MANAGEMENT CONTROL, FOR BETTER PERFORMANCE OF PUBLIC MANAGEMENT-CASE STUDY OF HEALTHCARE FACILITIES IN ALGERIA

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ABSTRACT

The objective of this work is to empirically show the active role of the management control performance variable, in improving management performance at public healthcare facilities. The determination of the levers on which management controllers can act to maximize the performance of this process, is also discussed. The results indicate the existence of a significant direct link between the performance of management control and that of managers of public health establishments. They also suggest interesting elements for practitioners, particularly as regards the levers to prioritize, to maximize management control performance and thus that of public managers. It turns out that the levers of the technical dimension are the most decisive for the sample of this study.

KEY WORDS

Management control, managerial performance, determinants, public management, healthcare facilities

JEL CLASSIFICATION: L25, L31, L32, H83

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مراقبة التسيير، من أجل تحسين فعالية التسيير العمومي
دراسة حالة المؤسسات العمومية للصحة بالجزائر

ملخص

تهدف هذه الدراسة إلى إبراز الدور الفعال "لمراقبة التسيير" في تحسين فعالية تسيير المؤسسات العمومية للصحة بالجزائر، وقد تم أيضا تحديد المحددات التي يمكن لمراقبي التسيير الاعتماد عليها لتحقيق أقصى قدر من فعالية هذا المسار. تشير النتائج المتحصل عليها إلى وجود علاقة مباشرة بين فعالية مراقبة التسيير وأداء مسيري المؤسسات العمومية للصحة، كما تقترح هذه النتائج عناصر مثيرة للاهتمام للممارسين في مجال الإدارة، لاسيما فيما يتعلق بمحددات الفعالية التي يجب تحديدها من حيث الأولوية لتحقيق أقصى قدر من فعالية مراقبة التسيير، وبالتالي أداء المسيرين فيا لقطاع العام، واتضح أن محددات البعد التقني هي الأكثر حسماً لعينة هذه الدراسة.

كلمات مفتاحية: مراقبة التسيير، فعالية التسيير، المحددات، التسيير العمومي، المؤسسات العمومية للصحة

LE CONTROLE DE GESTION, POUR UNE MEILLEURE PERFORMANCE DU MANAGEMENT PUBLIC-ÉTUDE DE CAS DES ÉTABLISSEMENTS DE SANTÉ EN ALGÉRIE

RÉSUMÉ

L'objectif de ce travail est de montrer empiriquement le rôle actif de la variable "performance du contrôle de gestion", dans l'amélioration de la performance de gestion des établissements publics de santé. La détermination des leviers sur lesquels les contrôleurs de gestion peuvent agir pour maximiser la performance de ce processus, est également abordée. Les résultats indiquent l'existence d'un lien

direct significatif entre la performance du contrôle de gestion et celle des responsables des établissements publics de santé. Ils suggèrent également des éléments intéressants pour les praticiens, notamment en ce qui concerne les leviers à prioriser pour maximiser la performance du contrôle de gestion et donc celle des managers du secteur public. Il s'avère que les leviers de la dimension technique sont les plus déterminants pour l'échantillon de cette étude.

MOTS CLÉS : Contrôle de gestion, performance managériale, déterminants, management public, établissements de santé

INTRODUCTION

The management of the public hospital sector, like other Algerian public institutions and administrations, is generally characterized by its fixed nature and by multiple dysfunctions (Belmihoub, 2004; Liassine, 2014).

To improve the reality of this sector, it is necessary not only to ban bureaucratic practices in its management, but also to review the public authorities' spending policy, while striving to strike a balance between ensuring equitable quality care for the neediest and controlling health care spending.

Most of the reforms undertaken in different countries in the health sector are based on the modernization of the management style of its establishments and the evolution of their internal structures (Cédric, 2011). These reforms must be accompanied by means to be granted to managers who, in turn, must establish programs, develop their activities, thus be efficient, and report to their supervisors. This necessarily means setting up new forms of management control and tools to enable institutions to supervise performance overall.

In this context, management control, which has proven itself in the modernization of managerial practices within the public administrations of developed countries and even those in the process of development (Mallek, 2016), turns out to be one of the means the most suitable for reconciling obligation of result (effectiveness) with optimization of means (efficiency). In particular, through its ability to

translate public missions into a coherent set of objectives, allowing better analysis of public action. And, by implementing tools, methods and indicators, for monitoring and managing performance, and thereby ensuring the good quality of the services provided by these administrations.

For Dangereux (2016), management control tools, considered as management techniques for managers seeking performance, help them in their decision-making process. Management control, as a support function, must satisfy its users (Bouquin, 1991; Blolcker, 2001). It must contribute to effectively helping its recipients in their missions. In the authors' opinion, management control is considered as a process to support strategic decision-making (Simons, 1990; Wegmann, 2000), as a process that promotes the implementation of strategy, the development of coordination or convergence of goals (Anthony, 1965; Fiol, 1991; Lorino, 1995), organizational learning (Simons, 1990; Bouquin, 2000) or change management (Simons, 1990) to the extent that it helps stakeholders make decisions (Bouquin, 2003).

Thus, this work is part of an approach to improve public management. It is interested in how management control contributes in improving the managerial performance of public healthcare facilities in Algeria. We will present and discuss the results of a field survey conducted in different establishments located in northern Algeria and on a sample of 673 managers.

These results contribute to the ongoing academic debate on management control system in the public sector, while being useful for top managers in public sector organizations aiming to improve the performance through the implementation of this system.

This work aims; firstly, to briefly demonstrate the value of management control in improving the performance of managers and in the management of public institutions in particular. Secondly, the study aims to empirically test the active role of the "management control performance" variable in improving managerial performance in public hospitals and to demonstrate how management controllers should proceed to optimize this process.

The paper is structured in three main sections: the first section presents the literature on management control, which is an interesting key to analyze the relationship between management control and managerial performance, particularly in the public sector, to gradually establish the hypothesis. The second section explains the methodological choices related to the field study and the obtained results. The last section is devoted to the discussion of the highlighted relationships. Finally, the implications of this research and its limitations are discussed.

1- THEORETICAL FRAMEWORK

This section aims to refine the hypothesis and to explain their basis. First, the management problems affecting the health sector in Algeria (§1.1) is briefly presented, then the management control process and missions (§1.2) are explained, followed by a discussion on the relationship between management control and managerial performance (§1.3) and management control in the public sector (§1.4). Finally, the support that could help to increase management control performance and on which management controllers can act (§1.5) is considered.

1.1- The Algerian health sector

Since its independence from French colonization in 1962, Algeria has opted for a dirigist and protectionist socio-economic system, of which state agencies were the main actors, until its reluctant transition to a market economy at the beginning of the 1990.

In terms of public health, by pursuing its desire to establish an authentically socialist system, Algeria instituted in January 1974, the free provision of medicine, a choice that is not surprising, given the poor population's needs. And despite the country's economic opening, the health sector remains to this day a niche almost monopolized by state structures: hospitals, polyclinics, health centers and care rooms that are in charge of providing the necessary care to citizens and protecting their health.

This policy, which has been undertaken by the public authorities for a long time, although beneficial in terms of equity, social justice

and solidarity, has not been without consequences for either the State or the citizen: exponential and dizzying expenditure weighing on the State budget, additional costs, waste, not to mention the citizens' dissatisfaction with the services rendered - poor hotel, reception and care conditions - (Djema, 2010). In short, the characteristic fact of the sector is the lack of overall performance in the management of its establishments.

In any case, the right of citizens to protection of their health is enshrined in the constitution and no one can question this right or any of the positive effects of this policy. Nevertheless, it has been found that it is currently out of step with market rules, the financing methods the country is experiencing, and the new modes of organization, management and operation of public institutions, the performance of which is particularly acute today.

The public hospital sector is very different from the private sector, in terms of legal, financial and human resources, but above all in terms of management. A mode characterized in the case of public service organizations by the existence of two management concepts, one based on political power and public policies, and the other on public management. Public health institutions then find themselves faced with a dilemma: finding the right balance between reducing costs and providing high quality and diversified services.

For this purpose, it is imperative for these institutions to undertake a process of improving their performance by moving from a logic of means to a logic of results and by implementing all the organization, management and control processes to optimize the allocation of resources and make their actions more efficient, hence the interest of a new public management method.

1.2- Management control: process and missions

To produce the desired results, usually expressed in terms of a "performance objective", the organization must have a strategic action plan. This action plan must be organized in the form of strategic projects, with objectives, means, a completion date, a person in charge, and a management system making it possible to measure the

results obtained in relation to the objectives set, i.e. d., a management control system.

Giraud et al. (2011) give the following definition to management control: "the process whereby a company sets itself performance objectives and strives to achieve them as best it can over time. It is a method for managing the performance of the company".

Thus, the role of management control progresses from a simple quantitative measurement, making it possible to ensure the reliability of the figures, as described by Lorino (2009), to become an essential tool for managing the overall performance of the organization.

Indeed, to succeed in the performance monitoring process, the stakeholders involved must use management control techniques and tools. The latter is based on the process of supporting the relationship between objectives, means and results. In this regard, Giraud et al. (2011) consider that management control is a progressive approach, which takes place both before the action, in the planning phase, and after the action in the phase of monitoring and analysis of the results. This is why we speak of a control process (see figure 1). Thus, the management controller, as Leclerc (2001) pointed out, becomes a partner who helps operational staff to achieve objectives.

Figure 1. The two major phases of the management control process

Source: Giraud et al. (2011)

Management control can be confusing. It makes it possible to verify the expected results and to control or direct behaviors (Fisher, 1995). In other words, it is a question, on the one hand, of defining the standards and comparing the expected results in relation to the objectives set, according to feedback loops, and on the other hand, it is quite simply a question of directing subordinates during their activities. The two notions of management control are linked, complementary and even inseparable.

In both senses, management control is perceived as a process and a recurring activity that is exercised regularly, based on previous experiences but oriented towards the future (Merchant, 1982; Bouquin; 1991; Chiappelo; 1996; Thiétart; 2003). It is a process that is both active and reactive (Thiétart, 2003, P 99). Active because it is a question of preventing imperfections even before their possible appearance, and reactive because making it possible to prevent future actions on the basis of lived experiences. Management control is exercised through a rational, even typical, process consisting of three stages (Merchant, 1982; Bouquin; 1991; Flamholtz, 1996; Thiétart; 2003):

- The planning sub-process, corresponds to the definition of the purpose of control (Bouquin, 1991) and occurs before the action.
- The piloting sub-process taking place during the action and comprising an action monitoring phase and a possible corrective intervention phase.
- After the action, the post-evaluation sub-process makes it possible to finally evaluate the performance and compare the results with the expected objectives. Thiétart (2003) concludes that chess serves the organization as a learning experience (the principle of trial and error).

According to Henri Bouquin, management control is the intersection of three fundamental missions (1998, p.68): "It is the hinge between strategy and daily life, of which it must ensure the interaction [...] It is a vector, like all the processes of control, orientation of the behavior of the actors [...] it is based on a modeling of the relations existing between the results pursued and the resources which it is advisable to mobilize and consume for the to reach".

In this context, the job of management controller consists in helping the governing bodies to define the overall economic strategy of the company, and to optimize its financial profitability. To do this, it helps them define realistic provisional budget objectives based on data from different departments and financial studies.

Among its main activities, it is responsible for developing management tools, anticipating deviations from set objectives, and recommending preventive actions. He thus carries out the economic

and financial analyzes necessary for the proper operational management of the company. He plays a role alongside the governing bodies that he supports in defining the company's overall strategy, as well as in their decision-making (Bouin X, Simon F.X, 2000; Lambert C, Sponem S, 2009).

In the company, the management controller therefore holds a place at the level of the governing body (Bouin X, Simon F.X; 2000), even if his relations are closely linked with the financial and accounting system.

1.3- Management control and managerial performance

Management control, a performance management tool, is essential for the proper functioning of modern organizations. This observation is confirmed by Mjidila et al. (2017) who consider that modernization, performance and management control are three interacting dimensions, and that any organization trying to modernize must be in search of performance, which itself could only be achieved by implementing an effective management control system.

Thus, several countries that have embarked on reforms to modernize their public services have integrated management control as a performance monitoring system (Mjidila et al. 2017; Lamarzelle, 2016), and it is through tools such as financial audits, dashboards or cost accounting that it is developed in the public sector (Lamarzelle, 2016). Demeestère (2002) also stated that management control has been developing for some years now in the public sector with forms that take into account the specificity of each organization.

Indeed, management control makes it possible to ensure that the actions in progress are running smoothly and to make corrections if necessary. It is a strategic guidance tool, which requires that the organization's objectives be defined first and then the results achieved can be judged (Lamarzelle, 2016).

The management control system allows managers to better understand the situation of their organization, which allows them to take the most appropriate decisions. In particular, it allows several objectives to be achieved at the same time: the determination of

objectives and strategies; the control of execution; the coordination between the different decisions.

Management control, therefore, acts as an intermediary between the strategic and executive levels (Bescos et al. 1997). Simons (1990) considers that the relationship between strategy and control is two-way; in other words, control not only highlights strategy but also feeds it. It highlights the existence of a clear correlation between the control system and organizational learning. Management control, as soon as it interacts, is able to renew knowledge that can modify the organization's strategy (Simons, 1990).

Several studies have been conducted to answer the question on the relationship between management control and managerial performance, particularly in the public sector, namely the one conducted by Bozec et al. in 2002 and the one conducted by Meyssonnier and Rosolofo-Distler in 2008. These studies show that management control can be implemented at the level of public (non-profit) organizations and can even lead to the achievement of non-financial objectives with the same frequency as the achievement of financial objectives.

Management control is now ranked among the most effective public management tools to achieve performance and optimize financial and human resources (Mjidila et al. 2017). It is also the most appropriate way to combine the effectiveness of public actions with respect for political guidelines (Demeestère, 2002).

There are many reasons why public organizations adopt a management control approach (Demeestère, 2002), but the factors most likely to make this approach necessary are first of all related to the constraint of the proper use of resources and their allocation to priority uses to fulfill the missions pursued. Next, the quality of the services provided and their adequacy to the needs of users are discussed, and more generally, the question of coordination and consistency of actions towards the objectives set. The question of adapting the organization to the uncertain and changing environment also requires it to anticipate the future as well as possible. And finally,

the issue of organizational learning and collective feedback on action are addressed.

Management control seems to answer these questions precisely. Indeed, management control is related to control from the point of view of results, one of the five modes of coordination proposed by Mintzberg (1982). This only makes sense if the decisions are not known in advance and leads the managers to make a choice. This organizational control modality tends to guide managers' decisions in such a way that it corresponds to the organization's objectives and to encourage that the available resources are used as efficiently as possible (Bouquin, 1997).

Thus, information from management control tends both to influence management decisions by motivating them and to help them make those decisions through appropriate information. Demeestère (2002) considered that when an organization adopts this approach, it opts not only for a system of managerial accountability in terms of achieving objectives and carrying out assignments with a high level of quality and under the best conditions. It also considers a process of cost control and problem diagnosis based on dialogue between operational managers on the results to be achieved and the best way to achieve them.

In addition, analyzing the causes of the problems encountered and seeking solutions with the various parties concerned not only makes it possible to identify the good ideas that work in practice but also to strengthen the organizational learning process that can be used to improve the organization’s performance. Merchant (1985) stated that knowing and regularly monitoring the information process on the effects of actions and the information proposed and committed helps to make decisions and allows a better understanding of alternatives and their potential impacts on objectives. They provide an opportunity to learn from events and thus represent a means of organizational learning and change management (Simons, 1990).

Management control also aims, through its mechanisms, to strengthen the consistency of the actions of the various units involved in implementing the same policy or providing the same service. In

addition, it has the ability to cope with changes that jeopardize the organization's performance, thanks in particular to the role it plays in collecting information that is both rapid and reliable, forward-looking and present, enabling it to improve managers' ability to respond, analyze and make decisions (Demeestère, 2002).

Ultimately, management control makes it possible to manage services on the basis of service objectives and commitments, and to control the costs of activities and results in both the public and private sectors.

1.4- Management control in public sector

The public sector has been adopting management control tools for several years, whether it is an information system, budget control, cost analysis, or cost accounting. There are many reasons for implementing this system in organizations in this sector. Demestère (2005) mentions among these reasons: the constraint of optimizing the resources allocated, the quality of the service rendered and the management of this quality, the coordination and consistency of actions with the objectives pursued, the need to adapt the organization to changes in the environment, and the reinforcement of organizational learning.

Management control is a very recent discipline in the public sphere; its role is poorly defined in most of public institutions and administrations. The practices and tools used for control can thus be disparate, and they are often linked to budget execution and budget allocation (Gibert, 2008). Similarly, the operating mechanism of control instruments, as internal management mechanisms of these organizations, remains little explored in the literature. Particularly in view of the notion of general interest and public service missions (social and economic vocation of public bodies). Meyssonnier and Rasolofo-Dastler (2008) mention to this effect that these devices are of two kinds, either purely accounting instruments for measuring costs, calculating margins, or interpreting discrepancies (for example cost accounting and provisional budgets). Or more global, but not homogeneous, indicators that are built to measure the overall

responsibility of the company (social and economic responsibility), such as the Balanced Scorecard.

Several researchers in the discipline of management control and public management have argued that the management dashboard and more particularly the Balanced Scorecard is the most appropriate tool to monitor public sector performance as public organizations are not seeking competition but rather to improve the effectiveness and efficiency of their management, to give meaning to their action, to encourage and structure joint work to ensure successful completion of the missions assigned to them (Mjidila et al., 2017; Lechab, 2015; Benzerafa, 2007;Niven, 2003; Radnor and Lovell, 2003; Zelman et al., 2003; Irwin, 2002; Kaplan and Norton, 2001; Wisniewski and Dickson, 2001).

The Balanced Scorecard has emerged as a response to the global performance measurement needs of private companies and is highly successful in both the private and public sectors around the world (Benzerafa, 2007). Kaplan and Norton (2001) described it as a "universal tool", i.e., applicable to organizations in all sectors, large and small, public and private, for-profit and not-for-profit. The authors argue that these organizations have achieved positive results by adopting the BSC, and that this tool can be successfully implemented in the public sector if it is adapted to the specificities of the public sphere.

This assertion is justified for several reasons; first, the simplicity of the implementation of the dashboard in practice, and second, it is the most appropriate tool for public organizations whose managerial and IT field is not very developed -low level of IT development and weaknesses in the use of integrated management systems - (Mjidila et al., 2017).

In addition, the financial and human costs of implementing this tool are very low compared to other management tools and methods such as total quality management, cost accounting, the ABC method and the ABM method.

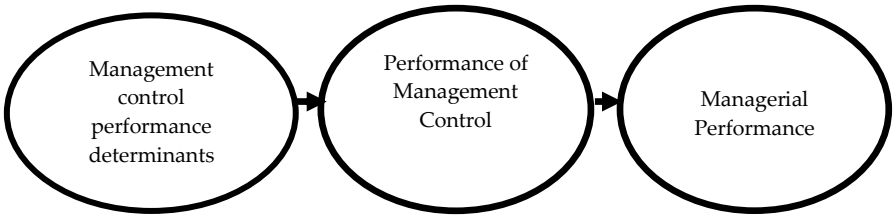
Moreover, considering that in the public sector, objectives are mostly expressed on non-financial criteria, it is therefore essential to

have measurement tools that measure performance through "balanced" indicators that go beyond budgetary or regularity criteria, which are widely questioned in the literature, to assess the performance of nonprofit organizations. It appears that the four axes of the BSC - financial axis, customer axis, internal process axis and organizational learning axis - perfectly meet this concern (Méric, 2003; Chauvey, 2005).

Therefore, it can be noted that management control enables managers to be efficient in their actions and to offer a quality service. In addition, its performance is an explanatory variable for individual and organizational performance. Fornérino et al. (2010), define management control performance as "the achievement of the objectives assigned to management control".

Hence, the performance of management control is directly related to the achievement of the company's objectives as well as to its overall performance. All this data fits well with a management control process whose performance has a positive effect on the performance of the various stakeholders. This is the basic foundation of our research model presented in figure 2.

Figure 2. The proposed global model



Source: By the authors as reflected in the literature

This global model was inspired by the work of Fornerino et al. (2010), trying to apply it to a new sector and in another context, the public health sector in Algeria. Our objective is, first of all, to show that the "performance of management control" is an explanatory variable of "managerial performance". In a second step, we want to

determine the levers on which the management controllers can act to maximize the performance of this process.

Thus, our first hypothesis can be formulated as follows:

H1: The performance of management control has a positive influence on the performance of public hospital mangers.

But before testing this hypothesis it will first be necessary to specify the determinants of the performance of management control.

1.5- Management control performance determinants

The variable performance of management control is not easy to measure directly because the objectives of management control are not clearly defined. It is also difficult to determine how management control would have enabled the strategy to be implemented. Using this principle, Fornerino, Godener and Ray (2010) demonstrated the importance of the variable "managers' satisfaction with management control", which they showed to reflect a performance of management control, using the internal customer concept. The customer concept, widely used in relationship marketing and used by Berry (1981), gives precise indications of the type of relationship between the management controller and managers.

Relational marketing, as a strategic approach, tends to create mutual values by establishing lasting relationships between actors. According to Berry (1981), employees in a given company act as "internal customers" and work as "internal product". It should also be noted that there is a causal link between employees and work.

Finally, all the evidence suggests that this conception, which is widely used in marketing, is a perfect solution for management control. As Fornerino, Godener and Ray (2010) stated: "Managers will be satisfied with management control when they realize that it helps them to achieve their objectives, whether through their contribution to making decisions or by putting their employees under pressure, i.e. to take their responsibilities into account".

The search for any link between the performance of management control, measured through the satisfaction of its users, and managerial performance, requires first to find the conditions capable of improving

managers' satisfaction with management control. In 2004 Laitinen outlined his discussion of management control systems by explaining that the quality of management control must be closely linked to managers' satisfaction with the proposed system. In the 1980s, he already stated that managers' dissatisfaction with information was one of the criticisms made of traditional management control.

Parasuraman et al. (1988) identified five dimensions of service marketing quality: reliability, responsiveness, assurance, empathy and tangibility. The authors defined their research using a service quality measurement tool - SERVQUAL - which was then used in the company's internal services: INTSERVQUAL. According to Brown et al. (1993), one of the negative aspects of these two instruments is that a considerable part of the determinants they involve only concerns the direct actors. In 2005 Bell, Auh and Smalley developed a scale for banking services, which, in our opinion, corresponds to our questioning. This scale refers to two forms of perceived quality identified by Grönroos (1984):

- Functional quality, also called relational quality, refers to the nature of interactions between the service provider, the customer and the process from which most of the service is delivered.
- Technical quality in relation to service quality refers to the quality of the resulting service.

These elements are also known as attributes of satisfaction with reference to the founding models of the consumer behavior literature. These are determinants of management control performance, identify them and study their importance in training managers' satisfaction with management control, it means seeking to optimize them to improve the performance of this process.

The importance of technical quality is well recognized for management control. The study carried out by Byrne and Pierce in 2007 in turn confirms the functional quality of the role of management controllers. Following a qualitative survey, the authors concluded that the degree of interaction between management controllers and managers is a function based on the influence exercised by management controllers on manager performance. This interaction

leads to high quality decisions, more effective planning and control. This interaction also allows problems to be detected early.

We then emit two additional hypotheses related to the implications of management control performance:

H2: the stronger the technical quality of management control, the stronger the performance of management control.

H3: the stronger the relational quality of management control, the stronger the performance of management control.

As well as two hypotheses of mediation to test the existence of link (direct or indirect) between the management control performance determinants and the managerial performance:

H4: There is an indirect link between the technical quality of management control and managerial performance.

H5: There is an indirect link between the relational quality relationship of management control and managerial performance.

2- METHODOLOGY

First, it is important to identify the processes by which empirical evidence can be obtained (§2.1). Next, the adopted measurement devices are presented (§2.2) and finally, the results obtained are exposed (§2.3).

2.1- The survey

This study was based on a survey conducted using questionnaires that were completed by public healthcare facility managers (directors, deputy directors and department heads) to verify the relevance of this research work. The first test carried out is part of a first experiment that was carried out in the *wilaya* (department) of Blida, then a final test was carried out in six *wilayas* in the north-central region of Algeria (Algiers, Blida, Media, Tipaza, Boumerdès and Tizi Ouzou). These establishments were classified into four categories: University Hospital Center (UHC), Hospital Public Institution (HPI), Specialized Hospital Establishment (SHE) and Public Health Establishment of Proximity (PHEP). The questionnaire was divided into two sections: the first section (A) focused on the effectiveness of the management control system and its performance, as well as the satisfaction

attributes of the system. The second section measured the managerial performance (B).

The questionnaires were distributed with the help of the general health directorates of the *wilayas* after approval by the Ministry of Health, Population and Hospital Reform. The response rate was 56.08% (return of 673 questionnaires out of 1200 questionnaires distributed). The survey sample consists of (Appendix, Table 1): 9.5% of managers are general managers of the facilities, 32.4% are directors of the main departments and 58.1% are heads of departments.

2.2- Measurement scales

The measurement scales were based on processes already in use. Only one item was used to measure the performance of Management Control in accordance with the recommendations of Kekre et al. (1995); this confirms that single-item satisfaction instruments offer sufficient psychometric qualities. The item used was based on measures traditionally used in the literature (Oliver, 1997; Fornerino et al., 2010): "Please note your overall satisfaction with management control on a 5-point scale". The average satisfaction response was 3.708, which is an average to good satisfaction of management control users. The standard deviation is 0.544; this highlights a certain common tendency of management control users to be satisfied with the latter.

The work of Govindarjan and Gupta (1985) was taken into consideration in assessing managerial performance, which has already been used since, for example, by Nouri and Parker (1998). Seven items corresponding to a probable dimension of performance were adapted to the concerned issue and respondents were asked to make their choice on a scale ranging from 1 to 5 points (Appendix, Table 3).

The work of Bell et al. (2005), who distinguished two dimensions of service quality in their study on banking consulting, was used to measure the various attributes of satisfaction related to management control. The first is the technical dimension, which comments on the results obtained, while the relational dimension seeks to determine the degree of interest that the service provider gives to its client and the degree of empathy it shows to him/her. Therefore, for the two

dimensions mentioned above, the questions were adjusted to the nature of the service expected from the management control department. These two dimensions were also considered along with Bell and Fornerino et al. items (Appendix, Table 3).

2.3- Results

2.3.1. Quality analysis of measuring instruments

The quality of the measurement scales (Managerial performance and factors of management control performance) was verified using standard statistical tools (Churchill and Iacobucci, 2005). Reliability was assessed by the Alpha coefficients of Cronbach and Rho of Joreskog. Convergent validity was confirmed by the factor weights of the indicators on their respective constructs and the average variance extracted (AVE). The Alpha coefficients of Cronbach and Rho of Joreskog each exceeded 0.8. The factor weights were all above 0.5 and statistically significant. The average variance extracted was higher than 0.5. These results allowed verifying the convergent validity of the scales used (Appendix, Table 4).

Discriminant validity was assessed by comparing the square root of the AVE of correlations between latent variables (Fornell and Larcker, 1981). The results show that the square root of the AVE is always higher than the correlations between the latent variables (Appendix, Table 5). This confirms the discriminant validity of the scales. The statistical processing was carried out with AMOS and SPSS. An overall score for each variable was obtained by calculating the average of responses to the different items.

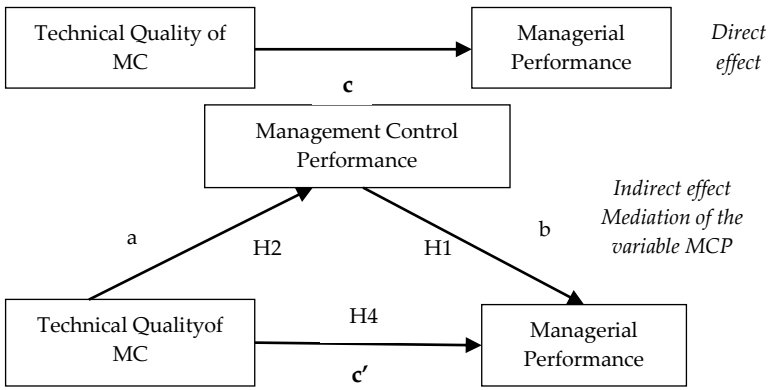
2.3.2 Hypothesis testing

The Preacher and Hayes (2008) approach, also discussed by Hayes (2013) in a new macro called PROCESS, was used to test direct and indirect relationships. The analysis was based on 5000 replications generated by the bootstrap method with a confidence interval corresponding to a significance threshold of 0.05. Figures 3 and 4 present the mediation models that were tested. The coefficients "a" and "b" correspond to the mediation effects.

i)The mediation model for hypothesis H4

This mediation model tests the indirect link between the technical quality of management control and managerial performance.

Figure 3. Statistical models tested (H1, H2, H4)



Source: By the authors

The H4 hypothesis shows that there is only an indirect mediation between the technical quality of management control and managerial performance through a third variable, which is the performance of management control.

The management control technical quality is significantly related to the performance of management control H2 (β= 0.3784; t= 15.5080; p = 0.000); On the other hand, management control performance also has a positive and significant impact on managerial performance H1 (β= 0.7613; t= 14.9877; p = 0.0000). The 95% confidence interval of the bootstrap does not contain 0[0.2176 to 0.3645], which corresponds to the criterion of significance of the mediator effect (Preacher and Hayes, 2008). Moreover, the direct effect of technical quality without mediator control is not significant "c" (β= 0.0222; t= 0.5930; p = 0.5534).

a*b is it significant? Yes (0 is not in the range [0.2176 to 0.3645],

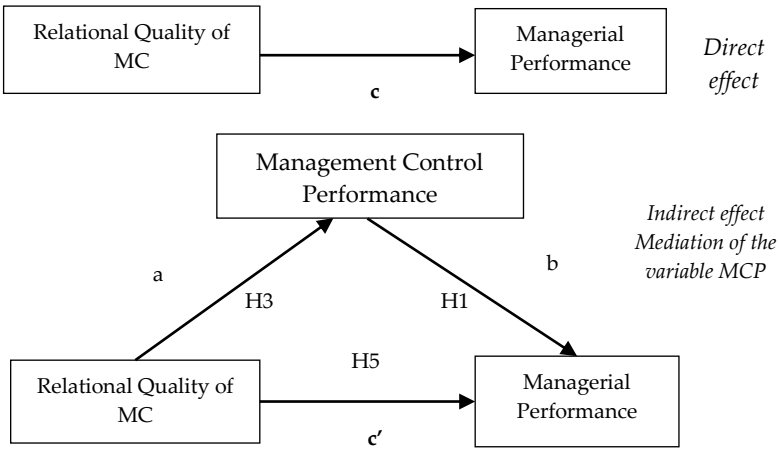
"c" is it significant? No (t= 0.5930; p > 0.05).

The decision tree of Zhao et al. (2011) tells us that, since there is a mediated (indirect) effect a*b and the direct effect c is not significant, mediation is only an indirect mediation H4.

ii)The mediation model for hypothesis H5

This mediation model tests the indirect link between the relational quality of management control and managerial performance.

Figure 4. Statistical models tested (H1, H3, H5)



Source: By the authors

The H5 hypothesis shows that there is only an indirect mediation between the relational quality of management control and managerial performance through a third variable, which is the performance of management control.

The relational quality of management control is significantly related to the performance of management control H3 (β= 0.2682; t= 8.2110; p = 0.000); On the other hand, management control performance also has a positive and significant impact on management performance H1 (β= 0.7777; t= 17.0078; p = 0.0000). The 95% confidence interval of the bootstrap does not contain 0 [0.1287 to 0.2969], which corresponds to the criterion of significance of the mediator effect (Preacher and Hayes, 2008). Moreover, the direct effect

of relational quality without mediator control is not significant "c" (β= -0.0030; t= -0.0727; p = 0.9421).

a*b is it significant? Yes (0 is not in the range [0.1287 to 0.2969],

"c" is it significant? No (t= -0.0727; p > 0.05).

The decision tree of Zhao et al. (2011) tells us that, since there is a mediated (indirect) effect a*b and the direct effect c is not significant, mediation is only an indirect mediation H5.

3- DISCUSSION

If the H1 hypothesis is approved; it means that the management control performance has a positive effect on the managers' performance; this is a plus for public hospitals and an asset for researchers and practitioners.

Validation of our first hypothesis also shows that measuring managers' level of satisfaction with the management control process is an extremely relevant indicator of management control performance.

These results therefore assume that the adoption of this type of measurement in future research in the field (the performance of management control measured through the satisfaction of managers), will have a highly positive effect on the approaches and will allow a better assimilation of studied phenomena.

In theory, the approval of this hypothesis is a significant contribution to understanding the relationship between management control and managerial performance since its explanatory value will appear significant: R2 equals 0.567, which means that management control performance explains 56.7% of managerial performance.

This relationship may seem surprising, but it corroborates the results obtained by the processes of the behavioral approach of management control aimed to explain the managers' performance, which tend to be between 10% and 50% (see for example Govindarajan 1986; Choo and Tan 1997; Nouri and Parker 1998 or even Chong and Chong 1997).

These results also indicate that managerial performance reveals other different parameters of management control such as the capacities and skills of managers, the relevance of the strategy defined

in relation to the environment of the department in question, etc. However, it refers to the existence of other regulatory variables, regulating the relationship such as the nature of the management controller's functions or variables such as the degree of adherence to the company's objectives. This phenomenon is the subject of particular attention from specialists in the field. This is achieved, of course, without neglecting the variables specific of each company (size, type of organization, etc.) and the variables of each sector of activity. Then, the validation of the first proposed hypothesis is considered, which confirms the study by Fornerino et al. (2010) and shows that the evaluation of managers' level of satisfaction towards management control is a highly indicative sign of an extremely relevant management control performance.

In addition, the validation of H1 is a good asset for practitioners, since the improvement of managerial performance is dependent on the reinforcement of the levers of the satisfaction of the management control system. This can be seen as a key element for leaders who want to build a true performance culture within their organizations.

This is especially true for public organizations, hospitals in particular, which often challenge not only the usefulness of a management control approach, but also its role and importance in planning and performance management. Indeed, the implementation of such an approach implies significant changes for managers, especially those in the public sphere. First, it transforms the process of resource allocation and therefore the priorities of the organization change, then it changes the responsibilities of each and imposes commitment in terms of results, it also improves both the ability to adapt to the needs of users, internal dialogue, cooperation between services, as well as anticipation and responsiveness.

The success in driving these changes to improve individual performance and the organization's overall performance depends on the degree of senior management's commitment to the project and its belief in the benefits of such an approach. All this must be complemented by the firm will of the various managers to change their management and behavior from a purely administrative

management style to a more performance-oriented management. Thus, satisfaction with management control is a *sine qua non* for the managerial performance of these managers.

Previous to the model, the validation of the H2 and H3 hypotheses -the stronger the relational and technical qualities of management control, the stronger the performance of management control- and the importance of the attributes offer encouraging choices.

The technical dimension of management control seems more important than its relational dimension: R2 (0.51 vs. 0.30). In practice, this result should lead practitioners to prefer the technical elements of management control, as they have a significant impact on managers' satisfaction and on their managerial performance. More specifically, adapting the timelines for obtaining information to meet needs seems to be the most appropriate technical element among many technical elements that can ensure manager satisfaction. The importance of the quality of information is obvious since the process of regular information on the consequences of actions taken and information to support decision-making promotes a better understanding of alternatives and their potential impacts on objectives (Merchant, 1985; Kren, 1997). They allow to draw conclusions based on the events (Simons, 1990; Lorino, 1997). As such, they convey organizational learning and change management. Moreover, the relative weakness of the support dimension is related to the observations made by Godener and Fornerino (2005). The authors observed that "management controllers - advisors" carry out all the tasks of "management controllers - technicians" in addition to the specific tasks.

So the technical dimension would obviously be the foundation, while the complementary dimension would be a dimension less systematically perceived as essential (Lambert and Sponem 2008, Fornerino et al., 2010). Thus, in the case of public hospitals, the conception of the notion of interaction between the internal client (the manager) and the management controller is confirmed by the weights of the items: "the management controller is personally interested in my activity" (0.785), "the management controller takes my main

interests to heart" (0.716) and "I can share my ideas with my management controller" (0.754).

According to Lambert and Sponem (2008) and Fornerino et al. (2010), the technical dimension is the essential basis, while the support dimension would only be supplementary and random, but considered essential. As a result, the satisfaction attributes presented here are not unrelated to the literature on management control (and the description of management controller functions). It is very likely that the performance of management control is only achieved through the satisfaction of its users. However, this observation remains specific to managers.

As for the mediation hypotheses H4 and H5, there is an indirect relationship between the determinants of management control performance and the managerial performance that has been validated. In addition, it should be added that managerial performance is also a function of other factors such as managers' skills, motivations, implications, etc. Thus, these findings show that the explanatory power of managerial performance can surely pave the way for the introduction of mediating and/or moderating variables in the context of research to be conducted in the future.

CONCLUSION

Based on the hypotheses discussed in this paper (Appendix, Table 6), a real explanatory power of management control performance on the performance of managers has been identified, which has a positive effect.

The explanatory power can be improved and the emphasis on possible mediating variables is an asset for managers' work. The semi-open interview, among other things, would make it possible to enrich the scales and develop the model by highlighting certain phenomena (e.g. complementary levers of satisfaction or performance of the MC).

On the other hand, it is very interesting to study the traditional variables in the light of their impact on this new variable in the context of behavioral models of management control, the participation of decision-makers in the budget definition, the importance of the

achievement of their budgetary objectives for the evaluation of their performance by their supervisors, their commitment towards their objectives and their implication in the company... etc. In fact, their impact on management control performance is supposed to take precedence over their direct impact on organizational performance because it is influenced by other factors.

Henceforth, the research carried out consolidates the idea of the qualities of management control such as the time limits for disseminating information and the interest that the management controller has in the concerns of his or her "internal client". However, it is important to consider whether further research should be undertaken to identify performance determinants other than those presented here and any other influences that may be exerted by these same performance determinants.

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Appendix

Table 1. Sample of the study

		Frequency	%	% valid	Cumul. %
Valid	Directors	64	9,5	9,5	9,5
	Deputy directors	218	32,4	32,4	41,9
	Department heads	391	58,1	58,1	100,0
	Total	673	100,0	100,0	

Source: The statistically processing of SPSS program, V22.

Table 2. Correlations

		TechQual	RelaQual	Sf	ManaPerf
TechQual	Correlation of Pearson	1	,229**	,514**	,307**
	Sig. (bilateral)		,000	,000	,000
	N	673	673	673	673
RelaQual	Correlation de Pearson	,229**	1	,302**	,169**
	Sig. (bilateral)	,000		,000	,000
	N	673	673	673	673
Sf	Correlation de Pearson	,514**	,302**	1	,567**
	Sig. (bilateral)	,000	,000		,000
	N	673	673	673	673
ManaPerf	Correlation de Pearson	,307**	,169**	,567**	1
	Sig. (bilateral)	,000	,000	,000	
	N	673	673	673	673

**. Correlation is significant at the level 0.01 (bilateral

Source: The statistically processing of SPSS program, V22.

Table 3. Measuring instruments

Measured structures	Source	Items selected following factorial analyses
MC Performance		
Please note your overall satisfaction with management control	[Oliver, 1997]	X
Managerial performance		
• Quality of the work;	Govindarjan	X
• Quantity of achievements;	and Gupta	X
• Delivery times for projects;	(1985)	X
• Personal development;	Nouri and	
• Achievement of budgetary objectives;	Parker (1998)	X
• Cost reduction programs;	Fornerino et	
• Development of new types of projects.	al. (2010)	
Management Control performance determinants		
Technical quality	Based on Bell	
• The management controller succeeds in providing me with the information corresponding to my needs;	et al. (2005)	
• The management controller succeeds in providing me with the analyses corresponding to my needs;		X
• Through his relevant recommendations, the management controller helps me achieve my financial objectives;		X X
• Through his relevant recommendations, the management controller helps me to achieve my non-financial objectives;		X X
• The volume of information received from the management controller is adapted to my needs;		
• The information received from the management controller is easily understandable;		
• The information provided by the management controller is reliable;		
• The time taken to obtain the information is adapted to the needs;		
• The time required to participate in the		

management control process is reasonable.		
Relational quality		
• The management controller is personally interested in my activity;	X	
• The management controller takes my main interests to heart;	X	
• I can share my ideas with my management controller.	X	

Source: Based on the sources mentioned in the table

Table 4. Analysis of reliability and validity of measurement scales

	Average (SD)	α	P of Joreskog	AVE
Technical quality	3,671 (0,738)	0,931	0,93	0,86
Relational quality	3,746 (0,613)	0,828	0,84	0,79
MC Performance	3,708 (0,544)			
Managerial Performance	3,655 (0,745)	0,898	0,90	0,83

Source: The statistically processing of SPSS and AMOS programs, V22.

Table 5. Discriminant validity analysis of measurement scales Correlation matrix

		TechQual	RelaQual	Sf	ManaPerf
Correlation	TechQual	,927	,888		
	RelaQual	,229	,302		
	Sf	,514			
	ManaPerf	,306	,164	,570	,911

Source: The statistically processing of SPSS and AMOS programs, V22.

Table 6. Summary of validated hypotheses

Hypotheses relating to causal links	**Hypotheses relating to mediating roles**
H1: The performance of management control has a positive influence on the performance of public hospital mangers.	H4: There is an indirect link between the technical quality of management control and managerial performance.
H2: The higher the technical quality of management control, the higher the performance of management control.	H5: There is an indirect link between the relational quality relationship of management control and managerial performance.
H3: the stronger the relational quality of management control, the stronger the performance of management control.	

Source: By the authors