CHANGE MANAGEMENT IN THE IMPLEMENTATION OF AN INFORMATION SYSTEM[1]

GESTÃO DA MUDANÇA ASSOCIADA À IMPLEMENTAÇÃO DE UM SISTEMA DE INFORMAÇÃO

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Abstract

Dealing with change is an ongoing challenge for organizations such as the Portuguese Air Force (PoAF). The design/operationalization of the Human Resources (HR) module of the Integrated Management System (IMS) in 2018 was a complex project that changed the PoAF's established personnel management and payroll processing procedures. This study analyses change management in the implementation of the IMS-HR using deductive reasoning, a quantitative research strategy with qualitative elements and a case study research design. During the study, the following analyses were conducted: a literature review, content analysis of semi-structured interviews to six officers (managers), and an analysis of the answers to a questionnaire delivered to 51 military and civilian personnel (83.6% out of N=61) who use the HR IMS of the Personnel and Finance Directorates of the PoAF. The findings showed that, in order to optimise the change management process, the strategies employed by managers must be aligned with how users effectively perceive them. These strategies should focus on: improving employee involvement and assessing and reducing employee resistance to change; intensifying the dissemination of the improvements/enhancements that have been achieved; hold training sessions to enhance users' skills and collect suggestions and feedback on possible improvements.

Keywords: Change Management, Resistance to Change, Information System Implementation, Human Resources, Integrated Management System-HR of the PoAF.

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Resumo

A mudança é um desafio permanente para as Organizações e, decorrentemente, para a Força Aérea (FA). A conceção/operacionalização do módulo de Recursos Humanos (RH) do Sistema Integrado de Gestão (SIG), em 2018, afigurou-se um projeto complexo, que alterou os procedimentos instituídos na gestão de pessoal e no processamento de vencimentos da FA. O presente estudo analisa a gestão da mudança associada à implementação do SIG-RH, mediante um raciocínio dedutivo, alicerçado numa estratégia de investigação quantitativa com reforço qualitativo, no estudo de caso como desenho de pesquisa, e nas análises: documental, de conteúdo às entrevistas semiestruturadas a seis oficiais (chefias), e das respostas, a um questionário, de 51 militares e civis (83,6% de N=61), utilizadores do SIG-RH das Direções de Pessoal e de Finanças da FA. Dos resultados obtidos, concluiu-se que a otimização desta gestão ancora, primariamente, na sintonia entre a implementação das estratégias definidas pela chefia, e a forma como estas são efetivamente percebidas pelos utilizadores. Concomitantemente, deve focar-se em: promover o envolvimento dos colaboradores e avaliar uma intervenção mitigadora das eventuais resistências; enriquecer a comunicação interna das melhorias/mais-valias já obtidas; e reforçar as ações de formação, centradas nas competências dos utilizadores e na recolha de inputs/contributos de melhoramento.

Palavras-chave: *Gestão da Mudança, Resistência à Mudança, Implementação de Sistema de Informação, Recursos Humanos, Sistema Integrado de Gestão-RH na Força Aérea.*

1. Introduction

The survival of any organization depends on its ability to recruit and retain its most precious asset – quality Human Resources (HR). Thus, "[…] the long-term value of a company […] rests on how it manages its people" (Cabral-Cardoso et al., 2012, pp. 54-55). Furthermore, "goods and services cannot be produced by people working alone" (Chiavenato, 2006, p.15).

Therefore, to survive and evolve, organizations must optimise their HR management practices (HRM), as this will bring benefits to the organization and, moreover, it is a logical, natural and necessary response "[…] to organizational growth and [to] increasingly complex organizational tasks" (Chiavenato, 2006, p.15).

Creating value that stays with the organization as it grows should also be a concern when implementing best practices in HRM. That is, organizations must increasingly "[…] invest in taking full advantage of their human talent, at all levels of the organization, if they wish to [generate] and sustain competitive advantages" (Cabral-Cardoso et al., 2012, p.55).

As new technologies emerge, so do their potential uses. This was the case in the application of Information System(s) (IS) to HRM, that is, of "[…] an organised set of procedures that aim to produce information to support decision making and enable organizational control" (Lucas, 1978, p.5). In essence, systems that create "[…] conditions to disseminate information and ensure that it is useful and productive, […] in order to facilitate decision-making" (Chiavenato, 2006, p.149).

This issue also affects political and military organizations, as shown by Decision No.

18885/2002 (2nd Series) of 26 August issued by the Ministry of National Defence (MDN), which determines:

> […] that the Ministry of National Defence implement, as a matter of urgency, an information system to enable the regular flow of financial information, designed and developed internally [in the case of the Air Force (PoAF), which already used an IS [that] would inevitably have to be updated to a more current, flexible system, this provided an added incentive to create the Integrated Management System for National Defence (SIGDN)] under the direction of the Secretariat-General of the MDN (SG-MDN) (pp.14512-14513).

Another decisive step in the implementation of the new IS and the formalisation of the SIGDN-Human Resources (IMS-HR) was taken in 2010, when "[…] a tender was opened […] for the acquisition of an integrated human resource information system by the Ministry of National Defence, [i.e. digital/computer operationalization of the IMS-HR]" (Decision No. 18563/2010 (2nd Series) of 15 December, MDN, p.60550). As determined by Decision No. 18885 in 2002, the system's implementation was to be conducted by the SG-MDN (Decree-Law No. 183/2014 (1st Series) of 29 December, MDN, pp.6377).

Considering that implementing a change – in this case, a new HR management technology – entails changing the organisation, or, as Campbell, Judge and Robbins (2010, p.516) define it, is one of several possible forces for change), it is crucial to invest in appropriate management practices that "[…] ensure the survival of organisations" (Chiavenato, 1999, p.10). That is, to anticipate, prevent and/or mitigate constraints, such as individual or organizational resistance, which affect the normal functioning of the organization (Campbell et al., 2010, p.519). This can be done by avoiding […] factors [such as] change being perceived as threatening by individuals and groups, [or] as not having been made at their request or with their collaboration. [Thus,] employee participation in change processes is an important factor in reducing resistance to and acceptance of change (Ferreira, Neves, Abreu, & Caetano, 1998, pp. 327, 329).

In light of this, and considering that the IMS-HR was implemented in the PoAF in October 2018, it is especially important that this new practice be optimised by analysing how change management was handled (retrospective study) and by identifying areas for improvement in the consolidation of change phase (prospective study).

This study addresses change management in the implementation of an IS, more specifically the implementation of the Integrated Management System (IMS) of the PoAF, and is delimited (Santos & Lima, 2019, p. 42) in terms:

– Of time, to the period from 2018 to the present day (late 2019). This covers the pre- and post- implementation phases;

– Of space, to the users of the IS of the Personnel Directorate (PD) and Finance Directorate (FD) of the PoAF.

– Of content, to the HR module of the IS implemented in the HR departments of the PoAF.

The study's general objective (GO) is *To propose strategies to optimise change management in the implementation of the PoAF's HR-IS*, and the two specific objectives (SO) are:

SO1: To analyse the change management strategies used by other organizations in the implementation of their HR-IS.

SO2: To analyse the change management strategies used by the PoAF in the implementation of the IS of the HR department.

These objectives were achieved by answering the Research Question (RQ) – What change management strategies can the PoAF use to optimise the implementation of its HR-IS?

2. Theoretical and conceptual framework

This chapter contains the literature review and key concepts, as well as the analysis model that guided the study.

2.1. Literature review and key concepts

This section presents the literature review and the theoretical framework for the research.

2.1.1. Change (Management)

In order to survive, organizations must adapt to today's constantly changing environments – *Change or die!* (Campbell, Judge, & Robbins, 2010, p.516), bearing in mind that change means moving from one state to another, a "[...] transition from one situation to a different one" (Chiavenato, 1999, pp.320-322).

In an organizational context, change (more specifically, organizational change) refers to changes related to information processing processes but also to how these changes influence human behaviour (Herzog, 1991, p.6). In addition to these two factors, recent technological advances have confronted organizations with the need to reassess the "role of information technologies, which are considered "[...] one of the driving factors for change in HRM, [with] several important implications for people management" (Cabral-Cardoso et al., 2012, pp.97-98). In other words, with the fact that technology is changing jobs and organizations, and that this presents (new/different) opportunities to evolve (Campbell et al., 2010, p.516).

Thus, change management must be carefully planned, as it is vital not only for the survival of the organization but also to optimise its (growing) success (Herzog, 1991, p.6).

Bearing in mind that organizational change [...] may have different goals, such as the acquisition of new technological skills or [...] the reorganization of work processes, [and that] organizational change processes may target individuals, groups [or] the organization, [it is, then, important to determine, among other things, how deep this change goes] (Caetano, Ferreira, & Neves, 2011, pp.608-609).

When a change has incremental goals that do not call into question the organization's core values and that do not constitute a radical break with normal operating conditions, it is called a "first order" change, while a "second order" change is more radical and transforming (Porras & Robertson, 1992, pp.719-822).

Another important factor in managing change is to understand whether this change occurs as an intentional action initiated by the organization (planned change) or, as a reaction, e.g., a response to outside threats or challenges (unplanned change) (Porras & Robertson, 1992, pp.719-822).

By combining these two types of change (first vs. second order) with the presence or absence of planning, Porras and Robertson (1992, p.729) conceived a model that measures four types of organizational change (Figure 1).
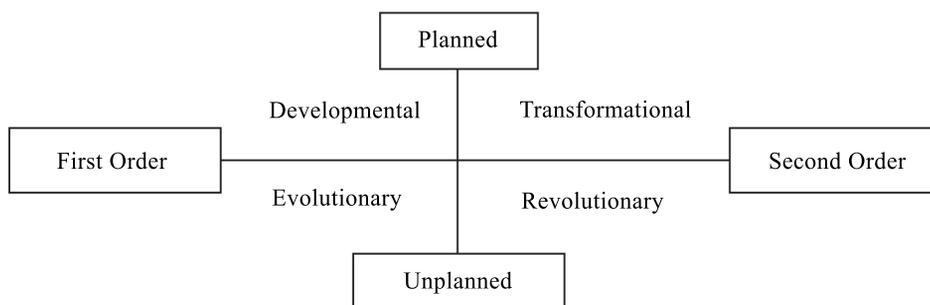
Figure 1 – Types of Organizational Change
Source: Adapted from Porras & Robertson (1992, p.729).

The model presented in Figure 1 measures the following types of change (Caetano et al., 2011, pp.605-606):

– Incremental, i.e., planned first order change – the changes are initiated "[...] internally by the organisation [and aim to update] the organization's operating procedures";

– Transformational, i.e. planned second order change – "[...] planned changes in the climate and culture of the organization which significantly alter the management, distribution and design of the work";

– Evolutionary, i.e. unplanned first order change – change in response/reaction to "[...] customer needs or pressure from competitors";

– Revolutionary, i.e., unplanned second order change – also a response/reaction by an organization when "[...] forced to radically alter the principles that guide it by [implementing] profound general changes to the organizational structure and to the [company's] overall strategic functioning".

2.1.1.1. Change implementation

This section briefly describes the change models advanced by Lewin (1951, pp.228-229) and Kotter (2007, p.3).

Lewin (1951, pp.228-229) proposes that the (successful) implementation of organizational change occurs in three steps:

– Unfreezing, which is defined by the emergence of an imbalance that triggers the need for change and/or reduces resistance to change. In other words, a "[...] reason for change which may be associated with anxiety processes that require the creation of psychological safety as a means of reducing resistance to change and effectively change a situation" (Caetano et al., 2011, p.610).

– Movement, that is, "[...] the organization *moves* to another level, which involves the development of new values, attitudes, behaviours" (Caetano et al., 2011, p.611).

– Refreezing, during which new processes are consolidated, stabilised and sustained over time, in order to "[...] avoid a reversal to the situation before the change" (Caetano et al., 2011, p.611).

Kotter's model (2007, pp.2-13) was based on Lewin's (cited in Campbell et al., 2010, p.525), which is shown in Table 1 alongside Kotter's.

Table 1 – Lewin and Kotter's models for implementing change

Lewin's Model	Kotter's Model
Unfreezing	#1. Establish a sense of urgency by creating a compelling reason for why change is needed.
	#2. Form a coalition with enough power to lead to change.
	#3. Create a new vision to direct the change and strategies for achieving the vision.
	#4. Communicate the vision throughout the organization.
Movement	#5. Empower others to act on the vision by removing barriers to change and encouraging risk taking and creative problem solving.
	#6. Plan for, create, and reward short-term 'wins' that move the organization toward the new vision.
	#7. Consolidate improvements, reasses changes, and make necessary adjustments in the new programmes.
Refreezing	#8. Reinforce the change by demonstrating the relationship between behaviours and organizational success.

Source: Adapted from Campbell et al. (2010) and Kotter (2007).

2.1.1.2. Resistance to change

Resistance to change is caused by "[...]employees' interpretations of the reasons they are given for why change is necessary, [which] influence how they react and whether or not they are aligned with the organization's direction" (Caetano et al., 2011, p.612).

Tables 2 and 3 present two types of sources/factors of resistance to change, advanced by Campbell et al. (2010, p.520) and Kanter, Stein and Jick (1992, p.380), respectively. These two taxonomies not only complement one another but interconnect and have commonalities between them.

Table 2 – Sources of resistance to change (individual and organizational)

Fonte		Descrição
Individual	Habit	Habits help to cope with life's complexities, however, tend to become a source of resistence when facing change.
	Security	People with a high need for security are more likely to resist change because it threatens their safety feelings.
	Economic factors	Changes in job tasks or established work routines can elicit anxiety about losing income if employees worry about not being able to perform the new tasks or routines to the same standards, especially when they are linked to productivity.
	Fear of the unknown	Change replaces the familiar with ambiguity and uncertainty.
	Selective information perception	Individuals tend to hear only what they want to hear and ignore information that challenges their perceptions.
Organizational	Structural inertia	Organizations have built-in mechanisms to produce stability, which act as a resistance when the organization is confronted with change.
	Limited focus of change	Organizations are made up of several interdependent systems. One cannot be changed without affecting the others. Therefore, limited changes in subsystems tend to be annulled by larger system.
	Group inertia	Even if individuals want to change their behaviour, group norms may act as a constraint.
	Threat to expertise	Changes in organizational patterns may jeopardise the expertise of specialised groups.
	Threat to established power relationships	Any redistribution of decision-making authority can threaten long-established power relationships within the organization.
	Treat to established resource allocations	Groups that control sizeable resources in the organization often see change as a threat and try to maintain the *status-quo*.

Source: Adapted from Campbell et al. (2010).

Table 3 – Factors of resistance to change in Kanter, Stein and Jick (1992)

Factor	Description
To much uncertainty	Resistance related to lack of information about phases of implementation and/or actions to be taken during the change.
«Surprise, surprise!»	Employees are surprised by the appearance of new measures due to lack of preparation for implementation.
Confusion costs	When several changes occur simultaneously, disrupting the exixting routines, the feeling of not knowing how to act naturally arises (confusion cost).
Loss of face	Resistance is caused by the feeling of appearing less intelligent/competent when performing the new role/activity (less of control due to the change), when compared to the familiarity of the role/activity previously performed (fear of "losing" one's reputation of proficiency, competence, etc.).
Increased workload	Change implementation is often associated with a greater number of meetings and new learning.
«Undulated effects»	Change usually requires other changes, often unforeseen, which elicit resistance (also unforessen).
Past resentments	Resistance related to misgivings based on past broken promises.
Real threat	Resistance arising from working conditions, time, employment, among other factors.

Source: Adapted from Kanter, Stein & Jick (1992, p. 380).

Considering the aforementioned,

> [...] participation in change processes is an important factor in reducing people's resistance to and acceptance of change. [Furthermore, to some degree, this participation is factor of] legitimisation [which may] be extremely relevant in the medium to long term, and especially in the refreezing phase during which changes are consolidated. (Caetano et al., 2011, p.615)

2.1.2. Information System

This section will briefly describe the definition and implementation of an IS, and of the IMS-HR as the new personnel management module of the PoAF (that is, a practical and concrete case study of a change implementation process in the PoAF).

#### 2.1.2.1. Definition and implementation

Generally, IS are defined as the

> [...] set of knowledge, material means (infrastructures) and know-how [...] designed for temporary or permanent storage of information, as well as for information processing and dissemination. [In this context], information [should] be considered a vital resource for organisations [...], who [should] take full advantage of it. (Rascão, 2004, pp.27, 33)

The core of an IS is a "database [that] works as a storage system [...] for processing and obtaining information" (Chiavenato, 1999, p.406). Such data are "facts or events, images or sounds which may be relevant or useful for the performance of a task, but which, taken separately, do not explain that fact or situation" (Rascão, 2004, p.22).

Therefore, an IS can be defined as "[...] an organized set of procedures which are executed

to produce information to support decision-making and organizational control" (Lucas, 1978, p.5), as shown in Figure 2.
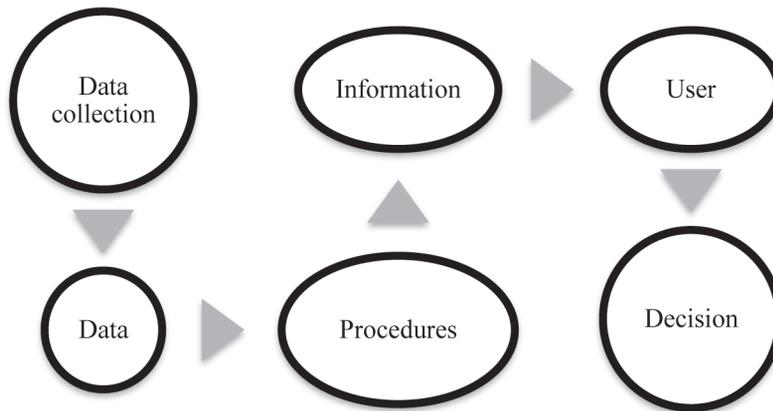
Figure 2 – Information System Representation
Source: Adapted from Lucas (1978, p. 5).

In light of the above considerations regarding the usefulness of IS in supporting decision making, the "implementation of an IS" can be defined as

> [...] part of a process that begins with the first idea to [design] a system and the changes that ensue. Implementation is completed when the system is successfully integrated into the organization's operations. Since people are expected to change their information processing activities, behavioural phenomena must be accounted for when implementing change. (Lucas, 1978, pp. 76-77)

The successful implementation of an IS depends not only on the system but also on HR (Ribeiro, 2009, p.31):

> [...] on its own, an IS cannot improve organizational performance, [this is only possible] with the help of its users and managers. Thus, implementing or changing an IS entails a change process that can cause the project to fail if not appropriately managed.

Reis (2001, p.119) advises that "[...] change must be clearly explained to those on whom the success of the project depends", that is (see above), an organization's HR should be involved in the implementation of its IS. This is a particularly relevant caveat considering that changes arising from the implementation of IS interfere with "[...] psychological aspects and elicit fears that stem from the need to acquire new skills [which may force the organization to] make adjustments after the system is implemented due to problems caused by resistance to change" (Jesus & Oliveira, 2006, pp. 327-328).

2.1.2.2. IMS-HR

In order to accomplish the task assigned by the MDN to the Information Systems Services Directorate (DSSI) of the SG-MDN through Ordinance No. 290/2015 (1st Series) of 18 September (implementing the SIG-RH in the Ministry of Finances and the Ministry

of National Defence), in 2018, the PoAF formed "[...] a Working Group comprised by the FD and the PD, [who accompanied] the different phases of the process, [in light of] the problems that existed in the old information systems, which needed to be replaced" (P.J. Sousa, email interview, 29 October 2019).

Furthermore, as stated by V. E. Almeida (email interview, 31 October 2019), the process to implement the IMS was not conducted according to "[...] a specific plan, [although] the PD Data Office and the IMS-MDN technical team took some steps to help users adjust to the transition".

The IMS-HR implementation "is still ongoing, [inasmuch as] a number of problems that are occurring now were caused by lack of resources to oversee the implementation" (E. F. Craveiro, face-to-face interview, 28 October 2019).

2.1.3. Human Resources

Chiavenato (2006, p.15) defines HR as the "people who participate in organizations and play certain roles in them".

Therefore,

> a crucial task for managers is [...] understanding how organizations can manage people in a way that improves their productive and creative capacity. [Therefore,] people management refers to the policies, practices and systems that influence the behaviour, attitudes and performance of the organization's members. (Cabral-Cardoso et al., 2012, pp. 54, 59)

On the issue of applying IS to HRM, Rascão (2004, pp. 228) states that "the bulk of the information [provided by IS to HRM] covers everything has to do with the management of the organisation's human resources, [from] recruitment and selection [to] training and payment of salaries".

2.2. Analysis Model

Table 4 presents the analysis model used in the study.

Table 4 – Analysis model

General Objective	To propose change management strategies that the PoAF can use to optimise the implementation of its HR-IS.				
Specific Objectives	**Research Question**	What change management strategies can the PoAF use to optimise the implementation of its HR-IS?			
	Subsidiary Questions	**Concepts**	**Dimensions**	**Indicatiors**	**Data collection techniques**
SO1 To analyse the change management strategies used by other organizations in the implementation of their HR-IS.	**SQ1** What change management strategies were used by other organization when implementing a HR-IS?	Change (management)	Implementation	Unfreezing	Literature review, questionnaire and semi-structured interviews
				Movement	
				Refreezing	
			Resistance	Intrepersonal	
				Organizational	
				Interpersonal	
				Control/Training	
		Information System	Definition and Implementation	Change in procedures	
			SIG-HR		
		Human Resources	Definition	HR Management: Training	
SO2 To analyse the change management strategies used by the PoAF in the implementation of the IS of the HR department.	**SQ2** What change management strategies were used by the PoAF when implementing its HR-IS?	Change (management)	Implementation	Unfreezing	
				Movement	
				Refreezing	
			Resistance	Intrepersonal	
				Organizational	
				Interpersonal	
				Control/Training	
		Information System	Definition and Implementation	Change in procedures	
			SIG-HR		
		Human Resources	Definition	HR Management: Training	

3. Methodology and method

This chapter will describe the methodology and methods that guided the study.

3.1. Methodology

Methodologically, this study uses deductive reasoning, a quantitative research strategy with qualitative aspects, and a case study research design.

3.2. Method

This section describes the study sample and procedures, the collection tools and data processing techniques.

3.2.1. Participants and procedure

<u>Participants.</u> The pre-test phase sample consisted of 2 officers and 2 sergeants assigned to the financial and personnel departments, with experience in the use of IMS-HR. The test phase (Table 5) consisted of 51 respondents ("users")[2] (83.6% of N = 61 service members from the PD and FD, i.e., the primary users of the IMS-HR), most of whom are officers (49.0%), male (52.94%), between 40 and 50 years of age (37.26%).

Table 5 – Descriptive analysis of the sample

	Variable	*n*
Category	Officers	25
	Non-Commissioned Officer	22
	Airman	2
	Civilians	2
Gender	Male	27
	Female	24
Age	[20, 30[	6
	[30, 40[	18
	[40, 50[	19
	≥ 50	8

The study sample also included 6 officers who participated as interviewees[3]: The director of the PD at the time when the change was implemented, who is now Air Command, Lieutenant General Eurico Craveiro; the director of the FD, Major General Guilherme Lobão; the head of the Data and Social Protection Office of the PD, Lieutenant Colonel Paulo Simões; the head of the Information Administration Office of the Personnel Department, Lieutenant Colonel Joaquim Pedreira; the head of the DFFA Office of Allowances, Major Paulo Sousa; and the head of the Information Management Section of the PD Data Office, Captain Vítor Almeida.

<u>Procedure</u>. During the test phase, after obtaining the proper authorisation from the military authorities, a questionnaire was made available to the study participants (via Google Forms) between 22 November and 27 December 2019. They were informed of purpose of the investigation and assured that their answers were anonymous and confidential, and that all data collected in the study would be used for statistical purposes only. The officers who participated in the semi-structured interviews (which were conducted face-to-face or by email) were likewise informed of the objective of the study and assured that their answers would be anonymous and confidential (however, all interviewees waived this option).

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[2] These users/respondents are the "primary users", i.e. military and civilian personnel who upload/treat/process data through the IMS-HR, as opposed to "end-users", who comprise all military and civilian personnel who use the system to obtain information, e.g., declarations, applications or certificates. From this point on, these (primary) users/respondents will be referred to as "respondents".

[3] From this point on, these officers will be referred to as "interviewees".

3.2.2. Data collection instruments

A three-part questionnaire[4] was designed based on Baptista (2017, pp.40-146), Bortolotti, Júnior and Andrade (2011, pp.6-7) and Maravieski and Reis (2008, pp.5-11). The first part collected sociodemographic data. The second consisted of three groups of questions designed to assess resistance(s) to change, specifically: individual resistance (n = 11 items), group resistance (n = 9 items), and reasons/causes for resistance (n = 5 items). The items were scored on a 4-point Likert scale (1 = "Strongly disagree" and 4 = "Strongly agree"). The third part assessed the participants' perceptions regarding the pre- and post-implementation phase of the PoAF's IMS-HR (n = 6 items). The group of questions that assessed individual resistances was based on the factors/sources identified in Tables 2 and 3. The questions were organized according to the contents of Table 6.

Table 6 – Relationship between issues and individual sources/resistance factors

Question	Sources / Factors
1 and 2	Fear of the unknown
3 and 4	Selective information processing
5 and 6	Too much uncertainty
7 and 8	«Surprise, surprise!»
9 and 10	Habit
11	Past resentments

The script of the semi-structured interviews combined the issues addressed in the questionnaire and the issues listed in Table 1. This script consisted of three groups of questions. The first referred to the pre-implementation phase of the IMS-HR and aimed to determine if there was any preparation for the change. The second addressed the implementation and assessed if strategies were used to reduce the factors that drive resistance to change. The third referred to the post-implementation phase and aimed to identify the existence of strategies to ensure that the change was successful.

3.2.3. Data processing technique

The qualitative content analysis methodology used in the study aimed to identify *a priori* categories (based on a closed model[5]), as advised by Fachada (2015). Excel was used to conduct a quantitative analysis of the data using mainly descriptive statistics.

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[4] As the data were collected through a self-reporting questionnaire, in order to avoid the presence of common method variance (Podsakoff et al., 2003, cited in Fachada, 2015, p.149), the study used a traditional procedural approach which included, on the one hand, "[...] providing assurances regarding the anonymity and confidentiality of responses, as well as the fact that there were no right or wrong answers" and, on the other, the use of semi-structured interviews to obtain information from experts on critical matters (Kimura, 2015).
[5] "A closed model (Silva et al., 2004) is a model with pre-established categories supported by a theoretical frame of reference (*a priori* coding categories, as defined by Stemler, 2001)" (Fachada, 2015, p.114).

4. Data presentation and discussion of results

This chapter analyses and discusses the study findings and answers the Subsidiary Questions (SQ) and the Research Question (RQ).

4.1. Change management in the implementation of a HR IS in other organizations

This subchapter describes five case studies of companies that had to manage change (and change resistance) in their HR IS. These companies operate in the following sectors: food sector (*n* = 2); Portuguese banking sector (*n* = 2); Health sector (*n* = 1).

4.1.1. IS Implementation Case Studies

4.1.1.1. Food sector companies

The first company surveyed (which remained anonymous in the study by Lima, Carrieri, & Pimentel, 2007, pp.97-98) reported different perceptions regarding the way the change was managed:

– Managers reported that they "softened" the usual resistance to change by using coping strategies such as intensifying internal communication(s)/action(s) to, among other purposes: assuage employee anxiety about possible layoffs, explain the purpose of implementing a new system, bringing managers closer to workers, and encouraging employee participation in the change process;

– Employees rated the training they received as insufficient.

The second company, Chocolates Garoto (a company based in Brazil), was surveyed in a study by Jesus and Oliveira (2006, pp.327-328). The study found that the reasons for resistance to change were shortcomings/gaps in: the employee involvement process, with workers reporting that they did not feel committed to the change, and even less so to the idea that their individual contributions were instrumental to its success; the training provided, which workers found to be too short, with contents that lacked relevance to the desired end state.

4.1.1.2. Portuguese banks

A retrospective post-implementation study of change in two banks by Baptista (2017) revealed that:

– Managers did not follow a specific plan to manage potential resistance to change; they did, however, provide information (verbal and written) concerning the change and held training sessions to get employees involved in the change process;

– Employees cited (self-reported) as some of (their) sources of resistance to change: fear, lack of knowledge regarding the improvements that the change will bring, lack of involvement, and failed past experiences.

Interestingly, the variable "group" was not found to negatively influence employees' individual perceptions during the change process (Baptista, 2017, pp.110-111).

4.1.1.3.   Health Services

A study by Neto (2012, pp. 46-47) on the changes implemented in the Centro Hospitalar do Nordeste, in Bragança, found that:

– Managers took full responsibility for managing the change but did not assess the reasons for employee resistance to change or encourage employee involvement (lack of internal communication and training);

– Employees reported that the main reasons for their resistance were: fear, uncertainty, criticism, and lack of confidence in their ability to perform tasks.

4.1.2.   Brief overview and answer to SQ1

Tables 7 and 8 summarise the change implementation process in the five case studies described above. Table 7 lists the strategies used by managers to cope with expected resistances, while employee perceptions of how change was managed are shown in Table 8.

Table 7 – Change management as perceived by managers in the five examined case studies

	Food sector companies	Portuguese banks	Health Services
Leadership	– Engaging employees.	– Absenceof a plan to manage potential resistance to change.	– Deliberate actions to prepare for change; – Importance of leadership in conducting the process.
Change and resistence management	– Results assessment; – Internal communication.	– Group involvement (source of influence on the element(s) that resist(s)); – Providing information to employees; – Employee involvement; – Strategies to assess resistance; – IS validation tests; – Perception assessment questionnaires.	– Promote employee identification with change through communcation; – Failure to assess the causes of resistance to change.

Table 8 – Change management as perceived by workers in the five observed case studies

	Food sector companies	Portuguese banks	Health Services
Training	– Insufficient training (both in quantity and quality).	–	– Non-existent.
Leadership	– Lack of employee involvement.	– Absence of a method to identify and evaluate resistance.	– Lack of communication about the reason for the change; – Absence of analysis of the reasons for resistance to change; – Lack of proactive leadership.
Causes of resistance	–Insufficient training.	– Fear; – Lack of knowledge about the benefits; – Failed experiences.	– Fear and uncertainty; – Criticism; – Lack of confidence in the ability to perform tasks.

Based on the above analysis, the answer to SQ1 – *What change management strategies were used by other organizations when implementing a HR-IS? –*, is that, while the managers of the studied organizations took steps to develop measures/strategies to prepare their

employees for the change (e.g. through internal communication actions and training sessions, and by getting employees involved in the change process), employees perceived these measures/strategies as insufficient.

In other words, of the strategies (used by managers/supervisors) analysed above, those that most positively influence employee acceptance of change are the ones that both managers and employees perceive as effective. That is, the change management strategies used by the organization should be perceived by employees as effective in:

– Assessing potential causes of resistance to change;

– Planning and implementing effective practical strategies to reduce resistance;

– Getting employees involved in the change process by (among other measures): organizing training sessions that employees perceive as satisfactory in terms of both quantity and quality, before and after the change; involving employees in preparing the implementation; engaging employees by intensifying internal communications explaining the change (the benefits it will bring, etc.);

– Empowering middle managers (perhaps by setting up working groups) to identify gaps/difficulties in the process and develop creative solutions to close them.

4.2. Change management in the implementation of the HR IS of the PoAF

This subchapter will analyse the organizational change that is the focus of this study, which can be classified as "incremental" (see Porras & Robertson, 1992, p.729), according to the three phases of the Lewin Model described above (Unfreezing, Movement and Refreezing).

4.2.1. Unfreezing

4.2.1.1. Manager perceptions

The semi-structured interviews revealed that the transition to the new information system (the IMS) was inevitable (E.F. Craveiro, op. cit.), as it would solve the problems in the IS that the PoAF was using at the time (P.J. Sousa, op. cit.), and that the PoAF managers took steps to prepare the implementation of the change (G.S. Lobão, email interview, 29 October 2019).

This preparation consisted of establishing a sense of urgency (the Ministry of Finances had informed the Ministry of Defence of the need for the change in 2003) (J.M. Pedreira, email interview, 8 November 2019). This was achieved by providing information explaining how the current problems will be solved by the IMS (E. F. Craveiro, op. cit.) and by involving the Technical Directorates and General Staff Bodies (E.F. Craveiro, op. cit.; P.J. Sousa, op. cit.), as well as the users (who began using the new system almost immediately) involved in the process (E.F. Craveiro, op. cit.).

As for the existence of a formal official plan – to identify, assess and reduce resistance to change –, all six interviewees stated that such a plan did not exist. However, some strategies were used (which the interviewees now assess as insufficient and not relevant, incisive, engaging or clarifying enough), such as issuing internal information/email communications on the "new changes" (P.J. Sousa, op. cit.) and defining a training plan (the existence of which all interviewees confirmed).

As shown in Table 9, most respondents state that they were involved in the change process (as future users – 43.1%) and that they received training to help them adapt to the change (58.3%). However, they also feel that they were not given enough information about the process (43.1%).

Table 9 – Respondent-user perceptions of the organizational strategies used in the pre-implementation phase of the IMS-HR

In my perception, when implementing the IMS-HR...	Yes	No	Unaware
I/We were provided information about the change process.	29.4%	**43.1%**	27.5%
I/We participated in the change process (as future user(s)).	**43.1%**	39.2%	17.7%
I/We received training to help me/us adapt to the changes.	**58.8%**	39.2%	2.0%
There was a plan to manage resistance to change.	-	**35.3%**	**64.7%**
Methods were used to identify and assess potencial resistance	1.9%	**37.3%**	**60.8%**

Table 9 also shows that most respondents stated that no measures were taken (or that they were unaware of such measures) to assess potential resistance (98.1%) and that no plan was defined to manage resistance to change (100%).

4.2.2.   Movement

4.2.2.1.   Manager perceptions

With regards to the content analysis of the semi-structured interviews, all six interviewees agreed that empowering middle managers would be beneficial, given the complexity of the project. However, it was decided that the service members who had the most expertise, that is, the ones who were most qualified to identify the best solutions (E.F. Craveiro, op. cit.) would be tasked with guiding the change. Despite this, there was a great deal of resistance from some members of the organization (J.M. Pedreira, op. cit.), which could have been reduced if, as acknowledged, middle managers had been involved in the process (P.J. Sousa, op. cit.).

The short-term targets were implemented according to a plan designed by the SG-MDN, and the change was guided by the PoAF in coordination with the project team set up by the Secretariat (P.G. Simões, face-to-face interview, 31 October 2019).

When asked whether the improvements had been consolidated, all interviewees stated that the procedures were improved and the processes were readjusted in response to the challenges that emerged during the production process[6].

Despite these improvements, there is considerable room for improvement (optimisation) with regards to the gaps that still exist in the procedures, mainly due to the shortage of HR, which makes it difficult to find personnel with the critical analysis skills required to assess the identified gaps and make overall improvements to the production process (E.F. Craveiro, op. cit.).

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[6] The "production process" refers to the procedures carried out by the IMS-HR users in the performance of their roles, which include using the system to upload, treat, and process data.

4.2.2.2. Respondent-user perceptions

Sources of individual resistance to change. As Table 10 shows, the main sources of resistance cited by respondents (when asked to self-report their perceptions/attitudes/ individual behaviours) are the factors *Surprise, Surprise!*, *Past resentments*, and *Too much uncertainty*. These factors correspond, respectively, to the perception that: the change occurred even though future users disagreed with it (88.3%); the change would be similar to past failed experiences, thus eliciting anxiety (80.3%); the benefits of the change were not sufficiently emphasised (74.5%); the nature of the change was not clearly explained, therefore users did not understand the need for it (49%).

Table 10 – Respondent-users' perceptions regarding the sources of resistance to change at the individual level (intrapersonal)

Factor / Question		Strongly Disagree	Disagree	Agree	Strongly agree
Fear of the unknown	When alone, I'm afraid to face new situations	52.9%	31.4%	13.7%	20%
	I'm afraid of the unknow, and I prefer to work with what I already know.	49.0%	35.3%	15.7%	0.0%
Selective information perception	Only bad situations motivate changes.	33.3%	58.8%	5.9%	2.0%
	It is difficult for me to transition to a "new" situation.	54.9%	37.2%	5.9%	2.0%
Habit	Change makes me uncomfortable.	43.1%	47.1%	9.8%	0.0%
	A well-known, comfortable process is better than a new one.	21.6%	41.1%	31.4%	5.9%
Too much uncertainty	When I don't understand the proposed change, I question that the results will be positive.	11.8%	39.2%	**45.1%**	**3.9%**
	It is easier for me to accept change when it is known that the results will be positive.	9.8%	15.7%	**49.0%**	**25.5%**
«Surprise, surprise!»	In my organization, change is implementedeven when employees do not agree with it.	3.9%	7.8%	**60.8%**	**27.5%**
	I resist when change is not planned.	19.6%	58.8%	19.6%	2.0%
Past resentments	Employees who have experienced failed change become resilient to new changes.	3.9%	15.7%	**72.6%**	**7.8%**

Table 10 also shows that *Fear of the unknown*, *Selective information perception and Habit* are not considered sources of individual resistance to the change that occurred in the PoAF when the new SIG-HR was implemented. In other words, although these factors elicited some resistance, the fear of dealing with new situations, personal preference and unwillingness to work outside one's comfort zone, the difficulty accepting new unplanned changes, and the perception that changes only occur for negative reasons were not the main sources of resistance.

Furthermore, Table 11 shows that respondent's perceptions regarding the delays in the process is also a source of resistance (80.4%), followed by the perception that the change increased the organization's workload (68.6%).

Table 11 – Respondent-users' perceptions regarding the sources of resistance to change associated with organizational functioning (organizational)

Question	Strongly Disagree	Disagree	Agree	Strongly Agree
Implementing a change creates more work for my organization.	7.8%	23.5%	**54.9%**	**13.8%**
In my organization, changes take longer than expected.	3.9%	15.7%	**56.9%**	**23.5%**
In my organization we perform tasks by trial and error.	**21.6%**	**45.1%**	31.3%	2.0%
In my organization, we carry out tasks in the way they were taught, by habit or tradition.	5.9%	29.4%	**56.9%**	**7.8%**
My organization has a clear and well-defined vision.	**11.8%**	**41.2%**	35.2%	11.8%

Table 11 also shows that most respondents (66.7%) consider that tasks are not carried out by "trial and error" in the PoAF, but rather by using what one has been taught and/or by habit or tradition (64.7%). However, 52.9% disagreed that the organization has a well-defined vision.

Table 12 shows that, with regards to management/authority/leadership, 94.1% of respondents agree that the presence of a leader to drive the change process is a factor that facilitates change, and that 74.5% (of the 94.1%) reported performing their tasks as instructed by management.

Table 12 – Respondent-users' perceptions regarding the sources of resistance to group-wide change (interpersonal)

Question	Strongly disagree	Disagree	Agree	Strongly agree
A process of transition to a new situation is easier if there is a leader capable of driving change.	3.9%	2.0%	**41.2%**	**52.9%**
I'm afraid to face changing situations even when I'm in a group.	**52.9%**	**47.1%**	0.0%	0.0%
In my organization, when the group disagrees with the change, no one is committed to that change.	**11.8%**	**56.9%**	29.3%	2.0%
The change process causes discomfort and anxiety, even when I'm in a group.	13.7%	35.3%	**49.0%**	**2.0%**
In my organization, when change is proposed, everyone is committed to the process.	7.8%	35.3%	**47.1%**	**9.8%**
When a member of the group disagrees with the change, we try to convince him/her that it is positive.	2.0%	11.7%	**82.4%**	**3.9%**
When a group member disagrees with the change, we support him/her and disagree as well.	**37.3%**	**56.9%**	5.8%	0.0%
In my organization we carry out tasks as instructed by an authority figure, that is, we always do it the way the boss wants it done.	0.0%	25.5%	**19.6%**	**54.9%**
In my organization when a team accepts the ideas for change and conveys this commitment to the other employees, they are more easily convinced that the change will be productive.	2.0%	3.9%	**23.5%**	**70.6%**

Note: For ease of reading, all group-related *a priori* categories are highlighted in green and those concerning leadership/authority are marked in blue.

All respondents regard the group as a protective factor (which helps people cope with their individual resistance to change) that reduces the discomfort elicited by change,

although some degree of discomfort always exists (51.0%), and fosters commitment in all parties involved in the process (56.9%) (Table 12).

This protection is also reflected in the fact that the group's acceptance of the change seems to potentiate both individual acceptance (94.2%) and individual commitment (68.7%), and can even help win over those who initially rejected the change (86.3%).

4.2.3. Refreezing

4.2.3.1. Manager perceptions

Content analysis of the semi-structured interviews revealed two types of responses (depending on the interviewees' area of work) regarding the information available on the benefits of the (new) implementation of the IMS-HR for the success of the organization.

Those working in the personnel department found it insufficient in light of the complexity of the system, stating that the rotation of military personnel in managerial positions limited the sharing of experiences (some HR participated in the unfreezing and/or movement phases but not in the refreezing phase because they were assigned to another service). Despite this, the expectation is that these issues will be mitigated the short term (E.F. Craveiro, op. cit.). In spite of the "formal" information available "falling short of what was required", users gradually became more aware of the improvements that were implemented and became less sceptical of the new production process (P.G. Simões, op. cit.).

The payroll processing department decided that it would be important to "[...] explain the benefits that the implementation of the new system would bring" (G.S. Lobão, op. cit.). Therefore, information on these "[...] improvements was shared with the personnel responsible for payroll processing" (P.J. Sousa, op. cit.).

An analysis of the questions that assessed if any strategies to reduce resistance to change were used in the post-implementation phase of the IMS-HR revealed that all interviewees from the personnel department answered that no strategies were used, and provided two justifications for this:

– On the one hand, despite some initial insecurity that may have stemmed from lack of information, the attitude that prevailed among employees was adherence and commitment to the project (E.F. Craveiro, op. cit.);

– On the other hand, the need to access the information in the system to complete daily tasks/assignments helped reduce resistance in the employees who were more sceptical of the change (P.G. Simões, op. cit.).

The payroll processing department "[...] tried to reduce resistance to change" not only by issuing communications (explaining the improvements already achieved) and by providing training to the employees who work directly with the system (G S. Lobão, op. cit.), but also by issuing official information to dispel any rumours about possible gaps in the new system (P.J. Sousa, op. cit.).

An analysis of the questions that addresses the training provided to consolidate the new procedures revealed that:

– The personnel department defined a training plan for trainers and users (despite

being short-staffed) by tasking its most qualified HR with operationalizing the system (E.F. Craveiro, op. cit.). The plan included two clarification and training sessions held by the PD in March and October 2019 (V.E. Almeida, op. cit.). Among other issues, the sessions served to explain the new procedures to the personnel responsible for data management, as well as to correct some gaps in the processes that had already been implemented with input from the users (P.G. Simões, op. cit.). In the light of these new developments, plans have been made to revisit the training process, i.e., the curricula of the training courses administered to contract and career personnel (E.F. Craveiro, op. cit.).

– The payroll processing department, despite the efforts to produce and update guidelines and support manuals, was not able to implement new training sessions to consolidate the knowledge acquired during the operational process due to lack of personnel and to the demanding work performed by the Office of Allowances (P.J. Sousa, op. cit.).

4.2.3.2. Respondent-user perceptions

Table 13 shows that 51.0% of respondents stated that they did not know if any strategies to overcome resistance to change were used, followed by 35.3% who reported that no strategies were used.

Table 13 – Respondent-users' perceptions regarding the existence, or lack thereof, of change consolidation measures (implementation of the IMS-HR)

In my perception, after the SIG-RH was implemented	Yes	No	Unaware
Some strategies were used to overcome resistance to the implementation.	13.7%	**35.3%**	**51.0%**
There was more training (e.g., consolidation of procedures).	**39.2%**	37.3%	23.5%

Still with regards to the data in Table 13, of the affirmative answers, the examples given as mitigating strategies and training purposes were "[...] issuing guidelines and holding sessions to clarify and train users" and "[...] presenting the procedure map for the new IMS".

An analysis of the way respondents justified their answers revealed that all respondents considered training to be an effective way of consolidating the change(s) introduced by the implementation of the IMS-HR, stating that training is "[...] a crucial element in [optimising] organizational performance" as it enables "[...] consolidating and validating procedures", especially "[...] if there were changes", as well as "[...] to review some steps and learn new things", that is, "[...] to stay up-to-date.".

4.2.4. Brief overview and answer to SQ2

The answer to SQ2 – *What change management strategies were used by the PoAF when implementing its HR-IS?* – is that the PoAF managers responsible for the implementation of the IMS-HR developed strategies to facilitate the change management process from the preparatory stages of unfreezing and movement to the post-implementation phase, with the refreezing of new procedures. However, these managers now agree that there were gaps in the operationalization of these strategies, which users describe as insufficient and in some cases non-existent. In other words, although managers' perceptions differ from

the perceptions of user-respondents regarding the degree to which some measures were effective, all respondents agree on the benefits of developing strategies to facilitate the implementation of the IMS-HR, both in the past (before and during the introduction of the new system) and in the present (change consolidation).

To elaborate, the study found that:

– In the unfreezing phase, in response to the instructions of the MDN and to the obsolescence of the previous system, the PoAF established a sense of urgency by setting up a working group, and, despite the lack of a formal plan to reduce potential resistance to change, took steps to get the future users of the IMS-HR involved in the process (by disseminating information, holding training sessions and issuing institutional communications). On the other hand, the respondents were either unaware of such strategies or found them to be insufficient. In fact, while most respondents report being involved in the process and asked to participate, the lack of effective and objective information about the change and the lack of a plan to manage resistance were factors that strongly limited the implementation's success.

– In the movement phase, managers took steps to: empower middle managers (but decided instead to select the HR who were most qualified for the task at hand, not all of whom were middle managers), which led to resistance from some users who felt they should be more involved; set short-term targets in coordination with the SG-MDN; improve procedures and readjust processes throughout the implementation process. With regards to these concerns, respondents acknowledged that the process can be further optimised by tasking HR with identifying emerging gaps in the production process. Furthermore, from the perspective of (primary) users, (their) resistances were, and in some cases still are, essentially based on: the uncertainty caused by the change to a new IS; resentment due to failed experiences with similar projects; difficulty understanding how the new IMS-HR relates to prior procedures (which they see as lack of vision by the PoAF, and, to some degree and in some cases, to natural reluctance to step out of one's comfort zone); the fact that change processes usually take longer than expected; and the extra workload that comes with the implementation of a new procedure. Finally, the group did not appear to be a critical factor of possible resistance to change, rather, there were several occasions in which it worked as a facilitating factor, as long as the group was sufficiently involved in the change.

– In the refreezing phase, the heads of the staff and payroll processing departments reported some differences in how they experienced the process. The personnel department developed a training plan to consolidate the change, which included holding training sessions in 2019 and the decision to incorporate this training in the training curricula of newly-inducted military personnel attending specialised training. On the other hand, the payroll processing department issued internal communications to inform employees of how the implementation of the IMS-HR would improve the processing of salaries and held specific training sessions to reduce resistance to change and to dispel rumours about possible gaps in the system. Other measures included the production and distribution of manuals and procedure scripts to users. Both departments agree that some of the measures analysed above fall short of what would be desired due to the shortage of HR and the lack of new (official) training after the implementation of the IMS-HR. Only 40% of users stated

that a training plan was developed, and all found it to be beneficial because it enabled the optimisation of procedures, helping (and continuing to help) consolidate the knowledge acquired in the pre-implementation phase of the IMS-HR and integrate new improvements.

4.3. Proposal to optimise change management in the implementation of the IS of the PoAF and answer to the RQ

The answer to the RQ – *What change management strategies can the PoAF use to optimise the implementation of its HR-IS?* – is that this optimisation will require aligning the strategies used by the managers with how they are effectively operationalized and perceived by users. In other words, to confirm if the strategies developed by the organization to facilitate the implementation of the change are perceived as effective by the recipients of those measures (in this case, the primary users). This confirmation should be obtained during the unfreezing, movement and refreezing phases by implementing the recommendations of this study during the current refreezing phase (i.e. a retrospective study to complement the prospective study).

More specifically, optimisation the refreezing phase of the implementation of the IMS-HR of the PoAF will consist of demonstrating (communicating/sharing information on) the improvements that have been achieved and the status of the targets that have been set, as well as the advantages the procedures still in development. Among other strategies, this "demonstration" can be operationalized by:

– Getting primary users more involved in the process (e.g. by holding "status meetings" to (among other purposes) collect user input on ways to optimise the system, and to identify and reduce resistances associated with failure of past projects, misgivings regarding delays, etc.);

– Producing effective internal communication (the "status meetings" mentioned above and/or email, training sessions, etc.) to review the reasons for the change, the benefits that have already been achieved and those that will be achieved in the future. Essentially, actions that reflect the etymology of the word communication, which comes from the Latin *communicare*, to commune, make common, or share (C.P. Fachada, orientation meeting, 06 January 2020).

5. Conclusions

Today, the importance of HR for the survival and development of organizations is widely acknowledged. The quality of an organization's productive capacity hinges on the unique contributions and human capital provided by its employees, which stem from the specific nature and quality of the sum of their skills, abilities, knowledge, education, experience, expertise, know-how, etc. The concept of HR is thus directly linked to best practices in HR management, to the conceptualisation and operationalization of practices, policies and systems which have proved effective in regulating employee attitudes, behaviours and performance.

Best practices in HRM are invaluable tools to improve the quality of organizations' production processes, and the implementation of a (new) IS brings significant organizational

benefits. The IS under study was selected from a variety of information systems that emerged from recent technological advances (which are evolving at a dizzying pace) because it met the requirements and needs of the organizational context where it would be used.

Aware that the HR systems of the Defence sector, particularly those of the PoAF, were fast becoming obsolescent, in 2002 the MDN decided to implement the IMS-HR in its services. The decisive step in this plan to modernise the systems was taken in 2010, when a procedure was defined to operationalize the system that would manage the HR of the Armed Forces.

In the specific case of the PoAF, the implementation took place on 01 October 2018, and had particular impact on the PD and the FD, the services with more managers and future (primary) users of the system.

Considering that change is unanimously regarded by the scientific community as a constant in the life of organizations, the implementation of this new IMS-HR necessarily entailed a change.

Therefore, and given the scale and importance of the data managed by the new IS, it was considered pertinent to analyse change management (retrospective study) and determine how it can be optimised (prospective study). This was initially done by analysing the best practices identified in case studies of other organizations where change was implemented, and by assessing the change process conducted by the PoAF, with special emphasis on manager and user perceptions.

This study aimed to analyse change management in the implementation of the IMS-HR of the PoAF. The study was delimited in terms of: time, to the period between 2018 and the present date (late 2019), which included the pre- and post-implementation phase of the change; space, to the users of the IS of the DP and the FD; content, to the HR module of the implemented IS.

In order to answer the RQ – *What change management strategies can the PoAF use to optimise the implementation of its HR-IS? –,* the study used a deductive reasoning methodology, a quantitative research strategy with qualitative elements, and a case study research design.

SO1 – *To analyse the change management strategies used by other organizations in the implementation of their HR-IS –* was achieved by answering the corresponding SQ. This was done by analysing five published case studies. This analysis revealed that, despite managers' efforts to drive change through "leadership" actions (e.g. by getting employees involved in the change process through training sessions, internal communication strategies, etc.), the measures taken were perceived by employees as insufficient and unsatisfactory. The collected data also shows that employees react positively to leaders that: issue internal communications to encourage involvement by all members of the organization; assess resistance to change and develop solutions to reduce it by providing training and collecting employee feedback on the new change, and by tasking middle managers with identifying and implementing creative solutions.

SO2 – *To analyse the change management strategies used by the PoAF in the implementation*

of the IS of the HR department – was achieved by answering the corresponding SQ. This was done by delivering a questionnaire to 51 users (83.6% of the sample of 61 personnel, including military personnel from the three categories and civilians assigned to the PD and the FD) and conducting semi-structured interviews with 6 officers in managerial positions ("leadership"). Upon analysis, the data revealed that:

– In the unfreezing phase, managers developed strategies that established a sense of urgency by: setting up a working group to prepare the implementation of the IMS-HR; getting the future users of the new system involved in the process; issuing internal communications and holding training sessions. These managers' current assessment of these strategies is that there is room for improvement. The respondents agreed with this assessment, stating that, despite having received some training, the information they were given regarding the change process fell short of what would be desired, and that it was not integrated in a (formal) plan for managing resistance to change.

– In the movement phase, the managers responsible for implementing the process in the PoAF agreed on the benefits of assigning tasks to middle managers (however, they also acknowledged that not all key personnel for the different processes were involved, which led to some foci of resistance) and of setting short-term targets (in coordination with the SG-MDN). The analysis also revealed that the sources of resistance were mainly: the uncertainty of the change combined with fears that the process would take longer than expected; resentment stemming from failed past experiences; employees preferred the procedures that were previously in place (i.e. natural reluctance to step out of their comfort zone); and initial resistance due to the increased workload that the implementation of the new IMS-HR would imply. Finally, the data collected showed that getting users to adhere to change, on the one hand, partly depends on the group, which, when well-managed, can even foster change acceptance, and, on the other hand, on effective internal communication and the existence of a training plan to optimise user involvement by identifying and addressing anxiety/resistance, collecting feedback, presenting the results achieved, with special emphasis on the improvements that the new system will bring and how it will help achieve the organisation's vision.

– In the refreezing (and consolidation) phase, despite some differences in how the change was experienced, the personnel and payroll processing departments took measures to constantly improve the system, even though managers and users agree that there is room for improvement. More specifically, some training sessions were held following the implementation and manuals/procedure guides have been developed. Nevertheless, the impact of these measures can be significantly increased through additional training and greater user involvement.

Thus, the above analysis achieves the GO – *To propose strategies to optimise change management in the implementation of the PoAF's HR-IS* – and answers the corresponding RQ. In general, optimisation mainly involves aligning the strategies used by managers (to manage change in the implementation of the new IMS-HR) with the way these strategies are effectively perceived by users. If the contents of the training provided are perceived by the users as falling short of what is required, an otherwise excellent

tool will end up having no impact or even having a negative impact. Additionally, this optimisation should focus on: increasing employee involvement through periodic meetings to obtain feedback on possible improvements to the production process and, simultaneously, to assess and mitigate resistance; issuing informative internal communication explaining, among other things, the targets, improvements and benefits already achieved; holding additional training sessions focusing, on the one hand, on developing users' skills and, on the other, on collecting feedback/input on possible improvements by assigning tasks to the HR with the most interest and qualifications, when possible.

This study's *contributions to knowledge* are: providing the PoAF with a snapshot/x-ray of how managers dealt with the implementation of the new IMS-HR and of how these practices were perceived by both managers and (primary) users – from the unfreezing and movement phases to the refreezing phase of the process. This knowledge will enable the optimisation of the latter phase (that is, the phase in which change is consolidated, which is currently ongoing) and to improve these practices when other/new changes are implemented. Furthermore, the data collected in the study and the study findings, specifically the data on how to manage change more effectively and efficiently, can be generalised to other departments currently considering implementing a change process.

The study had *two limitations*, which, although they were extraneous to the study, must be accounted for when analysing how to optimise change management in the implementation of the IMS-HR. The main limitation was the fact that the end-users of the IMS-HR were not surveyed, as the purpose of this study, one of the first conducted on this topic, was to assess the perceptions of the users operating the system in the central services (PD and FD) i.e. primary users. The other limitation was the fact that part of the data was collected through a self-reporting questionnaire, which may cause the findings to be influenced by common method variance. This limitation was controlled for by ensuring the anonymity and confidentiality of responses and by complementing them with an additional data collection tool, specifically, semi-structured interviews.

Therefore, *future studies* should be carried out to assess the perceptions of end-users on the quality of the service provided by the PD and the FD through the IMS-HR. It would likewise be of interest to examine the impact of the training sessions and internal communications that will be developed in the meantime, as well as the possibility of reinforcing/restructuring the curricula of the basic training courses given to newly-inducted personnel (both career and contract personnel).

A number of *practical recommendations* are suggested:

– The PD and the FD should formulate a plan to manage any remaining resistance to the implementation of the IMS-HR, as this will optimise the change process, which is now in the consolidation phase. This would involve using strategies such as:

- Getting users more involved (primary users, in the short term, and in the medium to long term , end-users) by holding periodic meetings to collect suggestions on how to optimise procedures, on the one hand, on the other, to assess and mitigate any foci of resistance;
- Intensifying information transfers within the organization through emails,

briefings, or training sessions to disseminate the goals that have already been achieved, the benefits (present and future) of implementing the IMS-HR, and updating this information accordinf to user needs.

– The Resources Division of the Air Force General Staff should assess if the study findings regarding best management practices in change processes can be implemented in all PoAF services.

A final recommendation of this study is that managers should constantly assess if their intentions when using a given strategy are aligned with how those strategies are effectively perceived (in this case, by the users). This assessment should begin early on and be continued throughout the implementation, as a complement to the recommendations above.

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