

# **Supervisory Board Process: Evidence from French public hospitals**

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## **Résumé:**

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Les théories de la Corporate Governance et la théorie de la psychologie sociale du petit groupe de prise de décision sont mobilisées afin de comprendre le mode de fonctionnement du conseil de surveillance hospitalier public et plus précisément pour tester empiriquement la relation de médiation du processus de prise de décision (les normes d'efforts, l'utilisation des connaissances et des habiletés et le conflit cognitif) entre sa structure (la taille, la composition et la diversité) et la performance de ses rôles (la stratégie, le contrôle et le service). 320 questionnaires en provenance des membres des conseils de surveillance hospitaliers ont été recueillis. L'agrégation de ces réponses individuelles génère un échantillon de 159 conseils de surveillance hospitaliers publics. Les résultats des tests des hypothèses du modèle de recherche confirment le fait que la structure du conseil de surveillance n'influence pas la performance de ses rôles. Les normes d'efforts affectent positivement la performance des rôles. Seules les normes d'efforts et l'utilisation des connaissances et des habiletés médiatisent partiellement la relation processuelle entre la structure et la performance des rôles

**Mots-clés :** processus du conseil , hôpital public, gouvernance, performance, conseil de surveillance

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# Supervisory Board Process: Evidence from French public hospitals

## INTRODUCTION

According to Fennell and Alexander (1): *“An extensive literature exists on hospital trusteeship and governance. However, the vast majority of these writings tend to be either descriptive, focusing on general characteristics of hospital boards, or prescriptive, delineating problems with board structure, process, or roles and proposing solutions to those problems. This literature is contained, for the most part, in hospital trade and practitioner journals, and is not based on a solid foundation of theoretical and empirical research.”* Besides, Weiner and Alexander (2) recognize that hospital governance which converges to the Corporate one seems to be more efficient than the philanthropic one.

Hence, we choose to be based on the corporate governance model to establish and check a public hospital governance model. Also, the internal governance mechanism to be dealt with is the supervisory board.

The supervisory board (SUB hereinafter) process is studied as the outcome of the marriage between small group research and the corporate board literature. According to the functional approach of the small group research (3,4), one can mobilize the input-process-output model to study the function of the SUB as a small decision-making group. Regarding the corporate board theories, the same model began to be adopted by researchers (5). Some of them have explicitly used the input-process-output conception when dealing with boards of directors in the manner of Wan and Ong (6) and recently Zattoni et al. in 2015 (7). They encourage *“governance scholars (a) to go beyond simple input-output models, (b) to explore the critical role played by board internal processes and tasks, and (c) to develop and test theoretical models taking account of the specific firm governance context”*.

According to the corporate board literature, the inputs are named the SUB structure which *“refers to the dimensions of the board's organization”* (8). Those dimensions are the composition, the diversity, and the size. The SUB process is defined as *“the related decision-*

*making activities and styles of the board*"(8). The SUB process compounded on the use knowledge and skills, effort norms and the cognitive conflict. The SUB outputs come down to the SUB roles performance. This latter is defined as a board's ability to perform its roles (9): the control, the service, and the strategy. (6,8,10– 12).

Those three blocks of variables are the emanation of the unitary governance system that are based essentially on the board of directors. Meanwhile, the dual governance system based on both the SUB and the management board (MGB hereinafter) did not receive the same research focus regarding the decision- making process. Scarcely, we find Van Ees et al. (13) whose empirical study deals with the SUB decision-making process. However, their context research is the for-profit organizations, and they did not mobilize the input-process-output perspective. Meanwhile, Kane et al. mobilized in 2009 this approach but in the American hospital board of directors' context (14). Otherwise, our research problem is as follows: how does the SUB process of the French public hospitals does explain the relationship between its structure and the performance of its roles?

The assumptions that emanate from the literature in Corporate Governance related to the board of directors and social psychology of the small decision-making group are to be confirmed within the framework of the study of the public hospital SUB. Hence, we aim to prove that the process of the French public hospital SUB process plays the role of mediator between the structure of this authority and the performance of its roles.

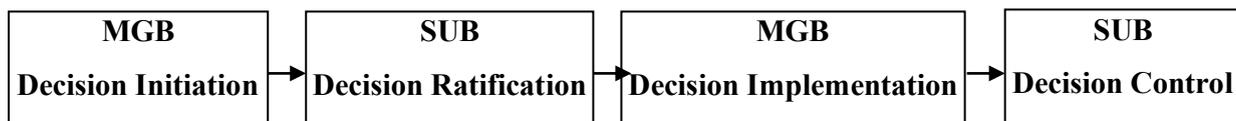
The choice of the French context is due to the changes in the law in 2009 which is oriented essentially to the public hospital governing board. This ratification is called "Hospital, Patients, Health and Territories" (*La Loi Hôpital, Patients, et Territoires*: HPST(hereinafter)). By running such reform, the French government wants to nominate "a true boss" in the hospital and remove "the absolute despot". Thanks to the HPST law, the French public hospital changed by the end of 2009, from the unitary governance system to the dual system (15,16). Therefore, the latter is compounded on governing bodies are the supervisory board (SUB) "*Le Conseil de Surveillance*" and the management board "*Le Directoire*" (MGB hereinafter). According to HPST, the SUB is supposed to ensure mainly strategic and control tasks face-to-face with the MGB. These last deals, mainly, with two missions. First, it approves of the Medical Project "*le Projet Médical*" prepared conjointly by the chairman of the Medical Commission of the Establishment "*La Commission Médicale d'Établissement*" and the hospital director. Second, it ensures the Establishment Project "*le Projet*

*d'Etablissement"* based on Nursing, Rehabilitation and Medical-Technical Care Project "*Le Projet de Soins Infirmiers, de Rééducations et Médico-Techniques.*" Previously this reform was the Board of Directors "*Le Conseil d'Administration*" who combine all the missions done currently by the SUB and the MGB.

This ratification stipulates that the French public hospital SUB is composed of three subgroups. They are supposed to represent the community surrounding the hospital based on the Pfeffer's reflection (17). These subgroups are the trade union representatives (3 to 5 members), qualified personalities (3 to 5 members) and local authority representatives (3 to 5 members). Among the members of the third subgroup, we find the mayor of the town where the hospital belongs.

Otherwise, the primary difference between the board of directors -as a principal actor in the one- tier governance system and conjointly the MGB and the SUB – as principal actors in the two-tier governance system is the fruit of Fama and Jensen conception (18). In fact, the SUB is in charge of ratifying and controlling the decision. The MGB is responsible for the initiation and the implementation of the decision. The functions of these two compartments are summarized in the following scheme:

**Figure n° 1: The functions of the MGB and SUB within the French public hospital**



### **SUB FONCTIONNEMENT : DEVELOPEMENT OF HYPOTHESES**

As mentioned previously, the board literature joined with small group research highlights the relationship between three latent variables namely the SUB structure, the SUB process, and the SUB performance. Thus, the SUB structure will play the role of the inputs, the SUB process will play the role of the process, and the outputs are represented by the performance of SUB roles. Meanwhile, the inputs-process-outputs model suggests the mediation of the process between inputs and outputs. Therefore, the SUB process is a mediator between the SUB structure and the SUB performance. Baron and Kenny (19) methods are suitable to generate mediation hypotheses and to test them.

## 1. STRUCTURE MODEL HYPOTHESES

The structure model sets relationships between two latent variables: The French public hospital SUB structure and its process. The SUB board structure is composed of three manifest variables: composition, size, and diversity. The SUB process variables are made up of three manifest variables: the use of knowledge and skills, the cognitive conflict, and effort norms (10).

The SUB board process is defined as "the related decision-making activities and styles of the board"(8). Forbes and Milliken (10) lay out three manifest variables that compose the SUB process: use of knowledge and skills, the cognitive conflict and effort norms. These authors are inspired by social psychology small group research to define these variables. Since "the elements" (i.e., variables) of the small decision-making process "are the influences on the group that stems from its actual activities" (20). Defining these variables as follows. Efforts norms are" a group-level construct that refers to the group's shared beliefs regarding the level of effort each is expected to put a task."(8). The cognitive conflict is defined as "*disagreements about the content of the tasks being performed, including differences in viewpoints, ideas, and opinions.*"(21). The use of knowledge and skills refers to the reduction of "process losses" of knowledge and skills within the group (22).

The SUB composition refers to the proportion of outsiders. Indeed, the SUB is created to be composed only of outsiders. However, the French health law authorizes the presence of some insiders within the hospital SUB even in an advisory capacity. According to the agency theory the board is more effective when composed of outsiders (23). Alternatively, the stewardship theory stipulates that the more the board is constituted of insiders, the more effective the board will be (17). Outsiders must enhance the cognitive conflict giving that they bring an external point of view regarding choices to be considered within the SUB. They will be more implicated in the preparation of meetings concerning evaluation reporting using an external eye. Therefore,

Hypothesis n°1 (H1): The more the SUB is composed of outsiders, use of knowledge and skills, cognitive conflict and effort norms will be higher.

The SUB size refers to the number of SUB members, who attend SUB meetings. As mentioned above, it is composed of 9 to 15 members depending on the category of the public hospital (University or not), the community served, and the variety of services proposed to patients. The SUB size also considers non-voting members. Consequently, the effective SUB size varies depending on the fixed number of voting members and the variable number of non-

voting ones. According to the small group psychology research, two contrasting points of view exist regarding the number of people who form a group. "The range of abilities, knowledge, and skills that are available to the group increases with increasing group size, as well as the sheer number of "hands" that are available for acquiring and processing information"(24). Following on:

Hypothesis n°2 (H2): The more members are composing the SUB the more, the level of efforts norms, the cognitive conflict, and the use of knowledge and skills, will be higher.

SUB diversity refers to the presence of knowledge and skills within the SUB. The HSPT 2009 stipulates that the public hospital SUB is composed of qualified personalities, local authorities 'representatives, and trade union representatives. All of them, are supposed to be "useful" and ensure a certain SUB heterogeneity (25). Therefore, the use of knowledge and skills depend on their presence within the SUB. The more diversity within the SUB the more the knowledge and skills are utilized. Altogether, this knowledge and skills if used, contribute to the enhancement of cognitive conflict which "results in consideration of more alternatives" and strategic issues (10). Thus,

Hypothesis n°3 (H3): The more the SUB is diverse, the cognitive conflict, the use of knowledge and skills, and effort norms it will be.

## **2. PROCESS MODEL HYPOTHESIS**

The process model links between two latent variables: The SUB process and SUB performance. The three following manifest variables compose the SUB performance: the strategy role, the control role, and the service role. The strategy role refers to the SUB's involvement in and contribution to the structuring of the hospital's mission, the development of the hospital's strategy, and the setting of guidelines for the implementation and effective control of the chosen policy. The service role involves enhancing company reputation, establishing contacts with the external environment, and giving counsel and advice to the MGB. The controlling role refers to the action of monitoring the MGB and the hospital performances (8).

A well-equipped SUB with skills and knowledge is supposed to "perform their control task effectively", SUB members "must integrate their knowledge of" hospital's "internal affairs with their expertise in the areas of law and strategy. Also, if SUB members "are to perform their service task effectively, they must be able to combine their knowledge of various functional areas and apply that knowledge properly to" Hospital "-specific issues"(10).

Therefore, the more the SUB uses the knowledge and skills of its members, the performance of strategy, service and control roles will be higher.

The cognitive conflict manifest "a presence of disagreement and critical investigation on" the SUB "may require" MGBs "to explain, justify, and possibly modify their positions on important strategic issues and to entertain alternative perspectives and courses of action"(8). Therefore, SUB members, having cognitive conflict, perform better service, control, and strategy roles.

Besides, strong effort norms coming from SUB and the hospital management team can be expected to enhance the effort of the individual group member (26–28). Consequently, those two actors will contribute to preparing harmoniously and correctly meetings. Hence, the existence of efforts norms manifested by the SUB and hospital management team help to provide better conditions to perform higher service control and strategy roles.

The following hypothesis summarizes previous propositions:

Hypothesis n° 4 (H4): The higher the level of SUB process (use of knowledge and skills, cognitive conflict, and effort norms), the SUB performance (strategy role, service role, and control role) will be higher.

### **3. MEDIATION MODEL HYPOTHESIS**

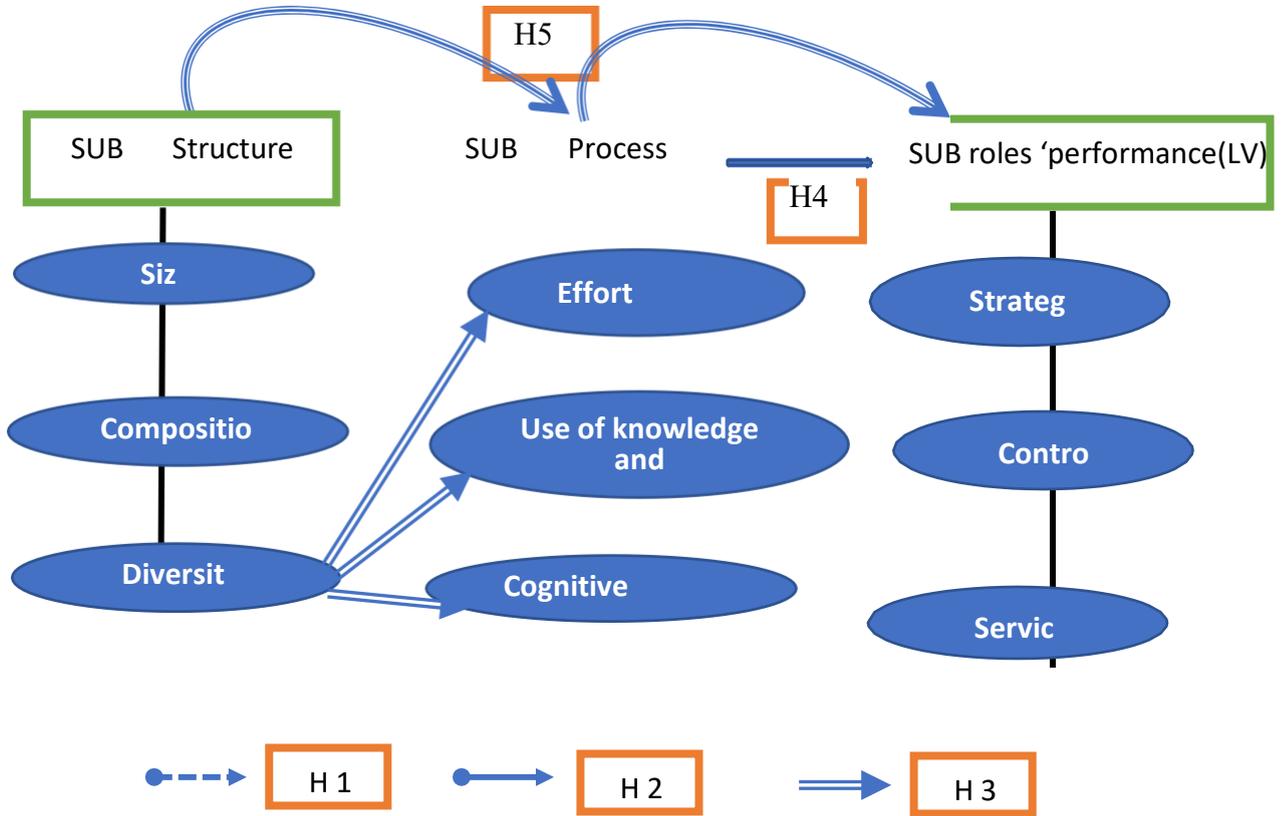
The mediation model establishes the relationship between the French public SUB structure and its SUB performance in the presence of the SUB process. It is the input-process-output model that characterized the mediation model. This new conception was due to social psychology research (4). Hackman and Morris (3) and Hackman (22) adapted the input-process-output model in the organizational context. They underlined the importance of group process when studying the relationship between group inputs and group outputs. They showed how one could not explain the relationship between the SUB structure and the SUB performance without passing through the SUB process. Consequently, the SUB process (effort norms, cognitive conflict, and use of knowledge and skills) mediates the relationship between the SUB structure (SUB size, SUB diversity, and SUB composition) and the SUB performance (strategy, service, and control roles).

The following hypothesis summarize all the previous propositions:

Hypothesis n°5 (H5): SUB process (Effort norms, use of knowledge and skills, and cognitive conflict) plays the role of mediator between the SUB structure (SUB size, SUB composition, and SUB diversity) and the SUB performance (control role, strategy role, service).

Given that, each latent variable (LV) is composed of three manifest variables (MV); we can deduce the following conceptual model that include all the three previous models (structure, process, and mediation).

**Figure n°2: The SUB functioning conceptual model**



## METHODOLOGY

The adopted methodological approach is a confirmatory approach, and the selected epistemological posture is hypothetically-deductive. Data collected based, fundamentally on a questionnaire, will be analyzed in order to check the previous hypothesis that emanate from the input-process-output paradigm applied to the SUB.

### 1. DATA COLLECTION

The repertoire of the Hospital Federation of France (FHF) allows, within the framework of this article, to target the population as a whole. This probabilistic method will enable us to establish a database of 861 public hospitals; Hospitals Centers (CHs), University Hospital Centers (UHCs) and Regional Hospital Centers (RHCs). We have not considered UHCs and RHCs because they are regarded as "hospitals groups" and they have their governing system.

The mode of reasoning within this study, concerning sampling, is from the perspective of the SUB rather than the individuals who compose it. Indeed, we carry out an analysis of aggregation to move from the individual mode to the group mode. Thus, the unit of the sample is the SUB of the hospital entity.

By 861 hospital units that constitute the parent population the whole of the public hospitals – all- inclusive categories– a sample of 799 HCs (Hospital Centers) could be made up.

The administration of the questionnaire to the members of the French SUB was a choice emanated from the deductive nature of this research. It falls under a confirmatory prospect aiming at calling on assumptions tested empirically in corporate board research. It was administrated by the end of 2010, that is to mean one year after the HPST'2009 came into effect. Hence, during the year of 2010, four SUB meetings are supposed to be run. This law change is assimilated to a segregation between "decision initiators and implementers": MGB members and "decision ratifiers and controllers": SUB members, formerly belonging to the board of directors. Therefore, we assume that the impact between the periods is not significant and members have sufficient experience regarding the SUB functioning.

However, we took the necessary precautions before the questionnaire to make sure of the familiarity of the SUB members with the concepts validated within the corporate board research. We organized interviews with members of the board of directors most of whom took part following the reform in the SUB. Admittedly, the framework of operation has changed; nevertheless, it is decision-making process which remains a significant issue both within the board of directors or the SUB.

The definitive version of the questionnaire was sent to the hospital management teams who in turn disseminate them to the SUB members at the end of the meeting. The administration of the surveys was carried out twice: First mobilized by the postal service and second using an electronic method. For both, two letters of support were inserted to increase the response rate (29): One edited by the supervisor of research and the other compiled by the health care minister's office. Indeed, the use of support letters is considered as a tool to enhance the response rate (29). 340 questionnaires were received, of which 20 were eliminated because they were not filled in entirely, at least for the essential information relating to the variables from the total model mediation. Finally, 320 questionnaires were retained to be used. The totality of the data is substantially collected on the surveys

## 2. THE ANALYSIS

We run a multiple regression to check structure, process and mediation model hypothesis because each independent variable is composed of three manifest variables. First, concerning the structure model, the SUB structure is the independent variable and the SUB process is the dependent one. Secondly, in the process model, the SUB process plays the role of the independent variable, and the SUB performance is the dependent variable. Concerning the mediation model, we consider the SUB performance as a dependent variable, and the SUB process and SUB structure, together, as independent variables. We run a path analysis associated with the mediation relationships model.

## 3. MEASUREMENT

The SUB structure is composed of three variables: Two discrete variables which are the SUB size and SUB composition. The first variable is measured using the number of SUB members present at the meeting. The second variable is measured by the proportion of outsiders (23). It is presented by the following expression:

$$\text{The proportion of outsiders} = \frac{\text{Outsiders number}}{\text{SUB size}}$$

Giving that the SUB is composed of three subgroups: (1) Qualified personalities, (2) trade unions representatives and (3) local authorities' representatives, we consider subgroups 1 and 3 as real outsiders. They are supposed to be entirely independent.

Concerning SUB size, the French health care law allows the presence of advisory members and voting members within the SUB. The SUB size may exceed the number of voting members: 15 or 9 (depending on the category of the hospital).

All the other variables are ordinal: three variables of SUB process (Use of knowledge and skills, cognitive conflict and effort norms) three variables of SUB performance (control role, strategy role, service role). These seven ordinal variables are measured using the five –Likert-scale (from totally disagree (1) to totally agree (5)). Therefore, respondents, that is to mean SUB members, are invited to evaluate the degree of presence of these variables within SUB and by the way, evaluate the model hypothesis. The items are equally adopted from the French hospital law (Art 6143), small group and board of directors' empirical research. The variables items are constructed basing on both a set of items already operationalized in Corporate Board literature and the French Health Care Law (30) (table n°1 and Appendix).

**Table n°1: Literature items**

| <b>Variables</b>                        | <b>Researchers /Law</b>  |
|---|--|
| <b>Control role</b>                     | Minichilli et al. (9) /French Health Care Law Art 6143   |
| <b>Service role</b>                     | Minichilli et al. (9); Wan and Ong (4)/ French Health Care Law Art 6143                          |
| <b>Strategy role</b>                    | French Health Care Law Art 6143  |
| <b>Use of knowledge and skills</b>      | Dulewicz et al.(29); Wan and Ong (4)/French Health Care Law Art 6143                             |
| <b>Effort norms</b>                     | Zona and Zattoni (10); Van Ees et al. (11); Kiel et al. (30)                                     |
| <b>Cognitive conflict</b>               | Forbes and Milliken (8); Jehn(19); Zona and Zattoni(10) ; Minichilli et al. (9); Wan and Ong (4) |
| <b>Presence of knowledge and Skills</b> | Forbes and Milliken (8); Wan and Ong (4) /French Health Care Law Art 6143                        |

#### 4. CONTROL VARIABLE

The only control variable is the hospital size. It is measured using the number of beds. We assume that the hospital size may influence the decision-making process mediation relationship between the SUB structure and the SUB performance.

## RESULTS

#### 4. MEASURE SCALES 'RELIABILITY AND VALIDITY

The table in the appendix sums up the results of the scales reliability at exploratory and confirmatory levels. Reliability corresponds to the coherence between the items that are supposed to measure the same concept. The validity tries to prove that each scale measures the phenomenon that it must measure.

The exploratory analysis, by Cronbach' $\alpha$ , displays suitable values according to Carmines and Zeller (33). The totality of values exceeds 0.7 which means scales seem to be reliable at exploratory level. The confirmatory analysis, by the  $\rho$  of Jöreskog, shows somewhat acceptable values since most exceed in most the value of 0.7 (34). So, the measure scales seem to be reliable at confirmatory level.

In the light of both analyses, the scales of measurement of ordinal variables seem to be overall reliable.

Regarding, the validity of the measurement scales, it is the discriminatory validity that is considered. As shown in the table below (Cf. Table 2), discriminatory validity seems to be satisfactory, since the value calculated of Chi-square associated to all relations exceeds the value extracted from the table of Chi-square distribution.

**Table n°2: Discriminatory validity**

| <i>Relations between SUB<br/>manifest variables</i>    | $\chi^2$ | $\chi^2$ | <i>DDL</i> | $\Delta$          | $\Delta$          | $\Delta$          | $\Delta$                        | $\chi^2$<br>(Table) | <i>Test<br/>Result</i> |
|--|----------|----------|------------|-------------------|-------------------|-------------------|---------------------------------|---------------------|------------------------|
|  |          |          |            | <i>de<br/>DDL</i> | <i>de<br/>DDL</i> | <i>de<br/>DDL</i> | $\chi^2_{MC-}$<br>$\chi^2_{ML}$ |                     |                        |
| Size ↔ Diversity                                       | 45,45    | 101,55   | 3          | 4                 | 1                 |                   | 56,09                           | 3,84                | Significant            |
| Size ↔ Composition                                     | 0        | 106,25   | 0          | 1                 | 1                 |                   | 106,25                          | 3,84                | Significant            |
| Composition ↔<br>Diversity                             | 45,40    | 122,09   | 3          | 4                 | 1                 |                   | 76,69                           | 3,84                | Significant            |
| Effort Norms ↔<br>Cognitive conflict                   | 53,51    | 232,56   | 6          | 7                 | 1                 |                   | 179,06                          | 3,84                | Significant            |
| Effort Norm ↔ Use<br>of knowledge and skills           | 16,92    | 45,26    | 6          | 7                 | 1                 |                   | 28,34                           | 3,84                | Significant            |
| Cognitive conflict ↔<br>Use of knowledge and<br>skills | 13,24    | 203,60   | 3          | 4                 | 1                 |                   | 190,36                          | 3,84                | Significant            |
| Control role ↔<br>Strategy role                        | 71,58    | 79,21    | 3          | 4                 | 1                 |                   | 7,63                            | 3,84                | Significant            |
| Control role ↔<br>Service role                         | 24,48    | 33,55    | 1          | 2                 | 1                 |                   | 9,07                            | 3,84                | Significant            |
| Strategy role ↔<br>Service role                        | 46,61    | 50,53    | 1          | 2                 | 1                 |                   | 3,92                            | 3,84                | Significant            |

## 5. DATA AGGREGATION

Since the data analysis is conducted at the group level, 320 questionnaires collected from respondents who are the members of the SUB will be aggregated. Aggregation data assures the passage of members of the SUB to the SUB as a unit of analysis. Among the tools that allow assessing the homogeneity of members' perceptions: the inter-rater reliability noted Rwg as specified by James et al. (35). These authors define Rwg as "the degree to which judges are "interchangeable", which is to say the extent to which judges "agree" on a set of judgments". It is assumed that R is ranged between 0 and 1, and if it is superior to 0.7, one may consider the agreement within the SUB. This fact is confirmed by the table n°3.

**Table n°3: Aggregation values**

|  | N   | Mean   |
|--|-----|--------|
| R_wgj_Service                          | 180 | 0,8252 |
| R_wgj_Control                          | 180 | 0,8206 |
| R_wgj_Strategy                         | 180 | 0,7365 |
| R_wgj_Effort Norms                     | 180 | 0,8383 |
| R_wgj_Presence of knowledge and skills | 180 | 0,8738 |
| R_wgj_Use of knowledge and skills      | 180 | 0,8827 |
| R_wgj_Cognitive Conflict               | 180 | 0,8489 |

Indeed, 180 hospital names that appear in 320 gathered questionnaires record redundancies, and so was necessary to regroup them. In another way, from 320 questionnaires collected, 159 answers were aggregated – 159 SUBs having answered the inquiry are considered. It is on this base that the rate of the response will be  $(159/799)$  % the equivalent of 19,9%.

## 6. DESCRIPTIVE STATISTICS

The table below (Cf. Table n°4) takes back different statistics of different variables of control, of the performance of roles, of the process of decision-making and structure of the SUB.

**Table n°4: Descriptive statistics: n=159**

| Manifest Variables          | Minimum | Median | Average | Maximum | Deviation Standard |
|-----------------------------|---------|--------|---------|---------|--------------------|
| Control                     | 2.250   | 4.250  | 4.136   | 5       | 0.542              |
| Service                     | 2.000   | 3.875  | 3.829   | 5       | 0.704              |
| Strategy                    | 1.000   | 4.187  | 4.092   | 5       | 0.719              |
| Use of knowledge and skills | 1.500   | 3.452  | 3.410   | 5       | 0.703              |
| Effort Norms                | 2.010   | 4      | 3.965   | 5       | 0.599              |

|   |        |      |         |        |         |
|---|--------|------|---------|--------|---------|
| <b>Cognitive Conflict</b>               | 1.250  | 2.5  | 2.528   | 5      | 0.489   |
| <b>Diversity</b>                        | 1.60   | 3.75 | 3.697   | 5      | 0.705   |
| <b>Size</b>                             | 7.00   | 12   | 13.346  | 25     | 4.3195  |
| <b>Outsiders Proportion</b>             | 0.33   | 0.5  | 0.496   | 0.7100 | 0.0758  |
| <b>Hospital size (control variable)</b> | 88.000 | 445  | 621.119 | 2894   | 575.899 |

As for the variable of control, which is the size of the hospital measured by the number of beds, the minimal is 88 beds the median is 445 beds and average exceeds the value of 621,12 beds.

The description of the statistics of three variables relating to the performance of the roles of the SUB testifies a promotion of these roles by the members. Indeed, median values about the roles of control, strategy, and service exceed the value of 2.5, with a standard deviation, that seems to be lower ( $<1$ ). Besides, 50 % of the sample allocate a value of effort norms relatively close to the maximum value which is equal to 5.

The statistical indications relating to three variables linked to the process of decision-making also point to a good appreciation of the members, since median values relating to the use of knowledge and skills, effort norms and cognitive conflict, exceed 2.5 with low standard deviation values ( $<1$ ).

## 7. THE STRUCTURE MODEL RESULTS:

The structure model establishes direct links between the SUB process variables (dependent variables) and SUB structure variables (independent variable). Results are summarized in table 5.

**Table n°5: Multiple regression results: The structure model**

| <i>Independent variables</i> | <i>Dependent variables</i> |                                    |                           |
|------------------------------|----------------------------|------------------------------------|---------------------------|
|                              | <b>Effort Norms</b>        | <b>Use of knowledge and skills</b> | <b>Cognitive conflict</b> |
| <b>(Constant)</b>            | 1.773*                     | 0.407                              | 3.259*                    |
| <b>SUB Diversity</b>         | 0.547*                     | 0.786*                             | -0.211*                   |
| <b>SUB Size</b>              | -0.004                     | -0.003                             | -0.010                    |
| <b>SUB Composition</b>       | 0.476                      | 0.226                              | 0.373                     |
| <b>Hospital Size</b>         | -2.492E-5                  | 3.812E-5                           | -2.512E-6                 |
| <b>R<sup>2</sup></b>         | 0.369                      | 0.613                              | 0.124                     |
| <b>F</b>                     | 25.282                     | 61.008                             | 5.463                     |
| <b>d.f.</b>                  | 4                          | 4                                  | 4                         |

\*P<0.05

According to table n°5, only the SUB diversity seems to have a significant relationship with all SUB process variables. Thus, the relationship between the SUB structure and SUB performance roles, within the structure model, is partially significant. Besides, the SUB diversity negatively influences the cognitive conflict.

## 8. THE PROCESS MODEL RESULTS:

The process model is supposed to check the direct links between the SUB roles performance (dependent variables) and the SUB process (independent variables) controlled by the hospital size. Results are summarized in table n°6.

**Table n°6: Multiple regression results: the process model**

| <i>Independent variables</i>       | <i>Dependent variables</i> |                     |                     |
|------------------------------------|----------------------------|---------------------|---------------------|
|                                    | <b>Strategy role</b>       | <b>Control role</b> | <b>Service role</b> |
| <b>(Constant)</b>                  | 0,831                      | 1,541               | 0,940*              |
| <b>Effort Norms</b>                | 0,439*                     | 0,445*              | 0,300*              |
| <b>Use of knowledge and skills</b> | 0,331*                     | 0,173*              | 0,380*              |

|                           |          |           |           |
|---------------------------|----------|-----------|-----------|
| <b>Cognitive conflict</b> | 0,131    | 0,098     | 0,170     |
| <b>Hospital size</b>      | 9,576E-5 | -1,612E-5 | -4,180E-5 |
| <b>R<sup>2</sup></b>      | 0,376    | 0,409     | 0,309     |
| <b>F</b>                  | 23,177** | 26,622**  | 17,189**  |
| <b>d.f.</b>               | 4        | 4         | 4         |

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\*p<0.05

Table n°6 shows that efforts norms and use of knowledge and skills positively influence the control and service roles. Consequently, the process hypothesis is partially supported

## 9. THE MEDIATION MODEL RESULTS

In order to test the multilevel mediation, it is recommended to use the hierarchical regression (36). This step-by-step method checks models gradually by evaluating the change of R<sup>2</sup> and F when moving from a model to another one. Each model integrates independent variables used in the previous model.

**Table n°7: Hierarchal and Multiple regression results: The mediation model**

| <i>Independent variables</i>                  | <i>Dependent variables</i> |                     |                     |
|---|----------------------------|---------------------|---------------------|
|   | <i>Strategy role</i>       | <i>Control role</i> | <i>Service role</i> |
| <b><i>Step 1: control variable</i></b>        |                            |                     |                     |
| Hospital size                                 | 7.650E-5                   | -1.419E-6           | -1.190 E-5          |
| <i>R</i> <sup>2</sup>                         | 0.10                       | 0.000               | 0.000               |
| <i>F</i>                                      | 1.57                       | 0.000               | 0.015               |
| <i>d.f.</i>                                   | 1                          | 1                   | 1                   |
| <b><i>Step 2: SUB structure variables</i></b> |                            |                     |                     |
| SUB size                                      | 0.001                      | -0.006              | -0.011              |
| SUB diversity                                 | <b>0.467*</b>              | <b>0.403*</b>       | <b>0.428*</b>       |
| SUB composition                               | 0.425                      | 0.251               | -0.250              |
| <i>R</i> <sup>2</sup>                         | 0.211                      | 0.263               | 0.186               |
| <i>R</i> <sup>2</sup> Change                  | 0.201                      | 0.263               | 0.186               |
| <i>F</i>                                      | 11.831**                   | 18.328**            | 11.706**            |
| <i>F</i> Change                               | 13.100**                   | 18.328**            | 11.691**            |
| <i>d.f.</i>                                   | 4                          | 4                   | 4                   |
| <b><i>Step 3: SUB process variables</i></b>   |                            |                     |                     |
| Effort norms                                  | <b>0.444*</b>              | <b>0.413*</b>       | <b>0.296*</b>       |
| Use of knowledge and skills                   | <b>0.344*</b>              | 0.094               | <b>0.361*</b>       |
| Cognitive conflict                            | 0.128                      | 0.121               | 0.178               |
| <i>R</i> <sup>2</sup>                         | 0.375                      | 0.647               | 0.559               |
| <i>R</i> <sup>2</sup> Change                  | 0.164                      | 0.384               | 0.364               |
| <i>F</i>                                      | 25.088**                   | 31.764**            | 20.954**            |
| <i>F</i> Change                               | 13.257**                   | 13.436**            | 9.248               |
| <i>d.f.</i>                                   | 7                          | 7                   | 7                   |

\*p<0.05

Three conditions should be gathered to judge the mediation relationship according to Baron and Kenny (19). Firstly, SUB structure and SUB process must be significantly related. Secondly, SUB process and SUB performance must be significantly associated. Thirdly, SUB process and SUB performance must be connected to the presence of the SUB structure.

The table n°7 shows that only SUB diversity positively influences SUB performance.

When

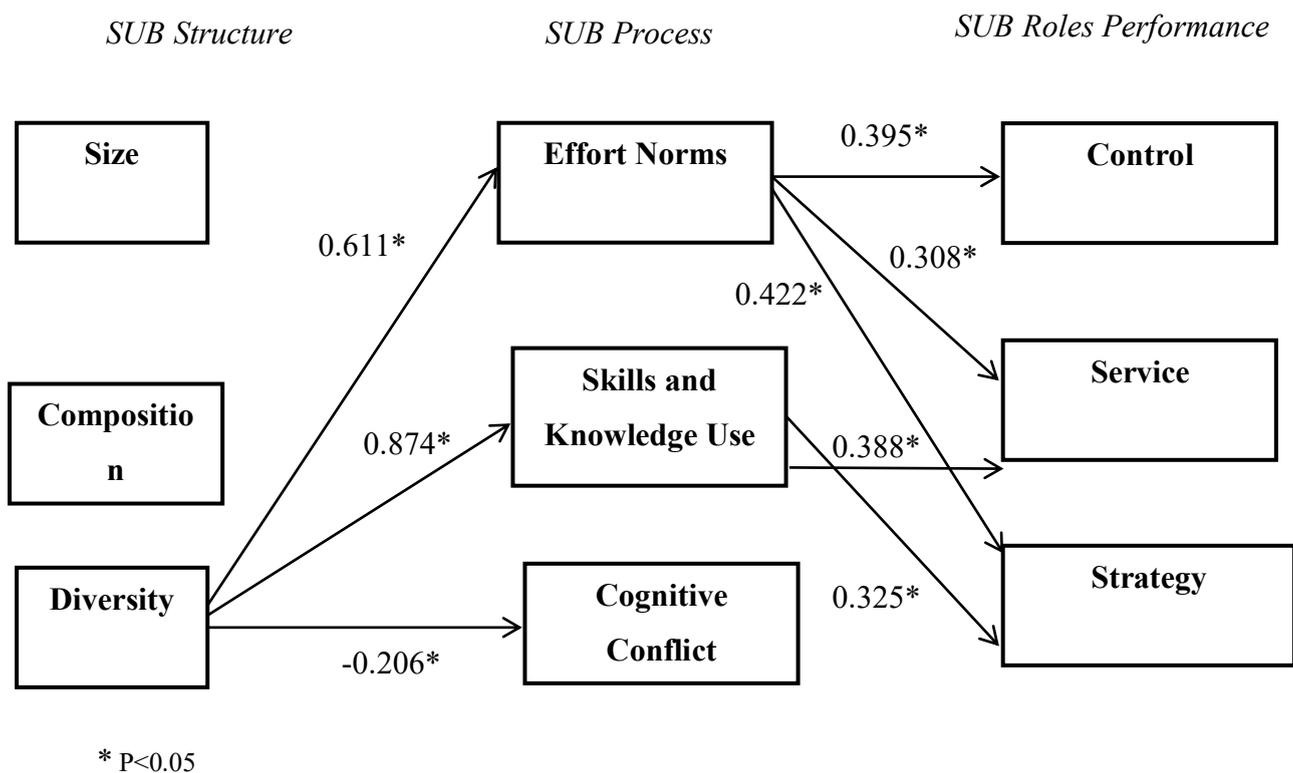
SUB

process variables are added, the value of R2 is remarkably improved. Hence, overall the significance is gradually improved each time have more variables are added.

By combining the three regressions, we conclude that the mediation hypothesis is partially validated. The effort norms mediate the relationship between the SUB structure and SUB performance.

This ascertainment is confirmed by paths significance as an output of the paths analysis given by JMP software.

**Figure n°3: The paths analysis results**



## DISCUSSION

Only the SUB diversity seems to influence the SUB process significantly. The SUB diversity positively affects effort norms and use of knowledge and skills but negatively cognitive conflict. This observation is, perhaps, since the hospital SUB diversity impact does not stimulate debates and make for a real cognitive conflict within the hospital SUB. Indeed, face-to-face interviews with some hospital SUB members indicates that the SUB is "rubber stamp." They adopt systematically "managerial decisions and legitimate the objectives managers choose to

peruse." Hence, the historical issue about the board involvement degree in decision making (37) arises in the case of such public organization.

Indeed, efforts norms are positively connected with the performance of the roles of the SUB. The higher the members of the SUB - and jointly the hospital management team - increase their effort norms, the more likely the members of the SUB are to carry out their strategy, service and control roles effectively. This relationship is confirmed by the empirical results (6,12). On the contrary, Van Ees et al. (13) did not find a significant link.

The results of the study prove that the SUB members and the management team of the hospital value the effort norms. This fact goes with the post-study- conversation with one of the members of SUB. This member admits that: "*The management team has to send us the necessary documents enough time in advance to be able to revise them and express our opinions the agreed.*" Hence making

information available to the individual and the group enhances the decision-making quality (38). Furthermore, they should take care of preparing the right environment for the progress of meetings. They must send necessary documents to the various members beforehand to allow for enough time to scrutinize information before the meetings. This instruction results in the successful conclusion of actions of controlling the MGB (role of control), deliberating on the budgets of the hospital (role of strategy) and expressing their opinion on the general policies of the hospital (role of service). For their part, the members of the SUB have to prove a certain level of diligence during their preparation for the meetings. By consulting the sent documents, they formulate their questioning and communicate them during the session. Still, the interactions during the SUB meeting have to allow them to present their opinion. As such, the remarks of minority groups will be respected. As the representatives of users, which is a minority of two people, they will be esteemed whatever is the size of the hospital.

Search results show that the relation between the use of the knowledge and skills, and SUB performance is significant. According to the small group research, a high level of knowledge and skills have five consequences. Firstly, it allows the members to increase the quantity of the useful information. Secondly, it widens the number of available critical judgments. Thirdly, it corrects the errors of inference and analysis. Fourthly, it increases the number of the potential solutions. Fifthly, it multiplies the range of perspectives of a task. An increase of skills and knowledge levels improve the quality of the decisions within the groups (37, 38).

In the literature regarding the board of directors, Maharaj (41) notices that the members apply their experiences and expertise to understand the problems better and this encourages them to improve the decision-making process.

The significant relationship between the use of the knowledge and the skills and the service role testifies of the importance of the immaterial resources application by the SUB members, for the benefit of the tasks such as advising and assisting the MGB.

Regarding the multiple regression table, the cognitive conflict has no significant relationship with the SUB performance. Zona and Zattoni (12), proved the significance of the relationship between the

cognitive conflict and the SUB performance namely the service and the control. According to these authors, this underlines the idea moved forward in the studies concerning the organization, which stipulates that its effect on the performance of the group be ambiguous (42). Concretely, cognitive conflict can favor the emergence of adverse feelings among the members of a group, counterbalancing these positive effects on the performance of the task of the group (10). On their sides, Minichilli et al. (11) associate the critical debate and the cognitive conflict, finding that these factors possess a relation significantly positive with the roles of advising and the networking. In the present study, and by based itself on the descriptive statistics of the data before aggregation, we notice that respondents turned to the trend varying value between " rather not all right " and " not at all all right." This finding could be due to the fact of the domination of the defective called "Groupthink " (43). The members of such small group of decisions tend to avoid critical debates not to hurt the acquired cohesion. They try hard to look for an agreement, for a consensus and an unanimity rather than for a critical debate which reveals all the options and results in the proper possible alternative. According to Janis (44), if such behavior is excessive, the group becomes defective.

Only the SUB diversity has proved the most active among the other variables of the structure of the SUB (the size and the proportion of the outsiders) in terms of influence on three variables of the process of decision-making (the standards of efforts, the cognitive conflict and the use of the knowledge and the skills).

Initially, the presence of a range of knowledge and skills (specific and/or general) within the SUB contributes to the valuation of effort norms. The latter emanates from the hospital management team and the members of the SUB. Indeed, Feldman (45) has already moved

forward the idea that the addition of knowledge in a group strengthens the effort norms and that each of the members contributes in their own way, even informally, in the preservation and the development of those norms. The latter can be considered as catalysts ensuring necessary conditions for the progress of a meeting. This means that accountants, doctors, mayors, manager and union activists, composing the SUB, use all relevant and vital elements during meetings. Each member, by basing themselves on the knowledge and skills verify carefully the information contained in documents, participating and contributing significantly to the meeting. In cases where information sent before the meeting is proved correct incomplete or vague, the member contacts the hospital management team to inquire. This pressure of demand requires the hospital management team to satisfy the needs of the members. So, the standards of efforts improve in a conventional way.

Secondly, the presence of knowledge and the skills of the members of the SUB (i.e., The diversity) negatively influences the cognitive conflict. The underlying hypothesis is countered, this goes against the definition given by Forbes and Milliken (10) regarding the cognitive conflict. The last bases itself on the inconveniences arisen from the "admixture" of the knowledge and the skills of the members. The more there will be of new and rival ideas, the more the cognitive conflict will become pronounced. This must be seen in the constructive version to justify the worthy cause of the diversity at the level of the members of the SUB. Indeed, this authority is in a confrontation with a complex environment and has to envisage various answers suited to the good management of the differing of opinions and perspectives. This same diversity positively influences the use of the knowledge and the skills within the SUB. This confirms the report that one should not only have the knowledge and the necessary skills but how it is necessary to use them advisedly (10).

The role of mediation is ensured by the effort norms. This underlines the importance granted by the members of the SUB to this component of decision-making process.

The effort norms mediate, partially, the relationship between the diversity and the roles of strategy, control and service. So, the higher the presence of knowledge and skills within the SUB, the more the effort norms, jointly ensured by the members and the management team, influence the performance of SUB roles. The deliberation on the strategies, the advising task, the operations of control cannot be understood directly by the diversity from the SUB, it is necessary to pass through the effort norms. This was confirmed by Levine and Moreland (46): "*Obviously performance is enhanced when the norms within a group regarding effort.....are*

*positive rather than negative.*". To satisfy right conditions in the meetings, some factors are to be considered: the relevance of issues to be discussed, the sending and reception of documents from the management team in advance, the time and the diligence awarded by the SUB to the preparation before the meetings. These effort norms facilitate the cohesion between doctors, the accountants, jurists, union activists, mayors, patients' representatives. This effect enhances, in the end, the performance of SUB roles. Regarding effort norms during the meeting; the members have to make sure about three facts. Firstly, the points of view of minorities are respected along the discussions. Secondly, the hospital affairs are discussed in a structured way. Thirdly, the meetings are led by a way that ensures open communication and grants the necessary time to allow for the resolution of the problems. Such instructions emanate from the communication theory related to small decision-making group.

## **CONCLUSION, LIMITATIONS AND RESEARCH AGENDA**

Concerning the new French hospital law (HPST 2009), its governance area focuses its reflection on the two-tier governing mode composed of the SUB and the MGB, as an internal mechanism of governance. Recently introduced, the SUB gains the interest of the decision makers in and around public hospitals. Given that the relationship between the board performance and organization performance is still ambivalent (4), researchers may insert the board process to study organizational performance (47).

The present work has given a new perspective on the way of the public SUB function regard to governing boards and social psychology related to small group theories. The central idea is aimed at verifying the mediation of the decision-making process between the structure and the roles of the SUB. The three generated sub-models are the structure model, the process model, and the mediation model. These models are tested on a sample of 159 French public hospitals. From these tests, model mediation hypotheses are partially valid. As for the process and structure models, the assumptions concerning them are for the more significant part not valid.

This study allows the actors within the public hospital sector to work on and improve the efficiency of the hospital board through the SUB roles performance. The French hospital reform of 2009 aimed at creating the SUB with for vacation, in principle, to merely control the

MGB. Besides, two other roles can be performed by this authority, namely the service role and the strategy role. This study underlines the importance of separately studying the roles of SUB as each of them are affected by other independent variables. These are cognitive conflict, effort norms and the use of knowledge and skills.

This study identified the various components of the decision-making process within the public hospital SUB by using rules already applied to the board of directors. The validation of the hypotheses associated to the relationship between effort norms and the use of knowledge and skills on the performance of roles of control, strategy, and service, incites decision makers who observe the progress of the SUB. They should reflect on best governance practices. By following the regulations appearing in the French 2009 'HPST law specifically, in the codes of best practices of the SUB, some connections are proposed:

in the " Efforts norms " are about the meetings (Art. R.6143-8 and art 6143-11), in the suspension or the dismissal of a session (Art. R 6143-9), in the quorum (Art. R.6143-10) and the votes (Art. R.6431- 10)

in " the formalization of debates " the records of (Art. R 6143-14), in the transmission to the Director General of the Regional Health Agency (Art. R.6143-14), in the reports (Art. R.6143-16)

in the " operating means " (Art. R. 6143-16),

So, this study seems to notice that, certainly these codes help to establish " the minimum " of the necessary conditions to ensure the progress of the SUB, but it seems rather more interesting to schedule the institution of SUB meetings' codes of conduct, framing mainly the decision-making process. These implications have also post pointed by Veronesi and Keasey (48).

Our sample excludes the impact of subgroups belonging to the SUB (Qualified Personalities, Local Authorities Representatives, and Trade Union Representatives) on the appreciation of the board performance. However, the stakeholder-agency theory (49) suppose a divergence concerning utilities concerning the actors implicated in the decision-making process. We support the idea advanced by Pointer and Orlikoff (50) within the healthcare organizations: *"The purpose of a board is to represent and balance shareholder or stakeholders interest"*. Therefore, we encourage empirical studies within the board process approach to evaluating the appreciation of effort norms, use of knowledge and skills and cognitive conflict by different subgroups compounding the SUB or the

board of directors.

All things being equal, we only kept the public hospital size as a control variable when checking our process mediation model. We believe that it does exist other control variables that may be considered. For example, the hospital category: psychiatric or hospital centers; hospital centers, regional hospital or University Hospital Centers.

Moreover, in-depth interview and focus groups may be data collection methods that should bring more knowledge about board process within the French public hospital board (for English case see (51)). The French governing seems to be a fertile research ground to run such studies.

Besides, our findings seem to be generalized to the for-profit organizations within the French context. Consequently, for-profit and nonprofit French organizations board process needs to be more investigated.

Furthermore, McGrath and Argote (52) argue that contextual issues may influence the group process. They consider the neglect of embedding context, as a significant limitation of research on group process. We have to recognize the fact that the French public hospital is at the crossroads of political, sociological and economic concerns. Hence, supposing that the SUB board within French hospital function independently from any contextual issues "damage" seriously the credibility of our research. However, the context variables related to the hospital context may be considered as inputs or even control variable for future research.

Meanwhile, the game power within and around such public governing body may be explicitly or implicitly conferred by institutions surrounding the public organization. This interaction may positively or negatively impact the governing function of the SUB. Hence the counterpower ensured by the democratic practice, globally appreciated in France, may encourage public hospital SUB to enhance the decision-making process level and by the way the SUB roles performance. Consequently, members feel that they exert a kind of internal locus of control, so they perform better their roles. Yet, the democratic practice may also contribute, sometimes, to some blocking of meetings. In fact, subgroups within the French public hospital SUB feels that are subject to an external locus of control fell down the decision-making process, by creating a coalition, and underperform their roles.

According to our experience -as a researcher within the recently installed SUB, we remark that the

principle separation between the SUB and the MGB seems not to be respected regarding autonomy and coordination. This observation may be due to the lack of maturity or even the character of non- profitability. As Forbes and Milliken (8) remark that the nonprofit board size

seems to be larger than the for-profit one. The inclusion of multiple stakeholders within the French hospital SUB may make the deliberation more complex. In fact, the public hospital board is characterized by the presence of "tensions between representative and professional "subgroups, " the conformance and performance," "controlling and partnering"(53). This complexity may be intensified by the fact that some of representatives' stakeholder's members require training regarding critical hospital organizational and financial issues.

Finally, Zahra and Pearce (8) set their *conceptual integrative model* by adding the organization performance as an output of the board roles performance (strategy, service, and control) which have board attributes (process characteristics, structure, and composition) as inputs. They have considered only one organizational performance side: the financial one. They have encouraged to run more empirical studies by examination of the indirect links between variables compounding the following model: Board attributes→ Board role→ Organization performance. Here, we propose to complete their suggestion by (1) proposing the following model to be examined: board structure→ board process→board roles performance→ organization performance and (2) using Norton and Kaplan organizational performance conception applied to the public hospital. Hence the organizational performance- as a latent variable\* have four observed variables: finance, patient satisfaction, internal process and innovation and learning (for more details see for example the conception of Baker and Pink (54) applied to the hospital context. The balanced scorecard tool may be used to dress the gap between the board roles performance and the organizational performance in the light of the board process.

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## Appendix

| Variables                                   | Constructs  | Items  | $\alpha$ Cronbach | Rh $\hat{o}$ Jöreskog |
|---|---|--|-------------------|-----------------------|
| <b>The presence of knowledge and skills</b> | <i>Presence of knowledge and specific skills from the MGB</i>         | -The MGB provides information to the SUB without problem.  | -                 | -                     |
|   | <i>Presence of specific knowledge and skills of the SUB members</i>   | The SUB includes in its midst of skills :<br>-Hospital accounting.<br>-Hospital law.<br>-Hospital finance.<br>-Hospital management.  | 0,927             | 0,809                 |
|   | <i>Presence of general knowledge and skills of the SUB members ..</i> | The SUB includes in its midst of skills in:<br>- strategic thinking.<br>-analysis skills.<br>-communication skills.<br>-interaction skills.<br>-Result orientation perspective.  | 0,942             | 0,907                 |
| <b>Effort Norms</b>                         | <i>Effort Norms of the management team before the meeting.</i>        | -The elements to be discussed are relevant.<br>-The elements to be discussed are prepared in advance.<br>-Documents relating to the meeting are sent sufficiently in advance.<br>-The member receives all of the documents.  | 0,787             | 0,701                 |
|   | <i>Effort Norms of the SUB members prior to the meeting..</i>         | -The SUB member carefully verifies the information contained in the documents.<br>-The SUB member is diligent in preparing for meetings.<br>-The SUB member spends a time sufficient for the preparation of the meeting.   | 0,800             | 0,732                 |
|   | <i>Effort Norms at the meeting.</i>                                   | -The views of minorities are respected along the discussions.<br>-Hospital-related affairs are discussed in a structured manner.<br>-Meetings are conducted in a manner that ensures open communication.<br>-Meetings are conducted in a way that ensures a meaningful participation.<br>-Meetings are conducted in a way that ensures a troubleshooting time. | 0,917             | 0,794                 |
| <b>The cognitive conflict</b>               | <i>Behavioral cognitive conflict</i>                                  | - There are frequent conflicts and disagreements between members.<br>-There are frequently conflicts and disagreements regarding the method of work of the SUB.  | 0.901             | 0,759                 |
|   | <i>Cognitive conflict of the output</i>                               | - Meetings often lead to clear decisions.  | -                 | -                     |

|   |  |   |   |       |       |
|---|--|---|---|-------|-------|
| <b>The use of knowledge and skills of SUB</b> | <i>Use of the specific knowledge and skills of the SUB</i> | Within the SUB there is exploitation of the competencies in:  | <ul style="list-style-type: none"> <li>-Hospital Accounting.</li> <li>-Hospital Law.</li> <li>-Hospital Finance.</li> <li>-Hospital Management.</li> <li>-Medicine.</li> <li>-Social Affairs.</li> </ul>  | 0,926 | 0,835 |
|   | <i>Use of the general knowledge and skills of the SUB</i>  | Within the SUB there is exploitation of the competencies in::   | <ul style="list-style-type: none"> <li>-strategic thinking.</li> <li>-analysis.</li> <li>-communication</li> <li>-interaction.</li> <li>-result-orientation perspective</li> </ul>  | 0,942 | 0.918 |
| <b>Control Role</b>                           | <i>The output control</i>                                  | <ul style="list-style-type: none"> <li>- The SUB shall communicate to the Director of the Health Agency (DGCB) comments on the annual report submitted by the Director.</li> <li>-The Supervisory Board shall communicate to the Director-general of the General Health Agency (DGCB) observations on the management of the institution.</li> </ul>                                     |   | 0.836 | 0.780 |
|   | <i>The Behavioural control</i>                             | <ul style="list-style-type: none"> <li>- Financial Report Categories received by SUB members are adequate in insure their responsibilities.</li> <li>-The SUB hear the hospital director (or his/Him representative) about the Income and Expenses Projected Statement.</li> <li>- The SUB hear the hospital director (or his/Him representative) about the Investment Plan.</li> </ul> |   | 0.917 | 0.510 |
| <b>Service Role</b>                           | <i>The advice and counselling</i>                          | -The SUB make advice about:   | <ul style="list-style-type: none"> <li>-The Quality Improvement Policy.</li> <li>- The care security and risk management.</li> <li>- Reception conditions and taking charge of users.</li> <li>-The internal Establishment Regulation.</li> </ul> | 0.880 | 0.780 |
| <b>Strategy role</b>                          | <i>Internal Strategy</i>                                   | -The SUB deliberates on :   | <ul style="list-style-type: none"> <li>-The Establishment Project.</li> <li>-The Social Project.</li> <li>-The Medical Project.</li> <li>-The Financial Account and the Results Appropriation.</li> <li>-The Annual Activity Report.</li> </ul>   | 0.902 | 0.855 |

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|--------------------------|---|--|-------|-------|
| <i>External Strategy</i> | -The<br>supervisory<br>board<br>deliberate on : | -Any measure associated to the participation of the establishment to the hospital territorial community. | 0.867 | 0.813 |
|                          |   | - Any agreement between an external partner and a member of SUB or MGB.                                  |       |       |
|                          |   | - Statues of hospital foundations which are created by the establishment.                                |       |       |

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