowledge
R	Reinforce
RBV	Resource Based View
SD	System Dynamics
SFD	Stock and Flow Diagram
SHRM	Strategic Human Resource Management
ST	System Thinking
STRESS	Strengthening the Reporting of Empirical Simulation Studies
VUCA	Volatile, Uncertain, Complex and Ambiguous
WB	Well-being

“Carefully watch your thoughts, for they become your words.
Manage and watch your words, for they will become your actions.
Consider and judge your actions, for they have become your habits.
Acknowledge and watch your habits, for they shall become your values.
Understand and embrace your values, for they become your destiny”.

Mahatma Gandhi.

Chapter 1

Introduction

1 Introduction

One of the main challenges faced globally by managers is dealing with the so-called VUCA environment (Volatile, Uncertain, Complex, and Ambiguous) (Marques, 2017). There is a consensus that markets are becoming more competitive and dynamic day-by-day, forcing organisations to seek a sustainable competitive advantage. It is said that a company is able to achieve sustainable advantage when it is capable of continually outperforming its competitors by leveraging its unique resources (Boselie, 2014; Pfeffer, 1995).

Barney and Wright (1998) identified three types of resources which can potentially be considered sustainable competitive advantage: (i) physical capital resources (buildings, equipment, etc.); (ii) organisational capital resources (such as the structure of the company, coordination, planning procedures, etc.); and (iii) human capital resources (including skills, abilities, knowledge, judgement, intelligence, etc. of the employees). Nevertheless, the competitive advantage of present day companies rarely lies in physical resources such as technology or their access to capital, since these are increasingly easy to imitate (Elorza, 2009). Thus, it would seem that although the sources of competitive edge have changed over the years, a key differentiating factor remains the employees and their working dynamics (Barney, Wright, & Ketchen, 2001; Chadwick, 2007; Katou, 2012; Wright, McMahan, & McWilliams, 1994).

In the organisational context, social relationships are highly complex and difficult to imitate due to the interactions and connections that an employee establishes with co-workers, superiors, subordinates and other stakeholders (Barney, 1991). Employees have their own individual background, experiences, values and beliefs, personality, expectations, and skills, which generates differences in perspectives and influences how they relate to others. Employees also have their own needs, desires, and goals, which can create tensions and challenges in balancing the individual and collective interests of the company. Moreover, organisations are dynamic social systems, where interactions between employees can be influenced by organisational structure, cultural norms, power dynamics, internal policies, and business objectives (Blau, 1964; Ostroff & Schulte, 2014; Schein, 1999).

These dynamic social systems are highly complex, characterised by the interplay and interdependence between various elements. The way in which collaboration is fostered, diversity is promoted, and conflicts are managed can significantly impact the quality and complexity of relationships between employees. Balancing individual needs with collective goals requires constant adaptation, negotiation, cooperation, and communication. These aspects, when properly addressed and nurtured, contribute to the overall functionality and coherence of the organisational system. Thus, recognising organisations as dynamic social systems highlights the profound impact that various interconnected elements can have on the dynamics and effectiveness of the entire system.

Human resource management (HRM) influences social relationships by establishing policies and practices that affect employees directly. An effective HRM approach can foster a positive organisational culture, which promotes autonomy, participation, transparency, and facilitates communication and collaboration among employees (Bowen & Ostroff, 2004), which in turn is key for

employee well-being (WB) and organisational performance (OP) (Elorza, Garmendia, Kilroy, Van de Voorde, & Van Beurden, 2022; Macky & Boxall, 2008; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Wood, van Veldhoven, Croon, & de Menezes, 2012). This means that analysis of the HRM-WB-OP system should recognise the importance of understanding and managing the complexity of social relationships within a company. A holistic approach that considers the interaction between HRM, employee WB, and OP, can make it possible to identify the key drivers of Human Resource (HR) practices[1] and to optimise their positive impact on the overall functioning of the organisation.

To understand the complexity of the HRM-WB-OP system and thus promote a healthy and productive work environment, the overarching objective of this research is to shed light on the impact of the implementation process of HR practices on OP and employee WB[2]. Addressing this complexity from a process approach allows us to go deeper into the underlying dynamics and mechanisms of the system. Since a process develops over time, and its nature and characteristics are intrinsically linked to the time dimension, analysing the HRM-WB-OP system from a process point of view inherently implies taking a temporal perspective. Furthermore, the social relationships between employees and consequently the relationship between the elements that constitute the HRM-WB-OP system are dynamic and can change over time due to various factors, such as changes in organisational structure, organisational objectives, the arrival of new employees, or changes in organisational culture. System Dynamics (SD) provides an analytical framework for modelling and simulating the HRM-WB-OP system, it enable us to examine how the implementation process of HR practices influence employee WB and OP over time (Sterman, 2000). Hence, to fulfil the main objective of this research, a theoretical foundation for temporal and dynamic causal paths are developed, and a system dynamic study is conducted.

Organisational objectives for example, influence managerial decisions (Capelle-Blancard & Couderc, 2007) and their implementation process, including the choice of HR practices, the frequency of adoption, and the intensity, among other significant aspects. Within the framework of this research, two fundamental decision-making approaches are examined: the proactive approach and the reactive approach. The proactive approach is characterised by long-term oriented decision-making, which involves the implementation of HR management practices with a long-term perspective. On the other hand, the reactive approach refers to decision-making that focuses on short-term objectives, where HR practices are implemented with the purpose of obtaining the fastest possible results (Capelle-Blancard & Couderc, 2007). The decision-making process of organisations is also influenced by their unique context. Hence, in this research, we have considered the macroeconomic context of the organisation—differentiating between crisis and non-crisis—as a key element that affects decision-making and consequently, the implementation of HR practices.

This thesis is divided into seven chapters. The first chapter, introduces the context of the study. In the second chapter, a comprehensive literature review is conducted to examine the theoretical arguments developed in the Strategic Human Resource Management (SHRM) field that explain the relationship

[1] HR practices refer to all the activities associated with the management of people in firms (Boxall & Purcell, 2008).

[2] In the current study, we refer to organisational-level employee well-being, rather than individual-level well-being, encompassing constructs such as satisfaction, motivation, and commitment.

between the components comprising the HRM-WB-OP system. This chapter also addresses the challenges associated with the implementation process of HR practices, considering both theoretical and methodological perspectives. The dynamic hypothesis is presented in a conceptual model format in the third chapter, together with the research objective and the six research hypotheses of the study. The fourth chapter outlines the methodology employed and describes the simulation model developed to achieve the objective. In the fifth chapter, the obtained results are summarised, while the sixth chapter delves into the discussion and conclusions drawn from the findings. In this latter, we also share the research contributions, explain how we plan to exploit the findings, managerial implications, and outline future directions for further enhancing the current work. Lastly, the seventh chapter contains the bibliographic references, and the document concludes with several appendices.

“Life is a balancing act.
What matters is how much fun you're having along the way”.

Torah Bright.

Chapter 2

Theoretical Framework

2 Theoretical Framework

Traditional HRM was based on achieving a perfect fit between HR practices and competitive strategy (Porter, 1985), focusing on influencing specific outcomes of individuals, such as job satisfaction and performance (Becker & Huselid, 2006). The SHRM field is considered a sub-domain within a wider HRM discipline (Boxall, Purcell, & Wright, 2007). It has emerged over the last 40 years to address the limitations of HRM (Kaufman, 2015), with the publication of two seminal works: Strategic *Human Resource Management* (Fombrun, Tichy, & Devanna, 1984), and *Managing Human Assets* (Beer, Spector, Lawrence, Mills, & Walton, 1984) establishing the basis of the field. SHRM takes a strategic perspective, orienting HR practices—which are considered as an interconnected set of practices—towards organisational goals (Becker & Huselid, 1998; Delery, 1998). This approach recognises that the behaviour of employees is influenced by the overall system of practices (Barney et al., 2001; Evans & Davis, 2005), aiming to align the attitudes and behaviours of employees with strategic needs. By designing and implementing a unique and inimitable HR system, SHRM seeks to gain a competitive advantage (Becker & Huselid, 2006; Delery & Shaw, 2001). This shift to SHRM emphasises the contribution of people to organisational outcomes (Boxall & Macky, 2009; Elorza et al., 2022; Guest, 2017; Huo, Boxall, & Cheung, 2022; Peccei & Van De Voorde, 2019; Wood & Ogbonnaya, 2018; Wood et al., 2012).

Paauwe and Richardson (1997) identified two main groups of studies in the SHRM field. The first group focuses on analysing the relationship between HR practices and employee-related outcomes such as turnover, satisfaction, motivation, commitment, and absenteeism. The second group examines the relationship between employee-related outcomes and organisational outcomes such as productivity, and performance. The authors concluded that HR practices lead to HR outcomes, which in turn impact OP. However, the relationship between HR systems, HR outcomes, and OP remained unclear, and was referred to as the “Black Box”.

To shed light on the abovementioned “Black Box”, Peccei and Van De Voorde (2019) in their systematic literature review focused on "HRM-driven" models (forward causality) of the HRM-WB-OP relationship. In this family of HRM-driven models, it is assumed that the causal relationship goes from HRM to either WB or OP or both. Three main models are identified: full mediation, partial mediation, and parallel outcomes. Mediation models are often used to understand how one variable (e.g., HRM) can influence another variable (e.g., OP) through a third variable (e.g., WB). Mediation occurs when an intermediate variable explains or transmits the effect of an independent variable on a dependent variable. A fully mediated model of the HRM-WB-OP relationship suggests that the effect of HRM on OP is fully explained by WB. That is, WB is the channel through which HRM influences OP (panel A, Figure 1). In the case of the partial mediation model, although WB may partially mediate the relationship between HRM and OP, there may also be a direct impact of HRM on OP that is not fully explained by WB. In this case, WB contributes to the relationship between HRM and OP, but it is not the only explanatory factor (panel B, Figure 1). Finally, the parallel outcomes model suggests that HRM, WB, and OP are independent factors that influence each other, but not necessarily through mediation. Instead of WB acting as a mediator between HRM and OP, it is argued that the three factors are related but can influence each other simultaneously and directly. In this case, HRM, WB, and OP

can have separate effects and do not necessarily require the presence of WB for HRM to have an impact on OP (panel C-Figure 1).

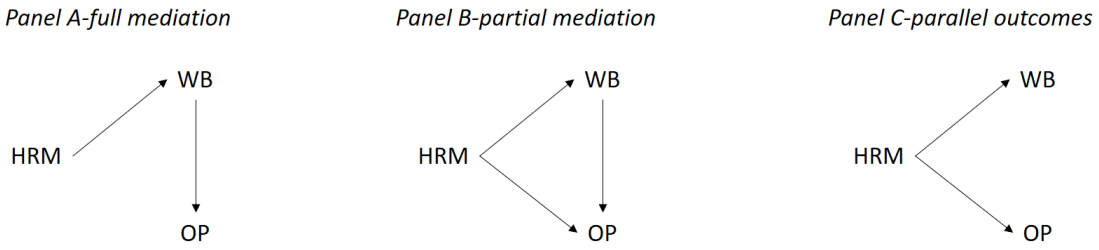


Figure 1: HRM-WB-OP models.
Source, Peccei and Van De Voorde (2019).

Although Peccei and Van De Voorde (2019) mention the existence of OP-driven models (reverse causality), where the direction of causality is hypothesised to go from OP to HRM and/or WB, they also note that they have not received sufficient attention. That is to say, although models of reverse causality have been proposed, most of the empirical evidence has focused on the analysis of direct causality (Garmendia, 2019). The inclusion of the reverse causal relationship in the reference conceptual models proposed by Paauwe and Richardson (1997), and Boselie, Dietz, and Boon (2005) showed that the HRM-WB-OP relationship was not simplistic. Moreover, this inherent complexity of the HRM-WB-OP relationship required consideration and focused analysis. Thus, the approach used in the current study considers the temporal dimension, OP, and employee WB as results at equal level, mutually affecting each other, and feeding back into the HRM system (Figure 2).

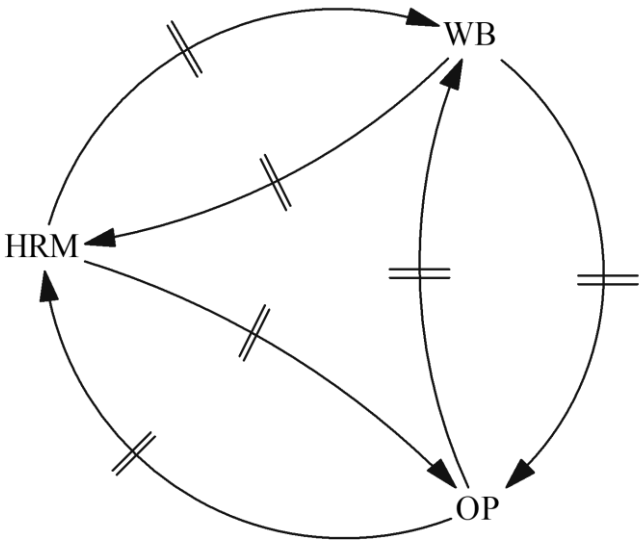


Figure 2: HRM-WB-OP model of current study.
(The two short parallel lines that cross the arrows perpendicularly represent the time delay, i.e., the time separation between an action and its effect).

In the aforementioned review of the literature the authors concluded that the vast majority of studies (80%) that have analysed the HRM-WB-OP relationship have used a cross-sectional design. The disadvantage of this type of design is that it does not allow analysis of the changes and trajectories of variables over time, nor analysis of the causes and consequences of the observed phenomenon. Although, longitudinal studies can address some of these limitations by providing a time perspective, they are still snapshots of various points in time. While they are useful for inferring the trend in the behaviour of the observed phenomenon, the precise occurrences between each measurement point are unknown (there could have been growth followed by a sharp decline, oscillations, etc., which are undetectable with only two or several measurement points in time). Consequently, the effect of long-term policy consistency on employee WB remains under-explored in the literature (Bos-Nehles, Trullen, & Valverde, 2021; Mirfakhar, Trullen, & Valverde, 2018), likely due to limitations of the traditional statistical approaches. To overcome this challenge, we employ SD, a systemic methodology of virtual experimentation and long-term simulation. This is a powerful tool for understanding and analysing complex systems, modelling causal relationships and simulating behaviour over time, and thus can provide new insights into policy analysis, decision-making, and understanding complex systems in general (Sterman, 2000).

2.1 Process approach of the HRM-WB-OP system

Although the SHRM field has extensively demonstrated the positive influence of HRM on OP and employee WB, still more work is needed to understand in detail how this relationship occurs (Sanders, Guest, & Rodrigues, 2021). Mirfakhar et al. (2018) identified three key dimensions for the successful implementation of HR practices: (i) the design and formulation of HR practices (content), (ii) the organisational culture, structure, and values, as well as the external environment in which the organisation operates (context), and (iii) the actions taken by the organisation as the implementation develops (process). Nonetheless, other scholars (Makhecha, Srinivasan, Prabhu, & Mukherji, 2016) have shown that despite adopting similar HR practices, different companies might not necessarily yield the same results. This could indicate that the difference lies not in the practices used, but rather in how they are implemented (Lee & Puranam, 2016). Indeed, these authors suggested that the process of implementing practices can be more important than the content of the action itself. In the current study, therefore, we focus on the process of implementation.

A recent stream in the literature has begun to analyse how HR practices positively affect OP and employee WB from a process perspective (Nishii, Lepak, & Schneider, 2008; Ostroff & Bowen, 2016; Sanders et al., 2021; Sanders, Shipton, & Gomes, 2014). Two approaches within the process perspective place the employee, and particularly employee perception, at the centre to explain how HR practices affect OP and employee WB.

The first of these, the situational strength theory (Bowen & Ostroff, 2004) suggests that the strength of the HR system is key to ensuring the aforementioned positive impact (Bowen & Ostroff, 2004; Ostroff & Bowen, 2016). The HR strength approach proposes that when information about HR practices is significant, is consistent over time, and there is unanimity among managers, employees can

understand what is expected of them, which is likely to affect their attitudes and behaviours. That is to say, internally consistent and coherent sets of HR practices contribute to improving OP by sending clear and consistent signals to employees about what is expected of them at work, which helps to direct their effort and behaviour towards desirable organisational goals (Bowen & Ostroff, 2004). This theory is composed of three main components. Firstly, clarity refers to the transparency and understanding of job expectations and tasks. When expectations are clear and well defined, employees have a greater understanding of what is expected of them and can adjust their behaviour accordingly. Secondly, consistency refers to the constancy and predictability of signals in the work environment. When signals are consistent, employees can develop stable routines and patterns of behaviour, which facilitates their performance and adaptation. Finally, specificity refers to the degree of detail and distinctiveness of signals in the work situation. The more detailed and specific signals are, the clearer it will be to employees which behaviours are appropriate in each situation.

The second approach within the process perspective is based on the attribution theory (Heider, 1944; Kelley & Michela, 1980; Sanders et al., 2021). This theory proposes that the motives employees attribute to the reasons managers implement certain HR practices shape the way they respond to those practices. In this vein, the seminal work of Nishii et al. (2008) explains how HR attributions contribute to understanding the reasons and the extent to which HR practices affect attitudes and behaviours, and thus OP and employee WB. Their research findings show that HR practices aimed at improving employee WB (commitment management approach) result in positive attitudes and behaviours (Hewett, Shantz, Mundy, & Alfes, 2018; Nishii et al., 2008; Wang, Kim, Rafferty, & Sanders, 2020). On the other hand, they demonstrated that HR practices aimed at controlling costs or exploiting employees (control management approach) result in negative attitudes and behaviours (Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020).

More recently, Guest, Oliveira, Sanders and Rodrigues (2020), and Katou, Budhwar and Patel (2020), have combined these two approaches (HR system strength and HR attribution theory) to study the influence of HR practices on OP and employee WB. Guest et al. (2020) made an important contribution by presenting signalling theory (Connelly, Certo, Ireland, & Reutzel, 2011; Suazo, Martínez, & Sandoval, 2011) as a framework for integrating the works of Bowen and Ostroff (2004) on HR system strength and Nishii et al. (2008) on HR attributions. Signalling theory suggests that organisations use HR practices as signals to convey important information to employees about their intentions, motivations, and expectations. These signals can influence the perception, attitudes, and behaviours of employees, and ultimately have an impact on their WB and OP. Thus, a strong HRM system (Bowen & Ostroff, 2004) functions as a signal to employees that the organisation values and prioritises their WB and development. This perception can enhance employee trust in the organisation and their commitment to achieving organisational goals. Integrating HR system strength and HR attributions into the signalling theory framework provides insights into how HR practices influence employee WB and OP. HR system strength functions as a broad signal that shapes the general perception and expectations of employees, while HR attributions provide more specific information about the underlying motives and intentions of HR practices. That is to say, in their study Guest et al. (2020) defined HR practices as signals, managers as senders of these signals, and employees as receivers of these signals.

Within the organisational context, HR systems not only serve as a significant signal that influences the perception of employees, but they also interact with the organisational culture and shape the design and implementation of HR practices. Figure 3 illustrates the relationship between organisational culture, implemented HR practices, employee perception and outcomes. *Organisational culture* is a reflection of profound organisational phenomena rooted in shared interpretations of core values, symbols, beliefs, underlying ideologies, and assumptions (Hatch, 2011). Organisational culture shapes HR practices, influencing their design and implementation (Bowen & Ostroff, 2004; Deal, & Kennedy, 1982; Mirfakhar et al., 2018). *HR practices* cover various areas related to the management of employees and their contribution to the achievement of organisational goals. Each HR practice that is implemented introduces new rules for employees, which they interpret and understand based on their previous experiences (Bowen & Ostroff, 2004). This interpretation of the messages sent by management when implementing HR practices shapes employee perception of the organisation. *Employee perception* of the organisation refers to how employees perceive and understand the company in which they work. It includes their beliefs, attitudes and opinions about the organisational culture, leadership, HR policies and practices, work environment, internal communication, and other aspects related to the organisation as a whole. Employee perceptions can influence their commitment, motivation, job satisfaction and behaviour within the organisation (Den Hartog, Boon, & Verburg, 2013; Elorza, Aritzeta, & Ayestarán, 2011; Elorza et al., 2022). Furthermore, the perception of employees plays a significant role in the adoption and implementation of HR practices (van Mierlo, Bondarouk, & Sanders, 2018). The perception of employees and their experiences with the HR practices, shape their subsequent behaviour, which then influences the managers' adjustment of the implementation strategy. HR practices, in turn, exert a powerful influence on organisational culture, reinforcing and perpetuating cultural norms and values (Bowen & Ostroff, 2004).

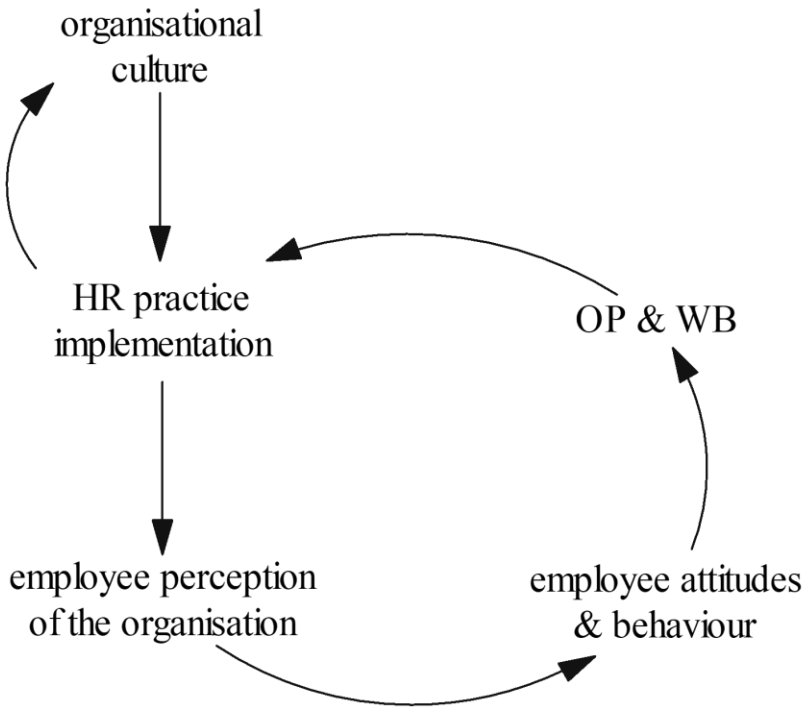
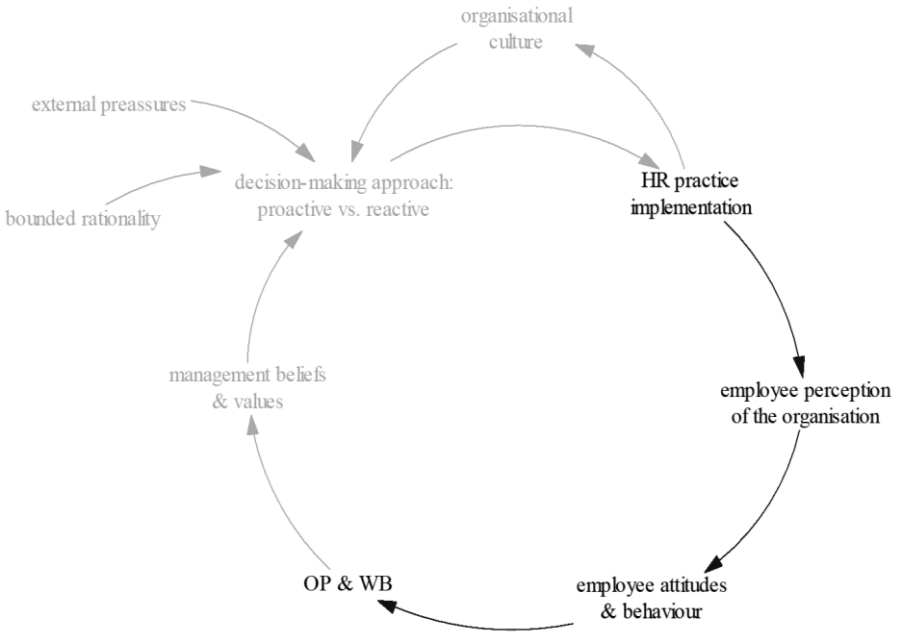


Figure 3: The relationship between organisational culture, implemented HR practices, employee perception and outcomes (OP & employee WB).

Traditionally, the SHRM field has considered the influence of HR practices to be unilateral and top-down, implemented to achieve outcomes such as employee WB and OP (Delery & Doty, 1996; Huselid, 1995; Jiang, Lepak, Hu, & Baer, 2012), (Panel A-Figure 4). This path is known as forward causality. However, van Mierlo et al. (2018), and Guest et al. (2020) stated that HR practices recursively and continuously influence employee behaviour. They explain that by implementing these practices, managers send messages which activate a bottom-up process that emerges from employees (message receivers) and feeds back to managers, which gives rise to reverse causality (Panel B-Figure 4). Moreover, HR practice implementation process depends on the decision-making approach adopted by managers (see Figure 4). This approach is influenced for example by bounded rationality, which can help explain why managers may prioritise short-term organisational goals over long-term objectives (Hernandez & Perez, 2019). Due to cognitive limitations, the ability of managers to consider and evaluate the long-term consequences of their decisions may be limited. Instead, they focus on immediate problems or short-term benefits that are easy to assess. However, bounded rationality is not the only factor that influences decision-making. Other factors, such as organisational culture (Bowen & Ostroff, 2004; Mirfakhar et al., 2018), organisational and personal values (Mirfakhar et al., 2018; White & Bryson, 2013), and external pressures (Mirfakhar et al., 2018), may also impact how managers prioritise short-term versus long-term objectives.

Panel A: Forward causality



Panel B: Reverse causality

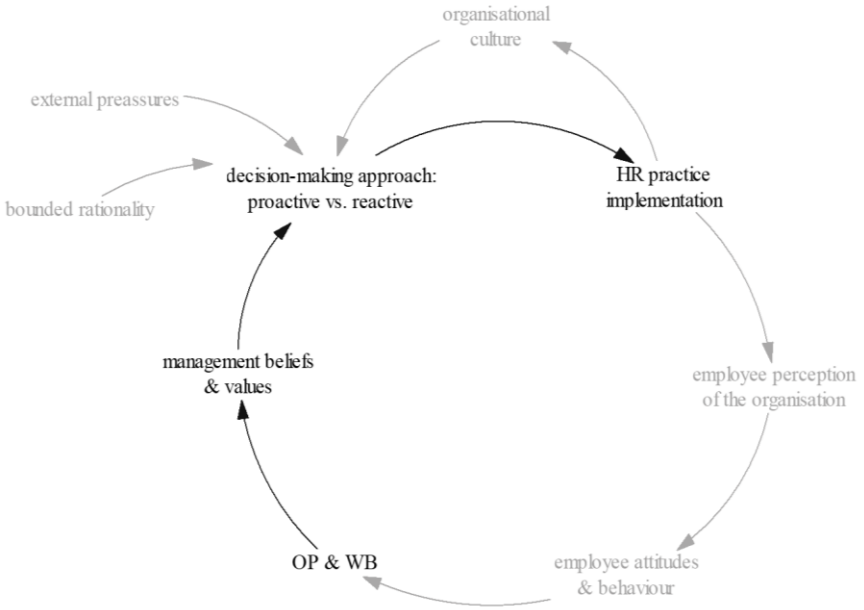


Figure 4: Forward causality (HR practices-HR outcomes), and reverse causality (HR outcomes-HR practices).

Managers adjust the implementation strategy according to the effects of employee behaviour in response to HR practice implementation (Dewettinck & Vroonen, 2016; Harris, 2001; Kossek, Ollier-Malaterre, Lee, Pichler, & Hall, 2016; van Mierlo et al., 2018). In this feedback process, the HR practice

implementation strategy is modified to provide a desired behavioural reaction from employees in their daily routines, and in turn employees influence the HR implementation strategy (van Mierlo et al., 2018). Each HR practice that is implemented introduces new rules for employees, which they interpret and make sense of based on their previous experiences (Bowen & Ostroff, 2004). This interpretation of the messages sent by management when implementing HR practices shapes the perception of employees of the organisation, which conditions their behaviours and affects organisational results. That is to say, the decision-making approach adopted by managers (proactive or reactive) determines the HR practice implementation process. This in turn affects employee attitudes and behaviours, and ultimately influences outcomes such as OP and employee WB. These outcomes, at the same time, reinforce the beliefs of the management about the cause-effect relationship of HR practices, affecting managerial adoption of the decision-making approach (van Mierlo et al., 2018), (see Figure 5).

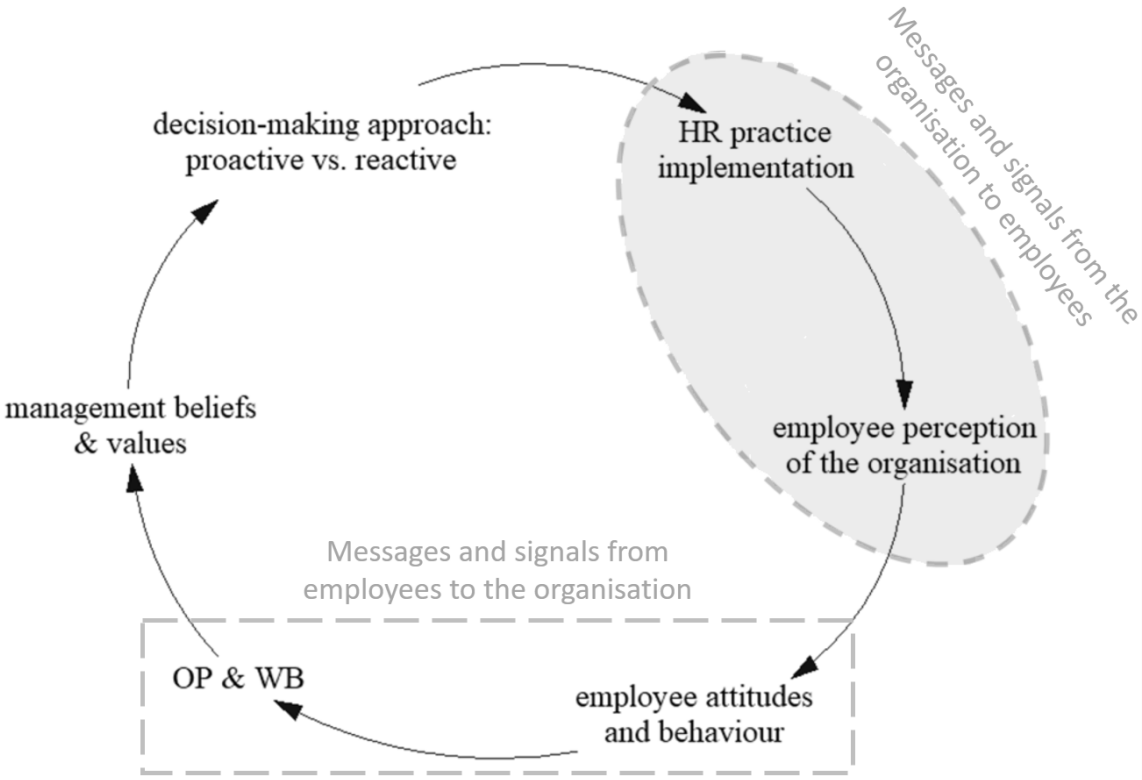


Figure 5: Conclusions of the signalling theory.

Managers make strategic and operational decisions to effectively lead and manage the organisation, considering both internal and external aspects that impact its performance and success. The prioritisation of short or long-term objectives by managers is influenced by their beliefs and values (Arthur, Herdman, & Yang, 2016; White & Bryson, 2013). When managers pursue objectives of a short-term nature, the decisions taken are oriented towards these goals and are often taken without considering the possible long-term effects they might generate (Capelle-Blancard & Couderc, 2007). Short-term oriented decisions are adopted reactively as events occur. Within the framework of the present research, this approach to decision-making is referred to as a reactive approach. On the other hand, when decision-making is oriented to the achievement of long-term goals and the organisation

does not respond to external pressures in an impulsive manner (Capelle-Blancard & Couderc, 2007), we refer to this as the proactive approach. Decisions focused on achieving long-term objectives are usually part of a strategic plan that is the result of a rigorous reflection process. Consequently, proactive decisions are carefully planned and consolidated within the management team.

Repenning (2002) described implementation as a complex dynamic process created by the interaction of multiple feedback mechanisms. These include the interactions between HR practices (Boxall et al., 2007), organisational context, and the actors involved (Bowen & Ostroff, 2004). HR practices are implemented, modified, and updated over time in response to changes in the organisation context. The process goes from adoption (Canato, Ravasi, & Phillips, 2013), adaptation and acceptance, and finally to routinisation (Choi & Chang, 2009). Routinisation involves making an action part of the daily routine, resulting in an automated and homogenised use of the HR practice. When a behaviour turns into a routine, actions are performed unconsciously (Duhigg, 2013), and become part of the organisational culture. Therefore, organisational culture serves as a stabilising factor of the HRM system (Deal & Kennedy, 1982; Mirfakhar et al., 2018) by providing a structure and reference framework for HR practice design and implementation. However, when changes occur in the context of the company or in the mindset of its managers, certain pressures arise that can result in decisions that deviate from the values, norms, and shared beliefs of the organisation, thereby generating instability in the system.

2.2 HR practices to improve OP and employee WB

The coexistence of HR practices is inevitable (Barney et al., 2001; Evans & Davis, 2005) owing to the influence of the past, the diversity of organisational needs and challenges, and the need to adapt to a constantly changing business environment. It is therefore crucial to take a systemic approach to understanding the impact of these practices on OP and employee WB. Each organisation has a unique history, culture, and context that has resulted in the implementation of HR practices rooted in its structure and established norms over time (Bowen & Ostroff, 2004; Deal, & Kennedy, 1982; Mirfakhar et al., 2018). The past plays a critical role in current decision-making and shaping these practices.

In a constantly evolving business environment, organisations must deal with technological changes, new labour regulations, changing employee preferences, and emerging challenges that require adaptability and flexibility. Some of these challenges require immediate responses while others call for more strategic planning. Certain HR practices may be better suited to addressing specific problems or situations, while others may be more efficient in different contexts. As a result, companies combine proactive and reactive decision-making approaches (Capelle-Blancard & Couderc, 2007).

Companies implement HR practices with the aim of optimising employee potential and achieving desired impacts on organisational outcomes. In the present study, HR actions are grouped into five HR practices of similar causes and consequences, as set out in Table 1. These groupings are based on stakeholder feedback from 41 group model building (GMB)[3] sessions developed by the "*Strategic People Management*" research group of *Mondragon Unibertsitatea.* Each group of HR practices are

[3] A more in-depth explanation of the GMB approach can be found in section 2.3.2 Group Model Building.

represented by the following labels: (i) actions for organisational growth, gaining volume, (ii) efficiency management, reducing costs without dismissals, (iii) reduce costs by dismissing, (iv) actions to improve well-being, and (v) HIWS (High Involvement Work Systems) implementation. In the following section we describe this HR practices in detail together with the dynamic hypothesis (in Causal Loop Diagram (CLD) format) of the effect they have on the system. An unpublished work from *Mondragon Unibertsitatea* that summarises the results of the GMB sessions is available in Appendix A: Group Model Building (GMB). It is new material, but we have permission to show it in the appendices of this document.

Table 1: Specific actions and their groupings into HR practices.

HR practices	Decision-making approach	Description of the practices	Specific actions
(i) **Actions for organisational growth, gaining volume**	**Reactive approach**	New recruitment.	-Hire new employees.
	Proactive approach	Investments for strategic repositioning. Strategic repositioning (value offered to the customer).	- Product diversification (innovation in the product/service offer). - Specialisation in niche looking for more added value. - Internalisation of work outsourcing suppliers. - Servitisation (from manufacturing a product to selling a solution). - Adding value (from components to modules).
(ii) **Efficiency management, reducing costs without dismissals**	**Reactive approach**	Daily efficiency management and task intensification. Manage day-to-day efficiency.	- Achievement-oriented, executive, task-focused leadership that maximises results (with the least possible use of resources). - Work intensification: through time and motion studies, requesting more work/responsibilities, etc.
		Cost adjustment and internalisation of tasks.	Cutting costs to solve a small crisis without the need to lay off workers. E.g., insourcing, replacing suppliers with internal workers.

(iii)	**Reduce costs by dismissing**	**Reactive approach**	Crisis management. Containment measures in difficult times.	-Dismissals, relocations, early retirement. - Salary reductions.
(iv)	**Actions to improve well-being**	**Reactive approach**	Strengthen the sense of belonging. Working on the spirit/feeling of belonging, team building; identification with the organisation.	-Share the project of the company with employees. -Revitalise trade unions (social councils) and/or joint committees.
			Improvement of working conditions.	Improvements in salary, work-life balance, safety, etc.
			Improvement of one people management practice (e.g., leadership, participation, information, and training).	-Improving an important people management lever (just one). Among the levers that can be developed: information, training, participation, listening, positivity, teamwork, etc. -Leadership skills development programmes for the management / management structure, seeking more effective leadership (more listening, positivity, etc.).
			Specific changes in management. Shift towards more empathetic, supportive, and listening attitudes. Change in positions of responsibility to improve organisational climate and the way people are treated.	-Change in the management team (positive) because “fresh air in management” is sought. This action does not change the working system. In other words, the way of working remains the same but the person in charge is more assertive (treats people better). Refers to a line-manager that supports subordinates, cares about their well-being, and values their contribution.

(v)	**HIWS implementation**	**Proactive approach**	Mutual coordination, self-management. Redesign of the organisational model.	- Horizontal enrichment. Associates teams with horizontal processes instead of people with machines. Polyvalences instead of specialisations. Horizontal structure, reducing departmental barriers, managing projects rather than departments, etc. - Vertical enrichment. Making people owners of their process (autonomy and responsibility for scheduling orders, quality, efficiency, and on-time delivery). - Visual and transparent information to facilitate decision making on the shop floor / in action. - Holistic and horizontal (business) rather than vertical and departmental objectives. - Coordination through mutual adaptation rather than direct supervision. On a rotational basis.
			Change of beliefs. Changes in the management structure.	- Change the function and role of managers (to empower and help achieve results). From someone who manages "resources" to achieve results to someone who "gets people to achieve" the results. - Reduce the management structure.

2.2.1 Actions for organisational growth, gaining volume

In the current business environment, organisational growth is a key objective for most companies seeking to expand their business, increase their competitiveness and achieve long-term success (Krivokapic, Njegomir, & Stojic, 2017). When an organisation takes actions to increase its size and sales volume—either by expanding within its existing market or by investing to expand into new markets—it is engaging in a growth strategy (Bang & Joshi, 2010). This can involve various tactics, such as developing new products or services, increasing marketing efforts, acquiring, or merging with other companies, or entering new geographical markets. The goal of a growth strategy is to increase the market share of the organisation, its revenues and profitability, and to create economies of scale that can lead to greater efficiency and competitiveness. However, growth can also bring challenges, such as increased complexity, resource constraints, and potential risks associated with entering unfamiliar markets.

The HR practice implementation labelled as (i) "actions for organisational growth, gaining volume" in our study (see Table 1) focuses on two main aspects: recruiting, and investing for strategic repositioning. Recruitment involves hiring new talent to increase the production capacity of the company, handle larger volumes of demand, expand its presence and power in the market as well as the range of its products or services, reduce unit production costs (benefiting from economies of scale), consolidate in a specific market, acquire new customers, and improve its competitive position. All of which leads to a positive impact on OP (Wood et al., 2012). The concept of economies of scale illustrates how increasing production in response to rising demand can enhance efficiency and leverage commercial efforts, further increasing the power that the organisation has in its market. As companies grow, they can become more efficient and better able to leverage their commercial efforts and distribution capacity, which reinforces their ability to handle larger volumes of demand (B3[4]-Figure 6).

On the other hand, investing for strategic repositioning involves various measures that aim to improve the value offered to customers. This includes product diversification, niche specialisation, internalisation of work (outsourcing suppliers), servitisation (from manufacturing a product to selling a solution), and adding value (from components to modules). Firstly, product diversification is a strategy used by companies to add new products or services to their existing portfolio to expand their offerings and increase their revenue streams. Secondly, niche specialisation refers to a strategic approach where a company focuses on serving a particular market segment that has specific needs or preferences and is willing to pay a premium for products or services that meet those needs. By specialising in a niche, the company can differentiate itself from its competitors and create more value for its customers by tailoring products or services to specific requirements. This can lead to higher profit margins, stronger customer loyalty, and a more sustainable competitive advantage. Thirdly,

[4] B3 → Refers to the third balancing (B) feedback loop. In system dynamics, feedback loops are used to describe the interdependent relationships between different components within a system. Specifically, a balancing loop refers to a feedback mechanism that acts to stabilise the system and maintain it in equilibrium (Meadows, 2008). A deeper explanation of balancing feedback loops can be found in section 2.3.1 Causal Loop Diagrams.

internalisation of work refers to a strategy where a company decides to internally manage certain activities or functions that were previously outsourced to external suppliers. The goal is to improve the control that the company has over its supply chain and reduce its reliance on third parties, thereby reducing costs, improving quality, and increasing flexibility. However, it also involves additional investment in infrastructure, equipment, and personnel. Fourthly, servitisation is a strategy where a company shifts its focus from solely manufacturing a product to providing a complete solution that includes the product and additional services. Adding value to the product in such a way helps the company to differentiate from its competitors. The goal of servitisation is to create long-term relationships with customers, increase customer loyalty, and generate additional revenue streams through service offerings. However, it also requires additional investment in service capabilities and infrastructures, and involves potential risks such as increased complexity in managing service operations, which can potentially reduce profitability. Finally, adding value (from components to modules) is a strategy where a company seeks to increase the value of its products by converting components into more complex and valuable modules. This can involve adding additional features or capabilities to an existing product to make it more valuable to customers. By doing so, the company can differentiate itself from competitors and potentially charge a higher price for its products.

As suggested by Krivokapic, Njegomir, and Stojic (2017), organisations invest in strategic repositioning as an approach to improve their market position. Moreover, the literature, including the works of Castaldi and Giarratana (2018), Krivokapic et al. (2017), and Oladimeji and Udosen (2019), supports the notion that companies that invest in strategic repositioning outperform their competitors. Therefore, strategic repositioning is viewed as a means to achieve better market share, which in turn can lead to superior performance (B1-Figure 6, i.e., balancing loop 1 in Figure 6).

However, growth also brings challenges in the medium to long term (R2[5] & R5-Figure 6)[6]. On the one hand, the increase in organisation size negatively affects OP due to the increase in structural costs, and on the other hand, negatively impacts both OP and employee WB due to the worsening of employee perception about the organisation. As organisations expand, they require more internal coordination and procedures, which can negatively impact the efficiency and effectiveness of their operational process over time. This means that larger organisations may experience a decrease in OP as they continue to grow. This phenomenon is supported by Koster's (2021) study, which highlights that there is a limit to how far manufacturing costs can be reduced in economies of scale. Beyond a certain size, unit costs no longer decrease in the same way. This is because the growth of an

[5] R2 → Refers to the second reinforcing (R) feedback loop. In system dynamics, feedback loops are used to describe the interdependent relationships between different components within a system. Specifically, a reinforcing loop refers to a mechanism that amplifies or reinforces changes in a system (Meadows, 2008). This can drive the system to extreme states or away from its stable equilibrium. A deeper explanation about reinforcing feedback loops can be found in section 2.3.1 Causal Loop Diagrams.

[6] Note that the CLDs presented in this section are extracts of a larger CLD presented in chapter 3 Research Objective. Therefore the numbers of loops B1, B3, R2, R5, etc. may look different in each of the figures, but they correspond to each of the feedback loops in the full conceptual model show in Figure 11.

organisation requires more internal coordination and procedures. As a result, larger sizes imply higher structural costs, which can further decrease OP (R2-Figure 6).

On the other hand, as organisations grow and the number of employees increases, they tend to be more structured, centralised, bureaucratic, and formalised. This growth is typically accompanied by more hierarchical levels, which result in less work autonomy for employees (Koster, 2021). This decrease in work autonomy negatively impacts employee perception of the organisation (Garmendia, Elorza, & Uribetxebarria, 2021) affecting both employee WB (Elorza et al., 2022; Koster, 2021; Wood et al., 2012) and OP (Tichy & Cardwell, 2004; Tichy & Cohen, 2007). A rapidly deteriorating employee perception of the organisation is likely to result in lower extra-role employee behaviour, which in turn reduces OP (Tichy & Cardwell, 2004; Tichy & Cohen, 2007). (R5-Figure 6).

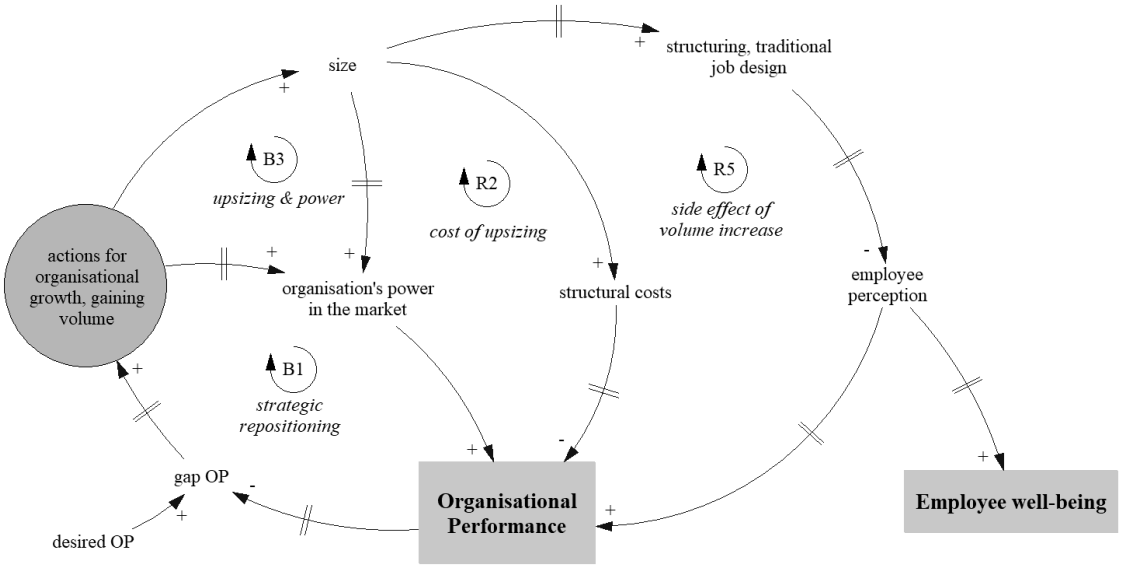


Figure 6: GMBs result of the effects of "actions for organisational growth, gaining volume" on OP and employee WB.

2.2.2 Efficiency management, reducing costs without dismissals

In highly competitive and dynamic business environments, maximising the day-to-day efficiency of organisational operations is critical to the survival and success of any organisation (Liu, Jantan, & Huang, 2020). Increasing efficiency in common tasks and activities can lead to improved resource utilisation, reduced costs, and increased productivity (Akeem, 2017). Organisations are greatly interested in managing their daily efficiency, as it directly impacts their ability to achieve their goals (Akeem, 2017) while maintaining a competitive advantage. Organisations implement such HR practice when they strive to enhance their productivity, reduce operational costs, and increase customer satisfaction, while also addressing internal inefficiencies and responding to external factors (i.e., changes in the market demand, technology, or regulatory requirements).

The HR practice implementation labelled as (ii) "efficiency management, reducing costs without dismissals" in our study (see Table 1) focuses on efficiency management and task intensification, and

cost adjustment and internalisation of tasks. Efficiency management and task intensification involve the implementation of achievement-oriented, task-focused leadership that maximises results while minimising resource usage. Meanwhile, cost adjustment and intensification of tasks involves cutting costs to solve small crises without the need to lay off employees (e.g., this might involve insourcing, where the company replaces external suppliers with its own employees).

When an organisation implements HR practices aimed at improving the daily efficiency and reducing costs without dismissing, OP and employee WB are affected in many ways (see Figure 7). By optimising resource utilisation, intensifying work through initiatives such as time and method improvements, and increasing workloads, organisations can achieve higher levels of productivity and efficiency, ultimately leading to improved OP (Liu et al., 2020) (B5-Figure 7). In addition, implementing HR practices that involve cost adjustment and cost control techniques (i.e., optimising resources and reducing waste), leads to significant improvement in OP (Akeem, 2017), (B4-Figure 7).

However, while increased efficiency can lead to short-term improved OP, task intensification generates secondary effects on the medium to long-term OP (Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020) and employee WB (Huo et al., 2022). Managing daily efficiency with an achievement-oriented leadership style results in work intensification. This involves assigning more tasks and responsibilities to employees with the goal of achieving more with less resources, which may lead to sustained stress and exhaustion for employees, ultimately causing a continuous decline of the perception of employees about the organisation. As a consequence, employee WB (Bakker & Demerouti, 2014; Demerouti et al., 2001; Wood et al., 2012), and OP (Liao, Toya, Lepak, & Hong, 2009; Tichy & Cardwell, 2004; Tichy & Cohen, 2007) are also negatively affected (R3-Figure 7).

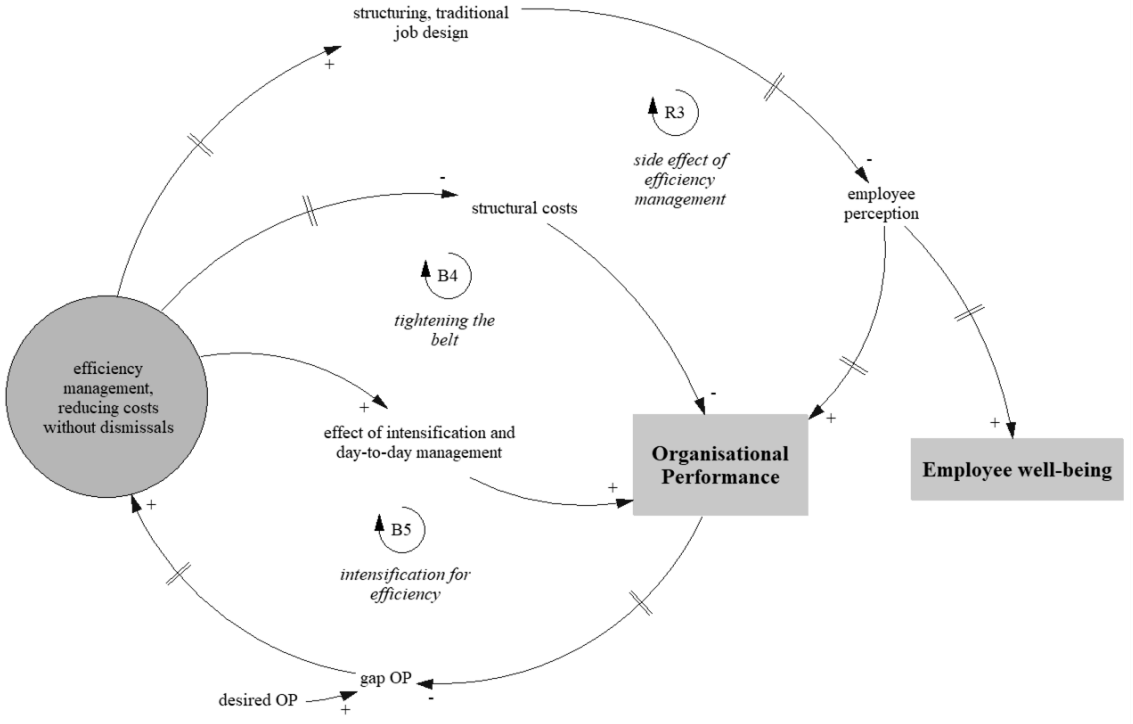


Figure 7: GMBs result of the effects of "efficiency management, reducing costs without dismissals" on OP and employee WB.

2.2.3 Reduce costs by dismissing

In periods of economic recession and business crisis, organisations often need to adjust their structure and size to survive (Garmendia, 2019; Wood & Ogbonnaya, 2018). When an organisation takes actions to manage difficult economic periods by dismissing employees, the outcomes for OP and employee WB are affected in several ways (Figure 8). Measures aimed at achieving short-term financial results (Capelle-Blancard & Couderc, 2007; Kozlowski, Chao, Smith, & Hedlund, 1993) generate medium to long-term side effects on both OP and employee WB (Cameron, Freeman, & Mishra, 1993; Garmendia, 2019; Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020). The potential long-term costs are associated with the loss of valuable skills, knowledge, and experience. Moreover, dismissals can result in decreased productivity and motivation of the remaining employees due to increased job insecurity and fear of future dismissals.

The HR practice implementation labelled as (iii) “reduce costs by dismissing” in our study (see Table 1) focuses on managing difficult moments with containment measures, such as dismissals, relocations, early retirement, and salary reductions.

Organisations can reduce their size (number of employees) and associated costs by implementing downsizing strategies during difficult economic times. This potentially leads to improved OP (Akeem, 2017; Kozlowski et al., 1993) as illustrated in B2-Figure 8. However, downsizing also has negative consequences for the organisation, such as reducing its competitiveness capacity (Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020) and deteriorating employee WB (Garmendia, 2019; Karina Van De Voorde, Paauwe, & Van Veldhoven, 2012). On the one hand, when an organisation chooses to reduce its size, as it becomes smaller, its market power is affected (Wood et al., 2012). Moreover, its ability to reduce production costs through expansion experiences declines in economies of scale, and as a consequence, the capacity of the organisation for future investments is diminished. Research has shown that the exclusive use of a workforce reduction strategy can lead to a medium-term decline in OP (Cameron et al., 1993), as depicted in R1-Figure 8.

On the other hand, adopting these kinds of recessionary actions in response to financial difficulties significantly colours how employees perceive their work environment, which generates a negative effect on employee WB (Garmendia, 2019; Wood & Ogbonnaya, 2018) and OP (Cameron et al., 1993; Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020). Reducing costs through dismissals leads to deteriorated employee perception of their work environment, which in turn affects employee WB, ultimately decreasing productivity (R4-Figure 8).

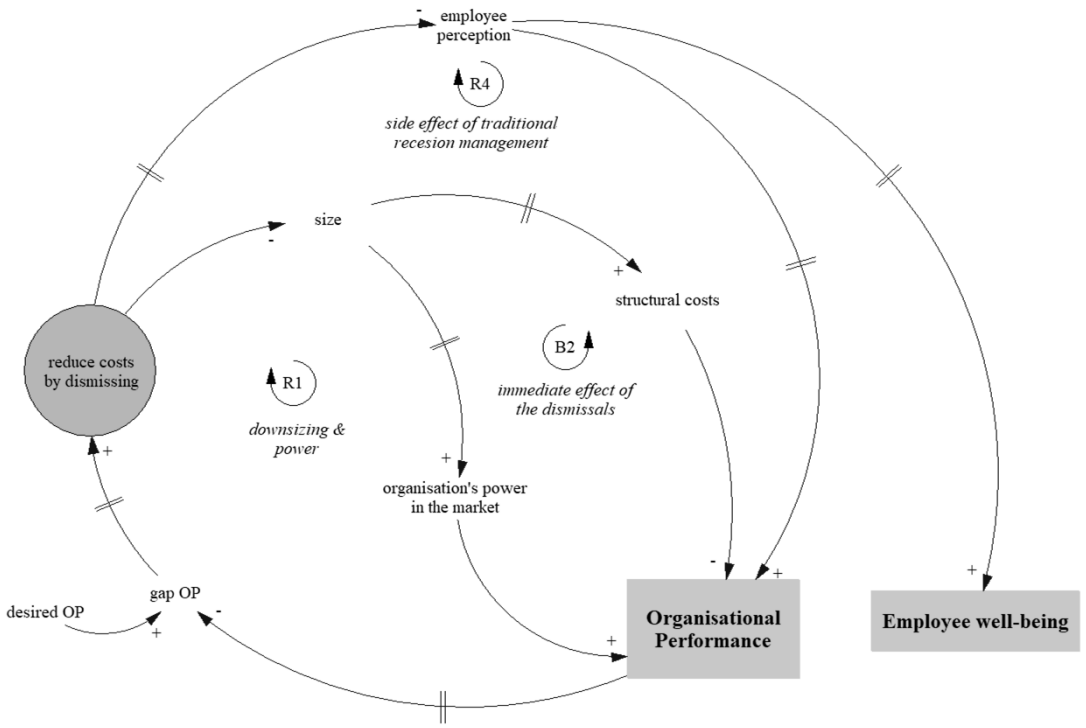


Figure 8: GMBs result of the effects of "reduce costs by dismissing" on OP and employee WB.

2.2.4 Actions to improve well-being

Employee well-being is an increasingly important concern for organisations (Terry, Nielsen, & Perchard, 1993), as it is a key element for organisational success and sustainability (Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020). In situations where organisations have a fragmented approach towards improving employee WB, actions are implemented in an isolated manner, which only leads to temporary improvements in employee WB.

The HR practice implementation labelled as (iv) "actions to improve well-being" in our study (see Table 1) focuses on strengthening the sense of belonging, improvement of working conditions, improvement of one of the people management practices, and specific changes in management. Firstly, strengthening the sense of belonging refers to working on the spirit/feeling of belonging, team building, and identification with the organisation. This HR practice involves sharing the project of the company with employees, and revitalising trade unions (social councils) and/or joint committees. Secondly, improving working conditions involves improvements in salary, work-life balance, safety, etc. Thirdly, improvement of one of the people management practices involves improving a key people management lever (information sharing, participation, listening, positivity, teamwork, etc.), and development programmes of leadership skills for the management structure to achieve more effective leadership (listening, positivity, etc.). Finally, specific changes in management involves shifting towards more empathetic, supportive, and listening attitudes. This practice also involves changes in positions of responsibility to improve the organisational climate and the way people are treated.

It should be noted that in our study, the defined HR practice does not change the working system. Instead, it focuses on having a line-manager who supports subordinates, cares about their WB, and values their contributions. This approach has been found to help employees cope with job demands and buffer the effects of workplace tension. In particular line-managers who adopt an assertive and supportive leadership style can significantly improve employee WB (Terry et al., 1993), as shown in Figure 9.

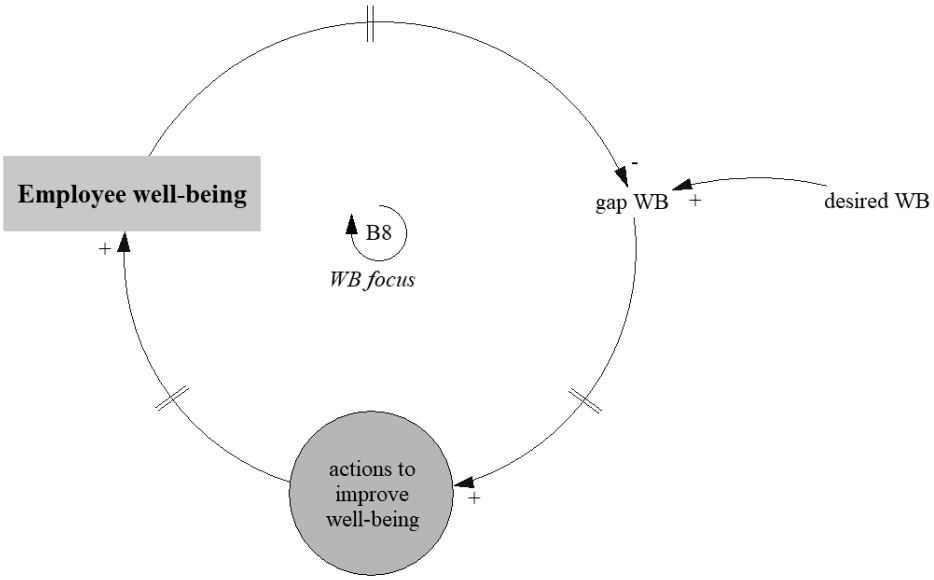


Figure 9: GMBs result of the effects of “actions to improve well-being” on employee WB.

2.2.5 HIWS

In our study, we have placed a particular emphasis on HIWS because of their potential to boost employee involvement, improve organisational performance and foster a positive work climate. The implementation of such systems requires a proactive outlook by management, i.e., a long-term desire for the future sustainability of the business. HIWS are based on the premise that employees are valuable resources and key assets in the organisation, and focus on encouraging active participation, empowerment, and development (Boxall & Macky, 2009; Lawler, 1986; Wood, 2020). Their implementation is based on the norm of reciprocity (Gouldner, 1960). Employees of companies which use HIWS may perceive that the organisation cares about their WB, and therefore may reciprocate with positive attitudes and behaviours towards the organisation (Kuvaas, 2008).

The aim of HIWS is to reverse the “Taylorist” paradigm of centralised decision-making and problem-solving in the hands of management. High involvement practices are believed to evoke the processes of PIRK (power, information, rewards, and knowledge) among employees, which satisfies their higher order needs (e.g., recognition, support, autonomy, and challenge), and which in turn leads to higher employee WB and OP (Boxall & Macky, 2009; Guest, 2017; Vandenberg, Richardson, & Eastman, 1999; Wood et al., 2012).

HIWS orientation entails two dimensions (Wood & Ogbonnaya, 2018). The first is role involvement, which focuses on maximising the autonomy and responsibility of employees through the design of enriched jobs. The aim is to provide employees with a greater degree of control and empowerment in performing their work tasks (Boxall & Macky, 2009; Wood & Wall, 2007). The second dimension is organisational involvement, which emphasizes the participation of employees in decision-making beyond the narrow traditional boundaries of their job roles. This is achieved through practices such as information sharing, training and development opportunities, and employee involvement in decision-making processes at both strategic and operational levels of the organisation (Boxall & Macky, 2009; Wood & Wall, 2007).

Many scholars have studied the impact of HIWS on employee WB (e.g., Elorza, Garmendia, Kilroy, Van de Voorde, & Van Beurden, 2022; Macky & Boxall, 2008; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Wood, van Veldhoven, Croon, & de Menezes, 2012), and some have observed unfavourable outcomes. In fact, Elorza et al. (2022), and Wood et al. (2012) suggested that the implementation of HIWS does not improve employee WB, indeed, they observed a worsening effect. Elorza et al. (2022) attributed these results to the existing gap between implemented and perceived HIWS. This is consistent with previous authors who argued that although implemented HIWS provides the context for employee perception, the two concepts are not necessarily the same (Den Hartog et al., 2013; Elorza et al., 2011; Liao et al., 2009). For this reason, in the present study we distinguish between the two. We use the term “implemented” to refer to the set of HR practices that are formally established by managers and implemented in the organisation, and “employee perception” to reflect the experience of employees about those HR practices.

Employees working in organisations that adopt HIWS may perceive a genuine concern for their WB, leading them to reciprocate with positive attitudes and behaviours towards the organisation (Bowen & Ostroff, 2004; Guest et al., 2020; Kuvaas, 2008). The HR practice implementation labelled as “HIWS implementation” in our study focuses on two main aspects: mutual coordination and self-management, and change of beliefs. Mutual coordination and self-management involve redesigning the organisational model, which includes associating teams with horizontal processes rather than people with machines, seeking polyvalences instead of specialisation, and adopting a more horizontal structure that reduces departmental barriers and manages projects instead of departments. It also involves vertical enrichment, where individuals are made owners of their process, leading to autonomy and responsibility for scheduling orders, maintaining quality, improving efficiency, and achieving on-time delivery. Sharing information in a visual and transparent manner facilitates decision-making on the shop floor, and the organisation centres on holistic and horizontal business objectives rather than vertical and departmental objectives.

On the other hand, change of beliefs refers to changing the function and role of managers from someone who manages “resources” to achieve results, to someone who “gets people to achieve” the results. In addition, it also refers to reduction in the management structure to facilitate a more streamlined decision-making process.

According to Bowen and Ostroff (2004), implemented HIWS are likely to affect perceived HIWS. Perceived HIWS is more strongly associated with outcomes than implemented HIWS (Den Hartog et

al., 2013; Elorza et al., 2011, 2022; Garmendia, Elorza, Aritzeta, & Madinabeitia-olabarria, 2021) and is positively related to OP and employee WB (Elorza et al., 2022). Consequently, the implementation of HIWS generates effects that expand over time and across many parts of the system (Figure 10).

By implementing HIWS, the company restructures and reorganises itself in a less hierarchical and more horizontal manner. This promotes greater involvement of employees in decision-making processes, facilitates transparent information sharing and constant communication, and leads to job design that promotes greater employee autonomy. As a result, employees perceive the organisational environment as more enriching, since it promotes autonomy, participation, training, and development (Boxall & Macky, 2009; Wood & Wall, 2007). This in turn, generates higher levels of both OP (B6-Figure 10) and employee WB (B7-Figure 10) (Boxall & Macky, 2009; Guest, 2017; Nishii & Wright, 2008; Wood et al., 2012).

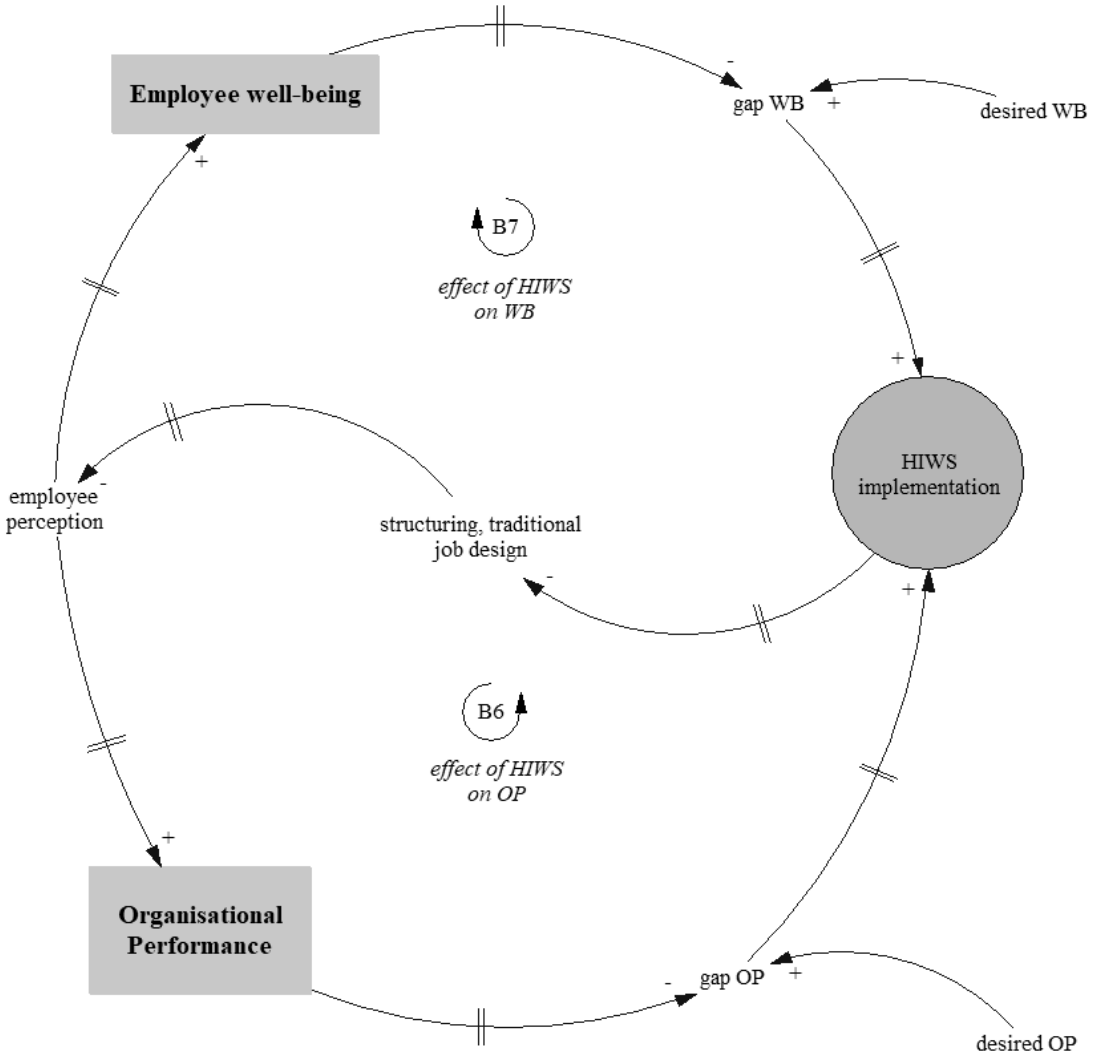


Figure 10: GMBs result of the effects of HIWS on OP and employee WB.

2.3 Theoretical implications of the SD approach and its application as a tool for analysing the HR implementation process

The SD methodology, by including the temporal dimension, captures the dynamic character of HR practice implementation. It facilitates analysis of the ripple effects that the implementation of one practice can have throughout the organisation, impacting other practices and processes. This perspective helps shed light on the factors that influence the successful implementation of HR processes. Hence, the objective of this study is to provide insights into the impact of employee perception on OP and employee WB, while also examining the influence of decision-making approaches on employee perception. Specifically, we analyse and compare the effect of two HIWS implementation approaches, proactive and reactive. Through our findings, we aim to provide valuable insights into how managers can effectively implement HIWS to mutually maximise employee WB and OP.

To improve the understanding of HRM implementation ,Trullen, Bos-Nehles, and Valverde (2020) advocate for the utilisation of alternative methodologies beyond the conventional approaches (mostly cross-sectional and occasionally longitudinal studies) found in the HRM literature. Pettigrew (1987), and Trullen et al. (2020) defined HR practice implementation as dynamic and multi-stage, highlighting the crucial role of time in the HR practice implementation process. Thus, it is important to recognise that the implementation of HIWS is not a one-time event but rather a continuous process that unfolds over time. To the best of our knowledge, no studies have been conducted analysing the HRM-WB-OP system considering changes over time. The implementation of HR practices (such as HIWS implementation) and their resulting effects (such as employee perception) often exhibit temporal gaps (i.e., are distant in time) (Sterman, 2000). Consequently, a temporal perspective is necessary to analyse the underlying mechanisms through which HR practices both impact OP and employee WB, and also the interaction with these practices in the long-term[7]. To address this challenge, we have adopted a systemic and dynamic approach known as SD, which provides the necessary temporal perspective. This methodology can capture the dynamic nature of implementing HR practices as if they were living entities (van Mierlo et al., 2018).

The word “system” refers to a part of reality where various components interact and mutually influence one another. Consequently, when one component of the system changes, it triggers corresponding changes in other components. In cases where multiple cause and effect relationships exist within a system, comprehending the evolution over time of the system becomes challenging. Hence, an adequate analysis methodology to gain insight into these dynamics is necessary. On the other hand, “dynamics” alludes to the behaviour exhibited by a phenomenon as it unfolds over time. Essentially, it denotes that the subject of interest changes over time. This does not necessarily imply rapid or extensive alterations, rather, it signifies the presence of change, regardless of its magnitude.

Initially developed by Jay Forrester in the 1950s, SD has since been applied in a wide variety of fields, including engineering, management, public policy, and environmental science (Sterman, 2000). It is

[7] The temporal spaces we considered in current study are short term <1 year; medium term >1 year & <=4 years; long-term >4 years.

also one of the most popular simulation methods within Operational Research and Management Science (ORMS) (Jahangirian, Eldabi, Naseer, Stergioulas, & Young, 2010). It is a methodology that falls under the broader umbrella of Systems Thinking (ST), which provides a conceptual framework for understanding the interrelationships and patterns within a system (Meadows, 2008). SD is a modelling approach that uses mathematical and computer simulation techniques to analyse and predict the behaviour of complex systems over time (Sterman, 2000). The SD approach emphasises the use of feedback loops, stocks and flows, and time delays to represent the dynamic behaviour of a complex system. A complex system is a set of interconnected and interdependent elements that interact in a non-linear way and generate emergent behaviours that cannot be explained by each individual part of the system in isolation (Ladyman, Lambert, & Wiesner, 2013; Sterman, 2000). The most complex behaviours usually arise from the interventions (feedbacks) between the components of the system, not from the complexity of the component themselves (Sterman, 2000).

The present study employs SD to analyse the HRM-WB-OP system from a holistic point of view, focusing on the relationships and dynamics of its components rather than these components in isolation. In this manner, we seek to explain and develop hypotheses around characteristics that arise within complex systems that seemingly could not emerge in any single system within the whole. Hence, the developed HRM-WB-OP model, adopts a long-term vision, and provides insights into how proactive and reactive decision-making approaches affect the HIWS implementation process and thus, OP and employee WB. Unlike other methodologies, it should be noted that the primary aim is not to precisely predict future behaviour. Instead, the study of the system and experimentation with different practices in the model contributes to enriching the understanding of the real world, allowing us to verify the consistency of our hypotheses and assess the effectiveness of various HR practices.

2.3.1 Causal Loop Diagrams

SD offers a complete methodology from system representation to simulation modelling. The causal loop diagram (CLD) is a problem structuring tool, the qualitative representation of the system and shows the elements and the interrelationships between them (Forrester, 1994). The set of interrelationships derived through a CLD therefore explain the mechanisms underlying a system through “telling a story” or “explaining a theory”. As a result of their clear structure and ease of understanding (even by people who are not SD experts), these diagrams stimulate debate between scholars from different fields (management science, organisational theory, psychology, etc.). The models that are generally applied in behavioural science and social psychology to identify and analyse mediating and moderating variables (Baron & Kenny, 1986) can be transformed into causal diagrams. In turn, these causal diagrams can be transformed into stock and flow diagrams (SFD), which are the mathematical (quantitative) representation of the model. SFD models can help humans to comprehend very complex dynamic behaviours that even basic systems represented by relatively simple CLDs can exhibit. One of the keys in the mathematical model building process lies in ensuring that the quantitative model (SFD) matches the qualitative one (CLD).

CLDs are used to represent feedback systems diagrammatically (Bala, Arshad, & Noh, 2017). These feedback loops are responsible for generating the dynamic behaviour of the system over time. A

feedback loop contains two or more causally related variables that feed back into each other, and the relationships between variables in the loop can be either positive or negative (Sterman, 2000). A positive relationship means that if one variable increases, the other also increases, and is represented with the plus "+" symbol. In contrast, a negative relationship implies that the two variables change in the opposite direction (i.e., if variable "A" increases then "B" decreases and if "A" decreases then "B" increases) and is represented with the minus "-" symbol.

By providing a graphical representation, the CLD allows the assumptions about the behaviour of the system to be clearly visualised, leading to the formulation of dynamic hypotheses. For this reason, we present our dynamic hypothesis in a CLD format, which illustrates the relationships between HRM-WB-OP (Figure 11). The CLD is the first conceptualisation phase and depicts how various HR practices interact to either balance (B) or reinforce (R) their effects on OP and employee WB (represented as loops). Balancing loops are defined as equilibrating or goal-seeking structures that oppose any direction of change to which the system is exposed (Meadows, 2008). They are also known as negative feedback loops, and an odd number of negative ("-") signs in the loop indicates a balancing feedback loop. In contrast, reinforcing loops lead to exponential growth or collapse over time (Meadows, 2008). They are also known as positive feedback loops, and an even number of negative ("-") signs indicates a reinforcing loop. (For a detailed description of each feedback loop in our model see section 4.1 The SD model).

2.3.2 Group Model Building

According to Zhao, Howick, and Quigley (2019), data utilised for the construction of a SD model has to be collected from diverse sources, including mental models, written, and numerical data. In our case, the mental model data was gathered from 41 Group Model Building (GMB) sessions conducted in 23 industrial organisations between 2017 and 2020. This data includes observations about structure, HR practices, cause and consequences of decisions, expectations about system behaviour, and actual observed system behaviour (Forrester, 1980). The written data was obtained from the SHRM literature, and numerical data was sourced from the Bateratzen database (see chapter 4 Methodology). As Meadows (1980) suggests, the key to SD models lies not so much in the precise numerical values of system variables at specific point in time, but rather, it is crucial to identify the general tendencies of the system (stability or instability, oscillations, growth, decline, etc.). Given that, our efforts in SD modelling have been directed towards capturing the behaviour of the system over time (Meadows, 1980).

Starting from the 1990s, a new approach called GMB emerged within the SD domain (Vennix, 1996). By using this technique, managers and key actors of organisations started to be more involved in the modelling process so as to internalise lessons about dynamic feedback behaviour (Forrester, 2007). GMB is a collaborative approach to system dynamics modelling that has gained significant attention in recent years. Given its acknowledged value in analysing complex problems with potentially severe consequences for organisations (Hall, 1984), we have employed GMB to define situations, resolve conflicting perspectives, and achieve consensus regarding the structure of systems. In these inclusive systemic modelling sessions, emphasis was placed on the active involvement of stakeholders,

including employees and managers, in the modelling process. This approach facilitates the development of a shared vision regarding strategic organisational problems, and the causes and consequences of decisions taken, by enabling effective problem structuring to reach a consensus on the conclusions. To this end, the GMB sessions consisted of formal workshops that incorporate structured activities. The sessions progressed sequentially with the aim of eliciting variables and generating increasingly refined qualitative diagrams depicting the interconnections and feedback loops within the structure of the system (Andersen, Richardson, & Vennix, 1997; Hosseinichimeh et al., 2017; Hovmand et al., 2011; Hovmand et al., 2012). Each GMB session was executed with 6 to 10 participants and lasted approximately two hours. The resulting qualitative model (see Figure 11 in chapter 3) utilises CLD conventions to represent the feedback mechanisms that underlie dynamic system behaviour.

2.3.3 Stock and Flow Diagrams

Based on CLD (dynamic hypothesis) where cause and effect relationships between variables are identified and visualised, a mathematical model is constructed which is called Stock and Flow Diagram (SFD). The SFD determines the dynamics of a system with stock and flow structures, time delays, and nonlinearities (Sterman, 2000, p. 12). By reflecting the state of the system, the SFD generates information upon which decisions and actions are based.

Stocks, the rectangles, generate delays as they accumulate the difference between the inflow and the outflow of a process. They show accumulations of levels of interest which can be concrete (in our case, OP, workforce size, etc.) and abstract (in our case, employee perception, structuring level of the organisation, etc.), and stocks of particular relevance are represented by shaded rectangles (see Figure 16). Mathematically speaking, stocks are the integral of the flows in (inflow) minus the flows out (outflow).

Stock flows are represented by double arrows with valves in the middle, where inflows are depicted pointing to the stock and outflows are illustrated pointing out. Clouds are used to depict the sources and sinks for the flow and are exogenous to the system of interest (Sterman, 2000, p. 192). In the context of modelling, a “source” refers to the stock from which a flow originates, when that stock is outside the boundary of the model. Meanwhile, a “sink” refers to the stock into which a flow exits out of the boundary of the model. Both sources and sinks are considered to have infinite capacity and are therefore assumed not to impose any restriction on the flows they handle (Sterman, 2000, p. 192). Single arrows represent cause-effect relationships between variables. Actions and their effects are separated in time and these delays are represented in the SFD by two parallel short lines perpendicularly intersecting the arrows. Finally, in our particular case, grey circles represent HR practices.

2.4 Synthesis and conclusions of the theoretical framework analysis

The business context presents many challenges that require organisations to take decisions and actions to survive and prosper. Among the various actions that are often implemented, those related to people management, known as HR practices, play a key role (Boxall & Purcell, 2008). Within organisations, the coexistence of multiple HR practices is inevitable (Barney et al., 2001; Evans & Davis, 2005) due to the influence of the past, the diversity of organisational needs and challenges, and the need to adapt to a constantly changing business environment.

HR practices encompass a wide range of approaches and can be implemented both reactively and proactively (Capelle-Blancard & Couderc, 2007). When organisations prioritise the achievement of short-term goals over long-term objectives, they act reactively and implement practices that mainly generate results in the shortest possible time. On the other hand, when organisations prioritise the long-term sustainability of the company, they focus their attention on long-term goals. They act proactively and implement practices that need more time to show their effects, but at the same time have little or no undesired side effects. The implementation of such initiatives is possible when the organisation trusts and believes in the process itself, which often depends heavily on organisational culture (Bowen & Ostroff, 2004; Mirfakhar et al., 2018), management beliefs and values (Arthur et al., 2016; Mirfakhar et al., 2018; van Mierlo et al., 2018; White & Bryson, 2013), bounded rationality (Hernandez & Perez, 2019), and external pressures (Mirfakhar et al., 2018).

Traditionally, the SHRM field has considered the influence of HR practices to be unilateral and top-down, implemented to achieve outcomes such as employee WB and OP (Delery & Doty, 1996; Huselid, 1995; Jiang et al., 2012). This approach is known as forward or direct causality. Although several researchers have claimed that HR practices have a recursive and continuous influence on employee behaviour, leading to reverse causality (Guest et al., 2020; van Mierlo et al., 2018), most existing studies analysing the HRM-WB-OP system are cross-sectional and assume a direct causal relationship (HRM-driven models) (Peccei & Van De Voorde, 2019). There has been much criticism of the over-reliance on cross-sectional studies (Boxall, Huo, Macky, & Winterton, 2019). Moreover, the effect of long-term policy consistency on employee WB remains underexplored, possibly due to the limitations of traditional statistical approaches (Bos-Nehles et al., 2021; Mirfakhar et al., 2018).

Several researchers highlight the process approach as a factor in analysing the HRM-WB-OP system (Nishii et al., 2008; Ostroff & Bowen, 2016; Sanders et al., 2021, 2014). This approach is motivated by the limitations of traditional methods used to analyse such systems in the SHRM field, and the possible greater importance of the implementation of practices themselves versus their content (Lee & Puranam, 2016). To improve the understanding of SHRM implementation, Trullen et al. (2020) advocate the use of alternative methodologies beyond the conventional approaches found in the literature. Pettigrew (1987) and Trullen et al. (2020) define the implementation of HR practices as dynamic and multi-stage, highlighting the crucial role of time in the implementation process. Consequently, to understand the underlying mechanisms through which these practices impact employee WB and OP, as well as their long-term interaction, it is essential to adopt a temporal perspective to analyse the HRM-WB-OP system.

SD is a modelling approach that uses mathematical and computer simulation techniques to analyse and predict the behaviour of complex systems over time (Sterman, 2000). That is to say, the SD approach allows the dynamic behaviour of a system to be represented. For this reason, we employ SD to analyse the HRM-WB-OP system from a holistic point of view, focusing on the relationships and dynamics of its components rather than these components in isolation. To fully consider the dynamism and change over time of the system under analysis, our study highlights the temporal dimension.

“Si por las noches lloras por no haber visto el sol, las lágrimas no te dejaran ver las estrellas”.

Rabindranath Tagore

Chapter 3

Research Objective

3 Research Objective

After conducting a comprehensive literature review in the second chapter, we formulated the dynamic hypothesis (depicted in CLD format) illustrated in Figure 11. This CLD provides a solid theoretical basis encompassing the interactions and feedback dynamics influencing the HRM-WB-OP system. The formulation of this dynamic hypothesis is key to achieving the main objective of the current study (explanation of each feedback loop is provided in the second chapter).

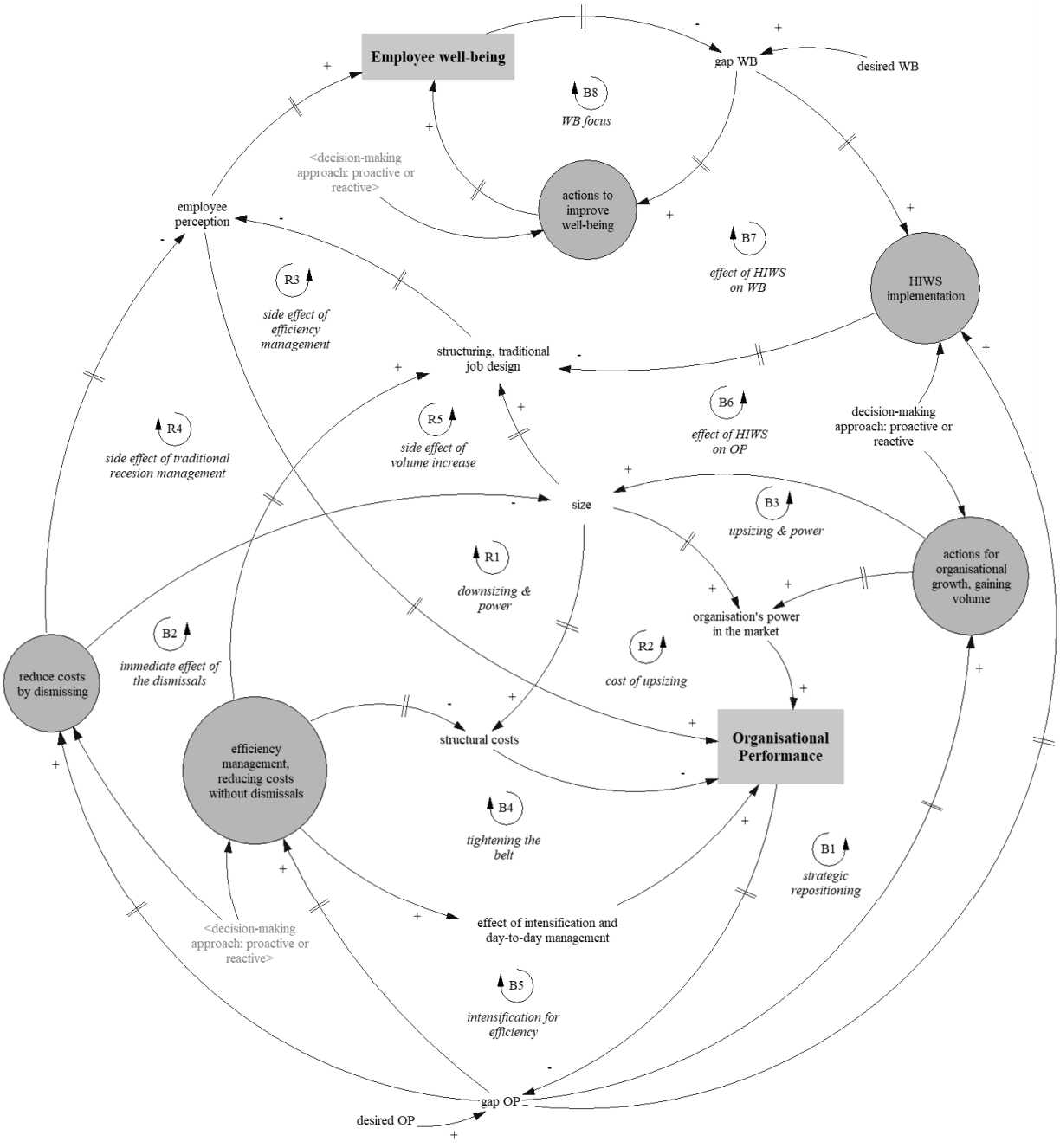


Figure 11: Dynamic hypothesis of the HRM-WB-OP relationship (CLD).

Recent research has highlighted the importance of HIWS for employee WB and OP (Elorza, Garmendia, Kilroy, Van de Voorde, & Van Beurden, 2022; Macky & Boxall, 2008; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Wood, van Veldhoven, Croon, & de Menezes, 2012). However, the literature still lacks clarity as to why the implementation of HIWS sometimes leads to positive outcomes and other times to negative ones (Elorza et al., 2022; Wood et al., 2012). According to the research by Elorza et al. (2022), a positive relationship between HIWS and employee WB at work has been observed when there is a good fit between the perceived HIWS and the implemented HIWS. However, a negative relationship has been found when there is a discrepancy between the level of employee perception and the actual implementation of HIWS (Elorza et al., 2011, 2022; Wood et al., 2012). This discrepancy is attributed to a lack of fulfilment of the expectations generated in employees.

In addition, there is limited knowledge about the key factors that both contribute to effective HIWS implementation and maximise its positive impact on employee WB and OP. That is to say, very little is currently known about how to successfully implement HR practices to ensure a stronger system—a system that sends unambiguous messages and clear signals about organisational values and priorities (Bos-Nehles et al., 2021; Mirfakhar et al., 2018).

Although Mirfakhar et al. (2018) identified three key dimensions (content, context, and process) for effective implementation of HR practices, other scholars such as Makhecha et al. (2016) showed that despite adopting similar HR practices, different companies do not necessarily achieve the same results. This would suggest that the difference lies in the implementation process (Lee & Puranam, 2016). This idea is supported by the growing stream of research analysing how HR practices positively impact OP and employee WB from a process perspective (Nishii et al., 2008; Ostroff & Bowen, 2016; Sanders et al., 2021, 2014).

Therefore, the main objective of this doctoral thesis is **to demonstrate that employee well-being (WB) and organisational performance (OP) results are influenced by the perception of employees of the practices implemented in their work environment.** Furthermore, we examine **how this perception varies according to the implementation process of these practices, which is determined by both the decision-making approach (proactive vs. reactive) and organisational resources** (see Figure 12).

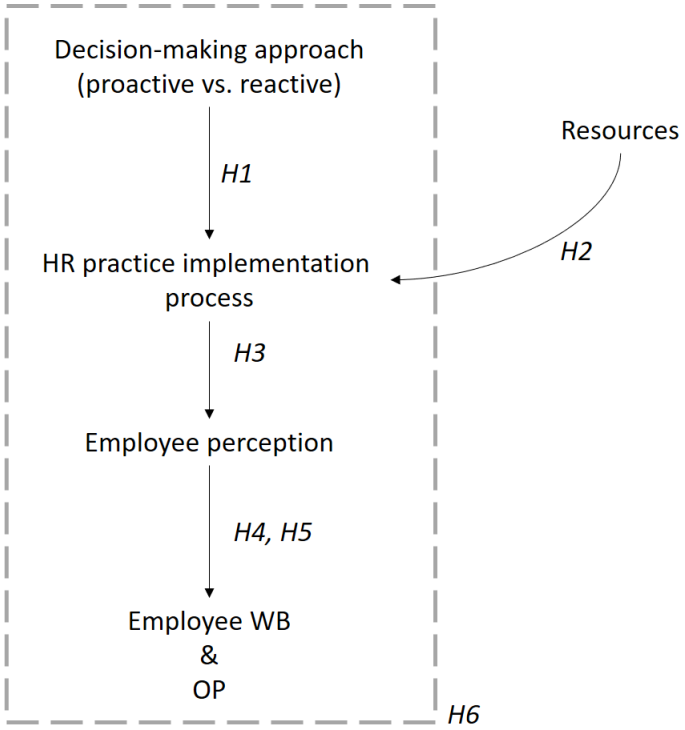


Figure 12: Overview of the main objective and related hypotheses.

By addressing these interrelationships, we gain a deeper understanding of how employee perception influences results (OP & WB), and how decision-making approaches affect perception. The proactive decision-making approach is characterised by prioritising the achievement of long-term goals, which involves anticipation and pre-planning to make strategic decisions that promote long-term organisational development and efficiency. On the other hand, reactive decision-making focuses on achieving short-term objectives and responding to immediate and emerging situations, which can result in more impulsive and premature decisions during the HIWS implementation process.

Adopting a novel methodological approach, this study examines how proactive and reactive decision-making influences the HIWS implementation process, and the resulting impact of that process on OP and employee WB. In particular, we test and compare the impact of proactive and reactive approaches to HIWS implementation processes on OP and employee WB. By focusing on the impact of these processes, we aim to shed light on unresolved issues in the SHRM field and better understand how organisations can simultaneously promote OP and employee WB through HIWS.

To examine and support the main objective of this research, six hypotheses are proposed, as set out below.

Bowen and Ostroff (2004) argue that a strong HR management system functions as a signal to employees that the organisation values and prioritises their well-being and development. This suggests that organisations which adopt a reactive approach to decision-making, characterised by prioritising short-term goals, may neglect to implement solid and effective HR practices. In other words, a lack of investment and attention to HR management can send negative signals and weaken employee perceptions. We therefore hypothesise the following:

H1: Organisations that adopt a reactive decision-making approach, characterised by prioritising short-term objectives, are more likely to have a weak HRM system.

When HR practices are routinised, they are embedded in the day-to-day life of the organisation and thus become part of the organisational culture (Choi & Chang, 2009). As a result, these practices become habitual actions that are performed automatically, without requiring much conscious effort (Duhigg, 2013). Therefore, the effort required for implementation decreases. However, an approach that prioritises the resolution of emerging problems (reactive approach) makes it difficult for HR practices to become part of everyday life, and almost impossible to become rooted habits. The need to make quick decisions in the presence of emerging challenges becomes more imperative than maintaining consistency over time in the way business is done. Hence, we hypothesise the following:

H2: The effort required to obtain the desired levels of OP and employee WB are greater when adopting a reactive decision-making approach.

HR strength theory (Bowen & Ostroff, 2004), posits that when information about HR practices is meaningful, consistent over time, and there is unanimity among managers, the perception of employees about the organisation improves. From this, it can be inferred that organisations that adopt a reactive approach to decision-making tend to show less consistency in the implementation of HR practices. This reactive approach is based on responding primarily to specific events and situations, resulting in isolated decisions that are not necessarily aligned with a long-term strategic vision. As a result, these organisations may lack consistency in the way they implement and maintain their HR practices over time. Lack of consistency can create a gap between what is implemented and how employees perceive those practices. When HR practices vary in their application or are inconsistently implemented, employees are more likely to experience a lack of clarity or inconsistency in the policies and procedures of the organisation. This can negatively affect their perception of the organisation, which leads us to the third hypothesis:

H3: Organisations adopting a reactive decision-making approach, characterised by a lack of consistency over time, have a greater gap between implemented HR practices and employee perception.

Research by Elorza et al. (2022) found a positive relationship between HIWS and employee WB when there is a good match between the HIWS perceived by employees and those implemented by the organisation. This means that when employees perceive that the implemented HIWS are consistent with their expectations and work experiences, they feel more engaged, motivated, and experience greater well-being at work. On the other hand, when there is a discrepancy between the level of employee perception and the actual implementation of HIWS, a negative relationship with employee WB has been found (Elorza et al., 2011, 2022; Wood et al., 2012). This suggests that if employees perceive that the implemented HIWS differ significantly from their expectations or work experiences, they are more likely to experience discomfort, dissatisfaction, and an overall deterioration in their job well-being. Based on these findings, we present the fourth hypothesis:

H.4: The greater the discrepancy between implemented HIWS and perceived HIWS, the worse the employee WB.

The proactive decision-making approach involves managers taking a strategic and forward-looking view of the implementation of HR practices. This proactive approach has the potential to generate greater alignment between the HR practices implemented and the expectations and needs of employees. By implementing HR practices that are aligned with employee needs (Bowen & Ostroff, 2004), greater employee satisfaction and engagement is fostered, which in turn can positively influence OP. Therefore, we propose our fifth hypothesis:

H5: The proactive decision-making approach does not worsen the results in OP.

The conflicting impacts (positive and negative) of HIWS implementation on employee WB found in the literature (Elorza et al., 2022; Wood et al., 2012) may be due to the statistical methods used. Measurements taken at a specific moment (cross-sectional) or several moments (longitudinal) can provide a snapshot of that precise moment in time. However, by not being able to analyse what is happening continuously over time, certain details that are key to understanding the HRM-WB-OP system may be lost. Methods such as cross-sectional or longitudinal can show negative or positive trends, without giving information about what has happened between the different measurement points (there could have been growth followed by a sharp decline, oscillations, etc.). For this reason, the present research incorporates a new method that considers the temporal dimension in the analysis of the HRM-WB-OP system. We therefore define our sixth hypothesis as:

H6: Traditional statistical approaches such as cross-sectional designs may be the cause of conflicting outcomes (positive and negative) of the effect of HIWS on employee WB found in the literature.

“We can't impose our will on a system.
We can listen to what the system tells us, and discover how its properties and our values can work together to bring forth something much better than could ever be produced by our will alone.
We can't control systems or figure them out.
But we can dance with them”.

Donella H. Meadows.

Chapter 4

Methodology

4 Methodology

The long-term effects of the constancy of HR practices on both OP and employee WB are still underexplored (Bos-Nehles et al., 2021; Mirfakhar et al., 2018), likely due to the traditional statistical approaches used in most studies in the field. Therefore, the present research aims to address this challenge by employing the SD methodology. SD is a powerful tool for understanding and analysing complex systems, modelling causal relationships, simulating behaviour over time, conducting virtual experiments, and enabling long-term simulation. As a result, it provides advantages for policy analysis, decision-making, and understanding complex systems in general (Sterman, 2000). With this methodology, the temporal dimension has been incorporated into the analysis, allowing us to capture the dynamic nature of HR practice implementation (Lee & Puranam, 2016; Nishii et al., 2008; Ostroff & Bowen, 2016; Sanders et al., 2021, 2014; van Mierlo et al., 2018), and thus, examine the effects of HIWS implementation from a process perspective.

Once the dynamic hypothesis has been formulated, it needs to be tested. To this end, a transition is made from the conceptual realm of diagrams to a formal model that is fully specified, including equations, parameters, and initial conditions.

We developed a SD model of the HRM-WB-OP system based on a combination of quantitative and qualitative data. Quantitative data was obtained from the Bateratzen database, which contains data from over 150,000 surveys and 830 organisations from various sectors (industry, education, services, etc.). This data provides insight into the alignment of people with organisational strategies and culture, making it a sought-after resource for companies joining the initiative. On the other hand, qualitative data was gathered from 41 GMB sessions conducted in 23 industrial companies in the Basque Country and combined with insights from the literature.

Our SD model of HRM-WB-OP consists of thirteen feedback loops, eight balancing and five reinforcing (for an in-depth explanation about each loop see Appendix B: Feedback Loops and Justification of the Relationships between Modelled Variables), and five stocks (see Table 5). The first stock represents employee well-being, the outcome of interest for the present analysis. The second stock represents organisational performance, the main indicator upon which managers base their decisions. The third stock represents employee perception of the organisation, which captures the experience of employees with respect to HR practices. The fourth stock, the “Structuring level, traditional job design”, refers to the way jobs are structured and designed in terms of tasks, responsibilities, and authority. A high level of structuring and traditional job design indicates that jobs are highly standardised and defined, with clear tasks, responsibilities, and specialised roles. This traditional approach often limits the autonomy and ability of employees to adapt to changing demands and make decision beyond their specific roles. Thus, this variable represents factors such as the level of employee involvement in decision-making processes, number of hierarchical levels in the organisation, the presence of specific training, transparent information sharing mechanisms, and the level of employee autonomy. Finally, size of the organisation is represented by the fifth stock, which reflects the magnitude of the

organisation in terms of the number of employees. These five stocks are connected by non-linear relationships to create feedback loops that capture the dynamic behaviour of the system over time.

The model assumes that unless deliberate intervention is conducted to organise the growth of the company (i.e., an increase in the number of employees), the organisation will default to a traditional mode of growth. This entails the specialisation of employees to ensure productivity in task execution, the standardisation of work through the implementation of additional rules, bureaucracy, procedures, formalisms, etc., and the definition of managers at multiple hierarchical levels.

The inputs used in our model consist of both quantitative and qualitative data obtained from three sources: the Bateratzen database, GMB sessions, and insights form the literature. Data from the Bateratzen database provides insight into the alignment of people with organisational strategies and culture, making it a sought-after resource for participating companies. On the other hand, GMB is a participatory systemic modelling approach that involves stakeholder participation in the modelling process (for a deeper explanation about GMB see sections 4.2 Model inputs, and Appendix A: Group Model Building (GMB)). During the GMB sessions, a group of people collaboratively developed a graphical model that represents the structure of the complex system, its functions, and relationships between the elements of the system. We used this data to calibrate the parameters of our model and check its accuracy.

To validate the model, we conducted structural and behavioural validity tests, and sense checked the model with subject matter experts. The validation process involved a panel of HRM and SD experts from various European countries, who assessed the results and the model building process for its relevance and accuracy. Additionally, the results were reviewed by managers and employees from the Basque industrial sector, who provided feedback on the practical implications of the findings. Moreover, from a modelling perspective, the mechanics of the model were also validated by comparing its capacity to reproduce the historical data that was reported in the 41 GMB sessions (see section 5.1 Validation results). The students of the master's degree in Business Innovation and Project Management, Supply Chain Manufacturing and Logistics Management, and two graduating classes of the master's programme in Production Management of Mondragon Unibertsitatea were also consulted to provide additional feedback. This multi-stakeholder validation approach ensured the validity and applicability of the results to both academic and industry contexts.

In conclusion, the SD methodology provides a powerful framework for developing a model of HRM-WB-OP that accurately captures its dynamic behaviour. By using the Bateratzen database, GMB, literature inputs, validating the model developed through structural and behavioural validity tests, and sense checking the model with subject matter experts, we are confident in its accuracy and ability to inform our understanding of the system.

To maximise the chances of other researchers or practitioners reusing this work to either extend results or benefit society, and give readers the ability to better judge the contribution of this simulation study, this model is reported following the STRESS (Strengthening the Reporting of Empirical Simulation Studies) guidelines proposed by (Monks et al., 2019) (see Appendix C: Model Assessment Results). Therefore, we start by clearly depicting the objective of the model. Following this, the base model logic is explained. The functionality of the model is further communicated by simplified overviews that focus

on the stocks, flows, and feedback loops. Model input data and initial model values are also presented. Each initial value, parameter estimation, and equations of all variables are presented in Appendix D: Equations Establishing the Relationships between the Variables. In addition, parameters have been explicitly defined as standalone variables with the aim of facilitating the understanding of the model.

This chapter is organised as follows. Firstly, the simulation model developed for this study is introduced, highlighting its most significant characteristics. Following that, a high-level overview of the simulation model is presented, illustrating the five stocks and thirteen feedback loops that comprise it. Additionally, an explanation is provided on how each stock increases or decreases its level. Next, the chapter demonstrates how each of the five analysed HR practices impact various points simultaneously in the system, generating both desired and unintended effects. Furthermore, the data sources necessary for constructing the simulation model of current research are presented. Lastly, the chapter presents the validation process of the model that ensures the rigor of the study.

4.1 The SD model

The simulation model developed in this research, analyses the influence of the perception of employees on OP and employee WB, and examines how that perception varies according to the implementation process of the five HR practices under study. The simulation model is based on the dynamic hypothesis (depicted in Figure 11, in chapter 3) that arises as a result of the exhaustive theoretical analysis presented in the chapter 2 of this document.

To formulate the dynamic hypothesis, literature insights were combined with GMB workshops focused on information elicitation and variable identification. This technique facilitated the involvement of multiple stakeholders and experts in the model building process, fostering collaboration and knowledge sharing. Through joint working sessions, we explored and analysed the interactions between the key variables of the HRM-WB-OP system. The full description of the feedback structure of the model is shown in Figure 11. This dynamic hypothesis (depicted in CLD format) captures the short and long-term effects of the five HR practices included in the current study.

As evidenced by the outcomes of the 41 GMB sessions, HIWS are never implemented in isolation but rather in conjunction with other HR practices. Based on the SD approach, we developed a simulation model to capture and connect three subsystems: (i) the effect of HR practices that are implemented driven by the desire to maximise OP outcomes, (ii) the effect of HR practices that are implemented driven by the desire to maximise employee WB, and (iii) the effect of actions that are implemented to simultaneously improve OP and employee WB.

We translated the CLD into a quantified simulation model (see Figure 16) and calibrated the model using data from Bateratzen database. The implicit assumptions about dynamic behaviour in the preliminary HRM-WB-OP model were then tested with managers and experts on the HRM field. In this section, we detail our model construction process and provide an explanation of the developed model.

To meet the objective of this research, reactive and proactive decision-making approaches were simulated by building six scenarios that combined the macroeconomic situation ("crisis" and "no-crisis") and the HRM philosophy ("control", "commitment", and "mix") of the organisation (Monks et al., 2013). Depending on the combination of these two variables that determine the context of the model, the HR practices implemented vary (see Appendix E: The Six Scenarios and Corresponding HR practice Implementation). For example, under a non-crisis macroeconomic situation it is easier to take proactive decisions than in crisis situations.

The "crisis" macroeconomic situation in this study refers to the fact that the market in which the organisations operates has decreased, and therefore their survival is somehow at risk. This macroeconomic context, can apply significant pressure on organisations, causing them to prioritise actions that can bring immediate results to fulfil short-term objectives. In contrast, "no-crisis" in the current work refers to when the market in which the organisations operate is stable and therefore a priori have no competitiveness nor survival risk. This macroeconomic context, characterised by stability, provides a favourable context to keep organisations focused on long-term objectives.

Organisational culture and HRM philosophy are closely interrelated and can influence each other (Bowen & Ostroff, 2004; Mirfakhar et al., 2018) (Figure 13). Organisational culture refers to the shared values, beliefs and norms that exist within an organisation, which influence how employees behave, how managers make decisions, and how activities are performed (Hatch, 2011). HRM philosophy, can be defined as the view of the organisation of its human resources, recognising their significance in the overall success of the business and outlining how they should be treated and managed (Schuler, 1992). It represents the guiding principles of the HR system. For example, firms may choose to value employee performance or may strive to control and monitor employee activity (Monks et al., 2013).

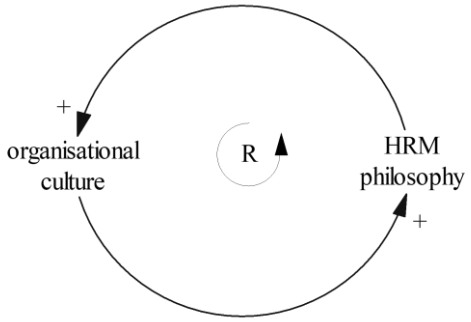


Figure 13: Mutual influence between organisational culture and HRM philosophy.

The current study differentiates three HRM philosophies: control, commitment, and mix. The control HRM philosophy refers to companies that are based on traditional work. It focuses on establishing rules, procedures and control systems to ensure compliance with organisational policies and objectives. It is characterised by narrowly defined jobs, specialisation of employees, close supervision and monitoring of employees by managers, hierarchical structure, centralisation of power, and a focus on cost reduction strategies (Boselie, Paauwe, & Richardson, 2003). This type of approach prioritises short-term goals over long-term objectives. In other words, decisions are taken in a reactive manner

with the aim of obtaining results as soon as possible (Figure 14). Organisational culture can support this philosophy by prioritising efficiency, clear hierarchy, and results.

Organisations with commitment HRM philosophy, on the other hand, create conditions through manager actions and decisions which enable employees to achieve their own goals by directing their efforts and energy towards the achievement of organisational goals. This philosophy focuses on fostering employee commitment and loyalty to the organisation. It is based on the idea that engaged and motivated employees are more productive and contribute positively to the success of the organisation. It encompasses broadly defined jobs, job rotation, evaluation by peers, non-hierarchical structure, and decentralisation of power (Boselie et al., 2003). Long-term objectives are prioritised, emphasising the sustainability of the organisation in the long run. In other words, decisions are taken proactively (Figure 14). An organisational culture that values and fosters trust, collaboration, and a sense of belonging can promote this philosophy.

The third HRM philosophy is labelled as “mix” in the present study and refers to a mixture of the aforementioned two philosophies. It recognises the importance of employee motivation and commitment, while establishing certain levels of control and structure. Although this approach seeks to prioritise long-term objectives, when external pressure arises, it tends to lose that long-term vision and give precedence to the achievement of short-term objectives. That is, in crisis situations, organisations focus more on reactive decision-making to address immediate challenges, while in stable contexts, proactive decision-making is favoured to anticipate future needs and foster long-term sustainability. As a result, there is less consistency over the years in the decisions taken, which means that companies that follow this philosophy tend to mix proactivity with reactive initiatives. By not focusing solely on the long-term, the tendency will be more or less towards reactive or proactive decision making depending on the macroeconomic context (Capelle-Blancard & Couderc, 2007) (Figure 14).

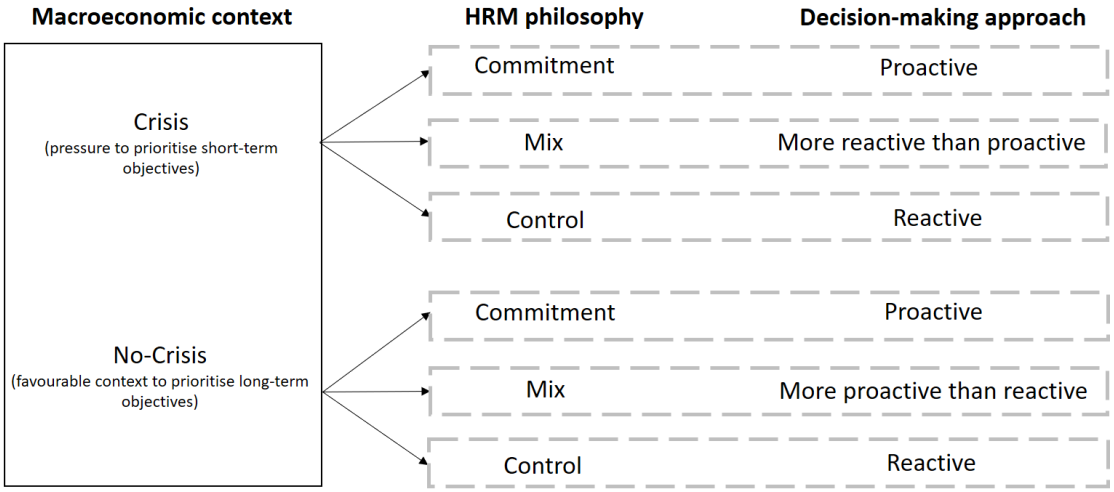


Figure 14: The relationship between macroeconomic context, HRM philosophy, and decision making approach.

Of the six scenarios mentioned above (combination of the two macroeconomic situations and the three HRM philosophies), we have focused on two scenarios: crisis-mix and crisis-commitment. These two scenarios implement the exact same HR practices (see Table 2), and the only difference between them is the decision-making approach used. In other words, the same HR practices are implemented, but in the Crisis-Commitment scenario, they are implemented using a proactive decision-making approach, while in the Crisis-Mix scenario, they are implemented using reactive decision-making. Focusing on these two scenarios, allows us to analyse the impact of the HIWS implementation process on OP and employee WB.

Table 2: HR practices implemented in the two main scenarios of the current research.

HRM philosophy	Decision-making approach	Macroeconomic context: Crisis	
Commitment	Proactive	-HIWS implementation. -Efficiency management, reducing costs without dismissals. -Reduce costs by dismissing. -Actions for organisational growth, gaining volume.	HR practices
Mixed	Reactive	-HIWS implementation. -Efficiency management, reducing costs without dismissals. -Reduce costs by dismissing. -Actions for organisational growth, gaining volume.	

Each of these HR practices (see Table 2) has a defined nature, i.e., they are more oriented towards the achievement of short-term or long-term objectives. For example, measures such as cost reduction through redundancies, day-to-day efficiency management, and organisational growth are focused on achieving results as soon as possible (short-term focus) (see Table 1). In contrast, the implementation of HIWS is more oriented towards the long-term sustainability of the organisation. Owing to the long-term orientation of HIWS, we mainly focus on analysing the effect of their implementation process on OP and WB. We investigate whether the proactive and reactive decision-making approach to implementing HIWS is a key factor in determining the impact of HIWS on OP and employee WB.

To study how the HR practices included in the current work (see Table 1) affect employee WB and OP, we built the mathematical model based on the premise that a gap between desired OP and/or WB and current real outcomes are resolved by taking corrective actions to achieve the goal (see Figure 15). The mechanism of this feedback loop works as follows: as the gap widens, this increases the implementation of HR practices, which raises the real level and hence reduces the gap. On the other hand, as the gap decreases, the implementation of HR practices is also reduced, which decreases the real level and thus widens the gap. We depict the HR practice implementation as variables that are

activated because of a gap identification between the desired and the actual level which works as a trigger (shaded circles in Figure 16).

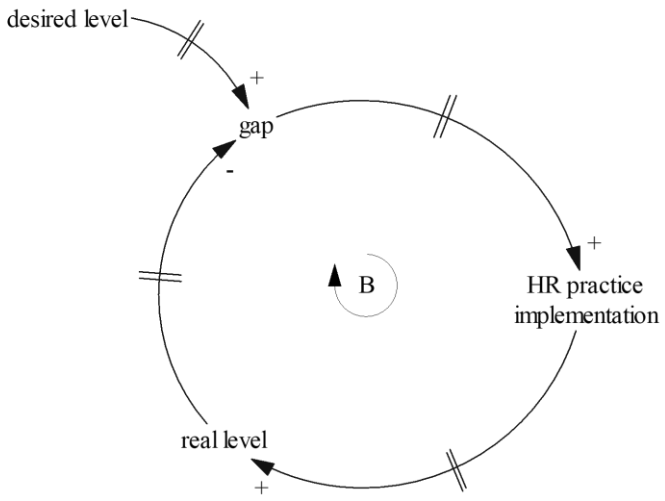


Figure 15: The logic behind the model of the present research, in which the gap between the desired level and the actual level of OP and/or employee WB works as a trigger for HR practice implementation.

To activate the triggers (a gap between desired OP and/or WB), we estimated the desired levels of OP and employee WB for each scenario (see Table 3). The exact value of each is unknown and was thus approximated through scenario comparison. For this purpose, we relied on the information elicited from the GMB sessions, which led to two estimations. The first is that the desired level of OP is the same under both commitment and mix philosophies, since organisations always want to maximise their economic results. Therefore, we assigned it a maximum value on a scale of 0 to 1. However, due to contextual circumstances, the desired level of OP is slightly lower in crisis situations compared to non-crisis markets. The second estimation is that the maximum value for the desired level of employee WB occurs in the most favourable scenario for employees, which prioritises employee WB and occurs in a stable or growing market (i.e., the “No-Crisis-Commitment” scenario). Using this scenario as a reference, we estimated the values for the rest of the scenarios through comparison. The desired level of employee WB, for example, is lower in crisis situations because the urgent need for survival. Furthermore, under a mixed philosophy, where short-term goal achievement is prioritised (with a focus on more business performance than employees), the desired WB will be lower (see Table 3).

Table 3: Desired values of OP and employee WB depending on the macroeconomic context and the HRM philosophy of the organisation. Data obtained from the 41 GMB sessions.

SCENARIO	HRM philosophy	**Commitment**		**Mixed**		**Control**	
	Macroeconomic context	**Crisis**	**No-Crisis**	**Crisis**	**No-Crisis**	**Crisis**	**No-Crisis**
	Desired WB	0.8	1	0.4	0.6	0.2	0.3
	Desired OP	0.7	1	0.7	1	0.7	1

This research combined a qualitative and a quantitative SD approach to model HRM-WB-OP over a time horizon of 10 years. The mathematical equations were developed using *Vensim PLE Plus 8.1.0 x64*. The high-level overview of our quantitative SD model is depicted in Figure 16, in which the most significant stocks and feedback loops can be seen (the explanation of each feedback loop and the justifying literature is presented in Appendix B: Feedback Loops and Justification of the Relationships between Modelled Variables).

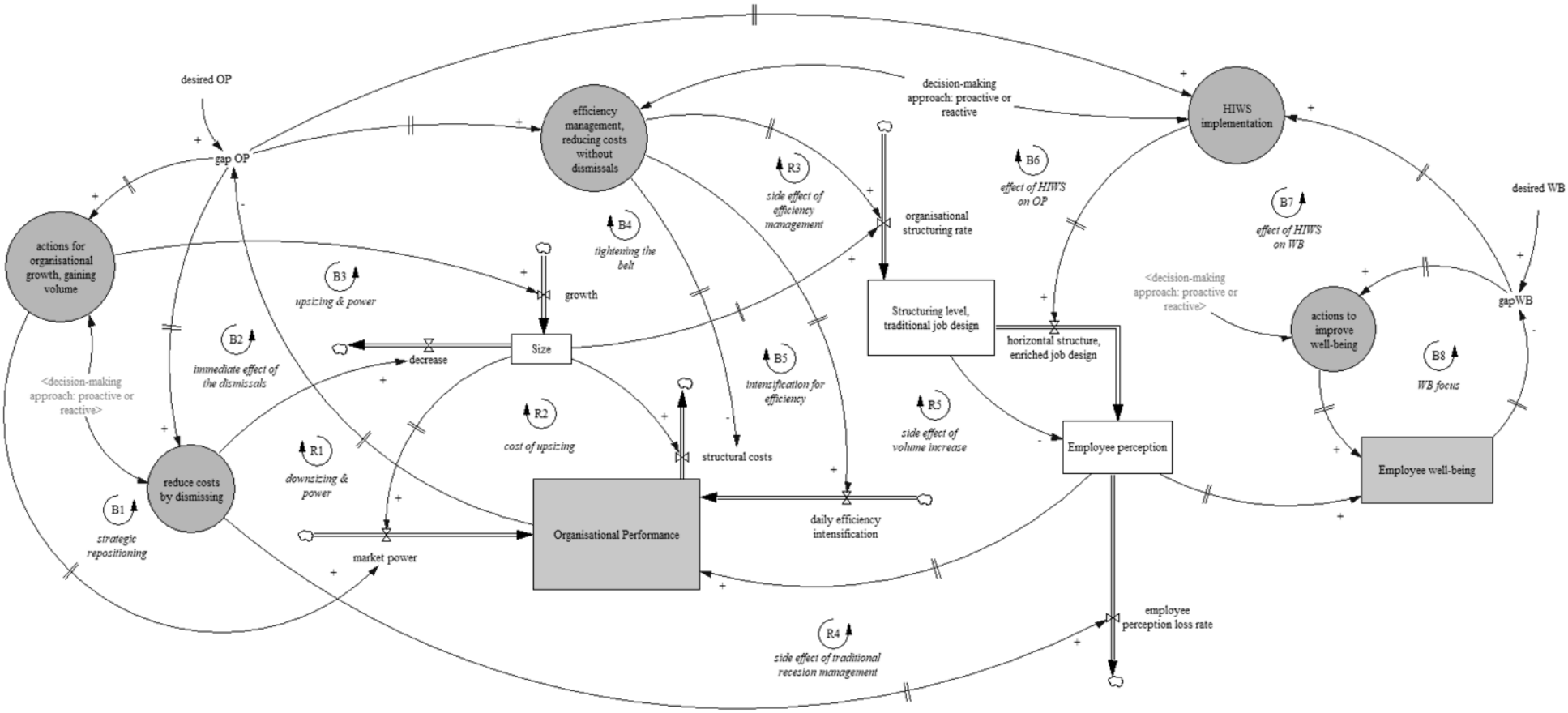


Figure 16: High-level overview of the model (SFD).

In accordance with Sterman (2000, p. 97), Table 4 presents the model boundary chart. This depicts the scope of the model by listing the key variables which are included endogenously (included within the boundaries/scope of the system), exogenously (external to the boundaries/scope of the system), and those excluded from the model.

Table 4: Model boundary chart for long-term HRM-WB-OP relationship.

Model boundary	Model inputs/variables
Endogenous	-HR practice implementation -Organisational size -Employee perception -Structural costs -Power of the organisation on the market -Employee well-being -Organisational performance
Exogenous	-Macroeconomic context (crisis vs. no-crisis) -HRM philosophy (control, commitment, or mix) -Decision-making approach (proactive or reactive)
Excluded	-Operational strategy -The effect of the sector -Cost of HR practice implementation

The combination of the exogenous variables, HRM philosophy, and the macroeconomic situation determine the decision-making approach adopted by managers, which in turn influences the way in which HR practices are implemented (see Figure 17).

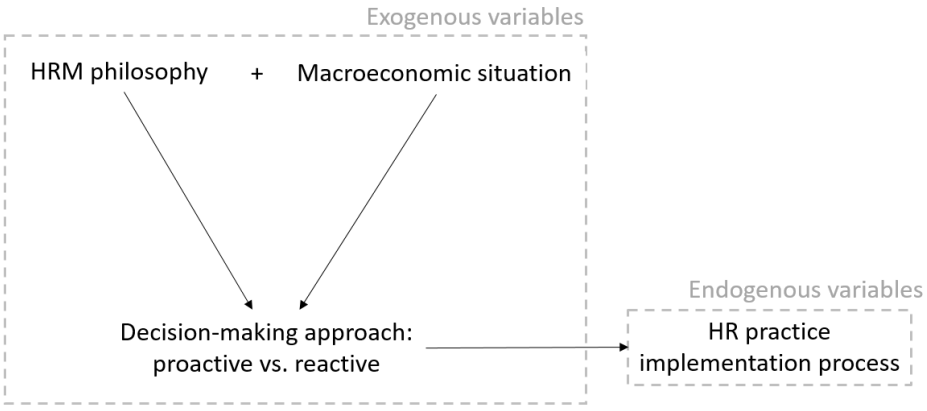


Figure 17: Relationship between exogenous and endogenous variables.

All the parameters[8] in the model are explicitly stated as standalone variables. Although they could have been integrated into the rate formulas, presenting them as standalone variables significantly improves the understanding of the model. Each parameter was tested with sensitivity analyses to examine their effect on the behaviour of the model and are presented in section 5.1 Validation results.

In the subsequent paragraphs, the stock and flow diagram is divided into its different variables (stocks, flow, parameter, and auxiliaries[9]). The main stocks, flows, and auxiliary variables are explained in Table 5, Table 6, and Table 7, respectively. A deeper explanation and the presentation of the mathematical equations of all the variables that constitute the simulation model are presented in Appendix D: Equations Establishing the Relationships between the Variables.).

[8] The parameters of an SD model are fixed values representing constants, coefficients or static characteristics of the system. They include rates of change, growth rates, rates of consumption, feedback coefficients, capacities, constraints, etc. These values are based on historical data, opinions of domain experts, or estimations.

[9] Auxiliary variables are useful to simplify the representation of the model and make it more understandable.

Table 5: Main stock variables of the model.

Name	Units	Description of the equation	Description of the variable
Organisational Performance	€	Influenced by several factors, including employee perception, the market position of the organisation, the daily intensification of operations, and the structural costs incurred.	A key element of the HRM-WB-OP system and one of the main indicators managers use to make decisions. Therefore, in the simulation model, the difference between the actual level of this stock and the desired level triggers the implementation of the HR practices. The unit "€" is illustrative and defined on a 0-1 scale where 1 is the highest level of OP, and 0 is the lowest.
Employee well-being	Degree	Strongly influenced by the perception that employees have of the organisation. It is influenced over time by the HR practice implementation aimed solely at improving employee WB.	A key element of the HRM-WB-OP system. Refers to organisational-level employee well-being, rather than individual-level well-being, encompassing constructs such as satisfaction, motivation, and commitment. The unit "Degree" here is on a 0-1 scale where 1 is the highest level of employee WB, and 0 is the lowest.
Employee perception	Degree	Influenced by the "structuring level" of the organisation (i.e., the way in which the company is organised). High levels of centralisation, hierarchy, formalisation, and standardised and defined jobs for example, negatively affect perception. In addition, it is also affected by practices that are traditionally taken for managing crisis situations, such as dismissals. In turn, this variable strongly shapes OP and employee WB.	Reflects the experience of employees about HR practices and refers to how employees perceive and understand the company in which they work. It includes their beliefs, attitudes and opinions about the organisational culture, leadership, HR policies and practices, work environment, internal communication, and other aspects related to the organisation. The unit "Degree" here is on a 0-1 scale where 1 is the highest level of employee perception, and 0 is the lowest.

Structuring level, traditional job design	Degree	Influenced on the one hand by the combination between the size of the organisation and the way the growth is organised, and on the other hand, by the management of daily efficiency (i.e., intensification of tasks).	Refers to the way jobs are structured and designed in terms of tasks, responsibilities, and authority. A high level of structuring and traditional job design indicates that jobs are highly standardised and defined, with clear tasks, responsibilities and specialised roles. This traditional approach often limits the autonomy and ability of employees to adapt to changing demands and make decisions beyond their specific roles. Thus, this variable represents factors such as the level of employee involvement in decision-making processes, number of hierarchical levels in the organisation, the presence of specific training, transparent information sharing mechanisms, and the level of employee autonomy. The unit “Degree” here is on a 0-1 scale where 1 is the highest level of structuring and traditional job design, and 0 is the lowest.
Size	People	The size of the organisation increases with new hires and decreases with dismissals, retirement, and relocations.	Reflects the magnitude of the organisation in terms of the number of employees.

Table 6: Main flow variables of the model.

Name	Units	Description of the equation	Description of the variable
Daily efficiency intensification	€/month	Inflow that feeds into the Organisational Performance stock and depends on the implementation of the HR practice labelled as *"efficiency management, reducing costs without dismissals".*	Connects HR practices with one of the main outcomes of the model, which is OP. The unit "€/month" in this case, represents the monthly profits derived from the intensification of daily management.
Market power	€/month	Inflow that feeds into the "*Organisational Performance*" stock, and depends on the size of the organisation and the implementation of the HR practice labelled as *"actions for organisational growth, gaining volume".*	Connects organisational size and HR practices with one of the main outcomes of the model, which is OP. The unit "€/month" in this case, represents the additional income per month from increasing market power through the implementation of HR practice.
Structural costs	€/month	Outflow that empties the "Organisational Performance" stock, by reflecting the negative effect of large organisational size. It is also affected by HR practices aimed at managing daily efficiency.	Connects organisational size and HR practices with one of the main outcomes of the model, which is OP. The unit "€/month" in this case, represents the monthly structural cost associated with the size of the organisation.

Horizontal structure, enriched job design	Degree/ month	Flow that by emptying the *"Structuring level, traditional job design"* (outflow), feeds *"Employee perception"* stock (inflow). The implementation of HIWS leads to a reorganisation of the organisational structure, promoting a more horizontal and less hierarchical organisation.	Represents the level of mutual coordination and vertical enrichment (making people owners of their work) of the organisation. The unit "€/month" in this case, represents the degree of monthly horizontal structuring resulting from the implementation of HIWS.
Employee perception loss rate	Degree/ month	Outflow that empties "*Employee perception*" stock. It is influenced by the lack of "HIWS implementation" and by the implementation of practices such as dismissals.	Represents the deterioration of the perception of employees when practices aimed at improving the organisational context are no longer implemented, and/or when practices that are poorly received by employees are implemented. The unit "Degree/month" in this case, represents the amount of perception lost per month, due to lack of HR practice implementation (i.e., HIWS), or due to the implementation of particular HR practices (i.e., reduce costs by dismissing).
Organisational structuring rate	Degree/ month	Inflow that feeds into the "*Structuring level, traditional job design*" stock, depends on the size of the organisation and the implementation of the HR practices oriented to manage daily efficiency.	Represents the rate of structuring for each period. The unit "Degree/month" in this case, represents the increase per month in traditional highly structured job design.

growth	People/ month	Inflow that feeds into the "*Size*" stock and depends on the number of employees recruited.	Represents the monthly growth rate of the organisation.
decrease	People/ month	Outflow that empties "*Size*" stock and depends on dismissals, retirement, and relocations.	Represents the rate at which the organisation experiences a decline in its workforce size.

Table 7: Main auxiliary variables of the model.

Name	Units	Description of the equation	Description of the variable
HIWS implementation	Dmnl	Triggered by a simultaneous need to improve OP and employee WB, represented by "gap OP" and "gap WB" variables, respectively. The way in which HIWS are implemented also depends on the decision-making approach adopted by managers (proactive or reactive). In turn, this variable directly affects the perception of employees, which consequently shapes OP and employee WB.	Refers to the adoption and integration of HIWS within the organisation. Its aim is to actively involve employees in decision-making, fostering teamwork, promoting skills development, and enhancing employee WB and participation in the workplace. The unit "Dmnl" in this case, is on a 0-1 scale where 1 is HIWS completely implemented and 0 is not implemented at all.
Efficiency management, reducing costs without dismissals	Dmnl	Triggered by the need to improve OP, represented by "gap OP". The way in which this HR practice is implemented also depends on the decision-making approach adopted by managers (proactive or reactive). In turn, this variable affects the way jobs are designed, the efficiency of the organisation, and its structural costs.	Refers to the adoption and integration of HR practices that involve the implementation of achievement-oriented, and task-focused leadership that maximises results while minimising resource usage. The unit "Dmnl" in this case, is on a 0-1 scale where 1 is "Efficiency management, reducing costs without dismissals" completely implemented and 0 is not implemented at all.

Reduce costs by dismissing	Dmnl	Triggered by the need to improve OP, represented by “gap OP” and especially implemented to manage crisis situations. The way in which this HR practice is implemented also depends on the decision-making approach adopted by managers (proactive or reactive). In turn, this variable affects the size of the organisation and the perception of employees.	Refers to the adoption and integration of HR practices that focus on managing difficult moments with containment measures, such as dismissals, relocations, early retirement, and salary reductions. Organisations can reduce their size (number of employees) and associated costs by implementing downsizing strategies during difficult economic times. The unit “Dmnl” in this case, is on a 0-1 scale where 1 is “Reduce costs by dismissing” completely implemented and 0 is not implemented at all.
Actions for organisational growth, gaining volume	Dmnl	Triggered by the need to improving OP, represented by “gap OP”. The way in which this HR practice is implemented also depends on the decision-making approach adopted by managers (proactive or reactive). In turn, this variable affects the size of the organisation and the power that the organisation has on its own market.	Refers to the adoption and integration of HR practices oriented to gaining volume, both by hiring employees or by investing in new markets. The unit “Dmnl” in this case, is on a 0-1 scale where 1 is “Actions for organisational growth, gaining volume” completely implemented and 0 is not implemented at all.
Actions to improve WB	Dmnl	Triggered by the need to improving employee WB, represented by “gap WB”. The way in which this HR practice is implemented also depends on the decision-making approach adopted by managers (proactive or reactive). In turn, this variable sporadically affects employee WB.	Refers to the adoption and integration of HR practices focused on strengthening the sense of belonging, improvement of working conditions, improvement of one people management practice (e.g., leadership, participation, information, and training), and specific changes in management. The unit “Dmnl” in this case, is on a 0-1 scale where 1 is “Actions to improve WB” completely implemented and 0 is not implemented.

We now explain how each of the five stocks presented in Table 5 are filled and emptied.

Firstly, the “Organisational Performance” stock is replenished by: (i) improvements in the power of the organisation in its market *(market power)*, either by hiring new employees (Wood et al., 2012) or by investing in strategic repositioning (Castaldi & Giarratana, 2018; Krivokapic et al., 2017; Oladimeji & Udosen, 2019); (ii) improvements in daily efficiency, work intensification and jobs internalisation *(daily efficiency intensification)* (Liu et al., 2020); and (iii) improvements in the perceived level of the enriched context of employees *(employee perception)*[10] (Elorza et al., 2022; Liao et al., 2009; Nishii & Wright, 2008). When referring to enriched contexts, we mean contexts that favour and promote autonomy, participation, information sharing, and training and development (Balluerka, Aritzeta, Gorostiaga, Elorza, & Madinabeitia, 2020). Conversely, OP is depleted by: (i) the increase of structural costs *(structural costs)* as a consequence of the increase in size (number of employees) (Koster, 2021); (ii) loss of power *(market power)* within the market in which the organisation operates as a consequence of downsizing (Cameron et al., 1993); and (iii) the worsening perception of employees (Elorza et al., 2022; Hewett et al., 2018; Nishii et al., 2008; Tichy & Cardwell, 2004; Tichy & Cohen, 2007; Wang et al., 2020).

Secondly, the stock of “employee perception” improves when HIWS are implemented. HIWS are associated with the development of more enriched working environments (Boxall & Macky, 2009; Jiang, Hu, Liu, & Lepak, 2017; Mendelson, Turner, & Barling, 2011; Nishii & Wright, 2008; Wang, Rafferty, Sanders, & Kim, 2021), because they reduce the level of organisational structuring[11] and traditional job design *(horizontal structure, enriched job design)*. Conversely, employee perception level drains *(employee perception loss rate)* when structuring and traditional job design grows as a consequence of no longer implementing HIWS (Garmendia, Elorza, & Uribetxebarria, 2021; Nishii & Wright, 2008), and when managing cost reduction through layoffs (Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020).

Thirdly, the stock of “employee well-being” varies based on changes in the employee perception level. That is, if employee perception of the enriched context improves, their well-being also improves (Boxall & Macky, 2009; Elorza et al., 2022; Guest, 2017; Mendelson et al., 2011; Wood et al., 2012). Conversely, if the perception level worsens, so does the well-being level. In addition, employee WB also experiences rapid improvement when actions particularly aimed at improving their WB are implemented (Hewett et al., 2018; Nishii et al., 2008; Terry et al., 1993; Wang et al., 2020).

Fourthly, the stock of "Structuring level, traditional job design" increases when the size of the organisation grows (Koster, 2021). In this study we assume that the organisation manages growth in a “traditional way”, which means that growth management is defined as an efficient organisational model to support the strategy. This involves the implementation of actions such as: (i) definition of

[10] Note that even if in the high level overview shows some stocks influencing each other without flows, the underlying mechanism driving the interaction is still based on the concept of flows. The flows might be implicit or hidden within the feedback loops, but they are ultimately responsible for the cause-and-effect relationships between stocks.

[11] By structure, we mean the manner in which employees are coordinated/managed within the organisation (level of centralisation, hierarchy, and formalisation).

units/positions; (ii) assigning people to units/positions (specialisation to ensure productivity in the execution of tasks); (iii) standardisation of tasks, definition of production standards, assigning people to tasks to gain specialisation and efficiency; and (iv) definition of coordinators (people in charge) to ensure the distribution of work appropriately in the unit and guarantee the coordination of activities between units/departments. This structuring stock also increases when daily efficiency management actions are implemented (Garmendia, Elorza, & Uribetxebarria, 2021; Kroon, Van de Voorde, & Van Veldhoven, 2009; Ramsay, Scholarios, & Harley, 2000), and decreases with the implementation of HIWS (Jiang et al., 2017; Nishii & Wright, 2008; Wang et al., 2021).

Finally, the stock of "size" increases with new hiring *(growth)*. The process of recruiting involves hiring additional employees to increase the production capacity of a company, thereby meeting potential increases in demand, expanding product or service offerings, reducing unit production costs through economies of scale, consolidating market presence, and improving competitive positioning against rivals (Wood et al., 2012). On the other hand, as the deliberate downsizing of organisations is related to the intention of the management to improve OP (Capelle-Blancard & Couderc, 2007; Kozlowski et al., 1993) this stock decreases with dismissals *(decrease)*.

Having understood how the five stocks that constitute the model work, we now explain how each of the five HR practices analysed in this study (see Table 1) impact the system. As previously discussed in the second chapter, the implementation of each of the analysed five HR practices simultaneously generates diverse effects on the system. The following outlines how these effects have been translated into the stock and flow diagram (SFD), i.e., the SD model (each of the loops are explained in detail in Table 11 and are presented in the form of SFD in Appendix F: SFD Feedback Loops and Archetypes).

Firstly, HR practice implementation labelled as "actions for organisational growth gaining volume" positively impacts OP through the *B1* feedback loop (Castaldi & Giarratana, 2018; Krivokapic et al., 2017; Oladimeji & Udosen, 2019) and the *B3* feedback loop (Wood et al., 2012). However, this practice negatively affects OP through the *R2* feedback loop (Koster, 2021), and both OP and employee WB through the *R5* feedback loop (Elorza et al., 2022; Garmendia, Elorza, & Uribetxebarria, 2021; Koster, 2021; Schommer, Richter, & Karna, 2019; Tichy & Cardwell, 2004; Tichy & Cohen, 2007; Wood et al., 2012) (see Figure 18).

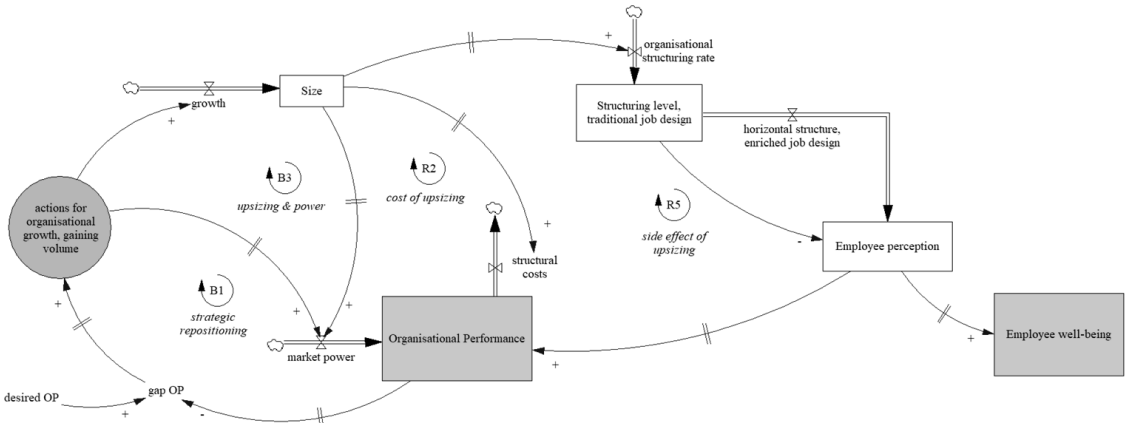


Figure 18: The effects of "actions for organisational growth, gaining volume" on OP and employee WB.

Secondly, HR practice implementation labelled as “efficiency management, reducing costs without dismissals” positively influences OP through the *B4*[12] feedback loop (Akeem, 2017) and *B5* (Liu et al., 2020). However, this practice negatively affects both OP and employee WB through the R3 feedback loop (Bakker & Demerouti, 2014; Demerouti et al., 2001; Elorza et al., 2022; Garmendia, Elorza, & Uribetxebarria, 2021; Hewett et al., 2018; Huo et al., 2022; Kroon et al., 2009; Liao et al., 2009; Nishii et al., 2008; Ramsay et al., 2000; Tichy & Cardwell, 2004; Tichy & Cohen, 2007; Wang et al., 2020; Wood et al., 2012), (see Figure 19).

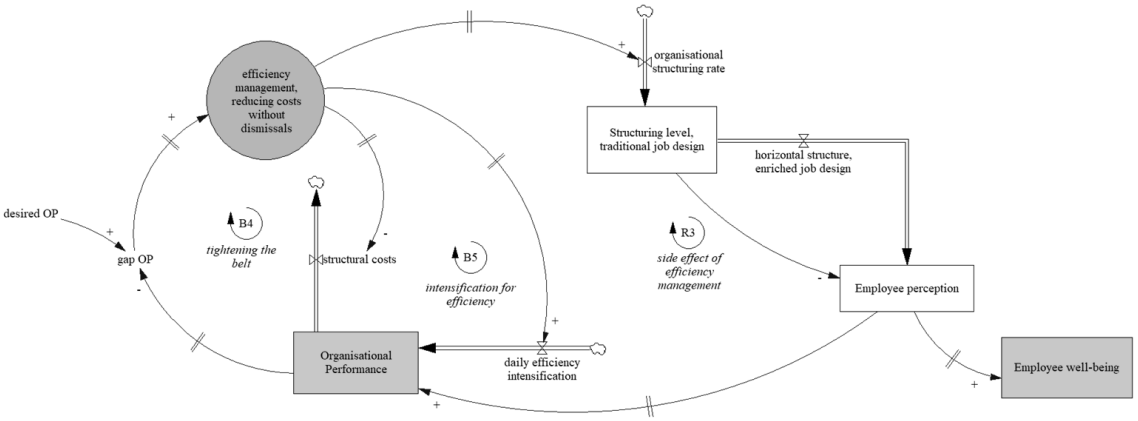


Figure 19: The effects of “efficiency management, reducing costs without dismissals” on OP and employee WB.

Thirdly, the HR practice implementation labelled as “reduce costs by dismissing” positively affects OP through the *B2* feedback loop (Capelle-Blancard & Couderc, 2007; Kozlowski et al., 1993). After a decrease in demand, the company may intend to reduce its structural costs by dismissing, which in turn positively affects OP. Nevertheless, dismissals negatively impact OP through the *R1* feedback loop (Cameron et al., 1993; Capelle-Blancard & Couderc, 2007; Wood et al., 2012). Moreover, when such downsizing measures are implemented, employees feel that the contract of trust that connected them to the company is broken (Rousseau, 1989, 1995), which negatively influences both OP and employee WB through the *R4* feedback loop (Cameron et al., 1993; Garmendia, 2019; Hewett et al., 2018; Nishii et al., 2008; Tichy & Cardwell, 2004; Tichy & Cohen, 2007; Van De Voorde, Paauwe, & Van Veldhoven, 2012; Wang et al., 2020; Wood & Ogbonnaya, 2018), (see Figure 20).

[12] Although in Figure 19, B4 may appear to have an even number of negative symbols, this is because the outflow from the organisational performance stock constitutes the third negative symbol. Therefore, with three negative symbols (odd number) it is a balancing loop, the mechanics of which are explained in detail in Table 11.

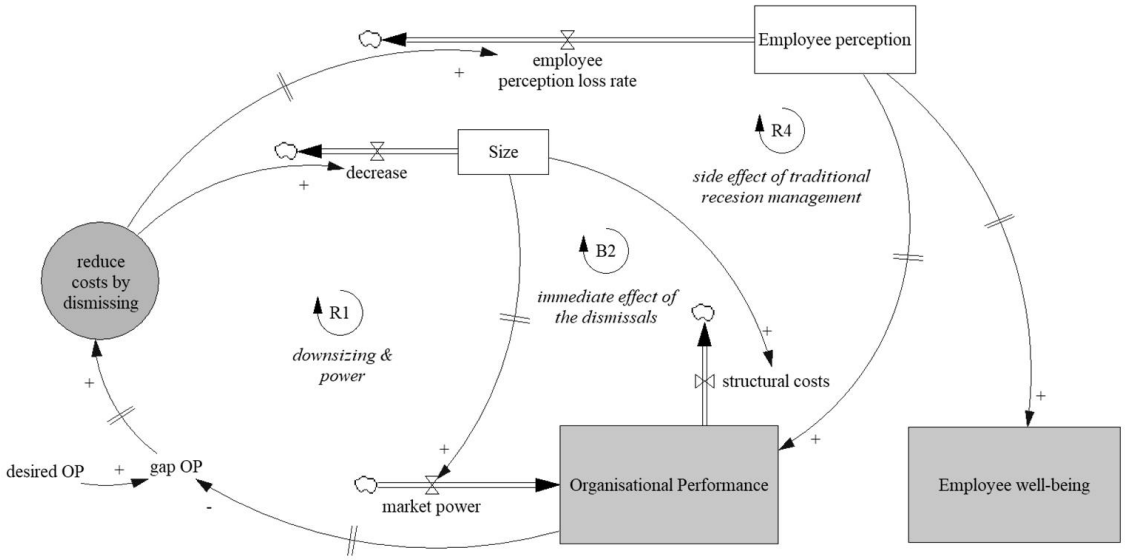


Figure 20: The effects of "reduce costs by dismissing" on OP and employee WB.

Fourthly, the HR practice implementation labelled as "actions to improve well-being" positively influences employee WB through the *B8* feedback loop (Hewett et al., 2018; Nishii et al., 2008; Terry et al., 1993; Wang et al., 2020), (see Figure 21).

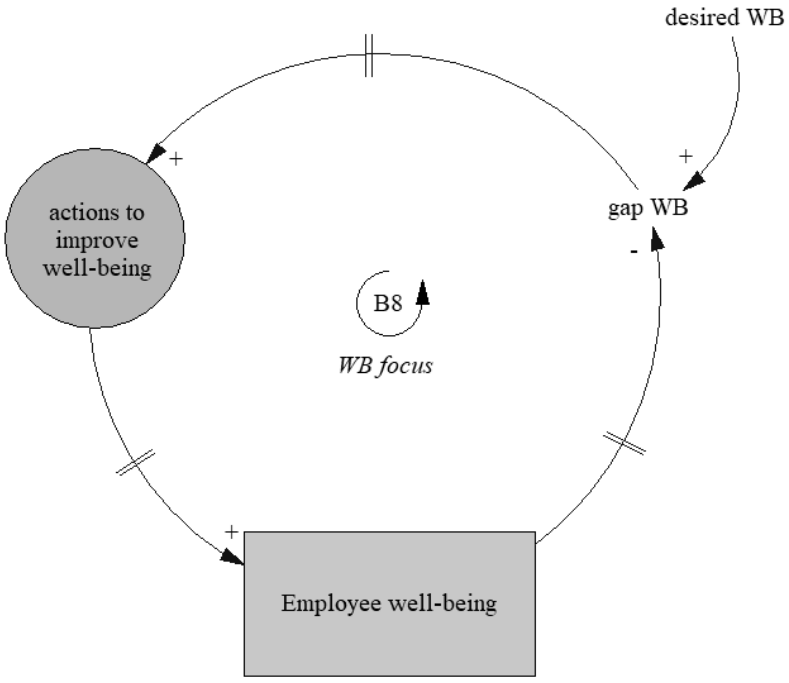


Figure 21: The effects of "actions to improve well-being" on employee WB.

Lastly, the HR practice implementation labelled as "HIWS implementation" positively affects OP and employee WB through the *B6* and *B7* feedback loops, respectively (Boxall & Macky, 2009; Elorza et

al., 2022; Guest, 2017; Jiang et al., 2017; Liao et al., 2009; Mendelson et al., 2011; Nishii & Wright, 2008; Wang et al., 2021; Wood et al., 2012), (see Figure 22).

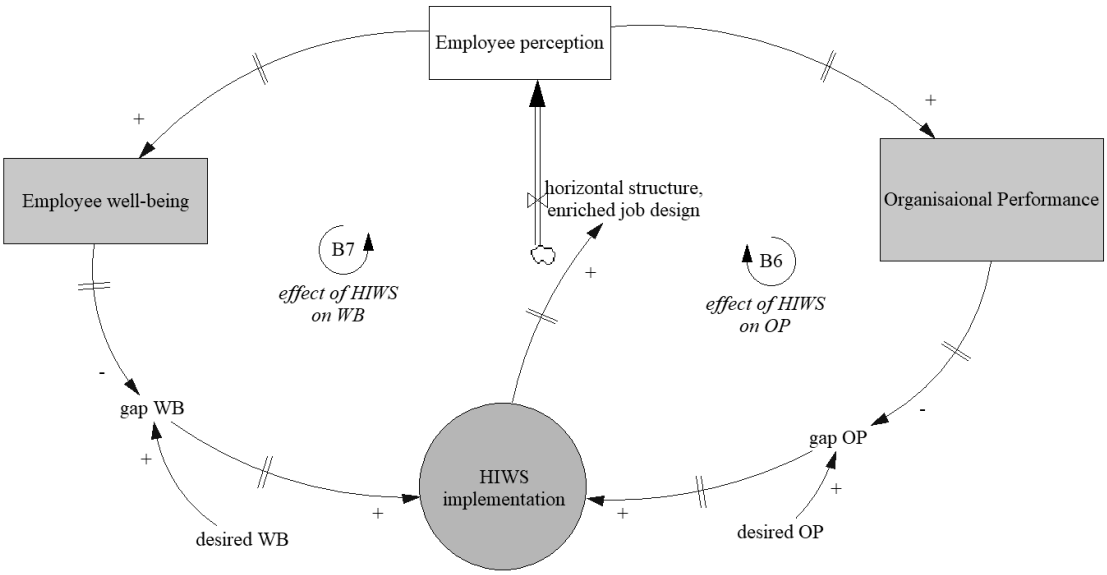


Figure 22: The effects of "HIWS implementation" on OP and employee WB.

4.2 Model inputs

Quantitative and qualitative data has been combined to develop the SD model that represents the HRM-WB-OP system.

A total of 41 GMB sessions have been conducted in 23 industrial companies in the Basque Country (Northern Spain). In all sessions, the same script was followed with the objective of gathering information for later use in the simulation. During the GMB sessions, the collective experiences of the employees was specifically explored to gain a deeper understanding of the group dynamics and the factors influencing the intangible variables of interest.

The HR practices most frequently implemented by decision-makers to cope with challenges or achieve specific objectives were discussed and grouped into five HR practices (see Table 1, in chapter 2). This information was combined with knowledge acquired from the literature (a summary of the most significant literature for the construction of the model can be found in Appendix B: Feedback Loops and Justification of the Relationships between Modelled Variables). Additionally, qualitative data was complimented with quantitative data and insights obtained from the Bateratzen database (for more about qualitative and quantitative data see Appendix A: Group Model Building (GMB), and Appendix G: Quantitative Data obtained from the Bateratzen Database). This invaluable contribution was incorporated into the present research via studies conducted by various authors, including Elorza et al. (2022) and (2011), Garmendia, Elorza, Aritzeta et al. (2021), Garmendia, Elorza, and Uribetxebarria (2021), and Garmendia's thesis dissertation (2019). These studies have played a pivotal role in both the construction and calibration of the simulation model.

Moreover, historical patterns of the behaviour of the system, known as reference modes, were extracted from the GMB sessions. These reference modes played a crucial role in validating the model by comparing and calibrating its performance based on its ability to reproduce the observed data. Reference modes are often used to assess model accuracy by generating graphs that represent specific behaviours over time (temporal dynamics), which are used to compare expected reference mode behaviour with SFD behaviour. This validation process helps ensure that the SFD can capture and represent real-world phenomena (Sterman, 2000).

To establish the reference modes, we collaborated with various stakeholders, including participants from GMB sessions, managers from the analysed organisations, and experts in the fields of SHRM and Business Economics. All the information gathered from these collaborations served as a foundation for constructing the model, and sheds light on the causes and consequences of management decisions related to HR practices.

4.3 Model validation

Validation tests are essential to assess the ability of an SD model to represent the observed system behaviour accurately and reliably in the real world, identify possible deficiencies, and establish model credibility. In this section, the validity tests performed on the simulation model presented in section 4.1 are explained.

Barlas (1996) and Sterman (2000) proposed several validation tests applicable to SD models, divided into two categories: structural validity (direct and indirect) and behavioural validity. Table 8 shows the validity tests carried out in the present study.

Table 8: Validation tests conducted in the current study.

Structural validity		**Behavioural validity**
Direct structure validity	**Indirect structure validity**	
-Structure confirmation test	-Dimensional consistency	-Behaviour reproduction test
-Parameter confirmation test	-Extreme condition test	
	-Equilibrium test	
	-Sensitivity analysis	

In the case of direct structural validity test, the validation process for both the parameter and structure confirmation tests involved a panel of HRM and SD experts from various European countries, who assessed the results and the model building process for their relevance and accuracy. Additionally, the results were reviewed by directors and managers from the Basque industrial sector, who provided

feedback on the practical implications of the findings. The students of the master's degree in Business Innovation and Project Management, Supply Chain Manufacturing and Logistics Management, and two graduating classes of the master's degree in Production Management of Mondragon Unibertsitatea were also consulted to provide additional feedback. This multi-stakeholder validation approach ensured the validity and applicability of the results to both academic and industry contexts.

Dimensional consistency tests were conducted to ensure the accuracy of the units of variables and equations, and guarantee comprehension of the structure and decision processes incorporated in our model (Sterman, 2000, p. 866). In addition to confirming the absence of errors when running the dimensional consistency test, we also verified the consistency of units in every equation.

By performing extreme condition tests, we structurally tested our model and assessed its ability to replicate the observed behaviour in the real system. The assessment of the validity of model equations under extreme conditions is based on evaluating the plausibility of resulting values in comparison to real-life expectations.

Another step in the validation of simulation models involves equilibrium tests. These tests aim to examine whether the behaviour of the model follows the expected pattern. In all simulation experiments, the system starts in an equilibrium state, where the net change rate of stocks should be zero, implying that the inflow rate is equal to the outflow rate (see Figure 23, in chapter 5).

Sterman (2000, p. 884) differentiated three types of sensitivity analyses: numerical, behaviour mode, and policy sensitivity. He explained that the preferred type depends on the intended purpose of the model. For human systems models, which typically do not require numerical precision, conducting numerical sensitivity is of little or no use. This is particularly significant for organisational models, as their primary objective is not to predict specific events, such as the next drop in sales. Instead, they are used to design strategies that drive the stability and profitability of the company. The aim of the SD model of this study was to identify opportunities for improvement, and make informed decisions that lead to long-term business success. Sterman (2000) suggested that in these cases, the most appropriate sensitivity test is behaviour mode, which was employed in this study.

We also performed the parameter sensitivity test. This generally involves a series of tests in which the modeller sets different values to observe how a change in the parameter causes a change in the dynamic behaviour of the stocks. To examine the effects of parameter variations on our model results, Monte Carlo simulations[13] with a uniform random distribution were carried out with 200 simulations. Five exploratory exercises were conducted to demonstrate the effects of different parameters on the behaviour of the system. The parameters selected for the sensitivity analysis are listed in Table 9.

[13] Using Monte Carlo simulations dynamic confidence intervals can be generated for the trajectories of variables in SD models (Sterman, 2000, p. 885).

Table 9: Variables used in the simulation sensitivity test.

Variable	Value range	Notes
market loss rate	5% to 20% loss of market share every month (estimated value 10%).	The market loss rate should oscillate between 5% and 20%.
HIWS effect loss rate	5% to 30% is lost every month from the effect of HIWS implementation (estimated value 20%).	HIWS effect loss rate should oscillate between 5% and 30%.
intensification change normal	10% to 70% is the effect that intensification can have on the system (estimated value 50%).	Intensification change normal should oscillate between 10% and 70%.
normal size	0.3 to 0.7 (estimated value 0.5, half of the modelled scales 0-1).	Normal size should oscillate between 0.3 and 0.7.
size normal change	5% to 50% is the loss every month of the size of the organisation when recessionary actions are implemented (estimated value 20%).	Normal reduction or increase (i.e. change) in size that occurs per period when applying HR practices should oscillate between 5% and 50%.

The significant nonlinearity of the model presented in this study means that the impact of assumption combinations may not be equal to the sum of the individual assumption impacts (Sterman, 2000, p. 884). Therefore, in addition to analysing each variable one at a time (univariate), it is also important to assess the impact of these assumptions in combination in the system, considering all variables simultaneously (multivariate). To this end, we incorporated the univariate sensitivity analysis into the multivariate sensitivity analyses depicted in Figure 39 and Figure 40, in chapter five.

GMB sessions yielded two types of information. Firstly, we obtained information on the causes and consequences of implementing each of the HR practices included in the model. This gave us insight into the individual effect that each action has on employee WB. Secondly, we extracted historical data on the behaviour of employee WB in relation to the implemented HR practices, which served as the base behaviour of the system. Both types of information were combined with literature data to build and validate the model. The model was first constructed based on the information on the individual effect of each implemented HR practice on OP and employee WB. Then, we used the base behaviour as part of the validation process. To ensure behaviour validity, the capacity of the model was compared to its capacity to reproduce the historical data that was reported in the 41 GMB sessions (see from Figure 41 to Figure 44, in chapter 5).

“You do not rise to the level of your goals.
You fall to the level of your systems”.

James Clear

Chapter 5

Results

5 Results

This study posits that employee WB and OP results are influenced by the perception of employees of the practices implemented in their work environment. To examine how this perception varies according to the implementation process of these practices, we conducted a simulation in a specific macroeconomic context (crisis). In the present study, it is assumed that the market in which the organisation operates has declined and, therefore, its survival is at some risk. The results obtained in two different scenarios were compared: the Crisis-Commitment scenario and the Crisis-Mix scenario. “Commitment” and “mix” refer to two HRM philosophies that guide the HR system of the organisation. These scenarios represent proactive and reactive approaches, respectively, ensuring comparison of the impact of proactive and reactive approaches to HIWS implementation on OP and employee WB.

The Crisis-Mix scenario represents a reactive approach to decision-making, while the Crisis-Commitment scenario involves a proactive approach. In the reactive approach, as embodied in the Crisis-Mix scenario, short-term goals are prioritised over long-term objectives. This means that decisions are made with the intention of addressing the immediate crisis and solving urgent problems, without necessarily considering the long-term effects. In this context, the implementation of HIWS is subjected to reactive decisions seeking quick fixes. On the other hand, long-term goals are prioritised over short-term objectives in the proactive approach. This suggests that decisions are made considering long-term effects and are focussed on the implementation of HIWS that promote the long-term sustainability and well-being of the organisation and employees, even in times of crisis.

In this chapter, the results of the validation of the model are presented, which give scientific rigour to the model itself and to the results obtained therein. Finally, the results of the research, which are related to the objectives and hypotheses of this work, are shown.

5.1 Validation results

Model testing is a process of controlled experimentation (Sterman, 2000, p. 716). For this purpose, it is recommendable to start the testing process in an equilibrium state (as shown in Figure 23). In the present model, a balance equilibrium is reached by matching the desired level of OP and employee WB[14] to their respective real values. That is to say, when desired levels and real values are equalised, then the gap (which works as a trigger) is deactivated, and therefore no action is implemented and no decision is taken. Not making any decisions over time has a deteriorating effect on the system, but by deactivating this effect and matching desired with actual levels, the system is shown to be in equilibrium. Figure 23 illustrates the OP and employee WB stock levels (the primary stocks of interest), over the ten year time horizon of the model.

[14] For illustrative purposes, the scale of desired OP and employee WB has been set between 0 and 1. By defining this range, the desired target can be easily interpreted in terms of its proximity to the maximum or minimum possible value. A value of 0 indicates the complete absence of desire, while a value of 1 represents full desire.

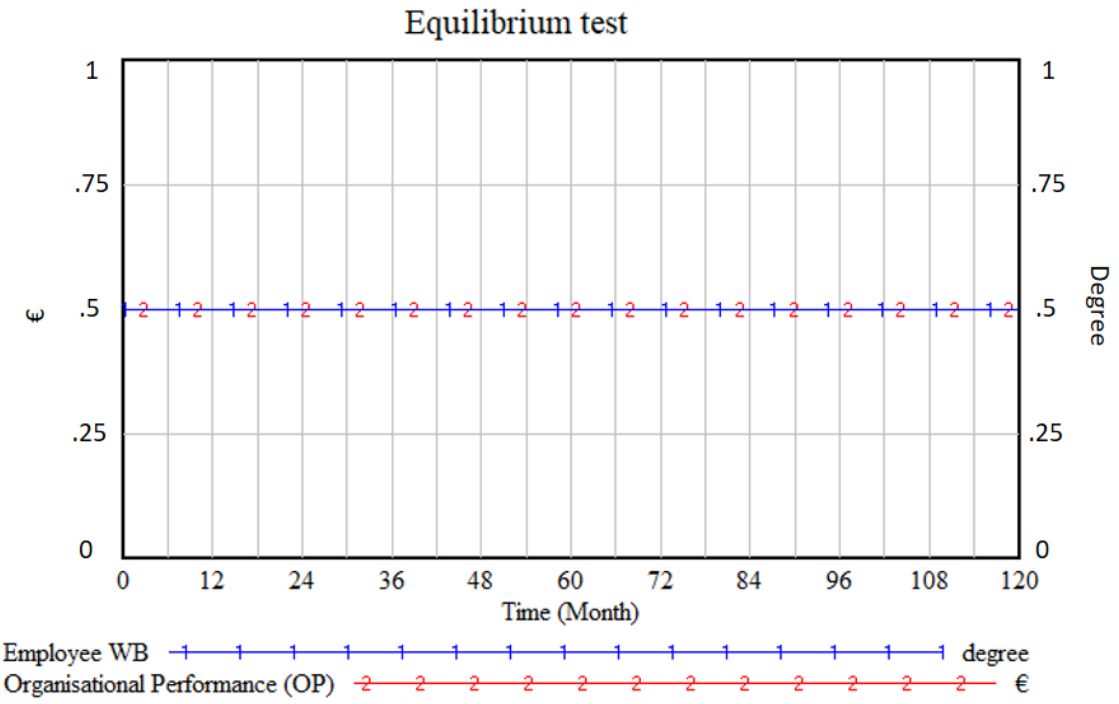


Figure 23: Equilibrium test.

This test verifies that the model correctly reflects the behaviour of reality and demonstrates the consistency of the results.

Once confirmed that the model can replicate an equilibrium state, we subjected it to extreme condition tests:

i) When the desired WB equals zero, the employee WB result should decline over time, but the “Employee well-being” stock must remain nonnegative (Figure 24).

ii) When desired OP equals zero, the OP result should decline over time, but the “Organisational Performance” stock must remain nonnegative (Figure 25).

iii) When both the desired OP and WB values equal zero, the employee perception of the organisation should decline, but the “Employee perception” stock must remain nonnegative (Figure 26).

iv) When the organisation decides to exclusively address the situation through dismissals, the size of the organisation should decline, but the “Size” stock must remain nonnegative (Figure 27).

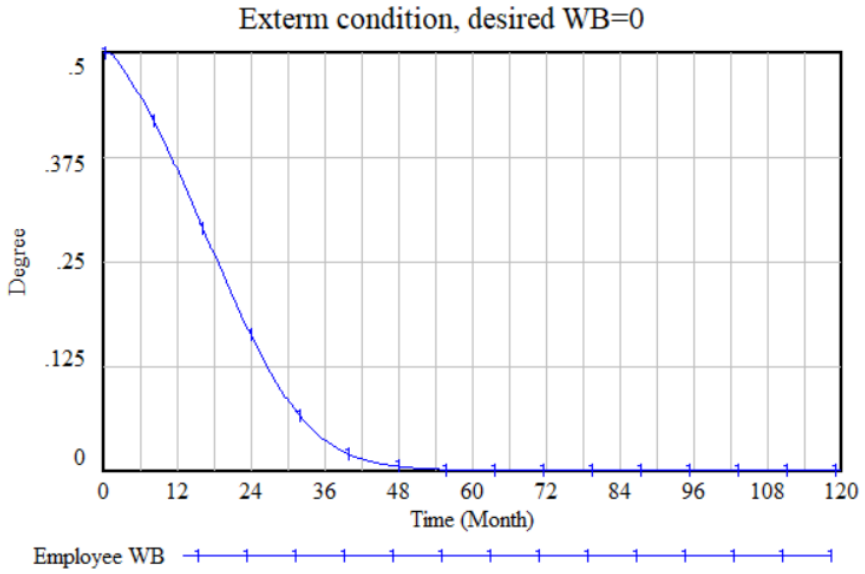


Figure 24: Result of the extreme condition test when desired WB equals zero.

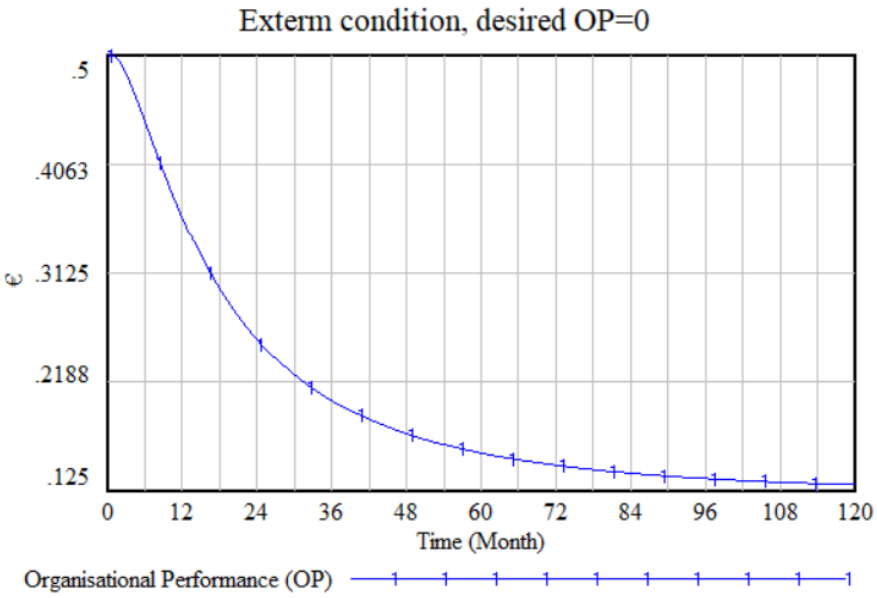


Figure 25: Result of the extreme condition test when desired OP equals zero.

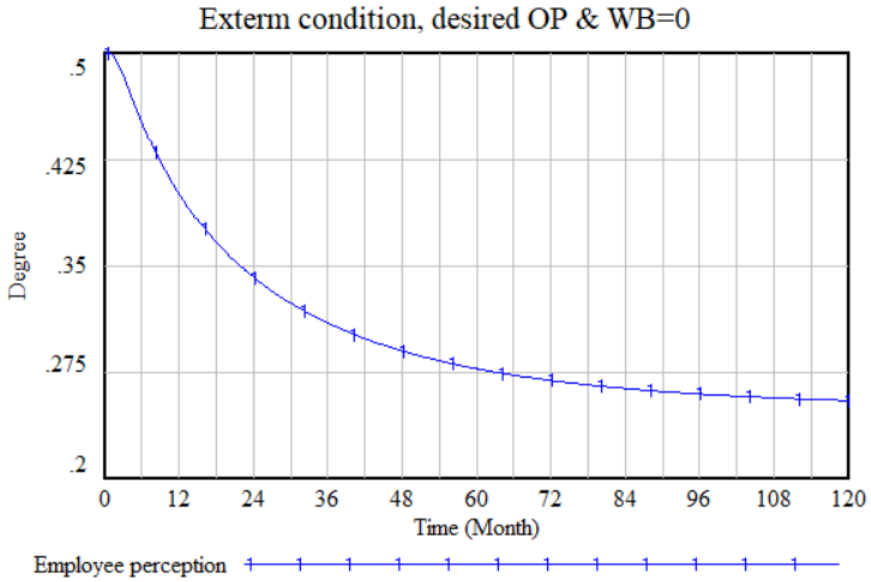


Figure 26: Result of the extreme condition test when desired OP and WB equal zero.

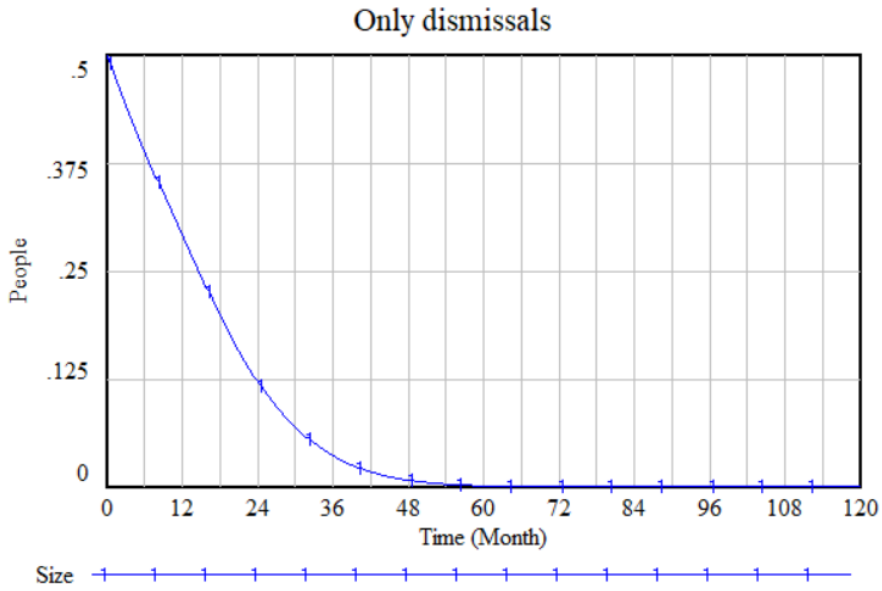


Figure 27: Result of the extreme condition test when the crisis is managed exclusively through dismissals.

In addition, we also conducted univariate and multivariate sensitivity tests. In the following paragraphs, we compare the result of the model in a normal non-sensitivity mode presented in Figure 28, with the results obtained in the various univariate sensitivity tests conducted (from Figure 29 to Figure 38). Multivariate test results are depicted in Figure 39 and Figure 40. Figure 28, which shows the result of the model in a normal non-sensitivity mode, illustrates that the proactive approach shows more stable and higher results (OP & WB) than the reactive approach. Furthermore, it is observed that in the reactive approach, both OP and employee WB exhibit oscillatory behaviour patterns.

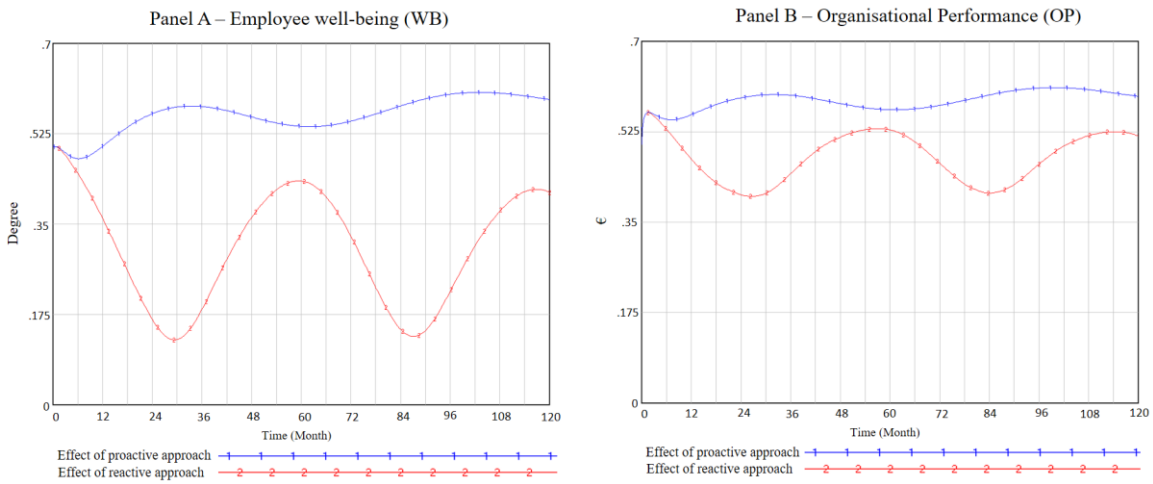


Figure 28: Employee WB and OP results in a normal non-sensitivity mode.

We conducted parameter sensitivity testing by performing a series of tests in which different values were set for the parameters to observe how a change in the parameter causes an alteration in the dynamic behaviour of the stocks (Sterman, 2000). To examine the effects of parameter variations on the model results, Monte Carlo simulations with a uniform random distribution were carried out with 200 simulations. Five exploratory exercises were conducted to demonstrate the effects of different parameters on the behaviour of the system. The parameters selected for the sensitivity analysis are listed in Table 9.

The following figures (Figure 29-Figure 40) show the results of the sensitivity tests in the HRM-WB-OP model. The results of the simulation depict the two main stocks of interest, OP and employee WB.

When analysing the influence of the "market loss rate" under both reactive (Figure 29)[15] and proactive (Figure 30) decision-making approaches, it can be observed that although the model is sensitive to changes in the "market loss rate", the pattern of behaviour exhibited by both outcomes (OP & WB) remains broadly similar (compared to the normal non-sensitivity mode depicted in Figure 28). In other words, both outcomes display oscillatory behaviour. In the case of employee WB, it can be seen that as time progresses, the system becomes more sensitive to changes in the "market loss rate", denoted by the widening of the confidence bands.

[15] Confidence bands represent the uncertainty and variability of model output results due to variations in input parameters. They provide a range of possible outcomes and their associated probabilities, allowing decision-makers to understand the robustness of the model and the potential impact of different parameter values on the results. The colour coding (50% yellow, 75% green, 90% blue, and 100% grey) is used to visually represent the different confidence bands. Each colour represents a specific level of confidence, indicating the likelihood that the true model output falls within the associated range.

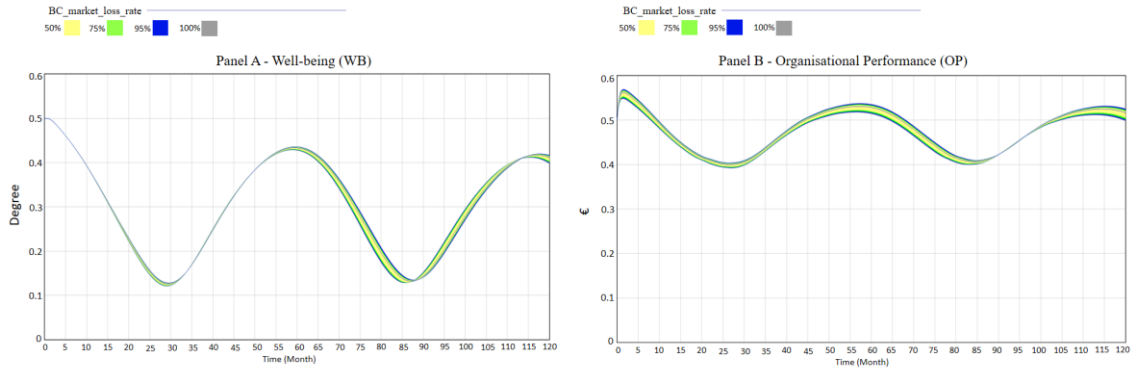


Figure 29: Sensitivity analysis when “market loss rate” oscillates in the range [0.05, 0.2] in a reactive decision-making approach.

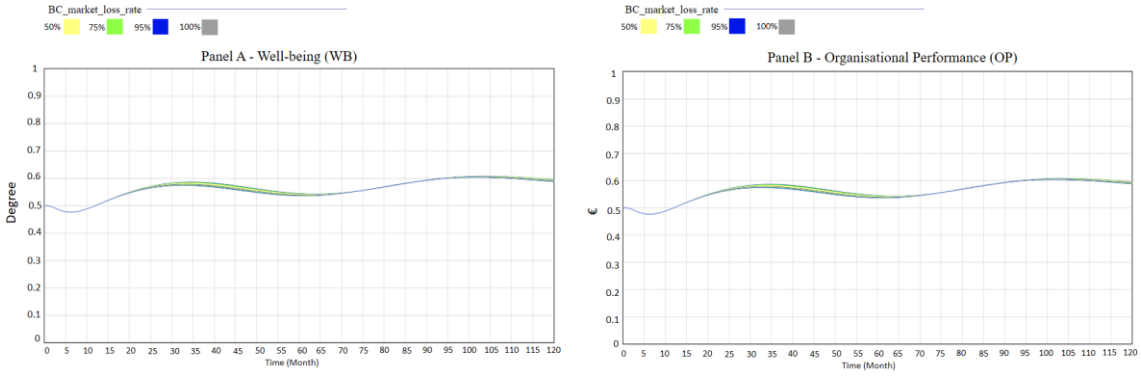


Figure 30: Sensitivity analysis when “market loss rate” oscillates in the range [0.05, 0.2] in a proactive decision-making approach.

In the case of the influence of the “HIWS effect loss rate” variable under a reactive decision-making approach (Figure 31), it can be observed that the model becomes increasingly sensitive as the time periods progress. One of the reasons for this could be that fluctuations in the intensity of HIWS implementation that occur in a reactive decision-making approach can lead to changes in the “HIWS effect loss rate”. These cumulative variations over time can amplify the impact of the loss rate and increase the sensitivity of the model as the time periods progress. Despite the sensitivity shown by the model, the pattern of system behaviour remains consistent, indicating that the same pattern persists (compared to the normal non-sensitivity mode depicted in Figure 28).

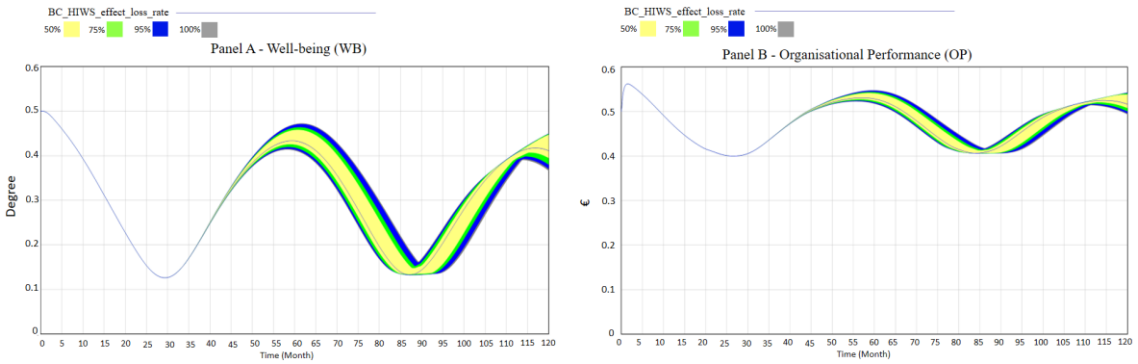


Figure 31: Sensitivity analysis when "HIWS effect loss rate" oscillates in the range [0.05, 0.3] in a reactive decision-making approach.

In the case of the influence of the "HIWS effect loss rate" variable under a proactive decision-making approach (Figure 32), the model can be observed to be highly sensitive. In the proactive approach the model exhibits higher sensitivity in the early years compared to the reactive case. This is because in the proactive approach HIWS are implemented from the beginning of the simulation, whereas in the reactive approach HIWS are implemented in period 16 (see panel A-Figure 46). Despite the sensitivity exhibited towards this parameter, in the current study, the model continues to display higher and more stable values over time using a proactive approach rather than a reactive one. In other words, the conclusions drawn from the comparison between the results of the proactive and reactive approaches remain unaffected by potential changes in this parameter (compared to the normal non-sensitivity mode depicted in Figure 28).

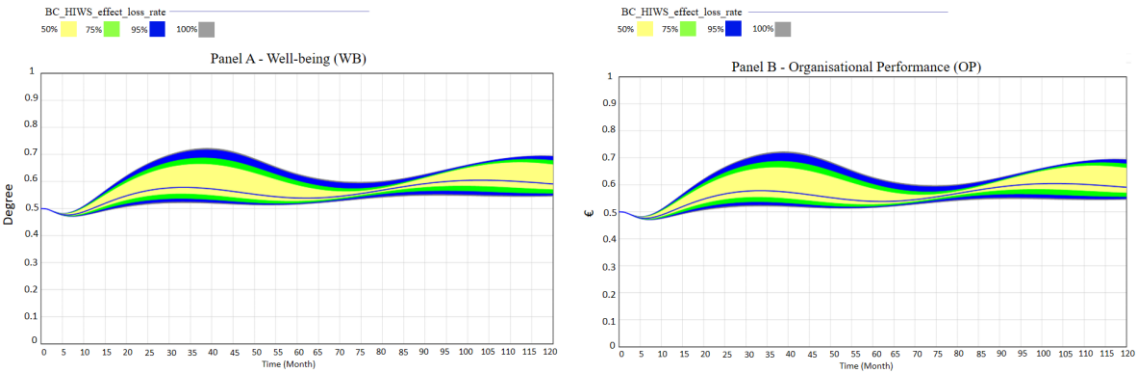


Figure 32: Sensitivity analysis when "HIWS effect loss rate" oscillates in the range [0.05, 0.3] in a proactive decision-making approach.

When analysing the influence of the "intensification change normal" variable, it is observed that under a reactive decision-making approach (Figure 33), employee WB is more sensitive as time progresses. This is to be expected because the effect of the HR practice "efficiency management, reducing costs without dismissals", which is affected by the parameter "intensification change normal" is accumulated over time. In contrast, for OP, the model is more sensitive at the beginning of the simulation.

Nevertheless, despite the sensitivity exhibited by the model, it continues to display the same behavioural pattern (compared to the normal non-sensitivity mode depicted in Figure 28).

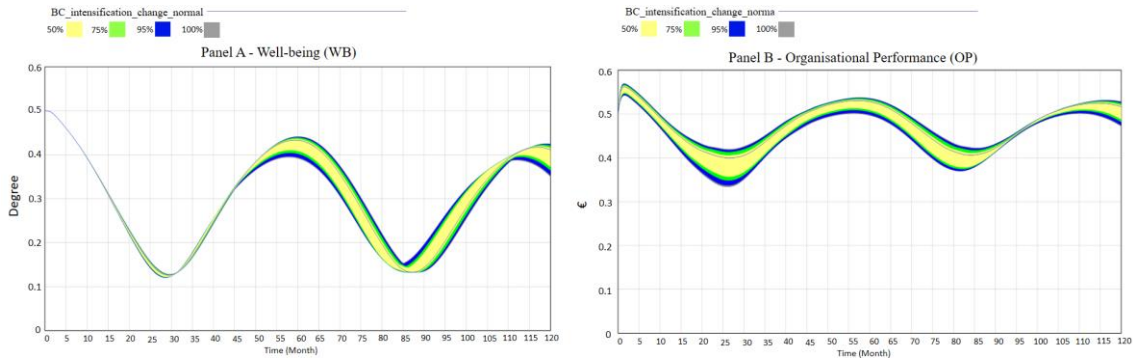


Figure 33: Sensitivity analysis when "intensification change normal" oscillates in the range [0.1, 0.7] in a reactive decision-making approach.

In the case of analysing the influence of the "intensification change normal" variable under a proactive decision-making approach (Figure 34), it can be observed that the model is highly insensitive to changes in the value of this parameter. This is because the behaviour depicted is very close to that displayed in Figure 28, and the confidence bands are very narrow.

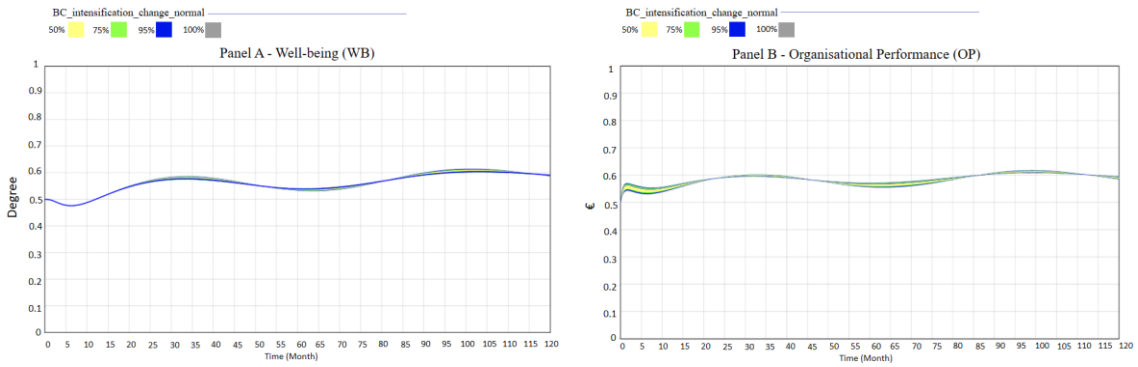


Figure 34: Sensitivity analysis when "intensification change normal" oscillates in the range [0.1, 0.7] in a proactive decision-making approach.

The model exhibits very low sensitivity to changes in the value of the "normal size" variable, in both the reactive (Figure 35) and proactive approach (Figure 36). In the case of the reactive decision-making approach, the model displays a slightly higher sensitivity, which increases as time progresses. However, it is important to note that this sensitivity is minimal and does not alter the behaviour pattern of the system (compared to the normal non-sensitivity mode depicted in Figure 28).

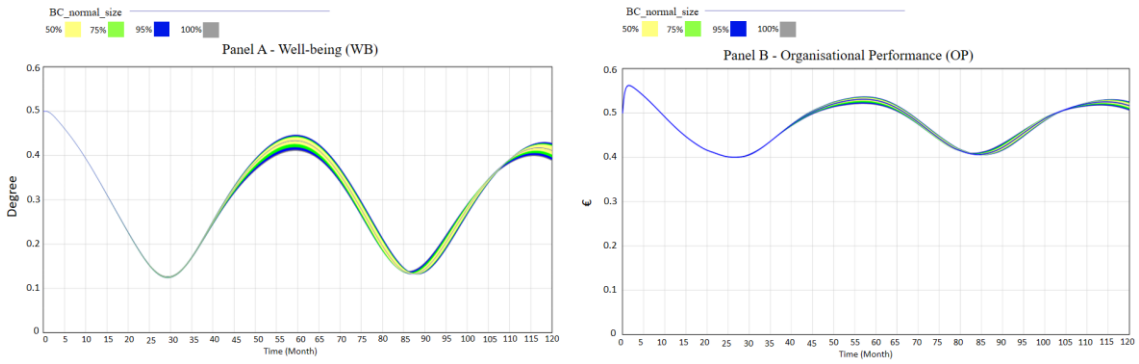


Figure 35: Sensitivity analysis when “normal size” oscillates in the range [0.3, 0.7] in a reactive decision-making approach.

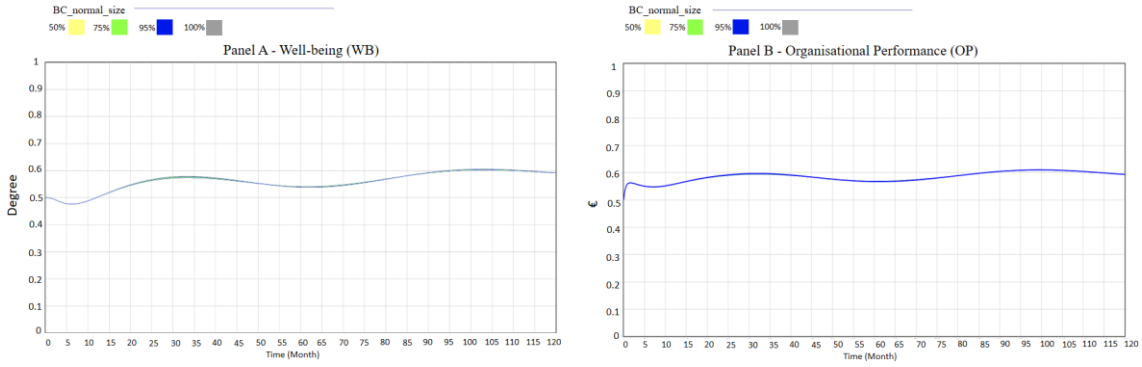


Figure 36: Sensitivity analysis when “normal size” oscillates in the range [0.3, 0.7] in a proactive decision-making approach.

In the case of “size normal change”, see Table 9, a similar phenomenon emerges. Changes in the value of this parameter do not significantly impact the model. However, it can be seen that the reactive decision-making approach (Figure 37) is more sensitive to these changes than the proactive decision-making approach (Figure 38). Nevertheless, despite this sensitivity, the model continues to exhibit the same behaviour over time (compared to the normal non-sensitivity mode depicted in Figure 28).

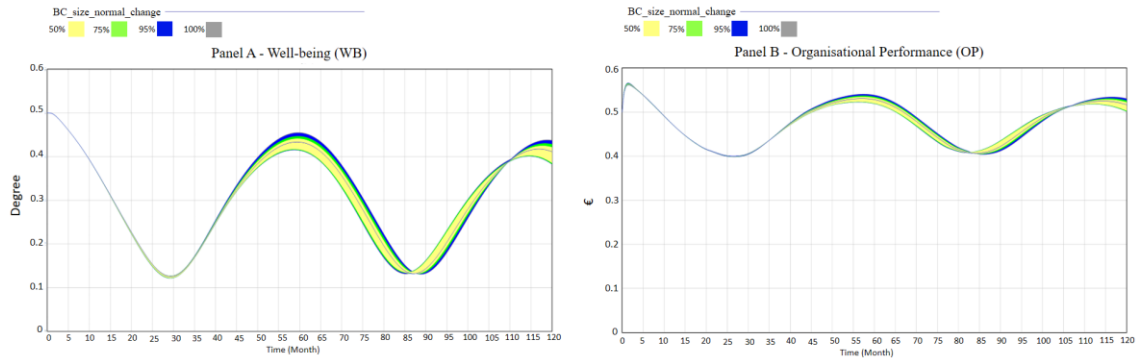


Figure 37: Sensitivity analysis when "size normal change" oscillates in the range [0.05, 0.5] in a reactive decision-making approach.

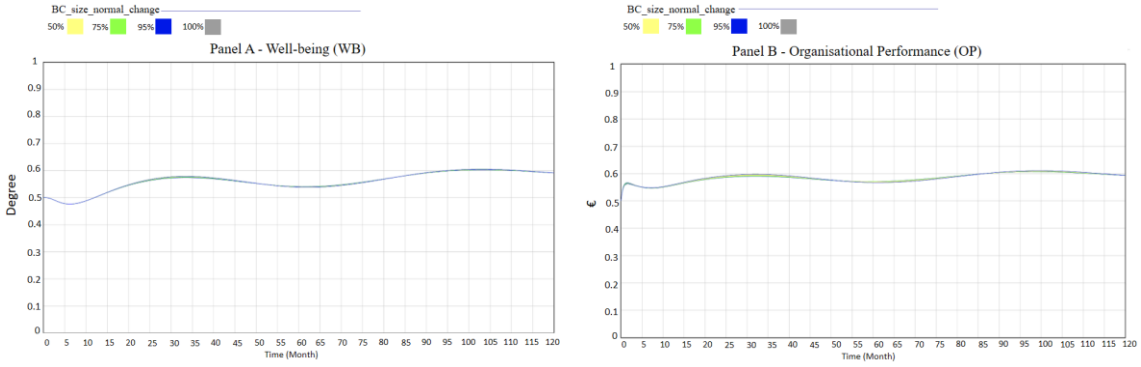


Figure 38: Sensitivity analysis when "size normal change" oscillates in the range [0.05, 0.5] in a proactive decision-making approach.

In addition to analysing each variable separately (univariate), we also performed multivariate sensitivity analyses. To this end, we incorporated the univariate sensitivity analyses presented above into the multivariate sensitivity analyses depicted in Figure 39 and Figure 40.

The multivariate analysis in the reactive decision-making approach (Figure 39) shows that the sensitivity of employee WB increases as time progresses, likely owing to the accumulated effect of the variables as time advances. However, the model continues to exhibit the same behavioural pattern, in this case, oscillatory (which is the same behaviour that the normal non-sensitivity mode exhibits in Figure 28). The fact that the behaviour pattern remains unchanged suggests that robust conclusions can be drawn from the analysis.

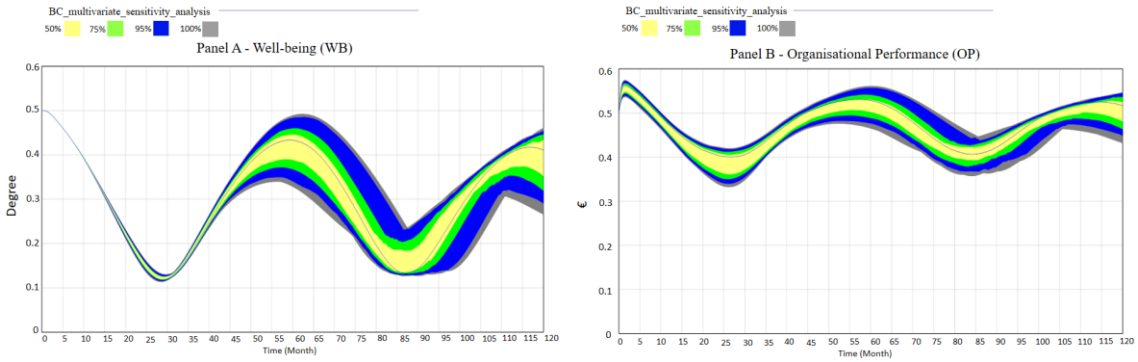


Figure 39: Multivariate sensitivity analysis in reactive decision-making approach.

In the case of the multivariate analysis in the proactive decision-making approach (Figure 40), although the model can be seen to be highly sensitive, it continues to display higher and more stable values over time under a proactive approach than a reactive one (which is the same behaviour that the normal non-sensitivity mode exhibits in Figure 28). In other words, the conclusions drawn from the comparison between the results of the proactive and reactive approaches remain unaffected by potential changes in these parameters.

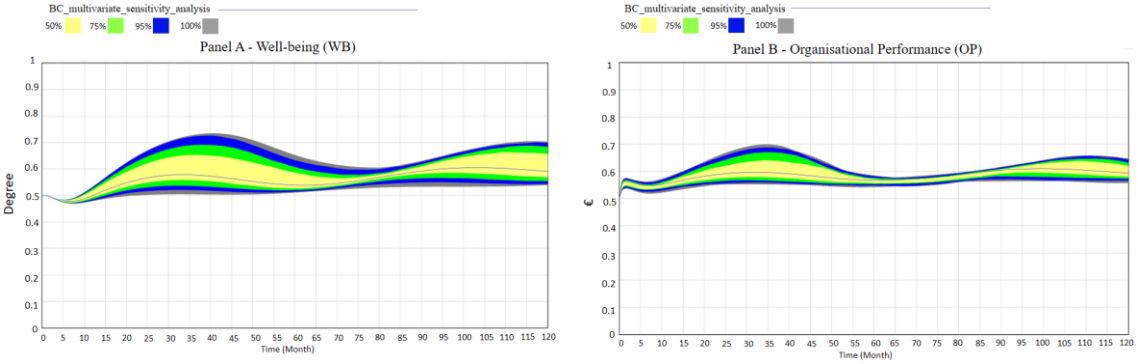


Figure 40: Multivariate sensitivity analysis in the proactive decision-making approach.

To conduct the behaviour validity test, the model results were compared to the capacity of the model to reproduce the historical data reported in the GMB sessions (see from Figure 41 to Figure 44).

Panel A - Figure 41 shows the behaviour of the model[16] in a traditionally managed growth phase, and the right-hand side of the same figure shows the reference mode to which we compare the output of the model. It can be seen how OP at the beginning improves with the growth of the organisation, but generates a medium-term side effect on employee WB. The reference mode is drawn from insights

[16] The behaviour validity runs for 20 months because it demonstrated the closest behaviour to the reference modes.

gained from the GMB sessions, and reveals that when growth is managed in a traditional way in a company, OP tends to improve at the cost of employee WB. The model developed for this research, not only captures this observed phenomenon, but also demonstrates that over time, OP will gradually decline due to diminishing employee WB. Nonetheless, it can also be seen that with traditional growth management, although OP gradually decreases over time, it remains above its initial level.

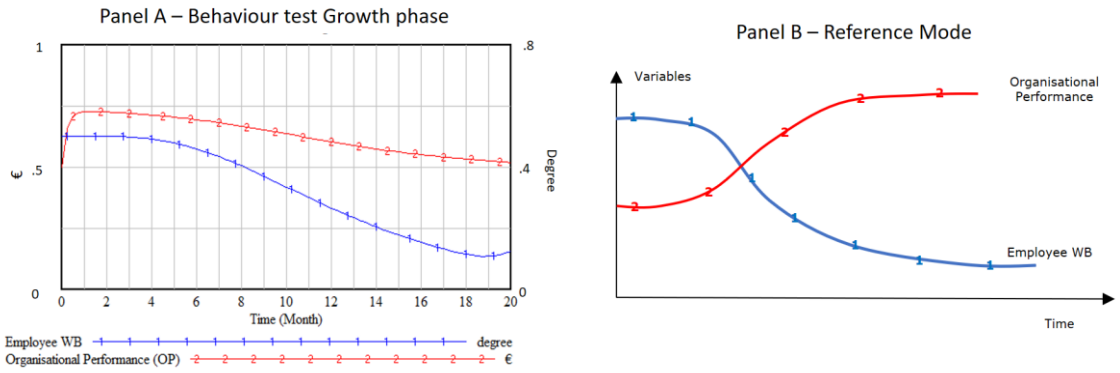


Figure 41: Behaviour test of the growth phase.

The GMB sessions showed (depicted in the reference mode graph, Figure 42) that when organisations implement HR practices aimed at improving employee WB in isolation (such as improvement of working conditions, strengthening the sense of belonging, etc. see Table 1), OP remains stable, and employee WB only improves sporadically. This is consistent with the outcomes observed in the behaviour test conducted on the simulation model (Figure 42—the search of WB).

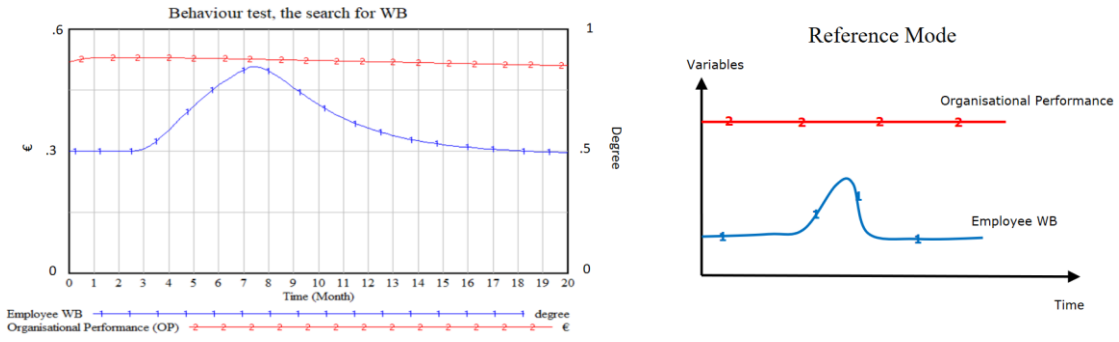


Figure 42: Behaviour test of the phase when organisation seeks to improve employee WB but only implements “actions to improve well-being”.

The GMB sessions revealed (depicted in the reference mode graph Figure 43), that during periods of crisis, OP initially experiences a decline. However, OP improves over time, due to the decisions made by management and the consequent actions taken. Additionally, it can be seen that employee WB is

positively affected by this improvement in OP after a crisis period. This observation is in line with the results of the behaviour test conducted on the simulation model (Figure 43—the crisis).

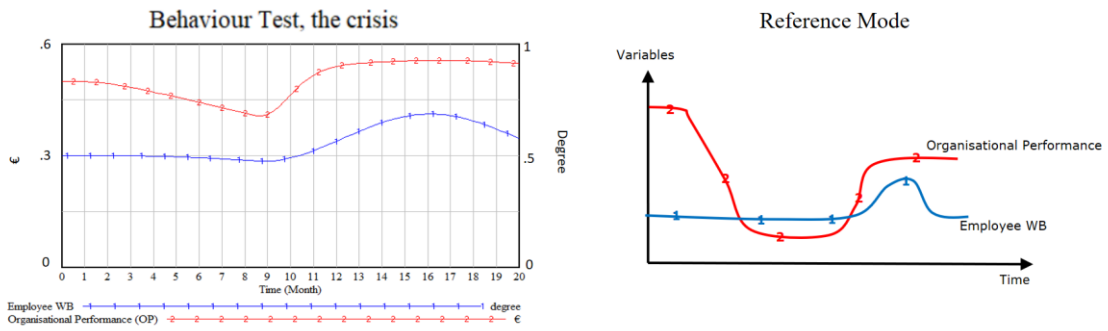


Figure 43: Behaviour test, of the capacity of the model to reproduce reference mode data in a crisis situation.

Lastly, the GMB sessions showed (depicted in the reference mode graph Figure 44), that when organisations implement HR practices aimed at simultaneously improving both OP and employee WB (such as the implementation of HIWS, see Table 1), employee WB improves, and this improvement remains noticeable in the medium to long term. This is consistent with the outcomes observed in the behaviour test conducted on the simulation model (Figure 44—win-win). In addition, the model also shows the simultaneous improvement of OP.

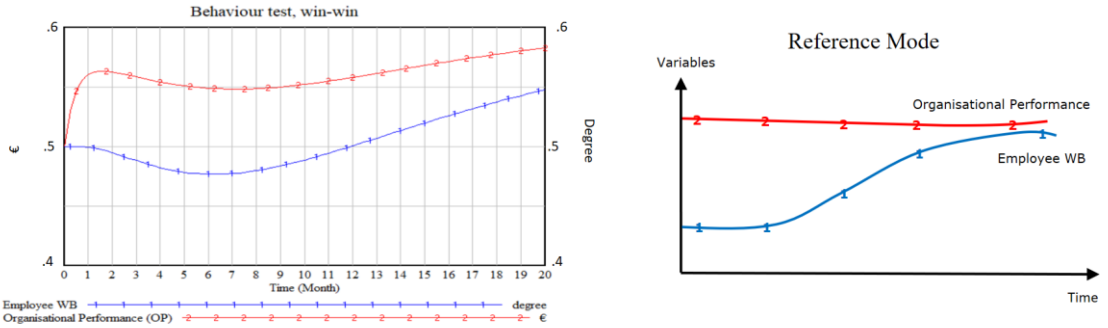


Figure 44: Behaviour test, of the capacity of the model to reproduce reference mode data in a win-win situation.

To conclude the behavioural test, we also compared the expected behaviour of the HIWS implementation process with the simulation results. The prioritisation of short-term or long-term objectives significantly influences the approach adopted for making decisions, which subsequently determines the implementation process of HR practices. In the context of the main objective of this study, the analysis focused on examining how reactive and proactive decision-making approaches

influence the implementation process of HIWS, subsequently affecting OP and employee WB. Organisations that prioritise the achievement of short-term objectives over long-term objectives tend to act reactively, responding as events occur. This means that decisions are not consistent over time, but rather vary based on immediate needs. Hence, in our finding, we expected to observe fluctuating HIWS implementation intensity over time, indicating an oscillatory pattern. This is supported by the depicted result in Figure 45. We also expected to observe a time gap (delay) between action (in this case HIWS implementation) and its effect on the system (Sterman, 2000). This is clearly depicted in Figure 45—the delay between HIWS implementation and employee WB (panel A) and the delay between HIWS implementation and OP (panel B)—where the maximum result in employee WB and OP are reached months after the peak of the implementation waves.

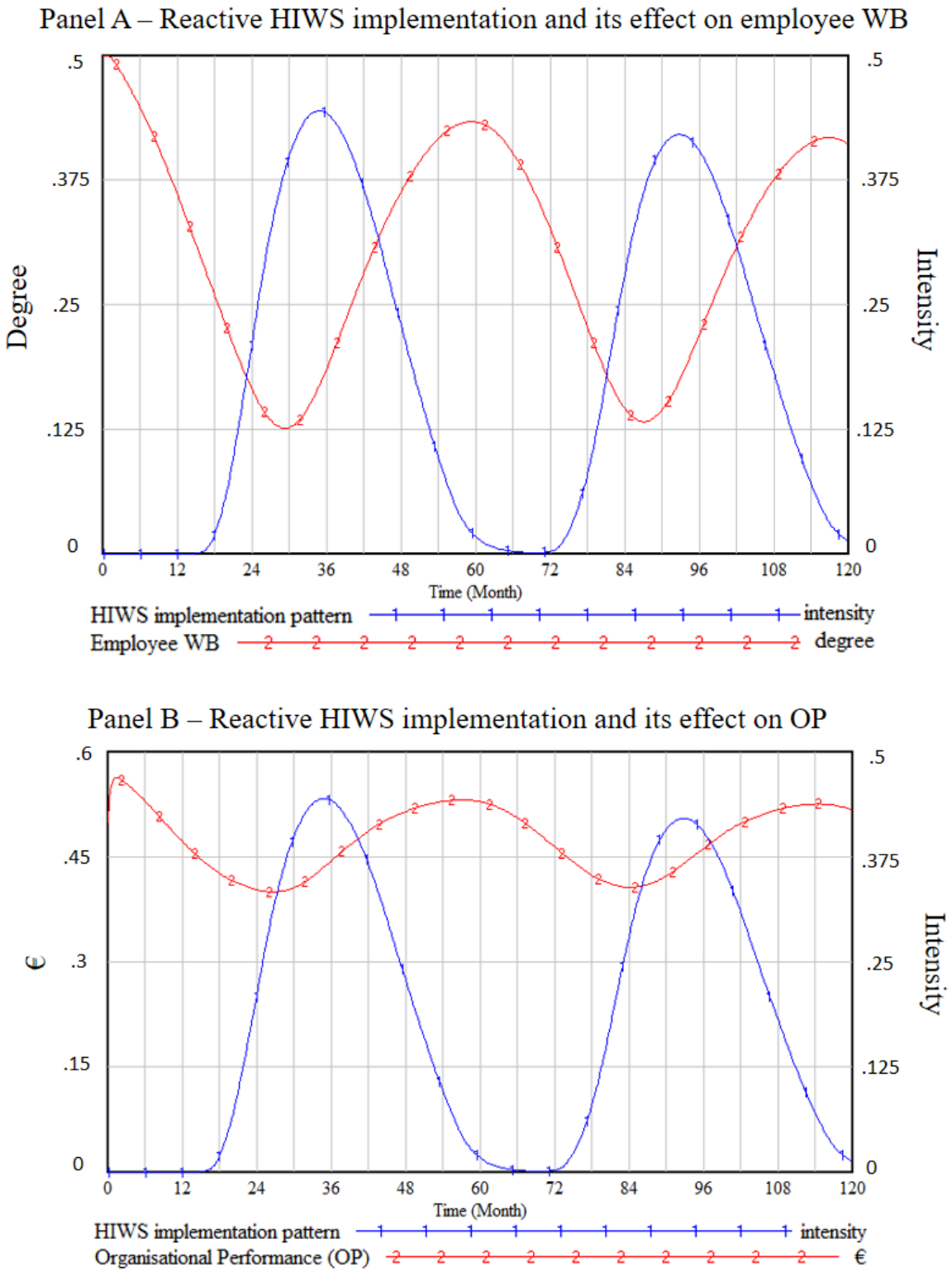


Figure 45: Reactive HIWS implementation pattern and its effect on employee WB (panel A), and on OP (panel B).

5.2 Research results

Figure 46 depicts the pattern of HIWS implementation according to the decision-making approach (proactive or reactive) (panel A), and their effect on employee WB (panel B) and OP (panel C). Employee WB and OP are higher and more regular when HIWS are implemented proactively, which facilitates a more constant implementation over time. In contrast, the reactive implementation of HIWS, results in a more modest and oscillatory employee WB and OP, that is to say, there is a lower HR strength over time (panel A-Figure 46).

As can be seen in Figure 46, when HIWS are implemented reactively, they are implemented in an oscillatory pattern over time (panel A), i.e., by varying the intensity of implementation. This causes both employee WB (panel B) and OP (panel C) results to oscillate over time. In contrast, when HIWS are implemented proactively, they are implemented in a more constant pattern, i.e., with little variation in the intensity of implementation. As a consequence, both the employee WB and OP (panel B and C, respectively) results are also more stable over time.

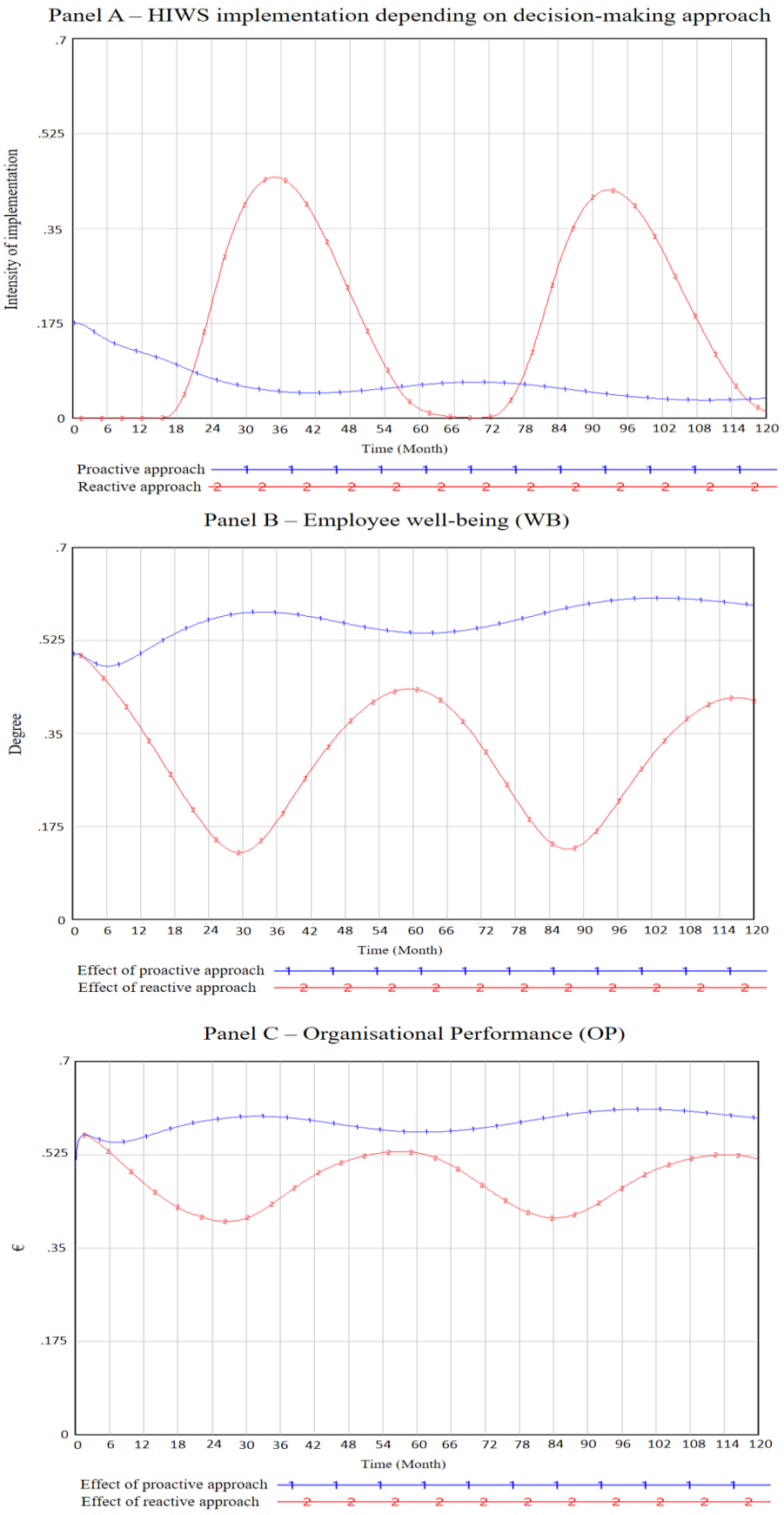


Figure 46: Simulation results of the two HIWS implementation approaches, proactive & reactive (panel A), their effect on employee WB (panel B), and OP (panel C).

Figure 47 presents the cumulative value of the effort required to implement HIWS (panel A), the cumulative employee WB (panel B), and cumulative OP (panel C) over the ten-year modelled time horizon. At the beginning of the simulated period, from years one to three, the effort required for the implementation of HIWS in a constant pattern (derived from the proactive approach) is higher than that required for the oscillatory pattern implementation (derived from the reactive approach). In the third year[17], however, there is a tipping point and then the trend reverses. At the end of the simulated ten years, shown in Table 10, the cumulative effort required for constant implementation (pattern that is a consequence of a proactive approach) is lower than that needed for the oscillatory implementation (pattern that is a consequence of a reactive approach). In addition, cumulative employee WB and OP are higher when HIWS are implemented proactively (see Table 10).

[17] The shaded areas of the three panels in Figure 47 relate to the three-year period.

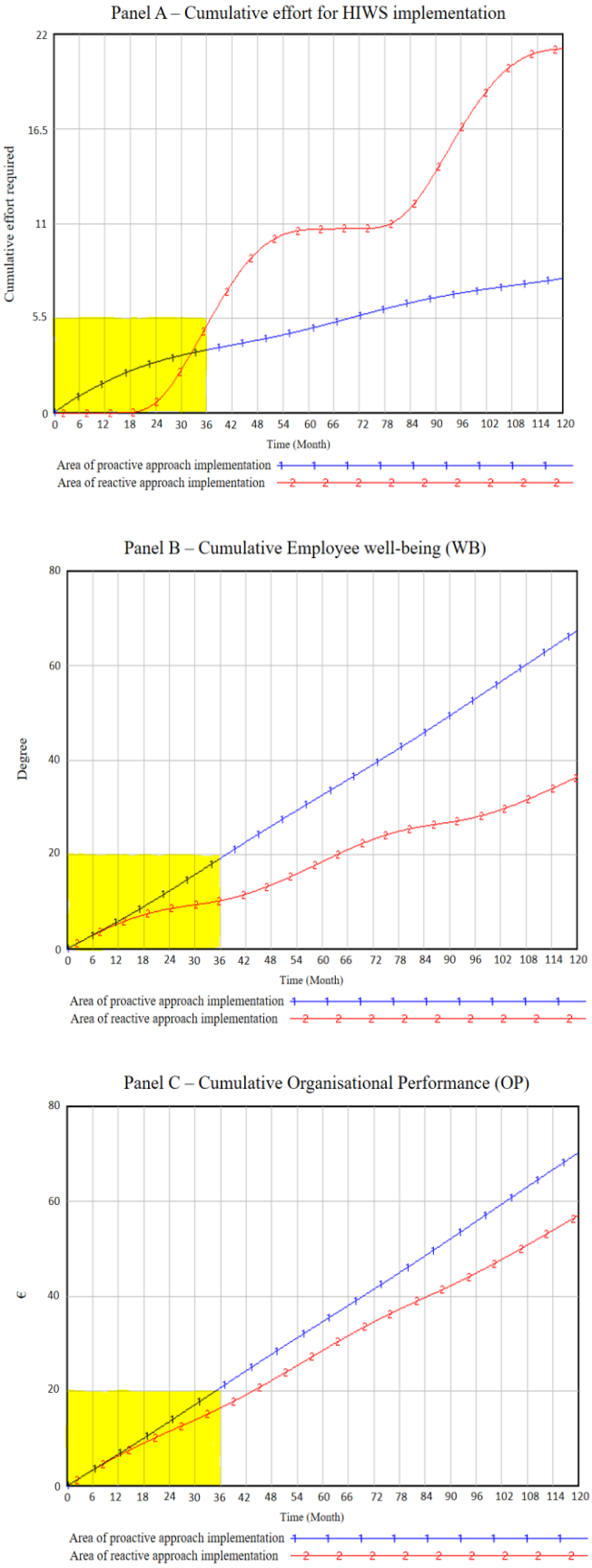


Figure 47: Cumulative results of the effort required for the implementation of HIWS (panel A), the achieved cumulative employee WB value (panel B), and OP (panel C).

Table 10: Cumulative results in period 120 (year 10) based on decision-making approach.

	Reactive approach	Proactive approach
HIWS implementation effort (t=120)	21.14	7.80
WB (t=120)	36.36	67.32
OP (t=120)	57.00	70.23

Moreover, we also examined the impact of prioritising short-term objectives over long-term objectives on the discrepancy between the implemented level of HR practices and employee perception of the organisation. The results presented in Figure 48 depict the gap between the five HR practices implemented and the perception of employees (gap between total implementation and perception), based on the decision-making approach used. The findings indicate that the gap between implementation and perception is smaller when a proactive approach is taken.

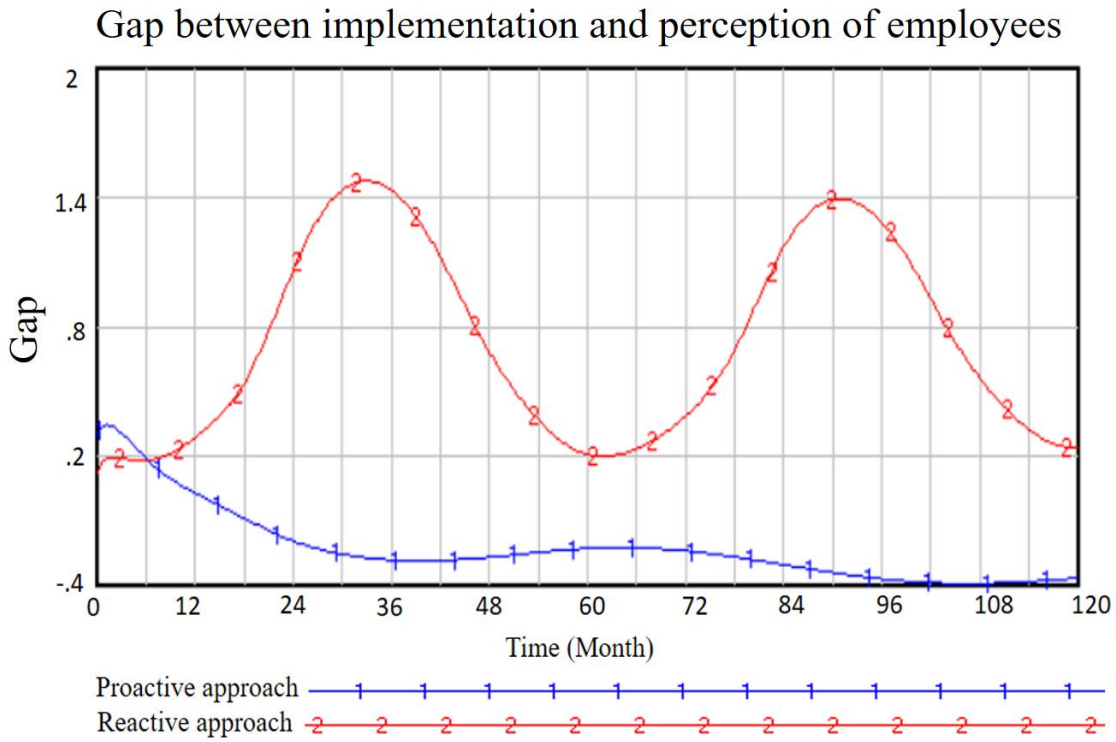


Figure 48: Discrepancy between HR practice implementation and employee perception of the organisation, depending on the management decision-making approach (proactive vs. reactive).

Furthermore, we investigated whether there is a correlation between the discrepancy between implemented HIWS and perceived HIWS (gap between implementation and perception of employees) and employee WB. The results presented in Figure 49 illustrate the impact of the discrepancy between implementation and perception on employee WB. These results highlight the relationship between HIWS and employee WB, and how this relationship can change depending on the agreement or discrepancy between employee perception and actual implementation of HIWS.

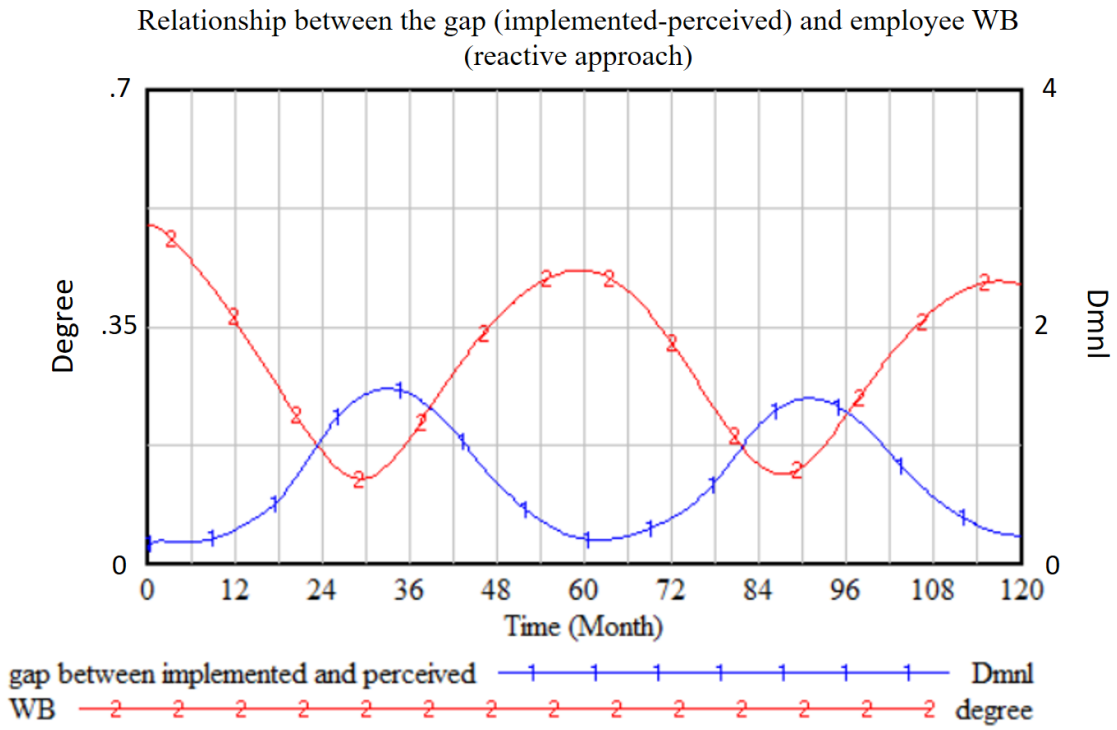


Figure 49: Relationship between discrepancy in implementation and employee perception with employee WB when decisions are taken reactively.

Finally, we investigated if traditional statistical approaches such as cross-sectional designs could be the cause of conflicting outcomes (positive and negative) of the effect of HIWS on employee WB found in the literature. The results shown in Figure 50 and Figure 51, show that an SD analysis better describes the trajectory of the variables over time, rather than the snap shot approach of traditional statistical methodologies. For example, cross-sectional or longitudinal studies, if measured over periods 18 and 30 in Figure 50 (measurement point A and B), could conclude that HIWS implementation negatively affects employee WB. This is because HIWS implementation point B is higher than HIWS implementation point A, but employee WB point B is lower than employee WB point A. However, if the study measures the variables, for example between periods 87 and 93, shown in Figure 50 (measurement point C and D), they could conclude that HIWS positively impacts employee WB. This is because HIWS implementation point D is higher than HIWS implementation point C and similarly, employee WB point D is higher than employee WB point C.

In addition, snapshot measurements taken at various points in time, (e.g., measurements A, B, and C in panel A of Figure 51), would present a particular trend (in this case growth). Consequently, the trend

that would be identified by traditional statistical methods would be as shown in panel B of Figure 51. Thus, the oscillations occurring between the different measurement points would be hidden.

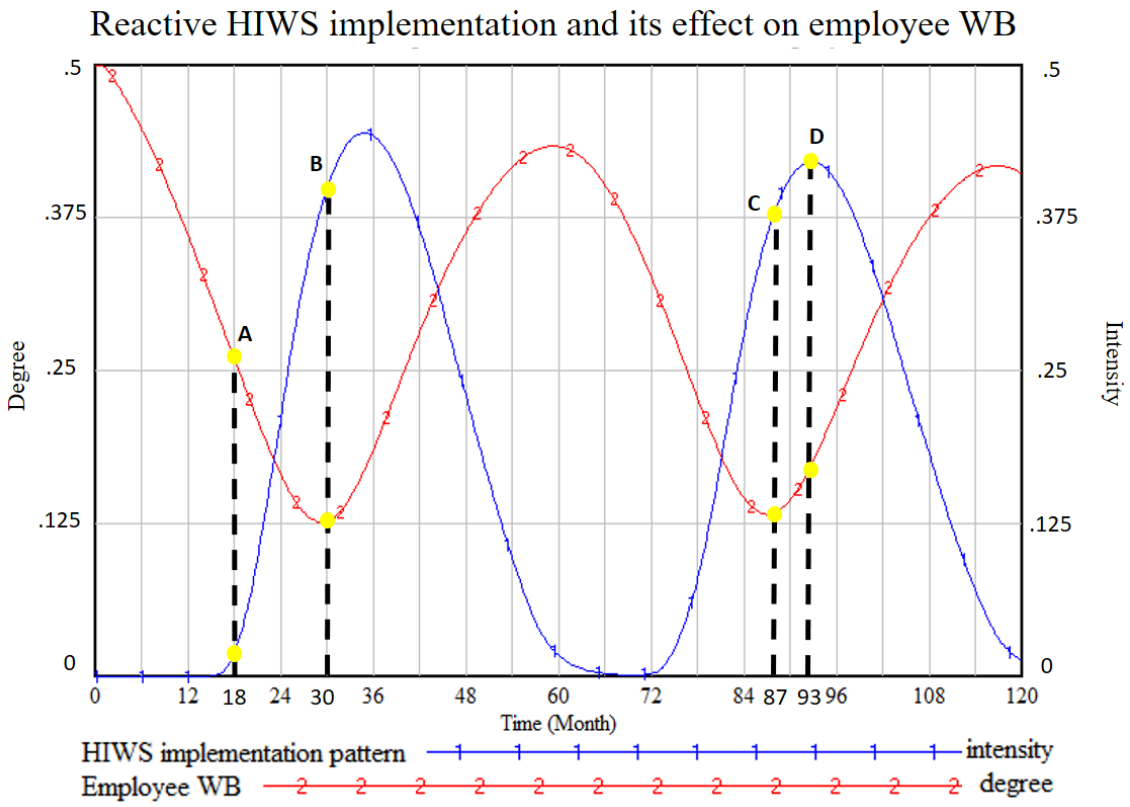


Figure 50: The implication of taking snapshot measurements (A, B, C, and D).

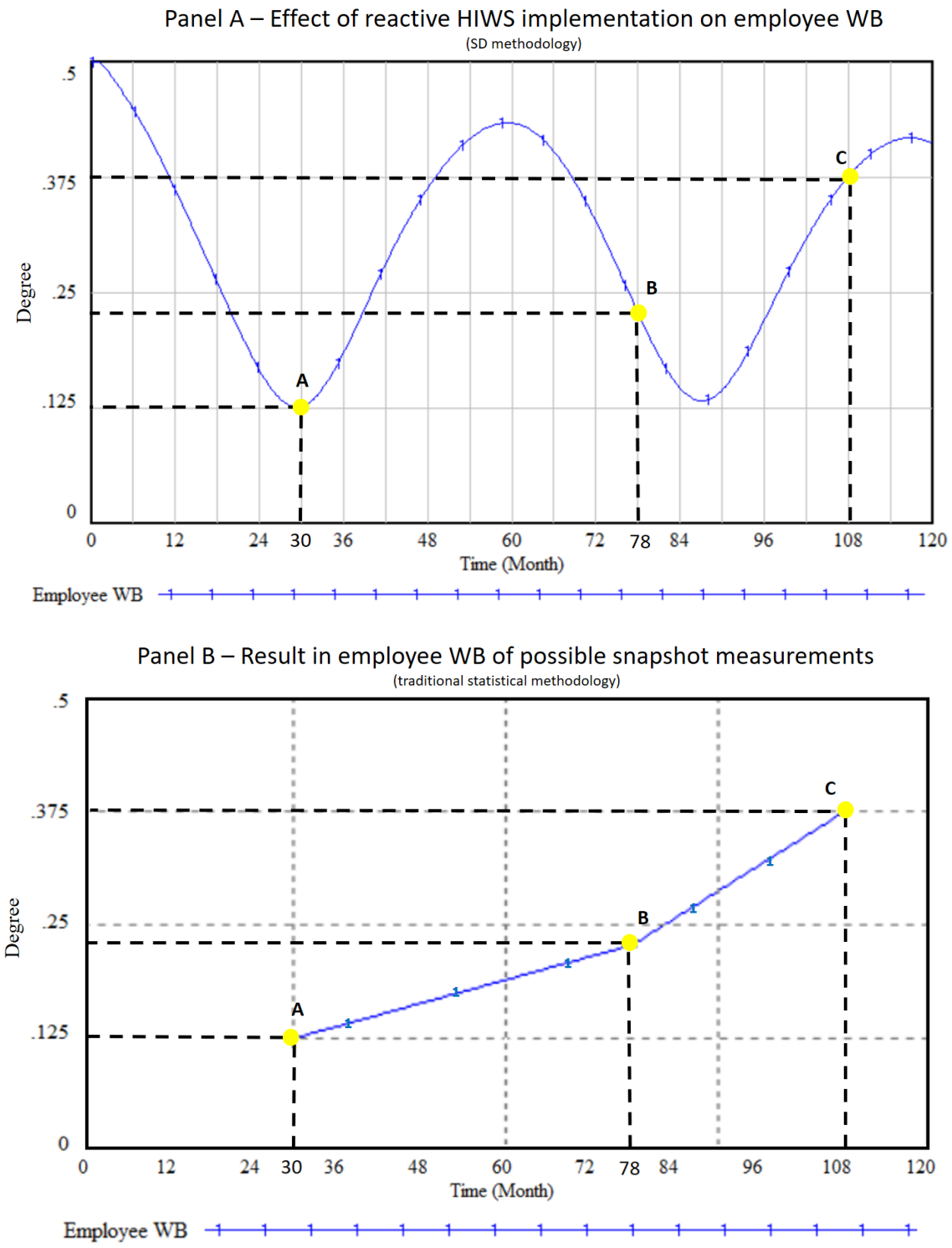


Figure 51: The information provided by SD when considering the time dimension (panel A) vs. the information provided by snapshot measurements taken at different points in time (panel B).

“Queda prohibido no sonreír a los problemas,
no luchar por lo que quieres,
abandonarlo todo por miedo,
no convertir en realidad tus sueños”.

Alfonso Cuervo Barrero.

Chapter 6

Discussion and Conclusions

6 Discussion and Conclusions

The results of the present research demonstrate that the decision-making approach (reactive or proactive) adopted by managers has a notable impact on employee WB and OP. This is consistent with the findings of Riaz, Riaz, and Batool (2014). Our study provides empirical evidence to support that the HIWS implementation process affects both OP and employee WB (see Figure 46). The results highlight the importance of proactive implementation of HIWS to promote positive organisational outcomes in terms of both OP and employee WB. A proactive decision-making approach ameliorates inconsistencies between implemented and perceived HIWS, and consequently improves employee WB and OP. On the other hand, a reactive approach may lead to inconsistencies, which create a gap between the implemented HR practices and employee perception of them, which ultimately results in lower levels of employee WB and OP. Our results show that the successful implementation of HIWS relies heavily on the consistency and commitment demonstrated by management, as it reinforces the messages sent, which builds a strong HR system (Bowen & Ostroff, 2004; Ostroff & Bowen, 2016). Thus, the results depicted in Figure 46 confirm the first of our hypotheses: *"organisations that adopt a reactive decision-making approach, characterised by prioritising short-term objectives, are more likely to have a weak HRM system".* This is crucial as HR practices serve as a system of communication between the organisation and employees, reflecting organisational values and priorities (Bowen & Ostroff, 2004; White & Bryson, 2013) including the concern for employee WB. Consequently, these messages are more likely to be perceived and believed by employees when proactively implemented.

In addition, the results depicted in panel B of Figure 46 support the idea that the conflicting impact of HIWS on employee WB (positive and negative) can be attributed to the decision-making approach adopted in the HIWS implementation process. When HIWS are implemented reactively, it is possible to find periods where employee WB worsens (e.g., periods 0-30 and 60-87) and periods where it becomes better (e.g., periods 30-60 and 87-120). That is, by implementing HIWS in a reactive way, employee WB results oscillate over time. Thus, depending on the moment in which the observations are made, negative effects of HIWS on employee WB can be found (for more details see Figure 50). On the other hand, when HIWS are implemented proactively, employee WB is more stable over time, and hence there are no periods of significant worsening (panel B of Figure 46).

Our findings also indicate that a reactive approach, driven by short-term objectives, results in an oscillatory implementation pattern of HIWS, which can lead to less stable outcomes (Figure 46). In contrast, a proactive approach driven by long-term objectives leads to a more constant and stable implementation of HR practices, resulting in better outcomes (employee WB and OP). As a result, our fifth hypothesis is also confirmed: *"the proactive decision-making approach does not worsen the results in OP"* (see panel C-Figure 46). Therefore, managers should be aware of the impact their decision-making approach has on the implementation of HR practices and their subsequent effects on employee WB and OP.

Adopting a proactive decision-making approach is crucial to prioritising long-term over short-term objectives, as it allows organisations to consistently implement small, incremental changes instead of relying on sporadic efforts to achieve immediate gains. This approach, helps organisations adapt to

changing market conditions, society, and employee needs (Pettigrew, 1987; Trullen et al., 2020). By prioritising gradual changes that become sustainable habits, organisations can increase their chances of survival in an ever-evolving market (Carse, 2011; Kifordu, Odita, & Anona, 2023). This idea is supported by the concept of routinisation (Choi & Chang, 2009), which refers to the automation and homogenisation of practices so that habitual behaviour is promoted (Duhigg, 2013). As a result, the effort required for implementation is reduced (see panel A-Figure 47). In contrast, organisations that rely on unsustainable high-energy actions are more likely to struggle with instability over time (Guise, 2013; Sterman, 1989; Sterman, 2000, pp. 129–132). These results confirm our second hypothesis: *"the effort required to obtain the desired levels of OP and employee WB are greater when adopting a reactive decision-making approach"*. Additionally, by becoming a habit, HIWS are integrated into the organisational culture (Bowen & Ostroff, 2004; Mirfakhar et al., 2018), which is a crucial factor influencing the implementation of other HR practices (Bowen & Ostroff, 2004).

The simulation model findings highlight that a smaller gap between HR implementation and employee perception is positively associated with higher levels of employee WB. That is to say, the present research provides empirical evidence supporting the hypothesis of a positive relationship between HIWS and employee WB when there is correspondence between the perceived and implemented level of HIWS (see Figure 49). Hence, our forth hypothesis: *"the greater the discrepancy between implemented HIWS and perceived HIWS, the worse the employee WB"* is also confirmed. These findings are in line with those of Elorza et al. (2011, 2022) and Wood et al. (2012).

Our study indicates that constant HR practice implementation is essential to narrowing the gap between implementation and perception (see Figure 48), which confirms our third hypothesis: "*organisations adopting a reactive decision-making approach, characterised by a lack of consistency over time, have a greater gap between implemented HR practices and employee perception*". Specifically, we demonstrate that the constant implementation of these practices results in improved employee perception (Bowen & Ostroff, 2004; Ostroff & Bowen, 2016). To maintain this constancy over time, it is critical for managers to take a proactive approach by prioritising long-term objectives over short-term gains, which can be beneficial for achieving sustainable long-term business results (Lumpkin & Dess, 1996). The proactive decision-making approach can also contribute to a positive work environment that supports employee WB. By promoting job autonomy, job satisfaction, work-life balance, and psychological safety, proactive managers can create a culture in which employees feel valued, supported, and engaged in their work.

Finally, we confirmed our sixth hypothesis: *"traditional statistical approaches such as cross-sectional designs may be the cause of conflicting outcomes (positive and negative) of the effect of HIWS on employee WB found in the literature"* with the results depicted in Figure 50 and Figure 51. These findings demonstrate that traditional statistical methods can show particular trends between several measurement points while hiding the real behaviour of the system.

In conclusion, the results of the current study demonstrate that the closer the perceived level of employees to the stated implementation of HR practices, the higher employee WB and OP. To reduce the gap between implemented and perceived HR practices, the key lies in the constant implementation of practices, as described in Figure 52. Such implementation is possible when long-term objectives are prioritised over short-term objectives (i.e., proactive over reactive decision-making approach). This

study, therefore, provides valuable insights into the relationship between decision-making approach, HR implementation patterns, employee WB and OP, which can inform the development of effective HRM strategies.

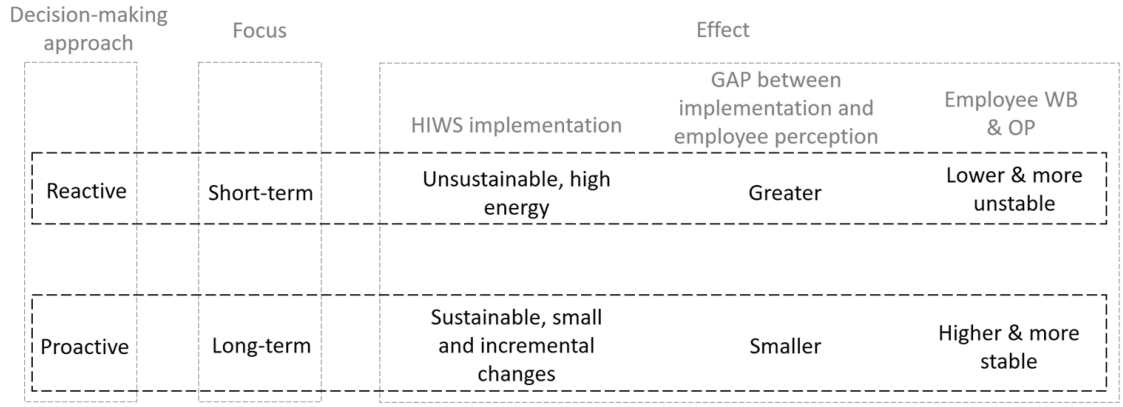


Figure 52: Relationship between decision-making approach, HIWS implementation process, employee WB, and OP.

6.1 Research contribution

Analysis of HR implementation has been static to date (van Mierlo et al., 2018). Hence, by studying the HIWS implementation process from a systemic and dynamic perspective, we contribute to the knowledge about HR implementation processes (Bos-Nehles et al., 2021; Bowen & Ostroff, 2004; Ostroff & Bowen, 2016; Trullen et al., 2020; van Mierlo et al., 2018) in six ways, as explained hereafter.

First, we add to the literature a temporal and non-static perspective of HIWS (Boon, Den Hartog, & Lepak, 2019) by providing conclusions related to the temporality, implementation, and sustainability of the system. We have identified a key factor for the successful implementation of HIWS, and also reveal some principles for its sustainable implementation (Bush, 2018; Kainzbauer & Rungruang, 2019; Mashhady, 2021). We recognise the importance of prioritising long-term objectives over short-term as a fundamental factor for facilitating proactive decision making and thus triggering the necessary effects that lead to organisational sustainability. The proactive approach allows the HIWS implementation process to be carried out constantly over time, which is key to sending clear signals about organisational values and priorities to employees.

Secondly, we contribute by analysing the dynamic interplay between HRM systems and organisational actors, including employees and decision-makers (Bowen & Ostroff, 2004; van Mierlo et al., 2018). We examined both the implemented HR practices and their effect on employee perception because the behaviour of employees is influenced by how they perceive the organisational environment. This in turn affects management beliefs and organisational outcomes (Nishii & Wright, 2007; van Mierlo et al., 2018).

Third, we provide valuable insights into the relationship between decision-making approaches (proactive and reactive), implementation patterns (constant and oscillatory), employee WB, and OP, which can inform the development of effective HRM strategies (Figure 52).

Fourthly, our study provides scientific evidence that aligns with the suggestion of Bowen and Ostroff (2004), and Ostroff and Bowen (2016) regarding the significance of consistent implementation of HR practices over time.

Fifth, we advanced the field by employing a novel approach to the HRM-WB-OP analysis that considers temporal research. Specifically, we used SD, an analytical methodology new to the field. This has revealed that traditional statistical methods may be insufficient to fully understand the impact of HIWS on employee well-being. Adopting more dynamic and holistic approaches could provide a better understanding of this relationship and help resolve the contradictions found in the existing literature. An integrated system approach helps us to understand how the implementation approach of HR practices, employee perception, and organisational outcomes (OP and WB) influence each other over time. Our findings shed light on the complex dynamics underlying these relationships and offer insights for improving HRM systems and organisational performance.

Finally, based on the insights gained from this doctoral research, we have developed a tool named “Management Flight Simulator” that facilitates effective managerial decision-making derived from evidence-based management. Further information can be found in section 6.2 Exploitation of finding.

Nonetheless, this study is not without its limitations, which in this case, are related to the available data. We focused only on the industrial sector in the Basque Country, which limits the generalisability of these results and the applicability of the developed model to other contexts. Hence, we suggest analysing other sectors and regions and comparing the results to understand to what extent these results can be generalised. In addition, it must be noted that all models are simplifications of reality, and although the model has been validated and verified for our research context this may need to be reviewed over time, or if the scope of the model changes. As part of these simplifications, our research focuses on a specific set of HR practices, while there are many more practices that could potentially impact organisational outcomes. Therefore, the findings and conclusions drawn from this study should be interpreted within the context of the selected HR practices.

6.2 Exploitation of finding

The insights gained from this body of work, have informed the development of a tool named “Management Flight Simulator” that facilitates effective managerial decision-making derived from evidence-based management. The simulator is based on the core SD and has two main objectives: (i) support managers in making effective decisions related to HR practice implementation; and (ii) generate reflection processes among managers and students (future managers of organisations) regarding the impact of these decisions on OP and employee WB in the medium to long-term. Against a background of macro-economic context changes (stability, growth, and crisis), the simulator also helps to explore different combinations of HR practices and timing of decision-making while monitoring

the OP and employee WB in real-time as indicators. (To see an overview of the “Management Flight Simulator” see Appendix H: Practical Application of the Current Research).

Currently, the simulator is in its initial phase of commercialisation. The simulator itself has been fully developed using *Vensim PLE Plus 8.1.0 x64,* and we are now working on creating a user-friendly front-end to enhance the user experience.

6.3 Managerial implications

The work we have developed has led to three key managerial recommendations: prioritise long-term objectives over short-term ones; be constant in the implementation of HIWS over the years; and change the perspective on employee WB so that is no longer viewed as a means to improve other indicators, but rather as a goal in itself.

Managers who prioritise long-term objectives over short-term goals are more likely to adopt a proactive approach to implementing HR practices, which can lead to positive outcomes for employee WB. Our findings suggest that organisations should prioritise long-term objectives, encourage a proactive approach to decision-making, and align their values and beliefs to create a positive and sustainable workplace environment that promotes employee WB. In addition, the results indicate that the prioritisation of long-term objectives (proactive approach) does not worsen OP results.

Nevertheless, it seems that to be constant in the implementation of practices is to go against the natural inertia of the system. Organisational energy tends to require addressing immediate needs to ensure current business survival. To achieve significant long-term gains, however, the key is performing small actions every day on a constant basis, so that they become habits (Guise, 2013). Managers need to think more about actions that can be sustained over time and less about actions that require short, intense effort.

There is no point in time when an organisation can say that it has reached the desired level of employee WB. Organisations must understand that it is about playing their best as long as possible, and not just until reaching a specific goal (Davis & Sinegal, 2008). Thus, employee WB should be viewed as a marathon rather than a sprint. Managers should see the implementation of HIWS as a way to nurture the WB of employees, and not merely as a temporary effort, to reach an arbitrary target. To generate the desired effects from the implementation of HIWS on employee WB, managers need to focus on long-term sustainability rather than achieving specific goals. This requires a mind-set shift, changing the focus from reaching a particular level of employee WB at a specific moment, to maintaining certain levels of employee WB as stable as possible for as long as possible.

Making evidence-based decisions is crucial. Managers should be aware of how bounded rationality can impact their decision-making process (Hernandez & Perez, 2019). Bounded rationality is the idea that, as human beings, our decisions are limited by the amount of information we can process and by our cognitive abilities. Although we try to make rational decisions, we are often forced to use shortcuts and simplifications because of these limitations. This means that our decisions are not always perfect,

but we do the best within our capabilities. To mitigate this bias, managers should prioritise taking the time to gather all pertinent information and thoroughly analyse the problem to support decision making. Quick-fix solutions may not address the root causes of the problem and could result in further complications in the future. In addition, organisations can establish processes and incentives that encourage a longer-term perspective, such as setting long-term goals, rewarding strategic thinking, and providing training on decision-making under uncertainty.

6.4 Future research

The inherent act of establishing boundaries in the simulation model creates limitations in the study. Therefore, this section proposes future directions for expanding the model to represent and simulate a wider range of scenarios, thereby providing applicable insights for other contexts.

The developed simulation model holds significant potential for further research related to the identification of HRM system configurations that under different combinations of managerial approaches (commitment, control, and mix) and macro-economic context (crisis, no-crisis) are mutually beneficial for OP and employee WB.

Therefore, in future lines we would like to enhance the comprehensiveness of the model by including the production strategy of the organisation (lean vs. mass manufacturing) as an external variable. By analysing the combined effects of the production strategy, macroeconomic situation, and various HR practices, we can gain insights into how these factors influence OP and employee WB. Such an analysis could identify the HRM system configurations that simultaneously optimise OP and employee WB in the short and long term.

Furthermore, it would be of interest to assess the extent to which the internal coherence (horizontal fit) and external context (vertical fit), such as the manufacturing strategy and macroeconomic situation, influence OP and employee WB. By examining these factors, we could gain a deeper understanding of the interplay between HR practices and the broader organisational context.

We would also like to be able to include the cost-benefit of HR practice implementation as an outcome of the model. In this way, we believe that we will be able to stimulate reflections in management teams that promote a more holistic vision which places the employee at the centre of organisational decisions.

Future research could also expand the scope to encompass a broader range of HR practices, than those analysed in this work, allowing a more comprehensive understanding of their effects on OP and employee WB.

Finally, our ultimate goal is to successfully launch and market the simulator, which is currently in its initial phase of commercialisation. We are open to exploring potential collaborations to expand the capabilities of the simulator and incorporate additional features that respond to specific industry needs. In this way, we can ensure it remains a valuable tool for evidence-based management and effective decision-making in the ever-changing business environment.

By undertaking these research endeavours, it is possible to overcome some limitations of the simulation model, expand its applicability, and advance knowledge in the field of HRM. This will contribute to developing evidence-based practices and strategies that can enhance both OP and employee WB.

“Gu sortu ginen enbor beretik
sortuko dira besteak,
burruka hortan iraungo duten
zuhaitz-ardaska gazteak.
Beren aukeren jabe eraikiz
ta erortzean berriro jaikiz
ibiltzen joanen direnak:
gertakizunen indar ta argiz
gure ametsak arrazoi garbiz
egiztatuko dutenak”.

Mikel Laboa

Chapter 7

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7 References

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Appendix

Appendix A: Group Model Building (GMB)

GMB is a participative systemic modelling approach that requires client involvement in the modelling process (Forrester, 2007; Vennix, 1996). It focuses on achieving consensus and commitment to decisions. This approach aims to create a shared vision and action in strategic organisational problems and decisions. Stakeholder involvement is important both for structuring a problem as well as ensuring implementation of conclusions, so they are directly involved in the decision-making process.

GMB involves formal workshops consisting of structured activities that are sequenced to elicit variables and generate progressively more refined qualitative diagrams of the structure of interconnections and feedback loops of system structure (Andersen et al., 1997; Hovmand et al., 2012). The resulting qualitative models use diagramming conventions of CLD to represent sources of feedback underlying dynamic system behaviour.

In this annex, a sample of three GMB sessions out of a total of 41 that have been carried out is presented. The three models selected are a representative selection, and each has been chosen for its relevance and richness. If interested in accessing the rest or any of them in particular, please contact the author at: asanchezz@mondragon.edu

As can be seen in this sample (Figure 53, Figure 54, and Figure 55), the GMBs conducted show similar characteristics in the composition of the CLDs. All of them have "organisational performance" and "employee well-being" as main indicators, which act as triggers for HR practices. These in turn influence these indicators through feedback loop mechanisms. The 41 CLDs developed are composed of both balancing loops and reinforcing loops, which illustrate how specific actions can yield intended effects on the primary indicators while simultaneously generating unintended consequences. These models host a set of actions that are represented in Table 1.

This appendix offers a glimpse into the fundamental characteristics and recurring patterns found in the 41 CLDs developed, through a sample of three GMB models. It illustrates the diversity and complexity of these GMB models, highlighting the interaction between key factors such as organisational performance and employee well-being within the realm of HR practices.

The first of the three GMB results presented in this annex is displayed in CLD format in Figure 53. It is composed of 7 feedback loops (5 balancing and 2 reinforcing) that are generated as a consequence of the implementation of five actions. The action entitled "one-size-fits-all policy" is an action that has two effects: (i) in the short term it reduces "slacking" (B1 loop) and (ii) in the medium term it generates greater disaffection (lack of commitment, worsening of employee well-being) that will further fuel "slacking" in the medium term (represented by R2 loop). At the same time, the higher the level of employee well-being, the more frequent and intense will be the behaviours of mutual support and cooperation among employees. These behaviours will contribute to the improvement of the social climate of the organisation, which in turn will contribute positively to the improvement of employee WB. Moreover, the higher the level of employee WB, the more frequent and intense are the mutual support and cooperative behaviours. These behaviours contribute to the improvement of the social climate. An improvement of the social climate, in turn, positively influences employee WB (represented by R3 loop).

A very deteriorated (low) social climate, in contrast to a specific desired level, contributes to the feeling that something needs to be done (from a social point of view). The higher the desired level of social climate, the higher the need to have to do something (make some kind of decision), and vice versa. The higher the need to have to do something, the more likely it is that a change of people on the board will be promoted. New people on the board of directors helps to create a more united and shared company project among them. The stronger and more shared the project is among the different members of the board of directors, the better the social climate will be, as there will be no opportunity for internal division. In this case, the change of people on the board of directors is clearly a "lever" that leads to a more cohesive and shared project in the management. It is the desired level of social climate that contributes to triggering the change of people on the board sooner or later. This phenomenon is represented by the loop B4.

A more or less shared project (in the board of directors) will require a series of people management policies that improve the employee WB. These policies are promotion, selection and work-life balance. A higher employee WB will encourage a behaviour of mutual support and cooperation, improving the social climate. The better the social climate, the less the need for management change. Policies (promotion, selection and work-life balance) are levers that improve employee WB and thus the social climate (represented by the loop B5).

The management change described in B4 is also possible from the perspective of the results in OP. The higher the “slacking” (originating from a lack of employee WB), the lower the OP, increasing the need to have to do something. The lower the OP and/or the more ambitious the objectives of the strategic plan, the greater the need to do something. The need to do something results in a change of people on the board. The new people will help the management team to visualise the project in a more shared way, favouring people management policies (promotion, selection, etc.) that help to improve employee WB and therefore reduce “slacking”. Low “slacking” will help to improve the results in OP by minimising the need to do something. Policies (promotion, selection and work-life balance) are levers that improve employee WB and OP (represented by the loop B6).

Finally, the change of management contributes to a more shared project. The more shared the project, the more participative the leadership style will be and the more people will recognise it. This type of leadership helps to improve the level of employee WB. A higher level of employee WB reduces the “slacking”, improving the OP and minimising the need for a change of people on the board of directors (represented by the loop B7).

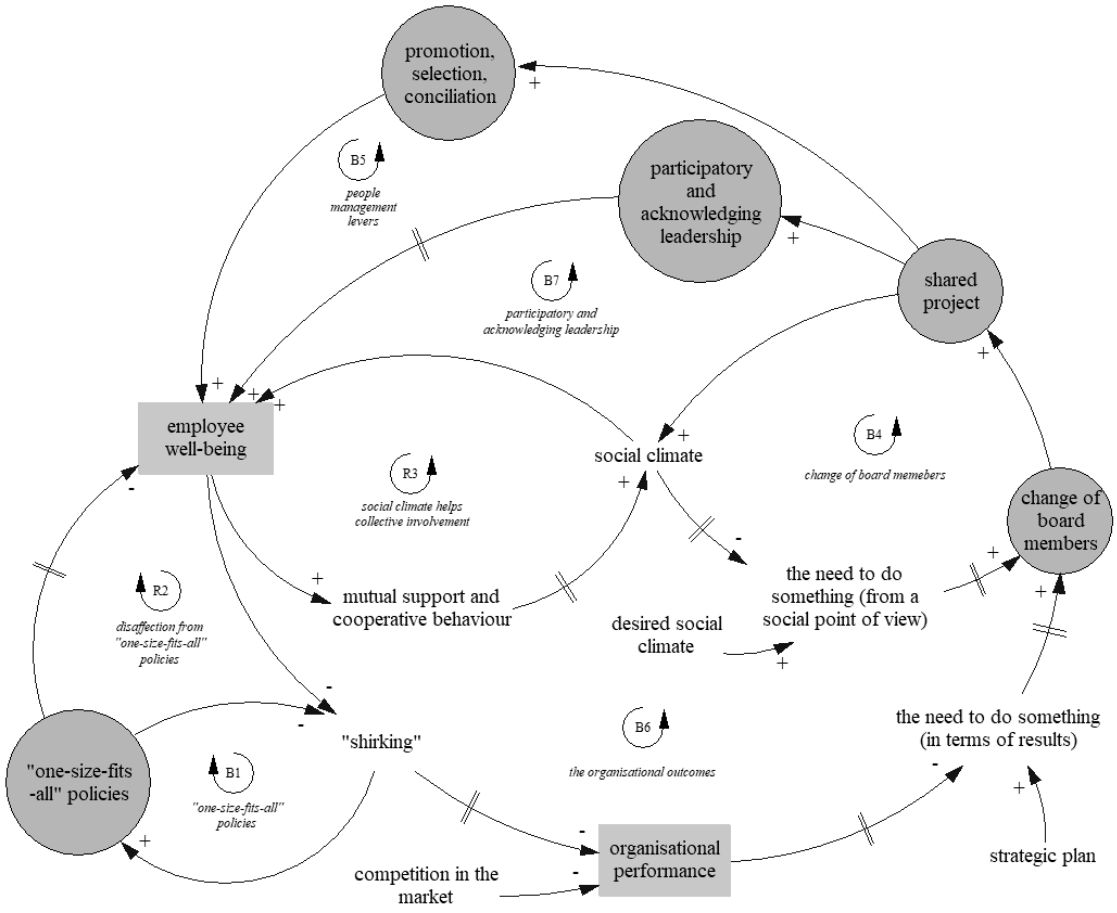


Figure 53: CLD 1, result of the GMB session conducted with the Organisation “A”.

The second of the three GMB results presented in this annex is displayed in CLD format in Figure 54. It is composed of 11 feedback loops (4 balancing and 7 reinforcing) that are generated as a consequence of the implementation of three actions. Continuously good results over time “anaesthetise” people. Conversely, a low or tight performance generates positive tension among people. This positive tension is also produced through a deliberate strategy of “showing the market” to employees. The “positive tension” helps employees to involve and materialise pro-organisational behaviours. These pro-organisational behaviours will produce better OP results. OP does not depend only on the efforts of employees but also on the level of competition in the market; the more competition, the lower the results. This phenomena is illustrated by the loop B1.

The better the OP, the higher the employee WB. This employee WB will contribute positively to the involvement of employees in the sustainability of the organisation and to the materialisation of behaviours that are favourable to the organisation. These behaviours (collectively and sustained over time) will contribute to improve the OP, generating more employee WB and thus, entering a positive reinforcement cycle that is reflected by the R2 loop.

Employee WB, which is nurtured by a good OP (among others), contributes to the involvement of people and the materialisation of behaviours that are favourable to the organisation. This greater involvement contributes positively to people making more suggestions on how to improve processes.

The more improvements, the greater the number of improvements implemented, thus contributing positively to the OP and further improving employee WB. This creates another positive reinforcement circle, which is represented by loop R3.

The implementation of the improvements suggested by employees depends (among others) on the responsiveness of the organisation to the number of suggestions made. This response capacity depends on the resources allocated and the level of attention/priority given to the suggestions made by people. The higher the quality of response, the greater the improvements implemented, producing better results in OP, resulting in better employee WB, greater involvement and a higher number of suggestions made. To the extent that the organisation is able to respond relatively quickly to the number of suggestions that are made, the number of suggestions will increase. As soon as the number of suggestions exceeds the capacity of the organisation to respond, suggestions will slow down and decrease. This mechanism is represented by loop B4.

A management that trusts in people will tend to: (i) implement policies that involve people in the company project (information, transparency, autonomy, etc.), and (ii) a leadership that listens to and respects people. All these elements will contribute to employees feeling that the organisation trusts them, which in exchange will lead to employees also trusting management more. This trust will materialise in a greater involvement of people, which in turn will contribute to maximising behaviours favourable to the organisation. Finally, these behaviours will contribute to reinforcing the trust of management in employees, further boosting the above-mentioned levers. The resources allocated and the attention given to implementing suggestions is also a lever that derives from the policies in place (as a result of greater or lesser trust in people). This phenomenon is represented by loops R5 and R6. Positive reinforcement (by management) of behaviours that are favourable to the organisation by employees contributes to improving the involvement of employees and further encourages the flourishing of behaviours that are favourable to the organisation. This positive reinforcing loop is represented by R7.

The positive reinforcement of loop 8 (represented by R8) depends on a culture of recognition and reinforcement embedded in the leadership structure of the organisation. This culture is only possible if the organisation deliberately develops an “attachment” style of Leadership (listening, respect, support and caring for employees, recognition and positive reinforcement). The development of this style of leadership is only possible if there is a trusting approach to employees from management. The involvement and behaviours favourable to the organisation that will flourish as a result of this style of leadership will positively reinforce the trust that management places in employees. This reinforced trust will tend to further maximise the culture of recognition through this new style of leadership.

The worse the OP, the greater the need for action (to improve the competitive position of the organisation in the medium term). The more demanding the strategic objectives defined in the strategic plan and the more demanding the new trends in the market, the greater the need for action. A greater need for action will result in decisions that can be showing the market to people, intensification of work, increase in efficiency through automation, and the development of new profiles to adapt them to the changing needs of the market/manufacturing process. These four actions tend to improve OP. Improved performance will tend to reduce the need for action by minimising the intensity of decisions (represented by loop B9).

Two of the strategic decisions that stem from the need to take action to improve performance (and market position) are the automation of processes, and the need to develop new profiles to meet growing market trends and challenges. Both issues will contribute to the development of a training plan. This plan will contribute to a more skilled/competent workforce with a positive impact on OP (represented by loop B10).

An intensification of work or increase in the level of production (derived from the need to improve performance and/or market position) has positive effects on OP, but at the same time has negative effects on employee WB. An increase in the level of production tends to reduce involvement and favourable behaviour towards the organisation and can ultimately have negative effects on OP. A reduction in performance can jeopardise the position in the market of the organisation and therefore increases the need to act by further intensifying (among other strategic actions) work. This phenomena is represented by the loop R11.

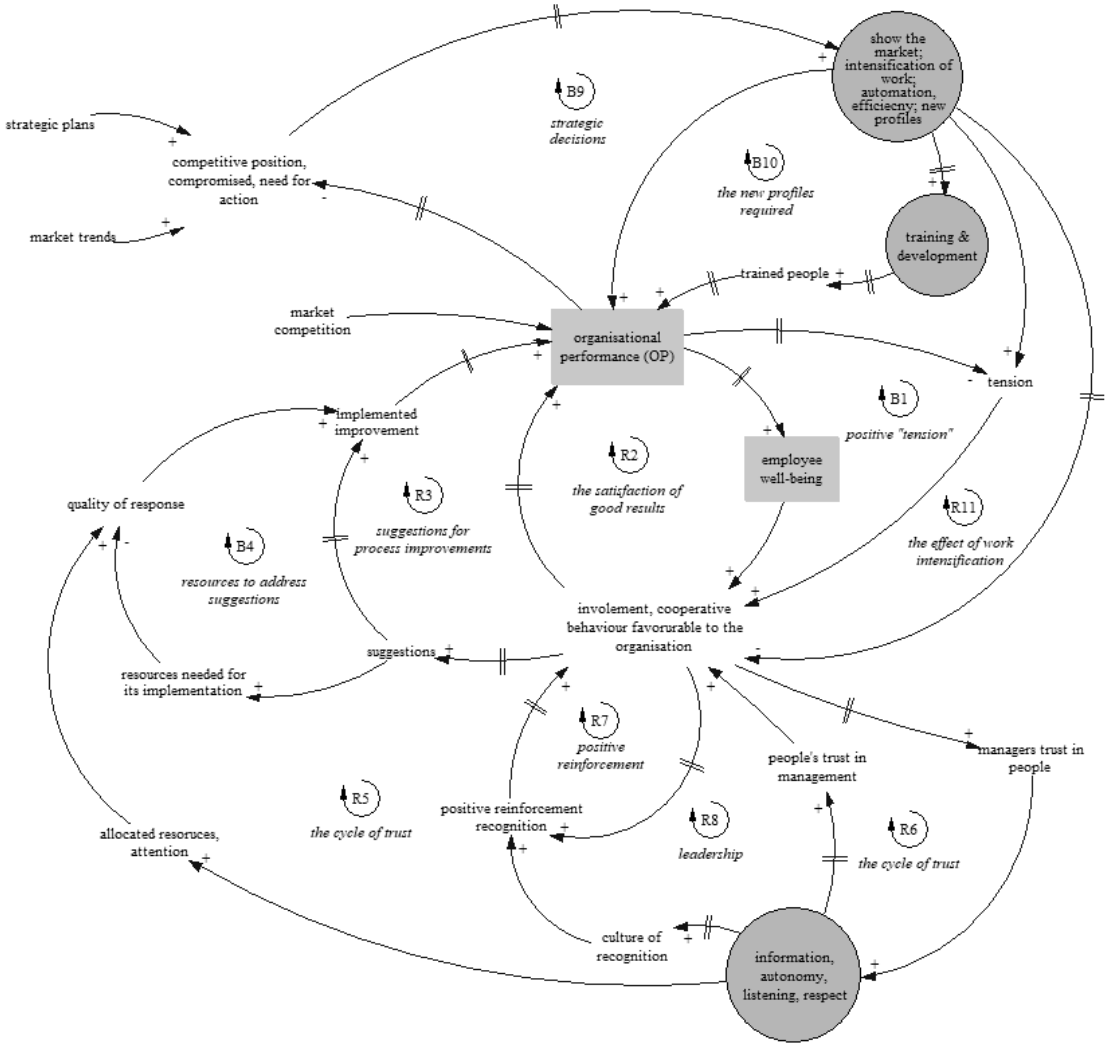


Figure 54: CLD 2, result of the GMB session conducted with the Organisation “B”.

The last of the three GMB results presented in this annex is displayed in CLD format in Figure 55. It is composed of 10 feedback loops (4 balancing and 6 reinforcing) that are generated as a consequence of the implementation of three actions. A management that trusts in employees tends to implement policies that involve people in the business project, share the project, practise leadership with listening and integrity, and design participative structures and empower people. All of these elements help employees to feel that they are trusted. In turn, employees also trust more the management. This trust will materialise in a greater involvement of people, which contributes to maximise behaviours that are favourable to the organisation. Finally, these behaviours contribute to reinforce the trust of the management in employees, further boosting the four levers mentioned above (represented by loop R1).

Increased employee WB in the organisation contributes positively to helping and cooperative behaviour between people. Helping and cooperating positively contributes to an improved atmosphere of trust between employees. This environment, in turn, contributes to a higher employee WB (represented by loop R2). On the other hand, the worse the working environment, the greater the need for action. The more demanding the desired working environment in the organisation, the greater the need to act. The need to act generally leads to conflict management, the establishment of common goals, and the promotion of teamwork. These elements will help to encourage cooperative behaviours favourable to the organisation, improving the atmosphere and ultimately, employee WB. This mechanism is represented by loop B3.

Some of the levers that derive from a management trust in employees approach (e.g. structure design, listening, autonomy, etc.) positively contribute to the creation of teams with common goals. These teams with common goals, while managing conflicts, contributes to cooperative and favourable behaviours for the organisation, as well as the improvement of the working environment, and finally employee WB. Improved employee WB lead to favourable behaviours for the organisation, thus reinforcing the trust of management on employees (represented by loop R4).

The higher the employee WB, the more favourable behaviours for the organisation, which contribute to the OP. The higher the OP, the lower the sense of "crisis", and therefore the lower the involvement of people. In other words, very good results over a long period of time can anaesthetise employees (represented by loop B5).

The worse the OP, the greater the need for action (to improve the sustainability of the organisation in the medium term). The more demanding the strategic objectives defined in the strategic plan, the greater the need for action. A greater need to act leads to decisions such as automation, offshoring, increasing productivity through improvements/changes in the way of working. These tend to improve the OP (represented by loop B6).

Increasing automation generates a different qualification need for employees. This need for qualification (to raise the profile of the people) will result in a training / development plan for the people, which contributes to increasing the trust of the employees towards the management. Consequently, it improves employee WB, which generates behaviour that is favourable to the organisational project. In this way, OP is improved, reducing the need for action and therefore reducing the need to automate, delocalise or raise the level of production (represented by loop B7).

The challenges arising from the strategic/management plan should be shared between the different departments. This joint work, together with appropriate training on the roles and functions of each department, contributes to improving trust between departments. This improved trust between departments has a positive impact on the trust of the management in employees. This trust is materialised in a series of levers, which contribute to improve the climate of trust between employees and management. Finally, this climate of trust in employees also contributes to improving trust between departments. This mechanism is represented by the loop R8.

Offshoring can improve the results in OP, but at the same time it has a demoralising effect on employees and can negatively affect their well-being. A reduction employee WB contributes to a reduction in behaviours favourable to the project, therefore negatively affecting OP. A reduction in OP requires more relocations, automation, or increases in production levels (represented by loop R9).

An increase in the production level has positive effects on OP, but at the same time, it has negative effects on employee WB. An increase in production level tends to increase tension among employees, reducing the trust and collaboration between them. This deterioration of the work environment reduces the involvement of employees and the favourable behaviours for the organisation. Ultimately negatively affecting OP (represented by the loop R10).

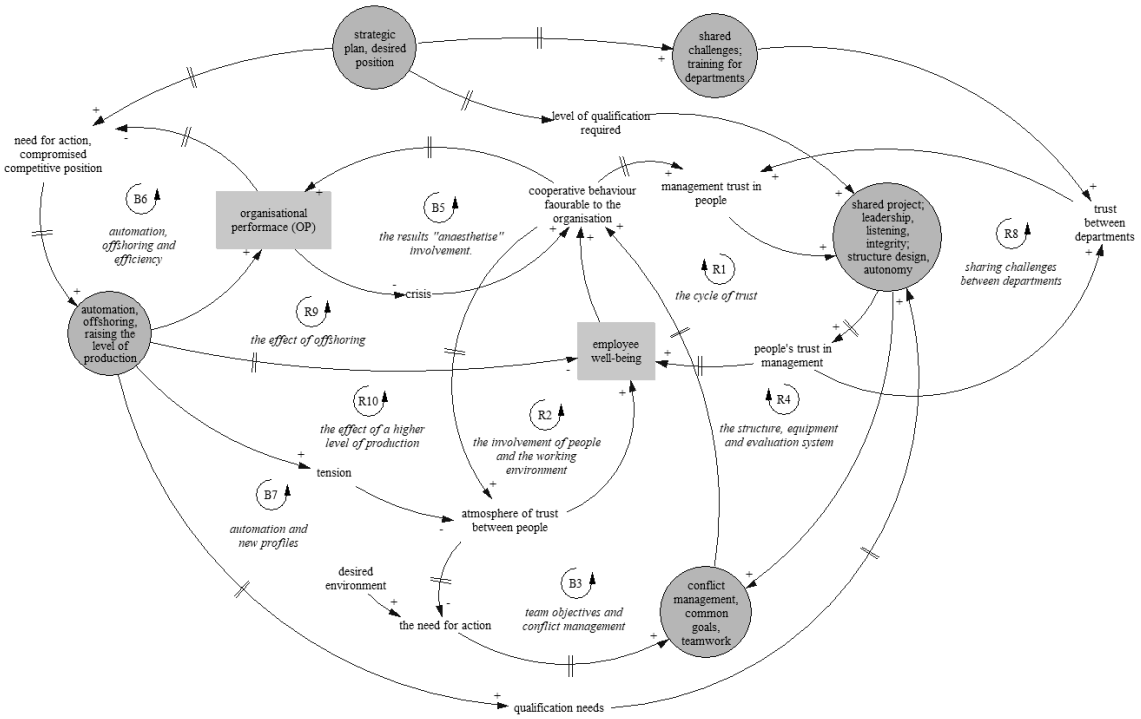


Figure 55: CLD 3, result of the GMB session conducted with the Organisation “C”.

Appendix B: Feedback Loops and Justification of the Relationships between Modelled Variables

Table 11: Feedback loops in the HRM-OP-WB model.

Loop	Description	Literary Evidence
B_1: strategic repositioning (Figure 56)	This is a balancing feedback loop that emerges when implementing the HR practice of "actions for organisational growth, gaining value". When organisations invest in diversifying their business, they can generate medium to long-term benefits by increasing their presence and activity in multiple markets, leading to a positive impact on OP. Diversification can lead to economies of scope[18], increase brand recognition, and a broader customer base, all of which can contribute to improve OP.	-Organisations diversify to have better position in the market (Krivokapic et al., 2017). -Companies that diversify outperform their peers (Castaldi & Giarratana, 2018; Krivokapic et al., 2017; Oladimeji & Udosen, 2019).
B_2: immediate effect of dismissals (Figure 66)	This is a balancing feedback loop that emerges when implementing the HR practice of "reduce costs by dismissing". This action results in a reduction in the size of the organisation (number of employees), which affects the structural costs of the company and therefore its overall results.	-The deliberate downsizing of organisations is related to the management intention to improve OP (Capelle-Blancard & Couderc, 2007; Kozlowski et al., 1993). -In times of crisis, organisations prioritise recessionary actions such as cost reduction through workforce downsizing (Garmendia, 2019).

[18] Economies of scope refer to the cost savings or efficiency gains that a company can achieve by producing a variety of goods or services together rather than separately. Economies of scope can help companies achieve greater efficiency, lower costs, and improve their competitive position by leveraging their existing resources and capabilities across multiple business lines.

B_3: upsizing and power (Figure 57)	This is a balancing feedback loop that emerges when implementing the HR practice of “actions for organisational growth, gaining value”. By hiring new employees, the organisation increases its size, which enhances its ability to handle larger volumes of demand. This allows the organisation to expand its presence and power in the market, leading to a positive impact on OP. Growth can also provide other benefits, such as the acquisition of new customers, talent, and significant funding, which can drive business performance and profits. The concept of economies of scale further illustrates the benefits that a company can achieve by increasing production in response to rising demand. As companies grow, they can become more efficient and better able to leverage their commercial efforts and distribution capacity, increasing the power that the organisation has on the market.	-The size of the organisation (in the industrial sector) is positively correlated with OP (Wood et al., 2012).

B_4: tightening the belt (Figure 61)	This is a balancing feedback loop that emerges when implementing the HR practice of “efficiency management, reducing costs without dismissals”. Managing daily efficiency through cost adjustment and internalisation of tasks (e.g., insourcing, replacing suppliers with company employees) can lead to greater organisational efficiency, which in turn can improve its ability to meet established objectives. By reducing structural costs, organisations can increase resources available to invest in key areas of business, which can improve their ability to compete in the market and thus increase their OP.	The use of cost control and cost reduction techniques has a positive effect on OP. These techniques help organisations to optimise their resources, reduce waste, and improve efficiency, which ultimately leads to better OP (Akeem, 2017).
B_5: intensification for efficiency (Figure 62)	This is a balancing feedback loop that emerges when implementing the HR practice of “efficiency management, reducing costs without dismissals”. By managing daily efficiency in a way that optimises resource utilisation, intensifies work through initiatives such as time and method improvements, and increases workloads, organisations can achieve higher productivity and efficiency levels. This, in turn, leads to improved OP.	The management efficiency has a positive and significant relationship with the OP (Liu et al., 2020).

B_6: effect of HIWS on OP (Figure 70)	This is a balancing feedback loop that emerges when implementing the HR practice of “HIWS implementation”. By implementing HIWS, the company restructures and reorganises itself in a less hierarchical and more horizontal manner. This promotes greater involvement of employees in decision-making processes, facilitates transparent information sharing and constant communication, and leads to jobs being designed in a way that promotes greater employee autonomy. As a result, employees perceive the organisational environment as more enriching, as it promotes autonomy, participation, training, and development. This in turn, generates higher levels of OP.	-High involvement management is directly and positively related to organisational performance (Guest, 2017; Wood et al., 2012). -Following social information processing theory, implemented HIWS are likely to affect perceived HIWS (Jiang et al., 2017; Wang et al., 2021). -Perceived HIWS are more strongly associated with outcomes than are implemented HIWS (Den Hartog et al., 2013; Elorza et al., 2011, 2022; Garmendia, Elorza, Aritzeta, et al., 2021) and perceived-HIWS is positively related to OP (Elorza et al., 2022). -High-involvement processes do act positively through both (indirect) motivational and (direct) cognitive paths. Company performance is higher, as is employee morale. (Boxall & Macky, 2009). -When employees perceive organisations to be supportive of their well-being, they want to reciprocate and adopt behaviours valued by the organisation (norm of reciprocity) (Liao et al., 2009). -The SHRM process model of Nishii and Wright (2008) purports that implemented HR practices (such as HIWS) by management have a positive effect on employees’ perception of HR practices, which in turn, influence employee and organisational outcomes. -Following social information processing theory, implemented HIWS are likely to affect perceived HIWS (Jiang et al., 2017; Wang et al., 2021).

B_7: effect of HIWS on WB (Figure 71)	This is a balancing feedback loop that emerges when implementing the HR practice of "HIWS implementation". By implementing HIWS, the company restructures and reorganises itself in a less hierarchical and more horizontal manner. This promotes greater involvement of employees in decision-making processes, facilitates transparent information sharing and constant communication, and leads to jobs being designed in a way that promotes greater employee autonomy. As a result, employees perceive the organisational environment as more enriching, as it promotes autonomy, participation, training, and development. This in turn, generates higher levels of WB.	-High involvement management is directly and positively related to employee WB (Guest, 2017; Wood et al., 2012). -Following social information processing theory, implemented HIWS are likely to affect perceived HIWS (Jiang et al., 2017; Wang et al., 2021). -Perceived HIWS are more strongly associated with outcomes than are implemented HIWS (Den Hartog et al., 2013; Elorza et al., 2011, 2022; Garmendia, Elorza, Aritzeta, et al., 2021) and perceived-HIWS is positively related to WB (Elorza et al., 2022). -High-involvement processes do act positively on employee morale. perceiving one's organisation to have high involvement work systems, and seeing that these practices are effective predicts higher levels of job satisfaction. (Boxall & Macky, 2009; Mendelson et al., 2011). -When employees perceive organisations to be supportive of their well-being, they want to reciprocate and adopt behaviours valued by the organisation (norm of reciprocity) (Liao et al., 2009). -The SHRM process model of Nishii and Wright (2008) purports that implemented HR practices (such as HIWS) by management have a positive effect on employees' perception of HR practices, which in turn, influence employee and organisational outcomes. -Following social information processing theory, implemented HIWS are likely to affect perceived HIWS (Jiang et al., 2017; Wang et al., 2021).

B_8: WB focus (Figure 69)	This is a balancing feedback loop that emerges when implementing "actions to improve well-being". When implementing actions solely aimed at improving employee WB in isolation, they only generate immediate (short term) improvements on this outcome.	-Line-managers supporting its subordinates, caring about their well-being and valuing their contribution can assist employees in coping with job demands, thereby buffering their effects on strain reactions (Terry et al., 1993). -HR practices aimed at improving employee WB result in positive attitudes and behaviours (Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020).
R_1: downsizing and power (Figure 65)	This is a reinforcing feedback loop that emerges when implementing the HR practice of "reduce costs by dismissing". This action generates a reduction in the size of the organisation (number of employees) that affects its market power. As the company decreases in size, it also loses its capacity to reduce production costs by expanding and experiences a loss in economies of scale. Consequently, this reduces the capacity of the company for future investments.	-Exclusive use of a workforce reduction strategy led to a reduction in OP (Cameron et al., 1993). -The size of an organisation (in the industrial sector) is positively correlated with its OP (Wood et al., 2012). -In times of crisis, organisations prioritise recessionary actions such as cost reduction through workforce downsizing (Garmendia, 2019).
R_2: cost of upsizing (Figure 58)	This is a reinforcing feedback loop that emerges when implementing the HR practice of "actions for organisational growth, gaining value". The increase in organisation size generates medium to long-term side effects on OP. This is because larger organisations require more internal coordination and procedures which can negatively impact the efficiency and effectiveness of the operational process over time. Moreover, larger sizes imply higher structural costs, which further decrease OP.	There is a limit to how far manufacturing costs can be reduced in economies of scale. At a certain size, unit costs no longer decrease in the same way. This is because the growth of an organisation requires more internal coordination and more internal procedures (Koster, 2021).

R_3: side effect of efficient management (Figure 63)	This is a reinforcing feedback loop that emerges when implementing the HR practice of "efficiency management, reducing costs without dismissals". Task intensification generates secondary effects in the medium to long-term on organisational outcomes. When managing daily efficiency with an achievement-oriented leadership style, brings work intensification. Assigning more tasks and responsibilities to employees (doing more with less), leads to sustained stress and exhaustion, which in turn results in a continuous decline of the perception of employees about the organisation. Moreover, the fatigue and exhaustion generated in employees negatively impacts the quality of work and retention of personnel. Consequently, leading to negative effects on OP and employee WB.	-Any performance benefits of HRM systems are offset by increased job demands, stress, and work intensification (Kroon et al., 2009; Ramsay et al., 2000). -The positive relationship between work intensification and exhaustion is theoretically explained by the Job demands-resources (JD-R) model, which proposes a causal relationship between job stressors, strain and WB outcomes (Bakker & Demerouti, 2014; Demerouti et al., 2001). -Work intensification negatively affects employee WB (Huo et al., 2022). -With rapidly deteriorating employees' perception of the enriched context, a lower extra-role employee behaviour is expected, which in turn reduces organisation's performance (Tichy & Cardwell, 2004; Tichy & Cohen, 2007). -When employees perceive organisations to be supportive of their well-being, they want to reciprocate and adopt behaviours valued by the organisation (Liao et al., 2009). -Enriched jobs are positively related to employee WB (Wood et al., 2012). -HR practices intended to control costs or exploit employees, result in negative attitudes and behaviour. Which in turn negatively affects OP. (Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020). - Referring to structure, we mean the manner in which employees are coordinated/managed within the organisation (level of centralization, hierarchy and formalization). Being so, the higher the structuring level of organisation, the lower the employees' perception level of the enriched context. (Garmendia, Elorza, & Uribetxebarria, 2021). - Perceived HIWS are positively related to WB (Elorza et al., 2022).

R_4: side effect of traditional recession management (Figure 67)	This is a reinforcing feedback loop that emerges when implementing the HR practice of "reduce costs by dismissing". This action leads to the worsening of employees' perception of their work environment, which has negative effects on OP and WB. As employees perceive a decline in their work environment, they may become less motivated and engaged, leading to a decrease in their productivity and a potential increase in absenteeism and turnover rates. This in turn, could further worsen the work environment and create a vicious cycle.	-Exclusive use of a workforce reduction strategy led to a reduction in organisational performance (Cameron et al., 1993). -HR practices intended to control costs or exploit employees, result in negative attitudes and behaviour. Which in turn negatively affects OP. (Hewett et al., 2018; Nishii et al., 2008; Wang et al., 2020). -Managers tend to adopt recessionary actions in response to financial difficulties, which significantly colours how employees perceive their work environment generating a negative effect on employee WB (Garmendia, 2019; Wood & Ogbonnaya, 2018). -Cost-cutting decisions are related to the conflicting outcomes perspective, since they serve to achieve financial results at the expense of employee well-being (Van De Voorde, Paauwe, & Van Veldhoven, 2012). -With rapidly deteriorating employees' perception of the enriched context, a lower extra-role employee behaviour is expected, which in turn reduces organisation's performance (Tichy & Cardwell, 2004; Tichy & Cohen, 2007). -When downsizing measures are implemented, employees feel that the contract of trust that connected them to the company is broken (Rousseau, 1989, 1995).

R_5: side effect of volume increase (Figure 59)	This is a reinforcing feedback loop that emerges when implementing the HR practice of "actions for organisational growth, gaining value". As an organisation grows, it tends to become more structured and centralised, with increased levels of bureaucracy and formalisation. Typically, this growth is accompanied by the addition of more hierarchical levels, more standardised processes, and more formal procedures to manage the increased number of employees. As a result, employee perception of the ability of the organisation to allow for autonomous decision-making can be affected by the complexity and bureaucracy of the organisational structure, which in turn affects employee overall perception of the organisation. This has direct impact on bot OP and employee WB.	-Performance of diversified organisation decline with time (Schommer et al., 2019). -The bigger the organisations are, the more centralized and formalized structures they have. Hence, it is likely that larger organisations tend to provide less work autonomy. (Koster, 2021). -Lower employee perception levels can be explained based on the way organisations structure their growth (Garmendia, Elorza, & Uribetxebarria, 2021). -Enriched jobs are positively related to employee WB (Wood et al., 2012). -Employee WB is usually lower in big companies (Elorza et al., 2022; Koster, 2021). -With rapidly deteriorating employee perception of the organisation, a lower extra-role employee behaviour is expected, which in turn reduces OP (Tichy & Cardwell, 2004; Tichy & Cohen, 2007).

Appendix C: Model Assessment Results

The results of the model evaluation are presented in Table 12, as reported by Martinez-Moyano (2012). By using this tool, we gained greater transparency and evaluation of our Vensim model. This tool has helped us to identify potential warnings and omissions, which we reviewed carefully. While we have deemed these concerns acceptable due to the purpose of our model, we would like to emphasis that our equations are available for consultation not only to those with access to the Vensim software, but to anyone interested.

Table 12: Model assessment results of HRM-WB-OP model.

Model Information	Number
Total Number of Variables	140
Total Number of State Variables	35 (25%)
Total Number of Stocks	6 (4.3%)
Total Number of Exogenous Variables	86 (61.4%)
Total Number of Endogenous Variables	54 (38.6%)
Total Number of Feedback Loops	24
Total Number of Causal Links (positive polarity | negative polarity | function-based polarity)	273 (132|42|99)
Total Number of Rate-to-rate Links	36
Number of Units used in The Model (Basic/Combined)	5/3
Total Number Of Equations Using Macros	0 (0%)
Variables with Source Information	0 (0%)
Dimensionless Unit Variables	45 (32.1%)
Variables without Predefined Min or Max Values	140 (100%)
Function Sensitivity Parameters	0 (0%)
Data Lookup Tables	0 (0%)
Time Unit	Month
Initial Time	0
Final Time	120
Reported Time Interval	TIME STEP
Time Step	0.25
Model Is Fully Formulated	Yes
Modeler-Defined Groups	No

Warnings	Number
Number of Undocumented Variables	0 (0%)
Equations with Embedded Data	0 (0%)
Equations With Unit Errors or Warnings	0 (0%)
Variables Not in Any View	0 (0%)
Nonmonotonic Lookup Functions	0 (0%)
Cascading (Chained) Lookup Functions	0 (0%)
Non-Zero End Sloped Lookup Functions	5 (3.6%)
Equations with "IF THEN ELSE" Functions	0 (0%)
Equations with "MIN" or "MAX" Functions	14 (10%)
Equations with "STEP", "PULSE", or Related Functions	0 (0%)

Potential Omissions	Number
Unused Variables	1 (0.7%)
Supplementary Variables	0 (0%)
Supplementary Variables Being Used	0 (0%)
Complex Variable Formulations	35 (25%)
Complex Stock	3 (2.1%)

Appendix D: Equations Establishing the Relationships between the Variables.

General note: The HRM philosophy “control”, “commitment”, and “mix”, and macroeconomic context “crisis”, and “no-crisis” are variables that determine different scenarios. The HRM philosophies are combined with the macroeconomic context. Each of them has an assigned parameter, and the combination of these variables determines the desired levels of OP and employee WB. This information has been derived from the GMB sessions. From these sessions, we found, for example, that the desired OP in stable macroeconomic contexts is higher than when the organisation is facing a crisis. Furthermore, we found that the level of desired employee WB is highest when the management approach is commitment, followed by the mixed approach, and finally, the control approach (Table 3). All these parameters and their impacts have been validated (see section 4.3 Model validation).

Although the HR practices in Crisis-Commitment and Crisis-Mix scenarios are identical Table 2, the manner in which they are implemented differ. The differentiation lies in the implementation process of HR practices (proactive or reactive). This is precisely why we have selected these two scenarios as the basis for analysing the impact of the implementation process of HIWS on OP and employee WB.

1. **"actions to improve well-being" implementation effect loss"** = DELAY1 ("actions to improve well-being", delay action effect loss) * normal effect loss

   Unit: 1/Month
   Description of the equation: This variable reflects the loss of effect of the implementation of HR practices labelled as "actions to improve well-being". Since the effect of HR practices are likely to be weaker over time (Meijerink, Beijer, & Bos-nehles, 2021), if the practice is not implemented and updated according to the contextual needs, it loses its effect over time. Thanks to this effect loss variable, the WB stock is progressively drained after certain periods of time. The DELAY1 VENSIM function returns an exponential delay of the input, by the time specified with the variable “delay action effect loss”.

2. **"reduce costs by dismissing" effect on perception** = MAX (0,Employee perception) * DELAY1(reduce costs by dismissing, "delay effect \"reduce costs by dismissing\" on perception")/normal time to perceive

   Unit: degree/Month
   Description of the equation: This variable represents the negative effect generated by managing periods of recession through dismissals on the perception of employees regarding the organisational context.

3. **“actions for organisational growth, gaining volume"** = DELAY1(LOOKUP EXTRAPOLATE(lookup GAP OP on actions, ZIDZ(GAP OP, desired OP)),delay on decision making on crisis)

Unit: Dmnl

Description of the equation: The greater the difference between the desired level of OP and actual level of OP, the higher the intensity with which this HR practice will be implemented. In other words, the bigger the GAP OP, the greater the implementation intensity. This relationship is defined by the variable "lookup GAP OP on actions". To ensure that extreme condition test does not encounter issues when this HR practice takes a value of 0 (indicating non-implementation), the ZIDZ command is employed.

4. **"actions to improve well-being"** = "macroeconomic context: No-Crisis"*("HRM philosophy: Commitment" + "HRM philosophy: Mix" +"HRM philosophy: Control")*DELAY1(LOOKUP EXTRAPOLATE(lookup GAP WB on actions, ZIDZ(GAP WB, desired WB)),delay decision making)

   Unit: Dmnl

   Description of the equation: Based on the information gathered form the 41 conducted GMB sessions, it is determined that this particular HR practice will only be implemented when the macroeconomic context of the organisation is stable (see Table 14). When employee WB exceeds the desired WB, then WB gap become negative. Therefore, we incorporated the LOOKUP EXTRAPOLATE function to ensure that this HR practice assumes a value of 0 when the real value surpasses the desired value.

5. **actions' effect loss on OP** = (market power loss + intensification effect loss)*MAX(0,"Organisational Performance (OP)")*market loss rate

   Unit: €/Month

   Description of the equation: Since the effect of HR practices are likely to be weaker over time (Meijerink et al., 2021), if HR practices are not implemented and updated according to the contextual needs, they loses their effect over time. This variable also reflects the effect that losing power in the market generates on OP. Thanks to this effect loss variable, the OP stock is progressively drained after certain periods of time.

6. **change limit lookup** ([(-1,-1)-(1,1)], (-1,-1), (-0.9999,-1), (-0.99,-0.99), (0.99,0.99), (0.9999,1),(1,1))

   Unit: Dmnl

   Description of the equation: This variable is defined such that the maximum power of change that increasing or decreasing the size of the organisation has on the system is 100% of its value (positive +1 or negative -1).

7. **Decrease** = MAX(0,Size)*reduce costs by dismissing*size normal change

   Unit: people/Month

Description of the equation: This variable represents the reduction in the size of the organisation.

8. **decrease in structural costs** = MAX(0,(ZIDZ((limit OP-"Organisational Performance (OP)"),limit OP))) * (effect of decrease in size on the structural costs + "effect of \"efficiency management, reducing costs without dismissals\" on cost reduction") * (normal OP/normal time OP change)

   Unit: €/Month
   Description of the equation: ZIDZ is added in the equation to ensure that in the tests of extreme conditions, when the HR practices get the value 0 (indicating their deactivation or non-implementation), the model does not encounter errors.

9. **"delay \"actions to improve well-being\" on WB"** = 3

   Unit: Month
   Description of the equation: This variable represents the time lag from the implementation of the HR practice labelled as “actions to improve WB” until they have an effect on employee well-being.

10. **delay action effect loss** = 36

    Unit: Month
    Description of the equation: With this variable, the model assumes that after 3 years (36 months) of implementing any of the HR practices included in the current study, if they are not continuously implemented (worked with), the effect of these practices gradually diminishes over time. Incorporating this variable allows the model to capture the temporal decay of the impact associated with the HR practices after certain period of discontinuation.

11. **delay decision making** = 3

    Unit: Month
    Description of the equation: This variable establishes the duration between the identification of OP or employee WB gap and the subsequent initiation of actions by the management. It quantifies the temporal lag in the decision-making process, allowing for a more accurate representation of the real-world dynamics within the model.

12. **"delay effect \"efficiency management, reducing costs without dismissals\""** = 3

    Unit: Month
    Description of the equation: Some effects of HR practices implementation on the system are not immediate. There is a time lag between HR practice implementation and its effects on the system. This variable shows the delay in the effect of “efficiency management, reducing costs

without dismissals" implementation on cost reduction and on the growth of the structuring level of the organisation.

13. **"delay effect \"reduce costs by dismissing\" on perception"** = 12

    Unit: Month
    Description of the equation: Some effects of HR practices implementation on the system are not immediate. There is a time lag between HR practice implementation and its effects on the system. This variable shows the delay in the effect of "reduce costs by dismissing" implementation on employee perception of the organisational context.

14. **delay HIWS implementation effect on structure and job design** = 3

    Unit: Month
    Description of the equation: The effect of some HR practices on the system is not immediate. There is a time lag between HR practice implementation and its effects on the system. This variable shows the delay in the effect of the implementation of HIWS on the level of structuring of the organisation.

15. **delay implementation on perception**= 6

    Unit: Month
    Description of the equation: This variable represents the time lag between the implementation of HIWS and their impact on the perception of employees.

16. **delay intensification effect** = 1

    Units: Month
    Description of the equation: Some effects of HR practices implementation on the system are not immediate. There is a time lag between HR practice implementation and its effects on the system. This variable shows the delay in the effect of "efficiency management, reducing costs without dismissals" implementation on OP.

17. **delay lack of decision making** = 36

    Unit: Month
    Description of the equation: The model incorporates a time frame of 36 months (3 years) to capture the noticeable impacts resulting from the absence of practice implementation.

18. **delay of the effect of change on structural costs** = 1

    Unit: Month

Description of the equation: This variable reflects the lagged effect of organisational growth or downsizing on structural costs.

19. **delay of the effect of repositioning the strategy** = 60

    Unit: Month
    Description of the equation: This variable reflects the effect of repositioning the strategy on OP (60 months = 5 years).

20. **delay of the growth effect on structuring** = 3

    Unit: Month
    Description of the equation: This variable represents that the effect of organisational growth on the level of structuring is not immediate. Instead, there is a delay of several months before that growth translates into a traditional form of work organisation. This variable signifies the temporal lag between organisational growth and the subsequent manifestation of a conventional work structure. It highlights that there is a time gap where the effects of growth gradually influence and shape the traditional organisational framework.

21. **delay of the size change on the market power** = 6

    Unit: Month
    Description of the equation: This variable quantifies the temporal gap between organisational growth and the subsequent manifestation of increased market power. It highlights that there is a delay between the expansion of the organisation and the realisation of significant shifts in its position and influence within the market.

22. **delay on decision making on crisis** = delay decision making + delay on decision making on crisis coefficient * "macroeconomic context: Crisis"

    Unit: Month
    Description of the equation: This variable allows to reflect that in a macroeconomic crisis context, when a discrepancy between desired OP and actual OP is detects, the implementation of short-term result oriented practices are prioritised over long-term. Once short-term concerns are solved, the focus shifts towards long-term considerations. Therefore, this variable serves as a mechanism to capture the decision-making process during a macroeconomic crisis, where immediate action is taken to address short-term performance gaps.

23. **delay OP information** = 6

    Unit: Month

Description of the equation: There is a temporal delay in the processing and validation of OP data, during which time elapses between the occurrence of changes in OP and the assessment of these results in relation to the desired level of OP.

24. **delay perception effect on WB** = 6

    Unit: Month
    Description of the equation: This variable quantifies the temporal lag between shifts in employee perception and the resulting effects on employee WB, capturing the delayed relationship between these two variables.

25. **delay perception HIWS on OP** = 6

    Unit: Month
    Description of the equation: This variable quantifies the temporal lag between employee perception and its effect on OP. To examine the effects of perceptual changes in HIWS on OP, a temporal delay is required. The manifestation of these effects are not immediate, indicating that a significant gap exists between the implementation of HIWS and the subsequent effects on OP.

26. **delay structuring on perception** = 3

    Unit: Month
    Description of the equation: The perception level of employee does not exhibit immediate changes upon alterations in the level of structuring. Rather, perception undergoes a gradual transformation process. It necessitates the implementation of concrete and consistent actions over several months to induce perceptual changes among employees.

27. **delay WB information** = 6

    Unit: Month
    Description of the equation: There is a temporal delay in the processing and validation of employee WB data, during which time elapses between the occurrence of changes in employee WB and the assessment of these results in relation to the desired level of WB.

28. **desired OP** = "macroeconomic context: Crisis" * ("HRM philosophy: Commitment" + "HRM philosophy: Mix" + "HRM philosophy: Control") * desired OP crisis
    + "macroeconomic context: No-Crisis" * ("HRM philosophy: Commitment" + "HRM philosophy: Mix" + "HRM philosophy: Control") * desired OP NoCrisis

    Unit: €
    Description of the equation: The desired level of OP is contingent upon the macroeconomic environment prevailing in the market in which the organisation operates. Based on the findings

derived from the analysis of the 41 GMB session, it has been determined that the desired level of OP is subject to variations depending on the stability or crisis conditions of the context (see Table 3). The extant magnitude of this difference remains uncertain, but it is crucial to establish an estimate grounded in logical reasoning. Consequently, it is assumed that the desired OP under stable conditions is assigned a maximum value, i.e. 1. Whereas during a crisis, the desired level is slightly reduced and assigned a value of 0.7 on a scale ranging from 0 to 1.

29. **desired OP crisis** = 0.7

    Unit: €
    Description of the equation: This variable takes the corresponding coefficient for the level of "desired OP" when the macroeconomic context in which the organisation operates is in crisis. The desired level of OP is contingent upon the macroeconomic environment prevailing in the market in which the organisation operates. Based on the findings derived from the analysis of the 41 GMB session, it has been determined that the desired level of OP is subject to variations depending on the stability or crisis conditions of the context (see Table 3). The extant magnitude of this difference remains uncertain, but it is crucial to establish an estimate grounded in logical reasoning. Consequently, it is assumed that the desired OP under stable conditions is assigned a maximum value, i.e. 1. Whereas during a crisis, the desired level is slightly reduced and assigned a value of 0.7 on a scale ranging from 0 to 1.

30. **desired OP NoCrisis** = 1

    Unit: €
    Description of the equation: This variable takes the corresponding coefficient for the level of "desired OP" when the macroeconomic context in which the organisation operates is stable. The desired level of OP is contingent upon the macroeconomic environment prevailing in the market in which the organisation operates. Based on the findings derived from the analysis of the 41 GMB session, it has been determined that the desired level of OP is subject to variations depending on the stability or crisis conditions of the context (see Table 3). The extant magnitude of this difference remains uncertain, but it is crucial to establish an estimate grounded in logical reasoning. Consequently, it is assumed that the desired OP under stable conditions is assigned a maximum value, i.e. 1. Whereas during a crisis, the desired level is slightly reduced and assigned a value of 0.7 on a scale ranging from 0 to 1.

31. **desired WB** = ("macroeconomic context: Crisis" * "HRM philosophy: Commitment") * "desired WB Crisis-Commitment" + ("macroeconomic context: Crisis" * "HRM philosophy: Mix") * "desired WB Crisis-Mix" + ("macroeconomic context: Crisis" * "HRM philosophy: Control") * "desired WB Crisis-Control" + ("macroeconomic context: No-Crisis" * "HRM philosophy: Commitment") * "desired WB NoCrisis-Commitment" + ("macroeconomic context: No-Crisis" * "HRM philosophy: Mix") * "desired WB NoCrisis-Mix" + ("macroeconomic context: No-Crisis" * "HRM philosophy: Control") * "desired WB NoCrisis-Control"

Unit: degree
Description of the equation: This variable has been designed to adopt a value corresponding to the macroeconomic context and managerial philosophy. The desired level of employee WB is contingent upon the prevailing macroeconomic environment in the market the organisation operates, and the underlying philosophy of its management practices. Analysis of the 41 GMB sessions has revealed that the desired WB level exhibits variations based on the stability or crisis conditions of the context, as well as the HRM philosophy embraced by the managerial team (see **¡Error! No se encuentra el origen de la referencia.**). Although the precise extent to these discrepancies remains uncertain, it is of utmost importance to establish a logical estimation. For this purpose, a scale ranging from 0 to 1 has been employed, and comparative assessments have been made across different scenarios.

32. **"desired WB Crisis-Commitment"** = 0.8

    Unit: degree
    Description of the equation: This variable takes the corresponding coefficient for the level of "desired WB" when the macroeconomic context in which the organisation operates is in crisis and the HRM philosophy of the management team is commitment (see Table 3).

33. **"desired WB Crisis-Control"** = 0.2

    Unit: degree
    Description of the equation: This variable takes the corresponding coefficient for the level of "desired WB" when the macroeconomic context in which the organisation operates is in crisis and the HRM philosophy of the management team is control (see Table 3).

34. **"desired WB Crisis-Mix"** = 0.4

    Unit: degree
    Description of the equation: This variable takes the corresponding coefficient for the level of "desired WB" when the macroeconomic context in which the organisation operates is in crisis and the HRM philosophy of the management team is mix (see Table 3).

35. **"effect of \"efficiency management, reducing costs without dismissals\" on the growth of the traditional job design"** = DELAY1(LOOKUP EXTRAPOLATE(lookup intensification effect on traditional job design, Employee perception/perception effect normal) * "efficiency management, reducing costs without dismissals", "delay effect \"efficiency management, reducing costs without dismissals\"")

    Unit: Dmnl
    Description of the equation: Perception HIWS" is divided by "perception effect normal" to enter the lookup with the unit "Dmnl".

36. **effect of HIWS implementation on perception** = DELAY1(HIWS implementation, delay implementation on perception) * real implementation and fulfilment of expectations

    Unit: Dmnl
    Description of the equation: This variable represents the effect that the implementation of HIWS has on the level of employees' perception of the organisational context.

37. **effect of lack of decision making on OP** = MAX(0,"Organisational Performance (OP)")*DELAY1(Effect of lack of decision making/normal effect of lack of decision making, delay lack of decision making)/normal time OP change

    Unit: €/Month
    Description of the equation: This variable represents the effect of the lack of decision-making on the OP.

38. **effect of perception HIWS on OP** = DELAY1(Employee perception * normal effect of perception on OP, delay perception HIWS on OP)

    Unit: €
    Description of the equation: The impact of employee perception on OP des not manifest immediately. This particular variable indicates the value of perceived HIWS within a time lag of six periods. The duration of the lag is defined by the variable “delay perception HIWS on OP”.

39. **"efficiency management, reducing costs without dismissals"** = ("macroeconomic context: Crisis" * ("HRM philosophy: Commitment" + "HRM philosophy: Mix" + "HRM philosophy: Control") + "macroeconomic context: No-Crisis" * ("HRM philosophy: Mix" + "HRM philosophy: Control")) * DELAY1(LOOKUP EXTRAPOLATE(lookup GAP OP on actions, ZIDZ(GAP OP, desired OP)),delay decision making)

    Unit: Dmnl
    Description of the equation: The greater the difference between the desired level of OP and actual level of OP, the higher the intensity with which this HR practice will be implemented. In other words, the bigger the GAP OP, the greater the implementation intensity. This relationship is defined by the variable "lookup GAP OP on actions". To ensure that extreme condition test does not encounter issues when this HR practice takes a value of 0 (indicating non-implementation), the ZIDZ command is employed.

40. **delay on decision making on crisis coefficient** = 12

    Unit: Month

Description of the equation: This variable represents the defining coefficient that in a context of macroeconomic crisis, when a discrepancy between desired OP and actual OP is detects, the implementation of short-term result oriented practices are prioritised over long-term.

41. **"desired WB NoCrisis-Commitment"** = 1

    Unit: degree
    Description of the equation: This variable takes the corresponding coefficient for the level of "desired WB" when the macroeconomic context in which the organisation operates is stable and the HRM philosophy of the management team is commitment (see Table 3).

42. **"desired WB NoCrisis-Control"** = 0.3

    Unit: degree
    Description of the equation: This variable takes the corresponding coefficient for the level of "desired WB" when the macroeconomic context in which the organisation operates is stable and the HRM philosophy of the management team is control (see Table 3).

43. **"desired WB NoCrisis-Mix"** = 0.6

    Unit: degree
    Description of the equation: This variable takes the corresponding coefficient for the level of "desired WB" when the macroeconomic context in which the organisation operates is stable and the HRM philosophy of the management team is mix (see Table 3).

44. **"effect of \"actions for organisational growth, gaining volume\" on size"** = LOOKUP EXTRAPOLATE(lookup size discrepancy, size discrepancy * "actions for organisational growth, gaining volume")

    Unit: 1/Month
    Description of the equation: The unit is [1/Month] because it represents the effect that the HR practice labelled as "actions for organisational growth, gaining volume" has on the size of the organisation each month, depending on the discrepancy between the current size and the normal size.

45. **"effect \"actions to improve well-being\" on WB"** = DELAY1("actions to improve well-being", "delay \"actions to improve well-being\" on WB")*normal WB improvement

    Unit: 1/Month
    Description of the equation: This variable represents the impact that the implementation of the HR practice labelled as "actions to improve well-being" has on employee WB.

46. **"effect of \"efficiency management, reducing costs without dismissals\" on cost reduction lookup"** ([(0,0)-(1,1)], (0,0), (0.149847,0.0131579), (0.428135,0.0745614), (0.587156,0.127193), (0.737003,0.201754), (0.798165,0.258772), (0.831804,0.337719), (0.868502,0.47807), (0.929664,0.785088), (0.954128,0.929825), (0.969419,0.97807), (1,1))

    Unit: Dmnl
    Description of the equation: This variable reflects the influence of the HR practice labelled as “efficiency management, reducing costs without dismissals” on cost reduction. The magnitude of the implementation intensity of this practice determines the level of its impact on reducing structural costs. Particularly, a higher implementation intensity leads to a greater effect on reducing structural costs. Moreover, this effect is exponential, implying that a high-intensity implementation results in a significant reduction of structural cost, whereas a low-intensity implementation yields only marginal changes in structural costs.

47. **"effect of \"efficiency management, reducing costs without dismissals\" on cost reduction**" = DELAY1("effect of \"efficiency management, reducing costs without dismissals\" on cost reduction lookup" ("efficiency management, reducing costs without dismissals"),"delay effect \"efficiency management, reducing costs without dismissals\"")

    Unit: Dmnl
    Description of the equation: This variable represents the impact generated by the implementation of the HR practice labelled as "efficiency management, reducing costs without dismissals" has on cost reduction.

48. **"effect of \"efficiency management, reducing costs without dismissals\" on intensification lookup"** ((0,0)-(1,1)], (0,0), (0.155963,0.381579), (0.269113,0.671053), (0.376147,0.815789), (0.495413,0.885965), (0.681957,0.938596),(1,1))

    Unit: Dmnl
    Description of the equation: This variable reflects the influence of the HR practice labelled as “efficiency management, reducing costs without dismissals” on OP through task intensification. The magnitude of the implementation intensity of this practice determines the level of its impact on OP. Particularly, a higher implementation intensity leads to a greater effect on OP.

49. **"effect of \"efficiency management, reducing costs without dismissals\" on intensification"** = DELAY1("effect of \"efficiency management, reducing costs without dismissals\" on intensification lookup" ("efficiency management, reducing costs without dismissals"),delay intensification effect)*intensification change normal

    Unit: Dmnl

Description of the equation: This variable represents the impact generated by the implementation of the HR practice labelled as "efficiency management, reducing costs without dismissals" has on OP through task intensification.

50. **effect of decision making** = MAX(0,Effect of lack of decision making) * LOOKUP EXTRAPOLATE(lookup effect of making decisions, ("actions for organisational growth, gaining volume" + "efficiency management, reducing costs without dismissals" + HIWS implementation + reduce costs by dismissing))/normal decision making frequency

    Unit: €/Month
    Description of the equation: This variable represents the effect of decision-making on the system. By deciding to implement a practice, the negative effect of not making decisions in the system disappears.

51. **effect of decrease in size on the market power** = DELAY1(LOOKUP EXTRAPOLATE (lookup effect of change in size, decrease/normal decrease effect), delay of the size change on the market power)

    Unit: Dmnl
    Description of the equation: The variable "decrease" is divided with the variable "normal decrease effect" so that the variable entering the "lookup" goes with the unit "Dmnl".

52. **effect of decrease in size on the structural costs** = DELAY1(LOOKUP EXTRAPOLATE (lookup effect of change in size, decrease/normal decrease effect),delay of the effect of change on structural costs)

    Units: Dmnl
    Description of the equation: The variable "decrease" is divided with the variable "normal decrease effect" so that the variable entering the "lookup" goes with the unit "Dmnl".

53. **effect of increase in size on the growth of the traditional job design** = DELAY1 (LOOKUP EXTRAPOLATE (lookup effect of change in size, increase/normal increase effect),delay of the growth effect on structuring)

    Unit: Dmnl
    Description of the equation: The higher the intensity of growth, the higher the level of structuring of the organisation. This relationship is determined by the variable "lookup effect of change in size".

54. **effect of increase in size on the market power** = DELAY1(LOOKUP EXTRAPOLATE (lookup effect of change in size, increase/normal increase effect), delay of the size change on the market power)

Unit: Dmnl
Description of the equation: The higher the intensity of growth, the greater the change in the organisation's power over its market. This relationship is determined by the variable "lookup effect of change in size".

55. **effect of increase in size on the structural costs** = DELAY1 (LOOKUP EXTRAPOLATE (lookup effect of change in size, increase/normal increase effect), delay of the effect of change on structural costs)

    Unit: Dmnl
    Description of the equation: This variable represents the increase in structural costs due to a higher number of employees.

56. **Effect of lack of decision making** = INTEG (lack of decision making-effect of decision making, initial effect of lack of decision making)

    Unit: €
    Description of the equation: This stock variable represents the cumulative effect of inaction or the absence of decision-making. Each instance of a decision made depletes this stock. It is widely acknowledged in the literatures that the lack of decision-making adversely affects OP.

57. **effect of lack of decision making on WB** = MAX(0,Employee perception) * DELAY1(Effect of lack of decision making/normal effect of lack of decision making, delay lack of decision making)/normal time to perceive

    Unit: degree/Month
    Description of the equation: This outflow variable represents the adverse impact resulting from the absence of decision-making on employee perception of the organisation and consequently on their WB. It signifies that when employee witness extended period of inaction, they develop a perception that leaders are not fulfilling their roles, consequently leading to a deterioration in their perception of leadership images.

58. **effect of perception HIWS on WB** = DELAY1(Employee perception, delay perception effect on WB)

    Unit: degree
    Description of the equation: This variable represents the effect that employees' perception of the organisational context has on their well-being.

59. **effect of repositioning the strategy** = DELAY1("actions for organisational growth, gaining volume", delay of the effect of repositioning the strategy)

    Unit: Dmnl

Description of the equation: The implementation of the Hr practice referred to as “actions for organisational growth, gaining volume” encompasses two key component. Firstly, it involves the recruitment of new personnel, leading to immediate organisational expansion. Secondly, it entails making investment in both product and market diversification. However, the effects of these investments do not manifest instantaneously; rather, they require a significant time lag, often spanning several months or even years, before becoming evident in the results. This temporal delay is captured and represented by the variable “delay of the effect of repositioning the strategy”.

60. **effect of structuring changes in perception** = DELAY1 (LOOKUP EXTRAPOLATE(lookup structuring effect, "Structuring level, traditional job design"/normal structuring level),delay structuring on perception)

    Unit: degree
    Description of the equation: This variable represents the effect that the way work is organised in the company has on the level of employee perception.

61. **Employee perception** = INTEG ((effect of structuring changes in perception-Employee perception)/normal time to perceive + net change perception-"\"reduce costs by dismissing\" effect on perception" - HIWS implementation effect loss effect on perception-effect of lack of decision making on WB, "Structuring level, traditional job design")

    Unit: degree
    Description of the equation: The measurement unit for the perception level of employee has been defined as [degree], representing the magnitude of perception. To ensure proper unit consistency in the integral calculation, it is divided by the variable “normal time to perceive”. When aiming for the integrated result to be expressed in [degree] units, the equation being integrated must possess the unit [degree/Month] (INTEG(xxxx,dt)).

62. **expectation fulfilment ratio in a commitment or control context** = 0.85

    Unit: Dmnl
    Description of the equation: This variable represents the coefficient of expectations fulfilment. The precis value is undetermined in this particular case, however, as noted by Elorza, Artitzeta, and Ayestarán (2011), failing to meet expectations lead to worse outcomes. Consequently, through this variable, the model illustrates that in a context characterised by a mix HRM philosophy, the fulfilment of expectations is at 50%. While the exact percentage remains uncertain, it is evident that tin the mix context it lies between 0% and 100%. Furthermore, the model reflects that in the control and commitment scenarios, expectations fulfilment is higher and reaches 85%. On the one hand, in the control scenario, expectations are exceptionally low, so are easy to fulfil. While in the commitment scenario, expectations are high but also are met. Although the precis percentages are unknown, it is evident that the fulfilment of expectations is lower in the mix context compared to the control or commitment

contexts (Elorza et al., 2011). Therefore, this variable refers to the perceived actual implementation level by employees.

63. **expectation fulfilment ratio in a mixed context** = 0.5

    Unit: Dmnl
    Description of the equation: This variable represents the coefficient of expectations fulfilment. The precis value is undetermined in this particular case, however, as noted by Elorza et al. (2011), failing to meet expectations lead to worse outcomes. Consequently, through this variable, the model illustrates that in a context characterised by a mix HRM philosophy, the fulfilment of expectations is at 50%. While the exact percentage remains uncertain, it is evident that tin the mix context it lies between 0% and 100%. Furthermore, the model reflects that in the control and commitment scenarios, expectations fulfilment is higher and reaches 85%. On the one hand, in the control scenario, expectations are exceptionally low, so are easy to fulfil. While in the commitment scenario, expectations are high but also are met. Although the precis percentages are unknown, it is evident that the fulfilment of expectations is lower in the mix context compared to the control or commitment contexts (Elorza et al., 2011). Therefore, this variable refers to the perceived actual implementation level by employees.

64. **FINAL TIME** = 120

    Unit: Month
    Description of the equation: Represents the simulated periods, in this case 10 years (120 months).

65. **gap between implemented and perceived** = HRM implementation - (Employee perception/normal gap)

    Unit: Dmnl
    Description of the equation: This variable has been added for the analysis of the results. This variable represents the discrepancy between the level of implementation of HR practices and the perceived level of the organisational context of the employees.

66. **GAP OP** = desired OP-DELAY1("Organisational Performance (OP)",delay OP information)

    Unit: €
    Description of the equation: The equation includes the variable “delay OP information” due to the non-instantaneous nature of information processing. There is a temporal lag between the occurrence of changes in OP and the subsequent processing and comparison of those results with the desired level of OP.

67. **GAP WB** = desired WB-DELAY1("Well-being (WB)",delay WB information)

Unit: degree

Description of the equation: The equation includes the variable “delay WB information” due to the non-instantaneous nature of information processing. There is a temporal lag between the occurrence of changes in employee WB and the subsequent processing and comparison of those results with the desired level of WB.

68. **growth limit** = normal size*limit growth coefficient

Unit: people

Description of the equation: In this way, the model considers that the growth of the company cannot be infinite. Therefore, it assumes that in the 10 years of the simulation (120 months) the organisation will become at most 10 times bigger than it was in the beginning (normal size). This limit is defined by the variable "growth limit" but its value can be changed if considered necessary by changing the coefficient of the variable "limit growth coefficient".

69. **HIWS effect loss rate** = 0.2

Unit: Dmnl

Description of the equation: Since the effect of HR practices are likely to be weaker over time (Meijerink et al., 2021). This variable determines the proportion of the efficacy of actions implemented three years ago that diminishes over successive periods, as governed by the variable “delay action effect loss”. Although the precise percentage remains unspecified, it is estimated to be 20% (0.2). Furthermore, this variable conveys the notion that the complete impact of implemented actions does not vanish entirely but gradually deteriorates over time.

70. **HIWS implementation** = ("macroeconomic context: Crisis" + "macroeconomic context: No-Crisis") * ("HRM philosophy: Commitment" + "HRM philosophy: Mix") * DELAY1((LOOKUP EXTRAPOLATE(lookup GAP WB on actions, ZIDZ(GAP WB, desired WB)) *LOOKUP EXTRAPOLATE(lookup GAP OP on actions, ZIDZ(GAP OP, desired OP))), delay decision making)

Unit: Dmnl

Description of the equation: This HR practice will be implemented in the commitment and mixed scenarios (see Table 14). In order to be implemented, both GAP OP and GAP WB must exist simultaneously. The larger these gaps are, the higher the intensity of implementation of this practice will be. In other words, HIWS will be implemented when the organisation wants to simultaneously improve OP and WB outcomes. In the equation we have (lookup GAP WB on actions(...) * lookup GAP OP (...)) so that when one of the two gaps is 0, this practice is not implemented. Mathematically, when the actual value of OP or WB is greater than its desired value, the GAP variable takes a negative value. So I add a negative point in the lookup and then include an LOOKUP EXTRAPOLATE in the equation of the "HIWS implementation" variable so that when this happens, the lookup takes a value of 0 and the practice is not

implemented. This variable refers to the implementation level of the action declared by management (i.e. reported by managers).

71. **HIWS implementation effect loss** = DELAY1(effect of HIWS implementation on perception, delay action effect loss) * HIWS effect loss rate

    Unit: Dmnl
    Description of the equation: Since the effect of HR practices are likely to be weaker over time (Meijerink et al., 2021). This variable reflects the loss of effect of the implementation of HR practices labelled as "HIWS implementation". If the practice is not implemented and updated according to the contextual needs, it loses its effect over time. Thanks to this effect loss variable, the stock of “employee perception” is progressively drained after certain periods of time.

72. **HIWS implementation effect loss effect on perception** = HIWS implementation effect loss * MAX(0,Employee perception)/normal time to perceive

    Unit: degree/Month
    Description of the equation: This variable represents the impact on employee perception of the loss of the effect of the implementation of HIWS.

73. **HIWS implementation effect loss effect on structuring** = ((limit structuring-"Structuring level, traditional job design")/limit structuring) * HIWS implementation effect loss * (normal structuring level/normal structuring time)

    Unit: degree/Month
    Description of the equation: This variable represents the impact of the loss of the effect of the implementation of HIWS on the way work is organised in the company.

74. **"horizontal structure, enriched job design"** = MAX(0,"Structuring level, traditional job design") * DELAY1(HIWS implementation, delay HIWS implementation effect on structure and job design) * real implementation and fulfilment of expectations/normal structuring time

    Unit: degree/Month
    Description of the equation: The implementation of HIWS leads to a reorganisation of the structure of the organisation, promoting a more horizontal and less hierarchical arrangement. This restructuring is accompanied by the implementation of enriched job designs, which enhance the level of autonomy, and involvement of employees.

75. **HRM implementation** = "actions for organisational growth, gaining volume" + "actions to improve well-being" + "efficiency management, reducing costs without dismissals" + HIWS implementation + reduce costs by dismissing

Unit: Dmnl
Description of the equation: This variable has been added for the analysis of the results. It represents the level of implementation of the five HR practices analysed in the current study.

76. **HRM philosophy: Commitment"=** 0

    Unit: Dmnl
    Description of the equation: This variable is activated or deactivated by the sliders placed on the side of the model. The unit [Dmnl] represents the scenario to be activated (activated takes value 1, deactivated takes value 0).

77. **HRM philosophy: Control"=** 0

    Unit: Dmnl
    Description of the equation: This variable is activated or deactivated by the sliders placed on the side of the model. The unit [Dmnl] represents the scenario to be activated (activated takes value 1, deactivated takes value 0).

78. **HRM philosophy: Mix"=** 0

    Unit: Dmnl
    Description of the equation: This variable is activated or deactivated by the sliders placed on the side of the model. The unit [Dmnl] represents the scenario to be activated (activated takes value 1, deactivated takes value 0).

79. **increase** = ((growth limit-Size)/growth limit) * Size*"effect of \"actions for organisational growth, gaining volume\" on size" * "macroeconomic context: Crisis" + ((growth limit-Size)/growth limit) * Size * "actions for organisational growth, gaining volume" * size normal change * "macroeconomic context: No-Crisis"

    Unit: people/Month
    Description of the equation: The size of the organisation increases when implementing the HR practice labelled as "actions for organisational growth, gaining volume". And size is reduced only when implementing the HR practice labelled as "reduce costs by dismissing". The effect of the growth action is different depending on the macroeconomic context. That is why the equation has a sum differentiating what will happen if the organisation is in a crisis or stable market.

80. **increase in structural costs** = MAX(0,"Organisational Performance (OP)") * effect of increase in size on the structural costs/normal time OP change

    Unit: €/Month

Description of the equation: This variable represents the effect on OP of the growth in structural costs.

81. **increase of the organisational structure and traditional job design** = (((limit structuring - "Structuring level, traditional job design")/limit structuring) * MAX("Structuring level, traditional job design", effect of increase in size on the growth of the traditional job design * normal structuring level) * ("effect of \"efficiency management, reducing costs without dismissals\" on the growth of the traditional job design" + effect of increase in size on the growth of the traditional job design))/ normal structuring time

    Unit: degree/Month
    Description of the equation: With this equation, the stock "Structuring level, traditional job design" gradually approach the limit (the limit is set by the variable "normal structuring level"). It is the form of the equation *((limit-current value)/limit)* that allows to do this. In this way, the model determines that when HIWS are not implemented, for the same size of organisation the structuring level is higher. Because the model assumes that if HIWS are not implemented then the organisation is organised in a traditional way (hierarchical, departmental, etc.). The stock level "Structuring level, traditional job design" increases when one of these things happens: (i) the size of the organisation increases and HIWS is not implemented, (ii) the HR practice labelled as "efficiency management, reducing costs without dismissals" is implemented, and (iii) if HIWS is no longer implemented, which means that it moves to a traditional structure. With this part of the equation: *(...*MAX("Structuring level, traditional job design", effect of icrease in size on the growth of the traditional job design)*...)* the model gets that if at some point "structuring level" is 0 but there is "effect of increase in size on the growth of the traditional job design" then the stock is gradually filling up again. And dividing the whole equation by the variable "normal structuring time" allows to get the unit result for the inflow as [degree/Month].

82. **initial effect of lack of decision making** = 0

    Unit: €
    Description of the equation: Its value is 0 because at the beginning it does not affect the fact that no decision have been taken, as the simulation stats at that very moment.

83. **initial structuring** = 0.5

    Unit: degree
    Description of the equation: On a scale of 0 to 1, the initial value of structuring is defined as a medium level.

84. **INITIAL TIME** = 0

    Unit: Month

Description of the equation: The initial time for the simulation.

85. **intensification change normal** = 0.5

    Unit: Dmnl
    Description of the equation: This variable shows what percentage intensification can change the OP of the organisation in each period. It is defined as 50% of the total effect of the HR practice labelled as "efficiency management, reducing costs without dismissals".

86. **intensification effect loss** = DELAY1("effect of \"efficiency management, reducing costs without dismissals\" on intensification", delay action effect loss)

    Unit: Dmnl
    Description of the equation: If no action is taken, the actions lose their effect over time. Since the effect of HR practices are likely to be weaker over time (Meijerink et al., 2021). This variable reflects that the implementation of actions, if not followed up and monitored for changes in the context, and if the implementation of the actions is not adapted to the context, they lose their effect over time. To reflect this we have created the following variables: *"market power loss"*, which reflects the loss of effect of the implementation of HR practice labelled as "actions for organisational growth, gaining volume". *"intensification effect loss"* which reflects the loss of effect of the implementation of HR practices labelled as "efficiency management, reducing costs without dismissals". *"HIWS implementation effect loss"* which reflects the loss of effect of the implementation of HR practices labelled as "HIWS implementation". *"actions to improve well-being implementation effect loss"* which reflects the loss of effect of the implementation of HR practices labelled as "actions to improve well-being". Thanks to these effect loss variables, the stocks are progressively drained after a certain period of time and thus generate waves in the system.

87. **lack of decision making** = (("max. effect of lack of decision making" - Effect of lack of decision making)/"max. effect of lack of decision making") * LOOKUP EXTRAPOLATE (lookup effect of lack of decision making, ("actions for organisational growth, gaining volume" + "efficiency management, reducing costs without dismissals" + HIWS implementation + reduce costs by dismissing)) * normal effect of lack of decision making/normal decision making frequency

    Unit: €/Month
    Description of the equation: This variable represents the effect of not taking decisions on the system.

88. **limit growth coefficient** = 10

    Unit: Dmnl
    Description of the equation: This variable determines how many times the size of the organisation can be increased with respect to its initial size. In this way it is considered that

the organisation cannot grow to infinity and that in the 10 years represented by this simulation the organisation will grow a maximum of 10 times its initial size.

89. **limit OP** = desired OP

    Unit: €
    Description of the equation: This variable defines the growth limit of the OP.

90. **limit perception coefficient** = 1

    Unit: Dmnl
    Description of the equation: This variable shows how many times bigger the growth limit of the employee perception is with respect to the normal perception value which is defined by the variable "perception effect normal".

91. **limit structuring** = initial structuring * limit structuring coefficient

    Unit: degree
    Description of the equation: At certain point, the organisation reaches a state of maximum structural complexity. This variable represents the point where the organisation has reached its limit in terms of traditional structuring, an cannot add more hierarchical levels or more departments, etc.

92. **limit structuring coefficient** = 2

    Unit: Dmnl
    Description of the equation: Indicates that the maximum level of structuring that the organisation will be able to achieve will be double its initial value.

93. **lookup effect of change in size** ([(0,0)-(1,1)], (0,0), (0.01,0), (0.0397554,0.0263158), (0.0917431,0.192982), (0.217125,0.605263), (0.281346,0.754386), (0.379205,0.877193), (0.452599,0.921053), (0.58104,0.951754), (0.733945,0.97807), (0.99,1), (1,1))

    Unit: Dmnl
    Description of the equation: This variable determines the relationship between the change in the size of the organisation and its influence on the system.

94. **lookup effect of lack of decision making** ([(0,0)-(1,1)], (0,1), (0.0152905,0.798246), (0.0428135,0.587719), (0.0733945, 0.412281), (0.107034,0.210526), (0.146789,0.109649), (0.186544,0.0526316),(0.235474,0.0219298), (0.3,0), (1,0))

    Unit: Dmnl

Description of the equation: This lookup represents that when decisions are not made, the fact of not making decisions generates negative effect on the OP.

95. **lookup effect of making decisions** ([(0,0)-(1,1)], (0,0), (0.01529,0.2018), (0.04281,0.4123), (0.07339,0.5877), (0.107,0.7895), (0.1468,0.8904), (0.1865,0.94737), (0.2355,0.97807), (0.3,1), (1,1))

    Unit: Dmnl
    Description of the equation: This lookup is the inverse of the "lookup effect of lack of decision making". What it represents is that the more decisions that are made, the less negative effect it has on the results (in this case causing more water to be drawn from the stock as more decisions are made).

96. **lookup GAP OP on actions** ([(-0.1,0)-(1,1)],(-0.1,0), (0,0), (0.08257,0.0263158), (0.1865,0.0877193), (0.2508,0.162281), (0.3272,0.258772), (0.4343,0.535088), (0.4862,0.675439), (0.5321,0.79386), (0.581,0.868421), (0.6544,0.942982), (0.7615,0.97807), (0.9999,1), (1,1))

    Unit: Dmnl
    Description of the equation: Depending on the GAP between the desired and the actual level of OP, current variable defines the intensity with which HR practices labelled as "HIWS implementation", "efficiency management, reduce costs without layoffs", "actions for organisational growth, gain volume", and "reduce costs by laying off" are implemented.

97. **lookup GAP WB on actions** ([(-0.1,0)-(1,1)], (-0.1,0), (0,0), (0.058104,0.0394737), (0.111927,0.219298), (0.172477,0.394737), (0.259939,0.631579), (0.333945,0.785088), (0.407951,0.899123), (0.532416,0.95614), (0.703975,0.982456), (0.9999,1), (1,1))

    Unit: Dmnl
    Description of the equation: Depending on the GAP between the desired and the actual level of employee WB, current variable defines the intensity with which HR practices labelled as "HIWS implementation", and "actions to improve well-being" are implemented.

98. **lookup intensification effect on traditional job design** ([(0,0)-(1,1)], (0,1), (1e-05,1), (0.5,0.5), (0.99999,0), (1,0))

    Unit: Dmnl
    Description of the equation: This variable establishes that the lower the level of *"employee perception"*, the greater the impact that HR practices labelled as *"efficiency management, reducing costs without dismissals"* will have on the level of *"structuring level, traditional job design"*. Consequently, generating a more negative effect on employee perception.

99. **lookup size discrepancy** ([(-1,0)-(1,1)], (-1,0), (0,0), (1,1), (1.1,1))

Unit: 1/Month

Description of the equation: When the value of the stock *"size"* is higher than the value of the variable *"normal size"*, the variable *"size discrepancy"* takes negative values. At that moment HR practice labelled as *"actions for organisational growth, gaining volume"* will not make the organisation grow, at that moment if this practice is implemented, it will only have effect by repositioning the strategy. When the value of "size" is smaller than the value of *"normal size"* and the HR practice labelled as *"actions for organisational growth, gaining volume"* is implemented, it will have an effect on the system in two ways. On the one hand, by increasing the size of the organisation and on the other hand, by repositioning the strategy. That is, if *"size discrepancy"* is negative, then HR practice labelled as *"actions for organisational growth, gaining volume"* only has an effect from the repositioning of the strategy. The unit of this lookup is [1/Month] because the unit of the variable it feeds is precisely that.

100. **lookup structuring effect** ([(0,0)-(1,1)], (0,1), (1,0))

Unit: degree

Description of the equation: This lookup is created because the effect of the level of structuring on the perceived level is inverse. That is, when the level of structuring increases, the level of perception decreases, and when the level of structuring decreases, the level of perception increases.

101. **"macroeconomic context: Crisis"** = 0

Unit: Dmnl

Description of the equation: This variable is activated or deactivated by the sliders placed on the side of the model. The unit [Dmnl] represents the scenario that is activated (activated takes value 1, deactivated takes value 0).

102. **"macroeconomic context: No-Crisis"** = 0

Unit: Dmnl

Description of the equation: This variable is activated or deactivated by the sliders placed on the side of the model. The unit [Dmnl] represents the scenario that is activated (activated takes value 1, deactivated takes value 0).

103. **market loss rate** = 0.1

Unit: 1/Month

Description of the equation: The instantaneous loss of market power is not characteristic in the dynamics of organisational markets. Rather it occurs gradually over time as new competitors enter the market, thereby elevating the risk of market share erosion, unless

counteractive measures are implemented. Hence, this variable represents the impact of market loss in each period on OP, with a defined value of 10%.

104. **market power loss** = DELAY1 (power change effect on the system, delay action effect loss) + effect of decrease in size on the market power

Unit: Dmnl
Description of the equation: If no action is taken, the actions lose their effect over time. This variable reflects that the implementation of actions, if not followed up and monitored for changes in the context, and if the implementation of the actions is not adapted to the context, they lose their effect over time. To reflect this we have created the following variables: *"market power loss"*, which reflects the loss of effect of the implementation of HR practice labelled as "actions for organisational growth, gaining volume". *"intensification effect loss"* which reflects the loss of effect of the implementation of HR practices labelled as "efficiency management, reducing costs without dismissals". *"HIWS implementation effect loss"* which reflects the loss of effect of the implementation of HR practices labelled as "HIWS implementation". *"actions to improve well-being implementation effect loss"* which reflects the loss of effect of the implementation of HR practices labelled as "actions to improve well-being". Thanks to these effect loss variables, the stocks are progressively drained after a certain period of time and thus generate waves in the system.

105. **"max. effect of lack of decision making"** = 1

Unit: €
Description of the equation: This model is defined to move in the range 0-1. Therefore the growth of the stock is limited to 1.

106. **net change perception** = (("perception max." - Employee perception)/"perception max.") * MAX(0,Employee perception) * (effect of HIWS implementation on perception)/normal time to perceive

Unit: degree/Month
Description of the equation: This variable represents the positive effect of the implementation of HIWS on employees' perception of the organisational context.

107. **normal action effect on OP** = 1

Unit: €/Month
Description of the equation: Auxiliary variable created to match the units of the equations.

108. **normal decision making frequency** = 1

Unit: Month

Description of the equation: This variable represents the frequency with which decisions are usually taken. It has been determined to take place every month (every simulated period).

109. **normal decrease effect** = 1

Unit: people/Month
Description of the equation: Auxiliary variable created to match the units of the equations.

110. **normal effect loss** = 0.1

Unit: 1/Month
Description of the equation: Since the effect of HR practices are likely to be weaker over time (Meijerink et al., 2021). This variable determines that each period 10% of the effect of HR practices labelled as "actions to improve well-being" is lost. The exact value of this variable is not known, but it is important to estimate and quantify a variable that determines the rate of loss of effect.

111. **normal effect of lack of decision making** = 1

Unit: €
Description of the equation: Auxiliary variable created to match the units of the equations.

112. **normal effect of perception on OP** = 1

Unit: €/degree
Description of the equation: Auxiliary variable created to match the units of the equations. This variable shows the change in OP generated by each unit of change in the degree of employee perception.

113. **normal gap** = 1

Unit: degree
Description of the equation: Auxiliary variable created to match the units of the equations.

114. **normal increase effect** = 1

Unit: people/Month
Description of the equation: Auxiliary variable created to match the units of the equations.

115. **normal OP** = 1

Unit: €
Description of the equation: Auxiliary variable created to match the units of the equations.

116. **normal size** = 0.5

Unit: people
Description of the equation: In a model that ranges on a scale from 0 to 1, the normal size has been determined as the average size, hence the value 0.5.

117. **normal structuring level** = 1

Unit: degree
Description of the equation: Auxiliary variable created to match the units of the equations.

118. **normal structuring time** = 1

Unit: Month
Description of the equation: Auxiliary variable created to match the units of the equations.

119. **normal time OP change** = 1

Unit: Month
Description of the equation: Auxiliary variable created to match the units of the equations.

120. **normal time to perceive** = 1

Unit: Month
Description of the equation: Auxiliary variable created to match the units of the equations.

121. **normal time WB change** = 1

Unit: Month
Description of the equation: Auxiliary variable created to match the units of the equations.

122. **normal WB** = 1

Unit: degree
Description of the equation: Auxiliary variable created to match the units of the equations.

123. **normal WB improvement** = 1

Unit: 1/Month
Description of the equation: Auxiliary variable created to match the units of the equations.

124. **"Organisational Performance (OP)"** = INTEG ((effect of perception HIWS on OP - "Organisational Performance (OP)")/normal time OP change + positive effect on OP from action implementation - actions' effect loss on OP + decrease in structural costs - increase in structural costs - effect of lack of decision making on OP, effect of perception HIWS on OP)

Unit: €

Description of the equation: This equation shows that the higher the intensity of implementation of HR practices labelled as "efficiency management, reducing costs without dismissals", the lower the structural costs on the one hand, and the higher the level of intensification on the other hand. And consequently, the higher the OP. But at the same time, it also reflects the unintended secondary effect that is generated by implementing this practice and worsening the perceived level of employees. In other words, this equation also reflects that the higher the level of employee perception, the higher the OP. On the other hand, the negative effect of the increase in structural costs is also reflected. For more details on how this stock changes (see section 4.1 The SD model).

125. **perception effect normal** = 1

Unit: degree

Description of the equation: Auxiliary variable created to match the units of the equations.

126. **"perception max."** = perception effect normal*limit perception coefficient

Unit: degree

Description of the equation: It refers to the maximum value that the perception can take. Its exact value is not known, but it is important to estimate it for the functioning of the model. As it is a model that works on a scale from 0 to 1, it has been defined it in this way.

127. **positive effect on OP from action implementation** = MAX(0,(ZIDZ((limit OP - "Organisational Performance (OP)"),limit OP))) * ("effect of \"efficiency management, reducing costs without dismissals\" on intensification" + power change effect on the system) * normal action effect on OP

Unit: €/Month

Description of the equation: The ZIDZ function has been introduced so that the extreme conditions test does not give problems when the value of "desired OP" is 0.

128. **power change effect on the system** = LOOKUP EXTRAPOLATE(change limit lookup, (effect of increase in size on the market power + effect of repositioning the strategy)) * power change normal

Unit: Dmnl

Description of the equation: This variable represents the lagged effect that the change in size has on the organisation's power in the market. The reduction in size also implies a reduction in the organisation's power in its market (bargaining power over suppliers, market share, etc.) and therefore a reduction in OP.

129. **power change normal** = 1

Unit: Dmnl
Description of the equation: Auxiliary variable created to match the units of the equations.

130. **real implementation and fulfilment of expectations** = (expectation fulfilment ratio in a mixed context * "HRM philosophy: Mix") + expectation fulfilment ratio in a commitment or control context * ("HRM philosophy: Commitment" + "HRM philosophy: Control")

Unit: Dmnl
Description of the equation: This variable represents the importance of meeting expectations. The precis value is undetermined in this particular case, however, as noted by Elorza et al. (2011), failing to meet expectations lead to worse outcomes. Consequently, through this variable, the model illustrates that in a context characterised by a mix HRM philosophy, the fulfilment of expectations is at 50%. While the exact percentage remains uncertain, it is evident that tin the mix context it lies between 0% and 100%. Furthermore, the model reflects that in the control and commitment scenarios, expectations fulfilment is higher and reaches 85%. On the one hand, in the control scenario, expectations are exceptionally low, so are easy to fulfil. While in the commitment scenario, expectations are high but also are met. Although the precis percentages are unknown, it is evident that the fulfilment of expectations is lower in the mix context compared to the control or commitment contexts (Elorza et al., 2011). Therefore, this variable refers to the perceived actual implementation level by employees.

131. **reduce costs by dismissing** = "macroeconomic context: Crisis" * ("HRM philosophy: Commitment" + "HRM philosophy: Mix" + "HRM philosophy: Control") * DELAY1(LOOKUP EXTRAPOLATE(lookup GAP OP on actions, ZIDZ(GAP OP, desired OP)),delay decision making)

Unit: Dmnl
Description of the equation: This HR practice will be implemented in crisis scenarios (see Table 14). In order to be implemented, GAP OP must exist. The larger this gaps is, the higher the intensity of implementation of this practice will be. Mathematically, when the actual value of OP is greater than its desired value, the GAP variable takes a negative value. So I add a negative point in the lookup and then include an LOOKUP EXTRAPOLATE in the equation of the "reduce costs by dismissing" variable so that when this happens, the lookup takes a value of 0 and the practice is not implemented. This variable refers to the implementation level of the action declared by management (i.e. reported by managers).

132. **SAVEPER** = TIME STEP

Unit: Month

Description of the equation: The frequency with which output is stored.

133. **Size** = INTEG (increase - decrease, normal size)

Unit: people

Description of the equation: Stock that represents the dimension of the organisation in terms of number of employees.

134. **size discrepancy** = (normal size-Size)/normal size

Unit: Dmnl

Description of the equation: When the value of the stock “size” is higher than the value of the variable "normal size", the variable "size discrepancy" takes negative values. At that moment HR practice labelled as "actions for organisational growth, gaining volume" will not make the organisation grow, at that moment if this practice is implemented, it will only have effect by repositioning the strategy. When the value of “size” is smaller than the value of "normal size" and the HR practice labelled as "actions for organisational growth, gaining volume" is implemented, it will have an effect on the system in two ways. On the one hand, by increasing the size of the organisation and on the other hand, by repositioning the strategy. That is, if "size discrepancy" is negative, then HR practice labelled as "actions for organisational growth, gaining volume" only has an effect from the repositioning of the strategy. While if "size discrepancy" is positive, then HR practice labelled as "actions for organisational growth, gaining volume" will affect from increasing the organisational size and repositioning the strategy.

135. **size normal change** = 0.2

Unit: 1/Month

Description of the equation: This variable indicates the normal reduction or increase (i.e. change) in size that occurs per period when applying HR practices labelled as "reduce costs by dismissing" (for downsizing), and HR practices labelled as "actions for organisational growth, gaining volume" (for upsizing). If the value of this variable is 0.2, this means that each period the organisation can downsize or grow by a maximum of 20%. This depends on the intensity with which HR practices labelled as "reduce costs by dismissing", and "actions for organisational growth, gaining volume" are applied. Its exact value is unknown, but it is important for the functioning of the model to make an estimation.

136. **"Structuring level, traditional job design"** = INTEG (HIWS implementation effect loss effect on structuring + increase of the organisational structure and traditional job design - "horizontal structure, enriched job design", initial structuring)

Unit: degree

Description of the equation: The stock level "Structuring level, traditional job design" increases when one of these things happens: (i) the size of the organisation increases and HIWS is not implemented, (ii) the HR practice labelled as "efficiency management, reducing costs without dismissals" is implemented, and (iii) if HIWS is no longer implemented, which means that it moves to a traditional structure.

137. **TIME STEP** = 0.25

Unit: Month

Description of the equation: The time step for the simulation.

138. **WB drain** = "\"actions to improve well-being\" implementation effect loss" * MAX(0,"Well-being (WB)")

Unit: degree/Month

Description of the equation: This variable represents the effect on employee well-being of the loss of the effect of the implementation of HR practices labelled as “actions to improve well-being”.

139. **WB improvement**="effect\"actions to improve well-being\"on WB"*normal WB

Unit: degree/Month

Description of the equation: This variable represents the positive effect on employee well-being of HR practice implementation labelled as “actions to improve well-being”.

140. **"Well-being (WB)"** = INTEG ((effect of perception HIWS on WB - "Well-being (WB)")/normal time WB change + WB improvement - WB drain, effect of perception HIWS on WB)

Unit: degree

Description of the equation: This stock represents the well-being level of the employees.

Appendix E: The Six Scenarios and Corresponding HR practice Implementation

Table 13: HR practices implemented in each of the six scenarios according to the information obtained in the 41 GMB sessions.

Macroeconomic context		Crisis	No-Crisis	
HRM philosophy	Control	-Efficiency management, reducing costs without dismissals. -Reduce costs by dismissing. -Actions for organisational growth, gaining volume.	Actions to improve well-being. -Efficiency management, reducing costs without dismissals. -Actions for organisational growth, gaining volume.	HR practices
	Commitment	-HIWS implementation. -Efficiency management, reducing costs without dismissals. -Reduce costs by dismissing. -Actions for organisational growth, gaining volume.	-Actions to improve well-being. -HIWS implementation. -Actions for organisational growth, gaining volume.	
	Mixed	-HIWS implementation. -Efficiency management, reducing costs without dismissals. -Reduce costs by dismissing. -Actions for organisational growth, gaining volume.	-Actions to improve well-being. -HIWS implementation. -Efficiency management, reducing costs without dismissals. -Actions for organisational growth, gaining volume.	

Appendix F: SFD Feedback Loops and Archetypes

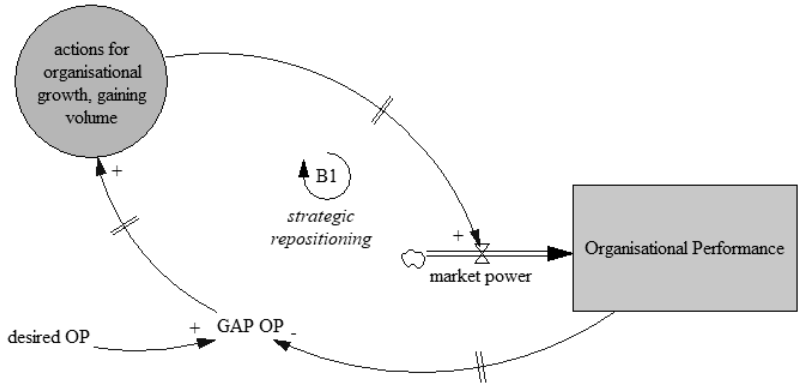


Figure 56: “Strategic repositioning” balancing feedback loop.

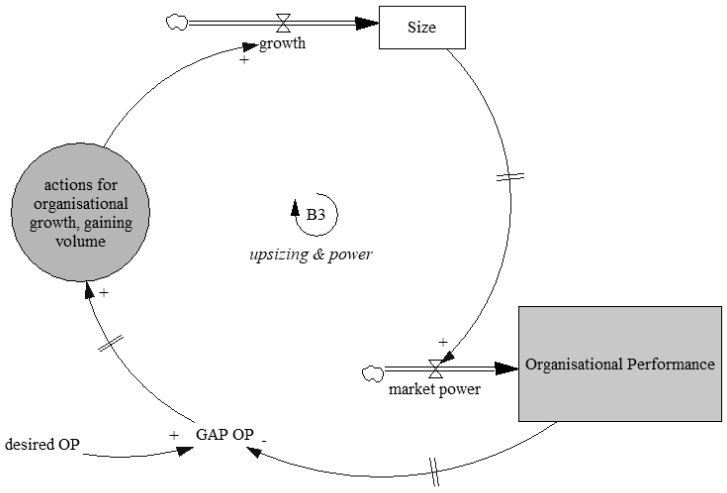


Figure 57: “Upsizing and power” balancing feedback loop.

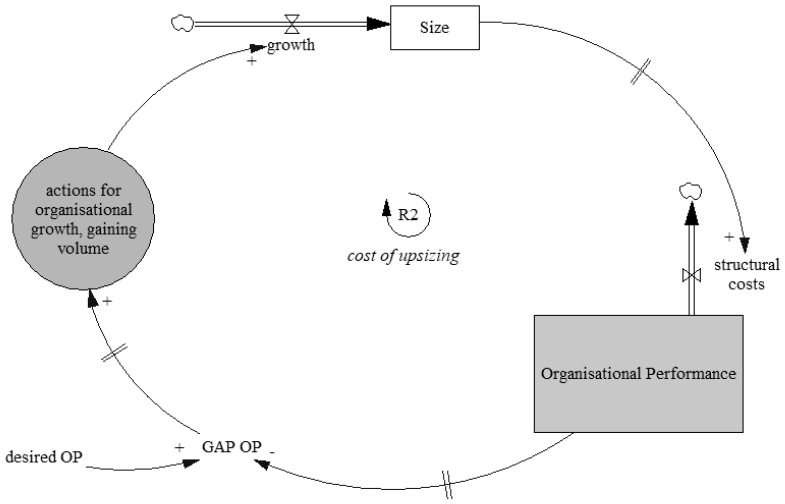


Figure 58: “Cost of upsizing” reinforcing feedback loop.

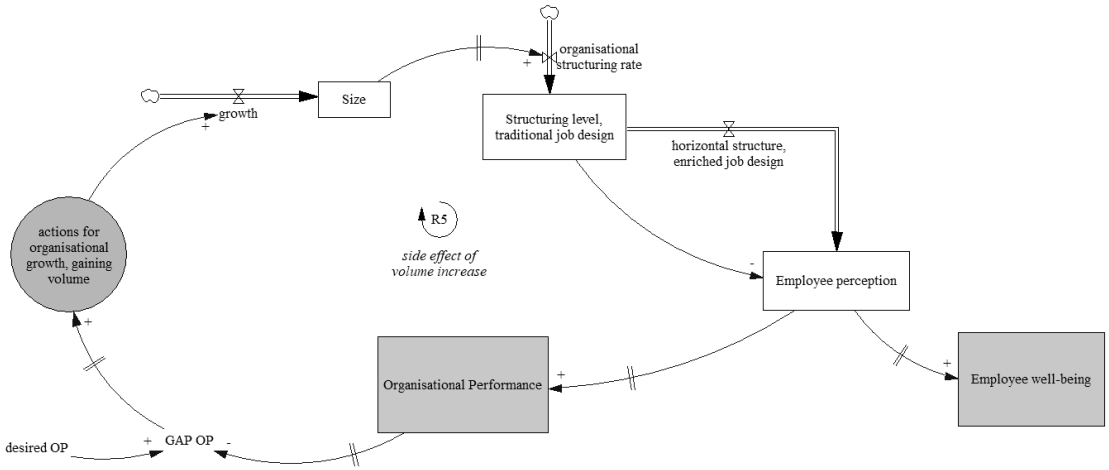


Figure 59: “Side effect of volume increase” reinforcing feedback loop.

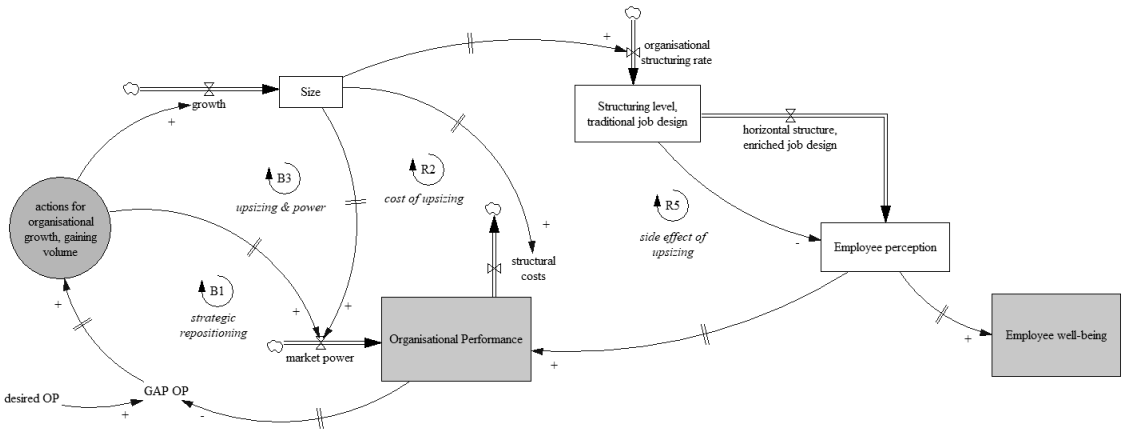


Figure 60: Fixes that fail archetype generated by implementing "actions for organisational growth, gaining volume" HR practice.

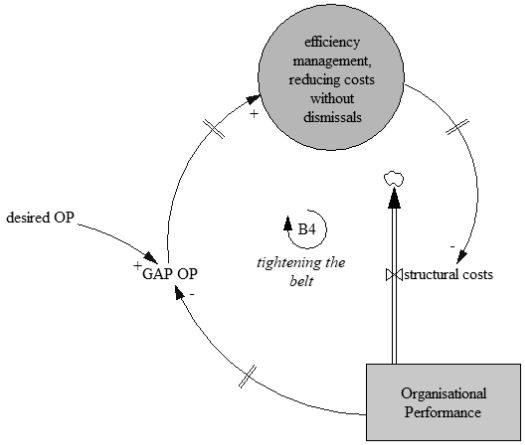


Figure 61: “Tightening the belt” balancing feedback loop.

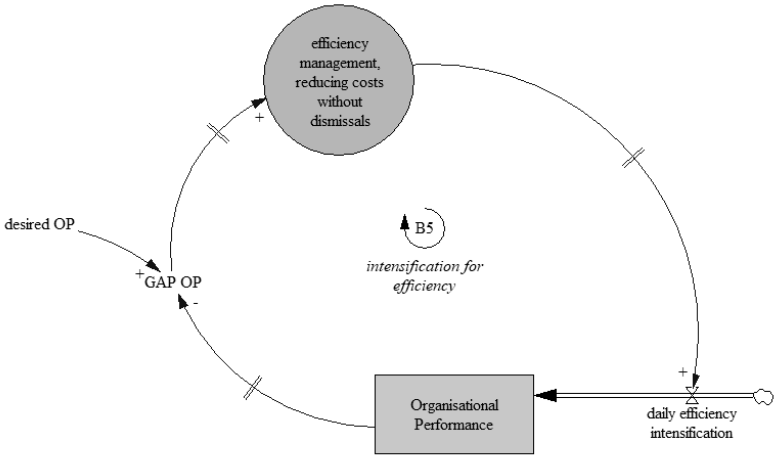


Figure 62: “Intensification for efficiency” balancing feedback loop.

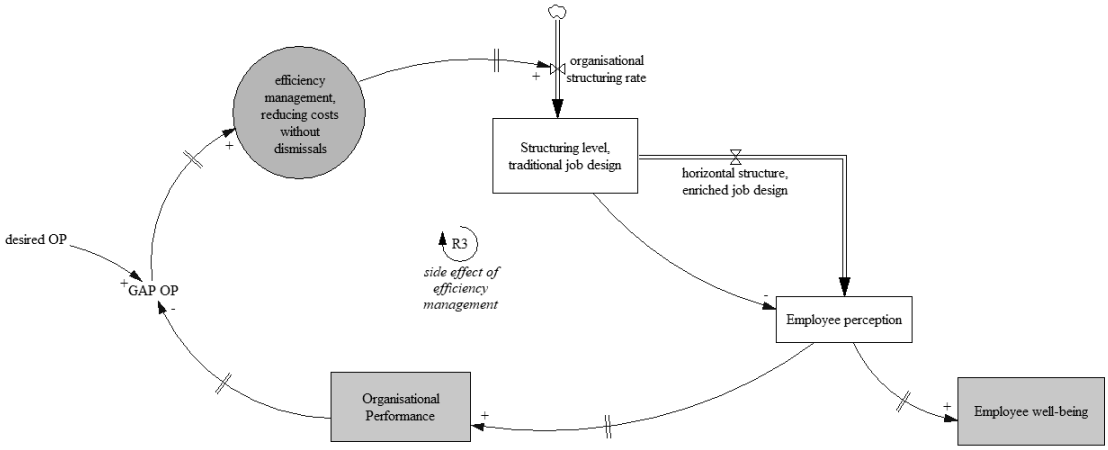


Figure 63: “Side effect of efficiency management” reinforcing feedback loop.

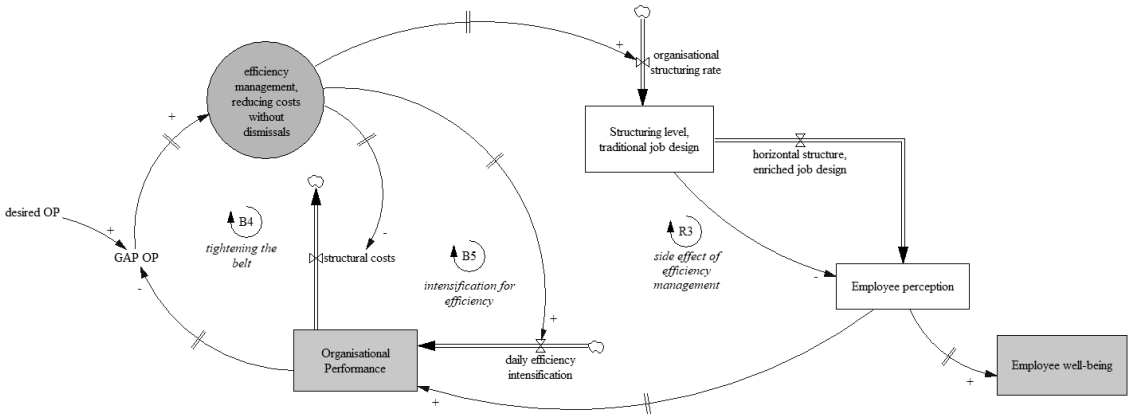


Figure 64: Fixes that fail archetype generated by implementing "efficiency management, reducing costs without dismissals" HR practice.

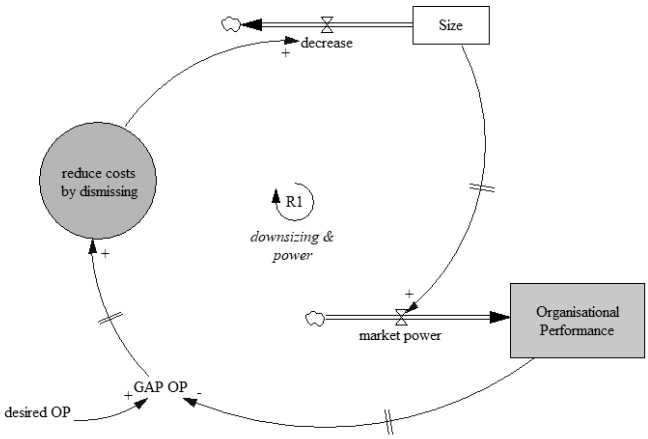


Figure 65: "Downsizing and power", reinforcing feedback loop.

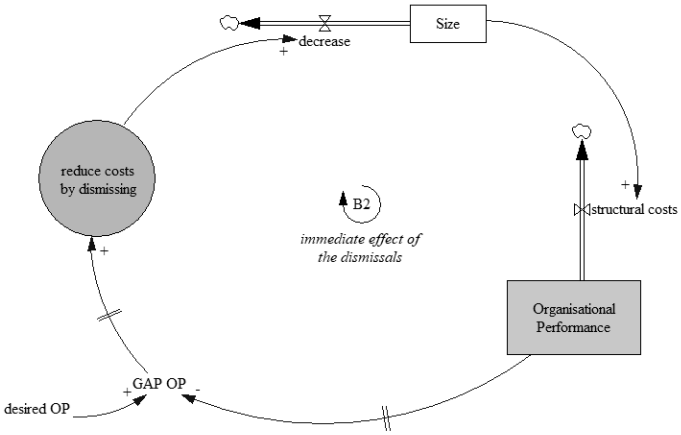


Figure 66: "Immediate effect of the dismissals", balancing feedback loop.

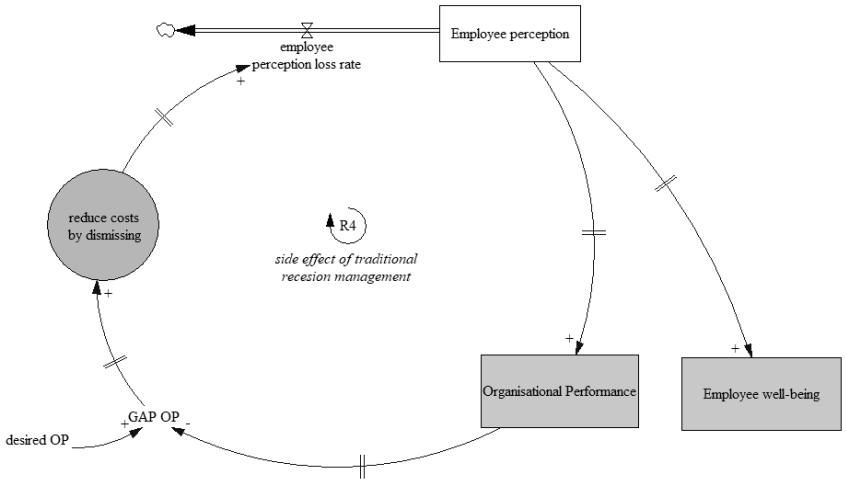


Figure 67: “Side effect of traditional recession management”, reinforcing feedback loop.

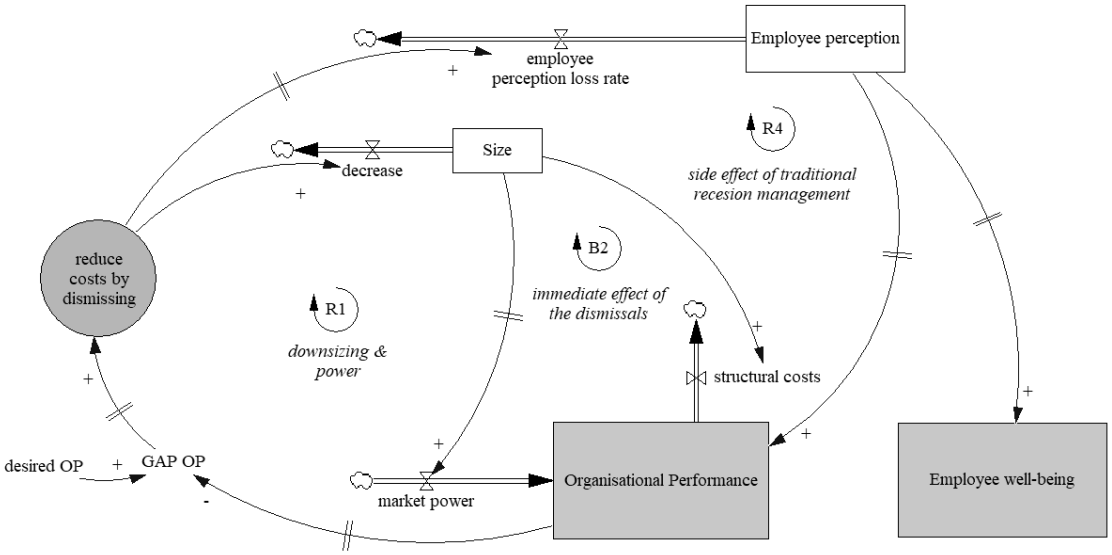


Figure 68: Fixes that fail archetype generated by implementing "reduce costs by dismissing" HR practice.

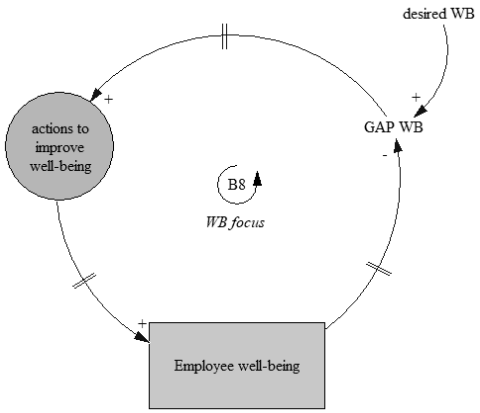


Figure 69: "WB focus" balancing feedback loop.

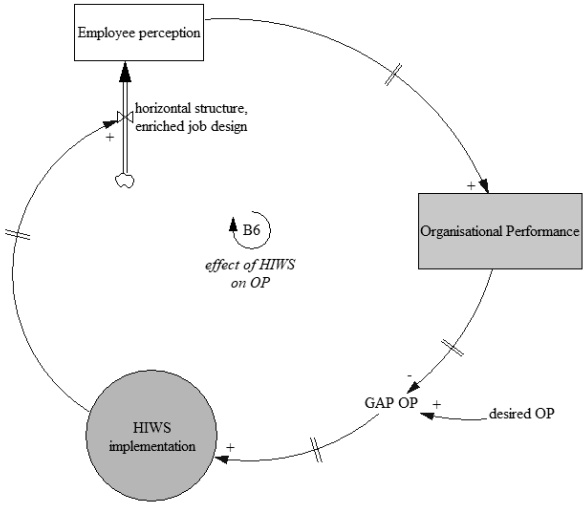


Figure 70: "Effect of HIWS on OP", balancing feedback loop.

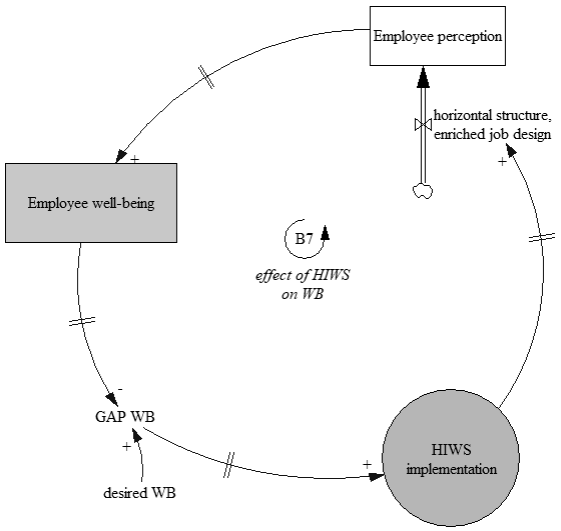


Figure 71: "Effect of HIWS on WB", balancing feedback loop.

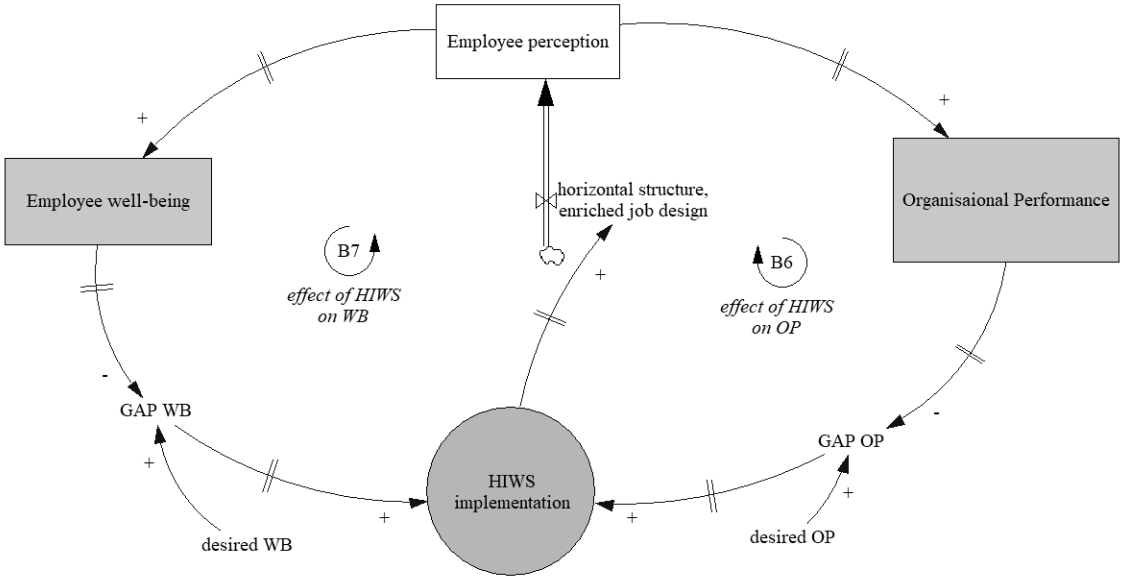


Figure 72: Archetype that addresses two different gaps through the implementation of a fundamental solution, "HIWS implementation".

Table 14: HRM practices implemented in each scenario according to the information obtained in the 41 GMB sessions.

HRM philosophy	Macroeconomic context: Crisis	Macroeconomic context: No-Crisis	
Control	-Efficiency management, reducing costs without dismissals. -Reduce costs by dismissing. -Actions for organisational growth, gaining volume.	-Actions to improve well-being. -Efficiency management, reducing costs without dismissals. -Actions for organisational growth, gaining volume.	HR practices
Commitment	-HIWS implementation. -Efficiency management, reducing costs without dismissals. -Reduce costs by dismissing. -Actions for organisational growth, gaining volume.	-Actions to improve well-being. -HIWS implementation. -Actions for organisational growth, gaining volume.	
Mixed	-HIWS implementation. -Efficiency management, reducing costs without dismissals. -Reduce costs by dismissing. -Actions for organisational growth, gaining volume.	-Actions to improve well-being. -HIWS implementation. -Efficiency management, reducing costs without dismissals. -Actions for organisational growth, gaining volume.	

Appendix G: Quantitative Data obtained from the Bateratzen Database

Qualitative data has been completed with quantitative data and insights obtained from the Bateratzen database. This invaluable contribution has been incorporated into the present research through the studies conducted by various authors, including Elorza et al. (2022) and (2011), Garmendia, Elorza, Aritzeta et al. (2021), Garmendia, Elorza, and Uribetxebarria (2021), and Garmendia's thesis dissertation (2019). These studies have played a pivotal role in both the construction and calibration of the simulation model.

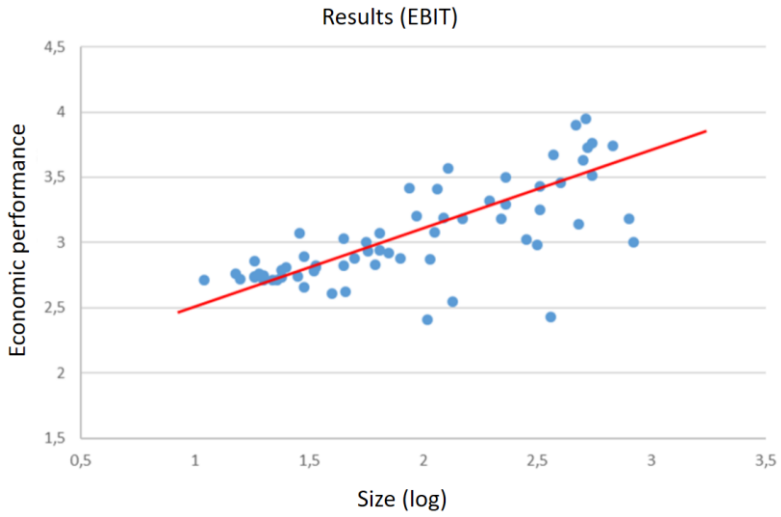


Figure 73: The larger the company, the greater its economic performance.

Source: Bateratzen database.

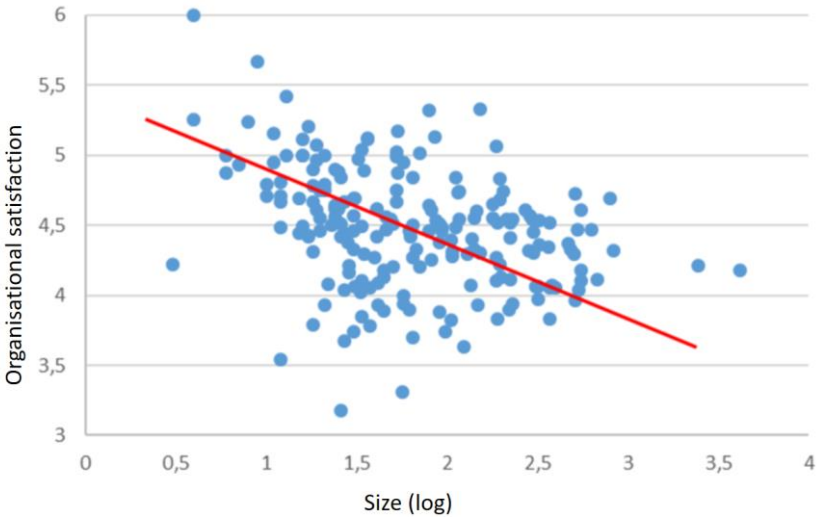


Figure 74: The larger the company, the lower the employee well-being.

Source: Bateratzen database.

Appendix H: Practical Application of the Current Research

Based on the insights gained from this doctoral research, we have developed a tool named “Management Flight Simulator” that aims to support evidence-based management for facilitating effective decision-making among managers. The simulator is based on the core SD model developed in this research and has two main objectives. Firstly, is to support managers in making effective decisions related to HR practice implementation. Secondly, is to generate reflection processes among managers and students (future managers of organisations) regarding the impact of these decisions on OP and WB not only in the short-term but also in the medium and long-term. This simulator also enables the exploration of different combinations of HR practices and timing of decision-making while monitoring the OP and WB in real-time as indicators, as the macro-economic context changes (stability, growth, and crisis).

This simulator pursues to be a useful tool to support decision-making processes. In Figure 75 and Figure 76 a screenshot of how the “Management Fight Simulator” looks like can be seen. In the sessions where this simulator has been utilised, three simulations with distinct objectives are conducted. The aim of the first simulation is to familiarise users with the tool. The objective of the second simulation is typically to maximise the outcome in OP. Lastly, the objective of the third simulation usually involves optimising both OP and employee WB simultaneously. Subsequently, the result obtained from the second and third simulations are compared to initiate a reflection on the significance of objectives that guide managers on their decisions and actions, and the influences that this has on resulting OP and employee WB (an example of comparison between second and third simulations can be seen in Figure 77).

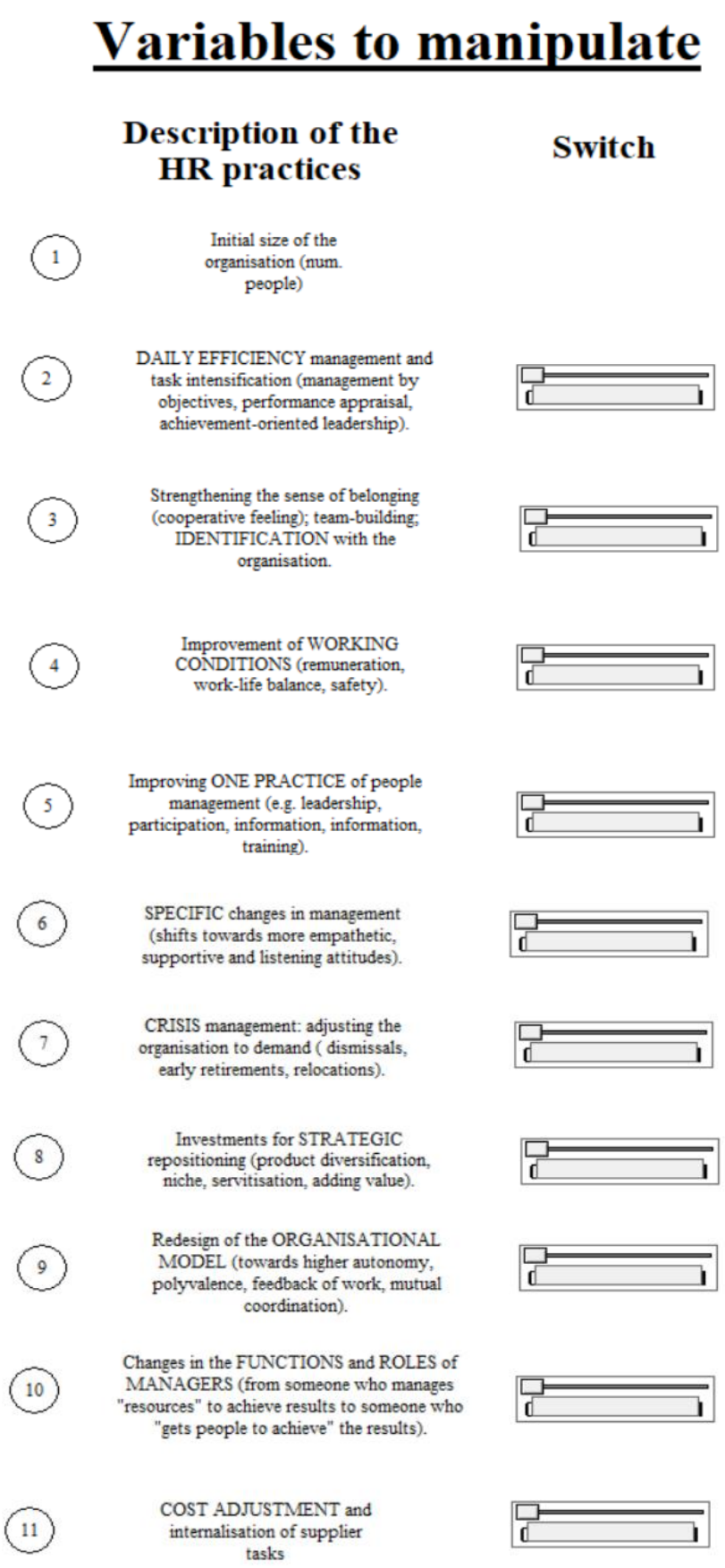


Figure 75: Dashboard elements of the “Management Flight Simulator”.

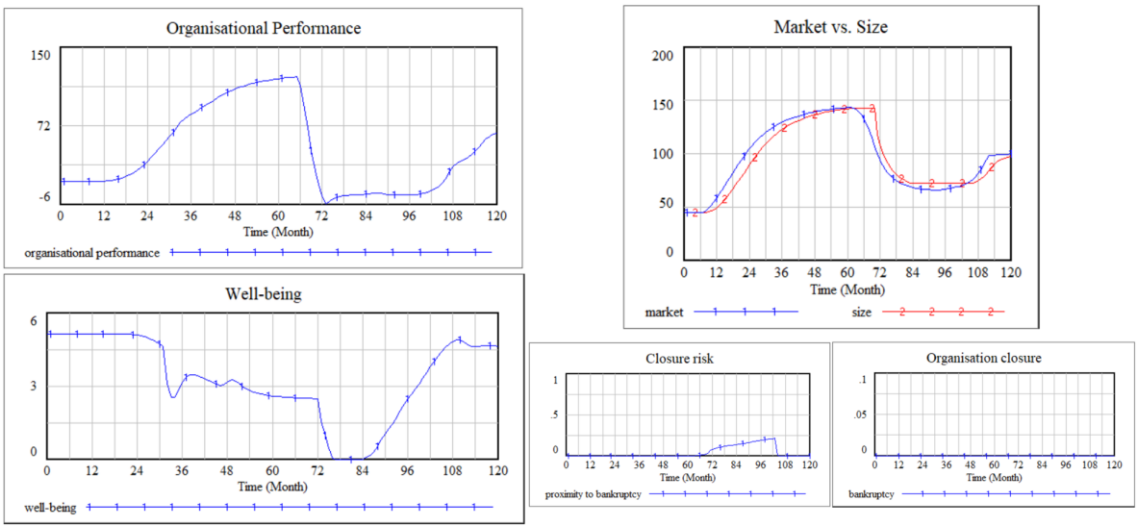
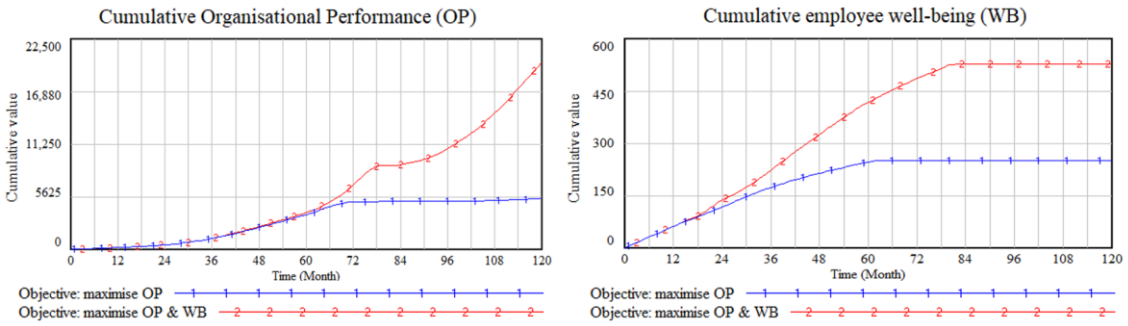


Figure 76: Example of the indicators that users visualise while conducting a simulation with the "Management Flight Simulator".



	t (120)	
	Objective: to maximise OP (€)	**Objective: to maximise OP & WB (€ + 웃)**
OP	5463.02	200019.4
WB	251.451	527.9

Figure 77: Example of the comparison of results from the second and third simulations.