



ORGANIZATIONAL INNOVATION: RESEARCH INTO THE INFORMATION/ TRAINING PATHS OF DECISION-MAKERS WITHIN HOSPITALS

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Abstract

Innovation is fundamental for the development of any organization, being achieved not only through the new products/services and the renewed processes offered, but also through managerial practices. In order to introduce innovative practices, an organization should adopt a managerial model of innovation that includes organizational innovation processes based on professional competences, people management skills and their influence on the decision-making process. It is with this in mind that we propose a model that provides room for reflection on the reality of the health service organization. The model allows us to conclude that the path to be followed by these health units in the public health sector will be a long and arduous one if they are to achieve an efficient implementation of the innovation process at the knowledge level of professions, together with a real and effective organizational performance.

Key-words: innovation, innovation process, information/training path, hospital decision-makers, organizational performance

INNOVATION: A MULTIDIMENSIONAL CONCEPT

Since the early 20th century, there has been a great deal of discussion about innovation, its nature, characteristics, sources and classification, all with the aim of understanding its role in economic development. In practical terms, since a country's economic development largely depends on the continued launching of

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new products, many governments have become concerned about innovation. Indeed, new products and new services provide new employment opportunities and positive balances of trade, thus protecting a nation's standard of living. But innovation in products, services, technologies and administrative practices is also important for other institutional sectors besides the economy; the study of organizational innovation, for instance, is closely linked to the study of significant breakthroughs in science, the creation of interdisciplinary programmes in higher education, the reform of welfare, etc (Hage, 1999). In other words, for anyone interested in some of the most basic problems of society, the subject of organizational innovation is extremely relevant.

Theoretically, research into organizational innovation opens up new perspectives for looking at a number of interesting issues that have surfaced recently, including societal evolution and institutional change, the dynamics of knowledge societies (Bell, 1973; Hage and Powers, 1992) and health care systems (Den Hertog et al., 2005). Organizational innovation can make important contributions to several important areas of new research in the field of economics.

Organizational innovation has been consistently defined as the adoption of an idea or behaviour that is new to the organization (Damanpour, 1988, 1991; Daft and Becker 1978; Hage, 1980; Hage and Aiken, 1970; Zaltman, Duncan and Holbek, 1973; Oerlemans et al., 1998; Wood, 1998; Zummato and O'Connor, 1992). In the European Commission's Green Paper on Innovation, there is a fairly complex definition of this concept, which is understood as a "multi-faceted phenomenon", being considered not just as an economic mechanism or a technical process, but above all as a "social phenomenon" (EC, 1995, p. 11). Although, in the Green Paper, emphasis is given to the technological component when reference is made to the concept of innovation, the importance of the organizational aspects is recognised, with regard not only to the "ability to involve the workforce to an increased extent, and from the outset, in the technological changes and their implications for the organisation of production and work" (EC, 1995, pp. 1-2), but also the mechanisms for interaction within the organization (collaboration between the different units/sectors).

Innovation can be either a new product, a new service, a new technology, or a new administrative practice. The academic literature contains a number of definitions of innovation, each revealing important aspects of it. Several authors emphasize newness, including anything perceived to be new by the people doing it (Rogers and Kim, 1985) or the fact that innovation is something different for each organization into which it is introduced (Downs and Mohr, 1976). Emphasis is also given to the generation, acceptance, and implementation of new ideas, processes, products or services (Thompson, 1965-6) in an applied setting (Mohr, 1969). Some see it as the early adoption of a new idea (Rogers and Kim, 1985), others as something that is synonymous with creativity (Jacques and

Ryan, 1978), while yet others see it as the same thing as improvements (Robinson and Stern, 1998), and a final group see it as involving substantive but not revolutionary changes (Merritt, 1985; Deutsch, 1985).

We bring several of these key concepts to our definition of innovation. Based on these and other approaches, throughout this article we will consider innovation as a process that, by including both an organization's firm's own scientific and technological knowledge and that coming from outside, as well as the personal capacities of the managers/decision-makers, leads to the development and improvement of the services provided or new or improved production processes.

THE INNOVATION PROCESS AND ITS IMPLICATIONS FOR ORGANIZATIONAL PERFORMANCE

The pioneering work of Coombs (2004), Miles (2004), Tether and Metcalfe (2003) indicates that the relevance of models, typologies and concepts from the manufacturing industry for the study of service innovation is rather limited. Service innovation has a wide variety of different forms, but reveals a number of particular characteristics that need to be analysed. The crucial role of the customer in the innovation process is one of these characteristics. It is now recognized that innovations take place within the context of intensive interactions between the service provider and the service user, as well between the service provider and equipment suppliers (Tether and Metcalfe, 2003). These complex interactions constitute multiple "processes of innovation". Tether and Metcalfe (2003, p. 2) argue that these systems often develop around identifiable sequences of problems, which are themselves framed by a number of contingencies (including regulatory, cultural and technological contingencies). This means that the "problem" or the "opportunity" can be considered as the heart of the system of innovation. Both writers point out that as the problem (or opportunity) changes, or is redefined, the system can change and, for the same reason, the agents and the relationships between these agents can change too. The implication is that there is not one 'single system', or process, of innovation in services, but instead innovation takes place in a multitude of different systems or patterns, which involve agents from different sectors (Den Hertog et al., 2005).

This characterization seems applicable to health care as it points to the complex nature of the innovation process. At the same time, there is an urgent need for knowledge about both the context and the process of innovation in health care as this can help to make innovation programmes more effective and less time-consuming. The main focus of this paper is the analysis of the innovation process in health care. The number of studies undertaken in this area remains rather limited (e.g. Denis et al., 2002; Lemieux-Charles et al., 2002; Metcalfe and

James, 2001; Robinson et al., 2003) and the field is still fragmented, showing that innovation in health care is a difficult process (Schrijvers et al. 2002, quoted by Den Hertog et al., 2005).

In the course of this paper, we will draw on studies that provide an in-depth analysis of innovation at the micro level, so that we can see the different components and relationships in action. The model of the innovation process that is set out in this paper is mapped from the perspective of hospital decision-makers.

The primary process of health care is the starting point for exploring the innovation process as a system. Secondly, the model should offer the possibility to visualize the *multiple levels* of decision-making and organizational learning (e.g. Tucker and Edmondson, 2003). Finally, the model should also show the feedback mechanisms within the health care organizational innovation process.

The model of the health care innovation process is built up along two basic axes: (1) the structure of the primary process, in which inputs are transformed into systems outputs, and (2) the structure of the planning and control functions (Den Hertog et al, 2005). The primary process is represented in the model as the horizontal axis. The horizontal axis serves to identify the needs for integration and cooperation between the different links in the health value chain. The vertical axis represents the control structure and shows the positions of the key echelons of management and policy-making: from the operational (or peer) management level to the systems (or policy) level (Den Hertog et al., 2005).

We start our model exercise with a tour of the elements that make up the innovation process. First of all, there are the components. Carlsson et al. (2002) describe components as the operating parts of a system (p. 234). These can be actors (e.g. patients, health care professionals, managers, politicians), organisations (e.g. hospitals, nursing homes, community care centres, insurance companies, professional bodies, patient organisations, manufacturers, universities), institutions (e.g. regulatory laws, inspection services, watchdogs) or artefacts (e.g. drugs, diagnoses, equipment, implants). We will not try to make a complete list of possible components. As Carlsson et al. (2002) point out, the system boundaries, the actors involved, the networks and institutions may vary depending on how we choose our level of analysis. In this paper, the actors of the innovation process are hospital decision-makers, based on their different competences, skills or knowledge¹.

The second element of a system consists of the relationships between the components. Again, much will depend on the specific innovation under study. Tether and Metcalfe (2001) describe how systems that generate innovation can be regarded as sets of micro-systemic elements that are created around sequences of problems or opportunities and involve shifting patterns of interaction as new problems or opportunities emerge and draw upon different kinds of specialised knowledge.

¹ See, amongst others, Nonaka and Takeuchi (1995) and Nonaka et al. (2000).

Finally, the third element of a system consists of the attributes; the properties of the components and the relationships between them (Carlsson et al., 2002). These attributes characterize the system: they are the features which are crucial for understanding the system and are related to the function or purpose served by the system. The main features of an innovation system are the capabilities of the actors to generate, diffuse, and utilize knowledge that has an economic value. Our proposed model will result in the description of a number of attributes originating from the personal and professional information/training paths followed by hospital decision-makers in regard to organizational innovation.

It should be stressed that the innovation process must be understood as a series of **interactions** and exchanges between researchers, users, technicians, government, organizations, etc., who together form the innovation network. Thus, the concept of the innovation network is linked to the perception that the development of new products or processes does not only take place within the confines of one isolated organization, but it also involves many different actors and the constant exchanges between them, as shown by the two columns headed 'Socio-organizational environment' in the model already mentioned (Figure 1) and the respective arrows that represent the necessary interactions.

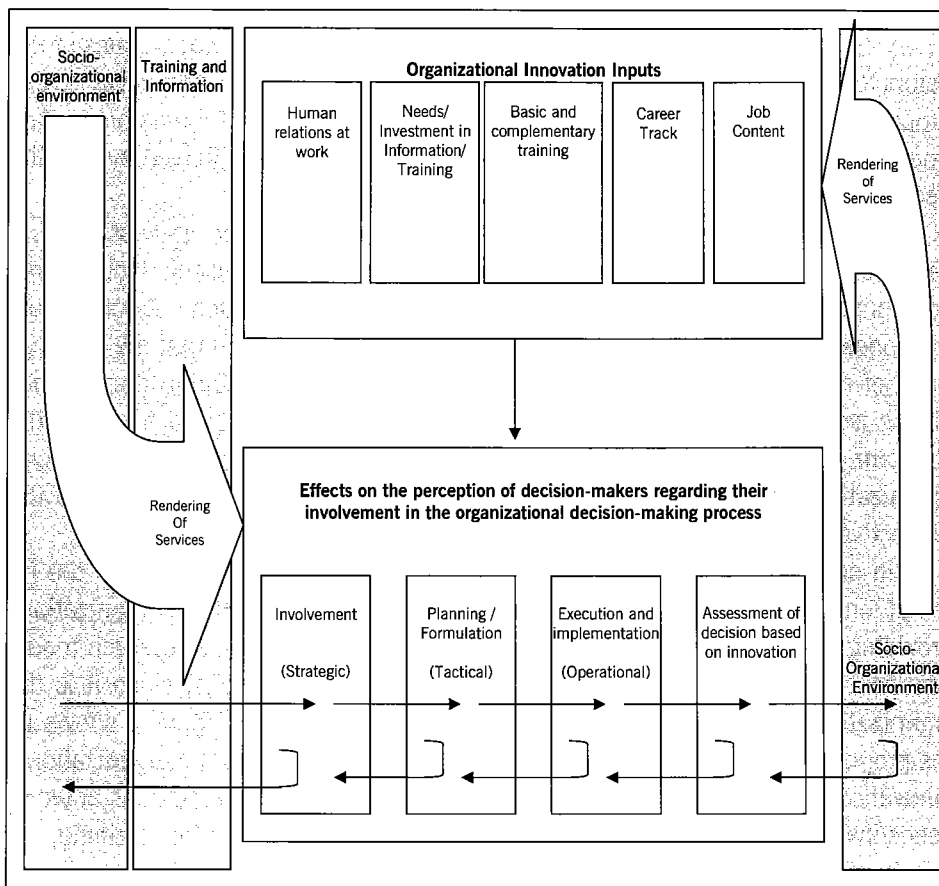
In order to capture the relationship between the different phases of the internal innovation process and the organizational performance of the organizations providing health care services (in this concrete case Hospitals), a research model was constructed that might reflect intra-organizational relations, since it is the organization that is the central subject of our attention here. Figure 1 shows us the proposed model. The central part of the model summarizes the organizational innovation process in the health sector. The five inputs (human relations at work, needs/investment in information/training², basic and complementary training, career track and job content), each of which contains several variables, are summarized in Tables 2 and 3, as well as their effects on the perception of decision-makers regarding their involvement in the organizational decision-making process that may lead to innovation outputs. The side columns show the interactions with the socio-organizational environment and the investment that is needed in information/training, joined together as needs/investment in information/training.

It should be stressed that, in the model proposed, the organization is inserted in a socio-organizational context, with which it interacts and from which it extracts inputs (such as new technologies, products and knowledge) for the complex internal activities of innovation. In turn, in these internal activities, different dimensions of the personal and professional information/training paths of the organization's human resources interact with one another, and innovation is the

² The dimension of Needs/Investment in Information/Training is composed of a series of individualized questions about needs/investment in both training and information.

FIGURE 1

Innovation process at the level of the personal and professional information/training paths of human resources, with a view to improving organizational performance



Source: Compiled by the authors.

output of these same interactions, of the exchanges of information/training and the back-links (which together can be referred to as the process of transforming an innovation input into an innovation output), bearing in mind the needs of the economy/society and the pressures of the market.

From the management point of view, there are choices to be made about resources, their availability and logistical coordination. A careful analysis of many of the innovations introduced over the years shows that, although there are difficulties of a technical nature – mistakes to be corrected, initial difficulties to be resolved and occasional obstacles to be overcome – most failures are due to certain weaknesses in the management of the **innovation and decision-making process**³.

³ We will not explore the problematics of decision-making theories in the course of this article. For this subject, see, for example, Nogueira (2004).

METHODOLOGICAL ASPECTS

The national hospitals of the Portuguese National Health Service (SNS) represent our field of analysis, which, amongst other aspects, is based on the setting up of the "network" of hospital units operating in Portugal between October 2002 and September 2003. At that time, the health sector was partly composed, on the one hand, of the predominant and powerful hierarchy of large, medium and small-sized hospitals (general and specialized) governed by the rules of public management and, on the other hand, of a small group of units under private management.

This scenario led us to collect data at four institutions: two large and two small hospitals⁴. It should also be mentioned that one of the large and one of the small hospitals were governed by the rules of public management and that the other two already contained within their organizational make-up particular features of business management (based on private law)⁵. This choice was further based on the premise that all of the hospitals (whether operating according to the rules of public management or operating according to the rules of private management) were subject to the same type of social and political constraints, even though they had different regulations and statutes.

Once the institutions had been identified, the next step was to decide upon the number of questionnaires to be undertaken at each of them. Bearing in mind our object of study, the size of the sample for each hospital had to take into account the size of the institution and the area that it covered, thereby also lessening the risks of under-representation, for example as a result of people's non-availability for answering the questions. As far as the size of the sample was concerned, at each institution the logical principle was therefore adopted that the hospital with the smallest capacity and least technical differentiation would correspond to a smaller sample, the size of which would increase for hospitals with a greater capacity and wider differentiation. Under these conditions, the following numbers of questionnaires were established for each unit: large hospitals, 12 questionnaires; small hospitals, 8 questionnaires. Consequently, it was planned to carry out a total of 40 questionnaires, without our being particularly concerned with the size of the sample. According to Freitas *et al* (1998), such a fact is not at all important in studies of an exploratory nature, given that the possible conclusions to be drawn can only be generalized after they have been confirmed through a confirmatory study, in which the size of the sample is indeed important.

⁴ Large hospitals are those with more than 600 beds and a very high differentiation in their supply. Small hospitals are those with less than 200 beds and a smaller differentiation in their supply (INE, 2003).

⁵ The legislation that gave rise to these new management approaches is part of an overall perspective of change, introducing both a model of pure private management in one case and management features deriving from private law in the other case. Thus, throughout the text, we will refer to the organizations under analysis as those under "private management" and those under "public management".

In selecting the individuals that were to be questioned at each unit, six target groups were initially considered – board of directors, doctors, nurses, advanced technicians, paramedical technicians and administrative technicians. However, each of these groups has a very different level of importance both within the organization and within the health system itself. Amongst other aspects, this situation results from the technical differentiation and symbolic power of the different professions. Such facts naturally have repercussions on the way in which each of the groups takes part in the hospital's decision-making process. An attempt was therefore made, in conjunction with the hospital organizations, to arrive at a representative picture of the different groups involved in the decision-making process. Consequently, the sample included the following managerial groups: top management (at the level of strategic decision-making), which comprised the members of the board of directors; middle management (at the level of tactical decision-making), which comprised the heads of services and the nursing supervisors; basic management (at the operational level), which comprised the heads of the medical and nursing departments, the advanced health technicians, the advanced technicians and the administrative technicians performing management and department leadership functions.

Thirty-two individuals responded to our questionnaire, divided equally between public and privately managed hospital units. Table 1 shows a summary of the main methodological aspects of this study.

TABLE 1

Technical Details of the Research	
Population	Hospital units operating in the SNS in Portugal
Sample unit	Two publicly managed hospitals and two privately managed hospitals
Geographical area	Portugal
Data collection method	Questionnaire administered personally
Sample size	32 questionnaires
Period under analysis	October 2002 to September 2003
Research objective	To propose a research model for capturing the relationship between the different phases of the innovation process and organizational performance, at the level of the information/training paths of hospital decision-makers
Research hypothesis	The different organizational innovation inputs at the level of the personal and professional information/training paths of hospital managers provide different positions and perceptions about the decision-making process in these organizations
Reliability level	95% $Z = 1.96$ $p=q=0.05$
Sample error	$\pm 4,22\%$
Data analysis	Statistical package: SPSS 13.0

Source: Compiled by the authors.

APPLICATION OF THE PROPOSED MODEL TO THE HEALTH SECTOR

In this section, having presented the premises, principles, procedures, methods and techniques of analysis, we shall now analyse the information collected.

TABLE 2

Personal and professional information/training paths of decision-makers at hospitals under public management, in percentage terms

Organizational innovation inputs	About the Decision-Makers Surveyed
Personal data - Gender - Age group - Basic area of training	- Mainly male (61%) - 50% aged between 39 and 49 and 6% aged below 39 - Managers mainly composed of individuals trained in health sciences (78%)
Basic and complementary training - Basic training - Year of training - Reasons for choosing course - Expectations met or not - Complementary training - Relevance of training for job	- First Degree 89%; Master's Degree and PhD 6% - 17% graduated before 1970; 83% between 1971 and 1981 - Personal vocation or family tradition (88%); Recommendation/Guarantee of Employment (12%) - Mainly not met (85%) - Mainly trained for the sector (78%) - Positive (94%)
Career track - Choice of profession - Beginning of career track - Other professional activities - Beginning of activity at hospital - Expectations met or not - Position	- Personal vocation (63%) - In the sector (87%); outside the sector (13%) - Has another professional activity (33%), with 22% working as entrepreneurs in the sector - Most entered the institution before 1990 (78%) - Mainly not met (60%). Thinking of continuing to fight (67%) - Obtained job through competitive application or direct appointment (94%)
Job content - Tasks entrusted to them - Degree of autonomy in tasks - Degree of autonomy in planning activities - Degree of autonomy in planning strategies - Degree of job satisfaction - Degree of satisfaction in the preparation of resources - Degree of satisfaction in inter-institutional relations - Attitude towards unexpected events	- Mainly technical (62%), due to their basic training - Felt to be high for technical tasks and in material resources (87%) - Felt to be nil by 40% of respondents - Felt to be nil or low by 61% of respondents - Very high for technical tasks, through the achievement of results (91%) - Felt to be high by 67% of respondents - Felt to be low by 80% of respondents - Seek out colleagues and internal managers (37%) or analogous situations (51%)
Needs/Investment in Information/training - Academic information/training for the sector - Academic information/training for the job - Vocational information/training for the sector - Vocational information/training for the job	- Feel fairly strong need (64%) - Feel some need (36%) - Feel little need (20%) - Feel fairly strong need (80%)
Human relations at work - Intensity of socialization - Personal investment - Intensity of close cooperation - Intensity of general cooperation - Values in work relations	- Conducted through daily contacts with colleagues from the institution (46%) - Mainly at work (36%) - Highly cooperative (94%) - Cooperative (67%) - Loyalty (76%)

Source: Compiled by the authors.

Now that an analysis has been made of the personal and professional information/training paths of the decision-makers at the two hospitals under public management (Table 2), we can see that these are mainly individuals with techni-

cal training for the health sector and with a low level of information/training for management (to judge by their basic and complementary training and by their needs for greater information/training). It can also be seen that a sense of both autonomy and satisfaction (at the level of their job content) are achieved in the performance of the technical tasks, but not in the management tasks that they currently perform. Human relations are established at their places of work and inter-institutional relations are felt by the group under analysis to be practically non-existent. As far as the dimension of information/training is concerned, the greatest needs/investment that the hospital managers refer to are the needs for academic training for the sector and vocational training for the performance of management tasks. This whole group of results leads us to think that we are faced with personal and professional information/training paths that are highly geared towards the great technical demands of the sector.

Let us now see what is the reaction to these same dimensions/inputs on the part of the managers of hospitals under private management.

Unlike in the previous case, the managers of hospitals under private management (Table 3) are mainly individuals who have trained as managers and have a low level of specific training for the sector (to judge by their basic and complementary training and by their needs/investment in information/training). Similarly contrasting with what was found in hospitals subject to the rules of public management, it can be seen that the level of both autonomy and job satisfaction is fairly high with regard to managerial tasks. Human relations are established both inside and outside the institution with work colleagues and inter-institutional relations are felt by these decision-makers to be at a high level. As far as Needs/Investment in Information/Training are concerned, the needs that are felt are exclusively geared towards the job. Such facts would seem to confirm that we are faced with decision-makers who, despite having the basic training required for performing the managerial tasks entrusted to them, are not highly motivated to invest in information/training for the sector, despite the technical complexity that this involves.

Now that the dimensions (inputs) of the personal and professional information/training paths of public and private decision-makers have been analysed, let us look next at their effects on the perception of both types of decision-makers regarding their involvement in the organizational decision-making process.

With the aim of analysing the feelings of the respondents to the questionnaire regarding their involvement in the hospital decision-making process, we asked them directly if they were in the habit of sharing (with their opinions) in the various decision-making processes about organizational innovation within the respective institution. The managers of the organizations under private manage-

TABLE 3

Personal and professional information/training paths of decision-makers at hospitals under private management, in percentage terms

Organizational innovation inputs	About the Decision-Makers Surveyed
Personal data - Gender - Age group - Basic area of training	- Mainly male (66%) - 50% aged between 39 and 49 and 17% aged below 39 - Managers mainly composed of individuals trained in health sciences (67%)
Basic and complementary training - Basic training - Year of training - Reasons for choosing course - Expectations met or not - Complementary training - Relevance of training for job	- First Degree (83%); Master's Degree and PhD (17%) - Graduated between 1971 and 1981 (100%). Average number of years in training: 22 - Personal vocation or family tradition (52%); Recommendation/Guarantee of Employment (48%) - Mainly not met (67%) - Mainly trained for the sector (63%) - Negative or mixed (68%)
Career track - Choice of profession - Beginning of career track - Other professional activities - Beginning of activity at hospital - Expectations met or not - Position	- Guarantee of employment (58%) - In the sector (75%); outside the sector (25%) - Has another professional activity (50%), with 8% working as entrepreneurs in the sector - All entered the institution after 1990 (100%) - Mainly not met (57%). Thinking of continuing to fight (47%) - Obtained job through invitation (100%)
Job content - Tasks entrusted to them - Degree of autonomy in tasks - Degree of autonomy in planning activities - Degree of autonomy in planning strategies - Degree of job satisfaction - Degree of satisfaction in the preparation of resources - Degree of satisfaction in inter-institutional relations - Attitude towards unexpected events	- Mainly managerial (79%), due to the position they occupy - Complete for all managerial tasks (100%) - Felt to be very high by 75% of respondents - Felt to be very high by 67% of respondents - High for managerial tasks, through the achievement of results (79%) - Felt to be very high by 84% of respondents - Felt to be high by 73% of respondents - Seek out colleagues and internal managers (45%) or books and other documents (39%)
Needs/Investment in Information/Training - Academic information/training for the sector - Academic information/training for the job - Vocational information/training for the sector - Vocational information/training for the job	- Feel little need (14%) - Feel fairly strong need (86%) - Feel little need (0%) - Feel fairly strong need (100%)
Human relations at work - Intensity of socialization - Personal investment - Intensity of close cooperation - Intensity of general cooperation - Values in work relations	- Conducted through daily contacts with work colleagues from inside and outside the institution (69%) - Mainly at work (75%) - Highly cooperative (82%) - Highly cooperative (82%) - Honesty (74%)

Source: Compiled by authors.

ment were unanimous in their answers: they all claimed to participate **at all times**⁶. In contrast to this picture, 50% of managers from the organizations under public management claimed **never** to participate.

⁶ The *Liken* scale inherent in this question was as follows: 1 – Always; 2 – Often; 3 – Sometimes; 4 – Rarely and 5 – Never.

In the light of these answers, we tried to understand which components of the organizational decision-making process the respondents felt, or didn't feel, themselves to be more involved in. For this purpose, we divided the previous question into a series of sub-questions inherent in the decision-making process carried out at three organizational levels: operational, tactical and strategic. We began by analysing the affirmative answers (yes, I participate) to this set of questions in an overall manner, in other words for all the respondents as a whole. Next, we did the same thing, but this time for the two groups of managers: those from public management and those from private management. The results are shown in Table 4.

TABLE 4

Perception of decision-makers regarding their involvement in the organizational decision-making process, by type of management and overall, in percentage terms⁷

Perception of decision-makers regarding their involvement in the organizational decision-making process		Type of Organization		
		All Respondents	Under Public Management	Under Private Management
STRATEGIC	In decisions to install new services and/or specialities at the hospital	65.5%	33.3%	81.8%
	In decisions to reduce the number of services and/or specialities at the hospital	56.5%	33.3%	81.8%
	In decisions to expand services and/or specialities at the hospital	70.8%	53.8%	90.9%
	In decisions to reduce the premises, equipment and staff of hospital services	54.2%	30.8%	81.8%
	In decisions to purchase highly specialized and costly technical equipment	79.2%	76.9%	81.8%
TACTICAL	In decisions to approve internal rules about the operation of hospital services	75.0%	53.8%	100.0%
	In decisions about the application at the hospital of legal rules approved by the governing bodies of the SNS	56.5%	25.0%	90.9%
	In decisions about the best way to link the activities of the different services	82.6%	66.7%	100.0%
	In decisions about the human resources needed to implement programmed activities	73.9%	50.0%	100.0%
	In decisions about the distribution of financial resources in view of the aims to be achieved	47.8%	41.7%	54.5%
OPERATIONAL	In decisions about the arrangement or maintenance of the technical equipment existing within their service	79.2%	84.6%	72.7%
	In decisions about the maintenance of the premises within their service (painting, recovery of materials,...)	87.0%	91.7%	81.8%
	In decisions about the place where equipment is positioned at their work unit	79.2%	92.3%	63.3%
	In decisions about the implementation of working hours, holiday plans, etc... in their department	87.5%	92.3%	81.8%
	In decisions about the undertaking of diagnoses, therapeutic action and measures of comfort for the users of the service in which they carry out their activity	75.0%	84.6%	63.6%

Source: Compiled by the authors.

⁷ In order to test the difference between the two groups under analysis, we used the Kruskal-Wallis test. This test is used to test whether two or more samples originate from the same population or whether, on the contrary, they come from different populations or even whether they come from populations with the same distribution, which is equivalent to testing whether the population medians are the same (Kruskal and Wallis,

From the overall analysis of the answers obtained, it was noted that all the tasks mentioned obtained a level of participation, on the part of the decision-makers, of more than 50%, except for the decisions taken regarding the allocation of financial resources in relation to the objectives to be achieved (47.8%). Analysed in this way and at the overall level of the answers provided by the respondents, we might almost be led to believe that, at both the hospitals under private management and those under public management, most of the hospital managers had a positive feeling regarding their involvement in the different areas of decision-making and that the others only lacked information/training about their real role in the process. However, in undertaking a more detailed analysis, in other words studying the question by type of organization (under public management and under private management) and, at the same time, bearing in mind the level of decision-making (strategic, tactical and operational), we note that, after all, our initial perception required a certain correction. Consequently, there was something that was not being considered that was taking place at the level of the personal and professional information/training paths of some of the respondents.

Let us see:

- (1) strategic decisions have a much higher level of participation on the part of the managers of organizations under private management⁸ than in the case of the managers of organizations under public management, except for decisions about the purchase of highly specialized and costly technical equipment, in which the answers converge more closely;
- (2) in the case of tactical decisions, the managers of organizations under private management are the ones that claim to participate more. In this particular dimension and in all decisions, the managers of organizations under public management have much lower levels of participation than the managers of private organizations, thus scoring well below the previous pattern;
- (3) in the case of operational decisions, the situation is completely reversed, with managers of organizations under public management having percentages that are always higher than those of managers of organizations under private management.

Such an analysis immediately allows us to conclude that most managers of organizations under public management only feel that they participate in the de-

1952). Through our analysis of the test, we are led to conclude that there are significant differences between the two types of management in the medians of most of the variables relating to the perception of decision-makers regarding their involvement in the organizational decision-making process.

⁸ In order to make it easier to read and interpret the data, it is assumed that the term 'private managers' refers to the decision-makers surveyed at the organizations under private management, and that 'public managers' refers to the decision-makers surveyed at the organizations under public management.

velopment of operational (technical) tasks. In contrast, the managers of hospitals under private management show fairly high levels of participation in the decision-making process, especially at the strategic and tactical level.

What remains now is to discover whether such a fact may or may not be related with the personal and professional information/training paths of the decision-makers, when seen as a whole. To put it another way: we shall attempt to discover whether different inputs to organizational innovation at the level of the personal and professional information/training paths of an organization's managers provide different positions and perceptions about the decision-making process. Returning to the dimensions considered as inputs (basic and complementary training, career track, job content, needs/investment in information/training and human relations at work), we can see that it is the managers of the hospitals under public management who experience greater difficulty in establishing the necessary links and positioning in relation to managerial tasks. The fact that their skills and competences, knowledge and sensitivities, attitudes and convictions are mostly geared towards the demanding (technical) functions of assistance that they are obliged to carry out frequently leads them to neglect to invest in knowing more about the management functions in which they are effectively involved. In turn, the managers of the units under private management seem to be fairly highly motivated towards tackling management problems and less geared towards the problems of providing assistance in the sector in which they are managers.

FINAL REFLECTIONS

In a knowledge economy, innovation and the capacity to promote the production and dissemination of knowledge are crucial for the survival of organizations. This process is not limited to the specialists. The tacit knowledge generated by experience and accumulated throughout professional life is an indispensable innovation input for organizations.

Participation in the organizational innovation process (through the various dimensions of the personal and professional paths of the organization's members) and a relative job stability are necessary conditions for increasing the outputs of any organization. "Professional know-how" (acquired conventionally or in the work context) is considered to be one of the essential pillars of innovation at the organization. Nonetheless, learning presupposes relatively stable spaces of interaction and interpersonal relations, and relatively long time horizons, as we were able to discover from the results obtained with the application of the proposed model at the health units under private management. The information/training levels of their human resources for undertaking management functions leads them to real knowledge about their involvement in the decision-making

process, not only with regard to strategic decision-making, but also with regard to tactical decision-making. On the other hand, still based on the proposed model, it can be seen that information/training paths geared towards the sector may not be sufficient to have real knowledge about the different dimensions of one of the most important managerial functions: decision-making. To put it another way, the personal and professional information/training paths of the human resources of the units under public management are only reflected as an innovation output, at the level of the organizational performance, that is to say at the level of operational decisions. This fact leads us to conclude that the path to be followed by these latter health units will be longer in regard to an effective implementation of the innovation process, at the level of professional know-how, with a view to obtaining a real and effective organizational performance.

For the new organizational forms to be accepted by both employers and employees alike, both parties must feel that their expectations have been met: employers need to see an improvement in the competitive position of their organizations, while employees need to see an improvement in wage levels, their working conditions, greater job security, and, no less important, more learning opportunities (through concerted information and training processes) geared towards their promotion.

Social control of the innovation process requires dialogue, i.e. negotiation between the parties involved, in order to obtain a reconciliation of interests and a share of responsibilities. New negotiation contents are required at the level of innovation inputs about the new professional profiles of managers: redefinition and adaptation of the needs of basic information/training for managerial positions; complementary information/training about the different strategic processes for undertaking action in accordance with the different needs of the sector; organization and redefinition of work; intensification of cooperation processes and inter-institutional relations; and new forms of representation and participation in the decision-making process.

Under these conditions, innovation, as a means for achieving certain organizational realities, applies not only to technical, economic and financial aspects, but also to the social, organizational and managerial aspects arising from the fact that the organization represents a complex organizational system composed of the following elements: the individuals who work and produce within the organization; material and technical resources for pursuing certain aims; a system of relations between individuals and groups; and strategic, tactical, administrative and operational decisions. It is in this sense, based on the results obtained through this first application of the model for the management of the organizational innovation process that we provide here, for all hospital decision-makers, both those under public management and those under private management, a careful, critical, individual and collective reflection on the organizational processes in which

they find themselves immersed, with the aim of ensuring that all those who are called upon to decide may:

- (a) know their "real" role and their degree of involvement in the decision-making process within hospitals;
- (b) reorient their complementary training, seeking to enhance it and to improve their "real" performance under the scope of all the tasks arising from the particular function that they perform at their institutions;
- (c) reorganize the organizational matrix, with the aim of achieving a clear and objective definition of both who decides and what they decide, so that the 'technicians' can effectively know what should be the extent of their intervention and involvement in the various stages of hospital decision-making;
- (d) implement, at the level of the internal functioning of hospitals, mechanisms that stimulate the necessary synergies for (re)organizing the processes for providing information/training to their staff, in particular their managers.

In fact, complex problems such as decision-making at hospitals will only be able to obtain suitable answers in a process of continuous (re)formulation and learning, at the level of people, structures and processes.

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Resumo

A inovação é fundamental ao desenvolvimento de qualquer organização. Através de novos produtos/serviços e processos é renovada não só a oferta mas, também, as práticas de gestão. Para levar a cabo iniciativas inovadoras, a organização deve adoptar um modelo global de gestão da inovação baseado em processos de inovação organizacional baseado nas competências profissionais e de gestão das pessoas e suas influências no processo de tomada de decisão. Com base neste pressuposto foi construído um modelo do processo de inovação organizacional que pudesse reflectir a realidade da organização prestadora de serviços de saúde. O modelo levou-nos a concluir que o percurso a percorrer pelas unidades de saúde, de forma geral, ainda é longo no que diz respeito a uma eficaz implementação do processo de inovação, ao nível dos saberes profissionais, com vista a um real e efectivo desempenho organizacional.

Palavras-chave: inovação, processo de inovação, percursos (in)formativos, decisores hospitalares, desempenho organizacional.
